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Trabajo Fin de Grado

Puesta en marcha de sistema para medida de supercondensadores.

Start-up of system for measuring supercapacitors.

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RESUMEN

Puesta en marcha de sistema para medida de supercondensadores.

En el presente TFG se elaboran una serie de ensayos conforme a la norma EN-62391-1:2016, mediante los cuales podemos obtener las principales características eléctricas de los supercondensadores que deseamos analizar. Las características eléctricas que se analizan son, capacidad, resistencia serie equivalente, corriente de fuga y voltaje mantenido.

Cada una de estas características está resuelta en diferentes apartados de la norma, por lo que este Trabajo Fin de Grado se centra en la adaptación de ensayos con los requisitos de la norma a los medios de los que se dispone dentro del departamento de ingeniería eléctrica, algunos de los problemas que se han resuelto son:

- Análisis de la norma y búsqueda de información sobre los distintos tipos de ensayos que deseamos solucionar, ya que según la EN-62391-1:2016, podemos aplicar diferentes métodos de ensayo [1][2][3][4][5][6][7][8][9][10] para la obtención de cada una de las características que deseamos obtener.
- Búsqueda de equipos aptos para el ensayo, ya que muchos de los equipos de los que disponemos no son los idóneos para dicho ensayo, por lo que este proceso de búsqueda es mediante la prueba de diferentes equipos y observando sus características ante una situación controlada.
- Diseño y creación de un sistema automático para el control y registro de las variables del sistema, facilitando de esta forma la realización y procesamiento de la información. Dentro de este punto se resuelven problemas de programación con la ayuda de José Carlos Millán de Cortés, encargado del laboratorio de proyectos. Se desarrolla un programa que es capaz de registrar dos variables, en nuestro caso temperatura y voltaje, además de poder modificar el tiempo de registro de variables, pudiendo variarlo según nuestras necesidades. Al ser un sistema automático de registro de la temperatura de la cámara climática y de la tensión del supercondensador, se minimiza la interferencia humana en la medida de dichas variables, mejorando la calidad del resultado final.

Cuando se realiza el ensayo de resistencia serie equivalente (ESR), la precisión que requieren estas medidas, nos resulta imposible de alcanzar con los instrumentos que tenemos en el departamento, por lo que optamos por aumentar la corriente por encima de los límites de la norma. Cabe destacar, que pese a realizar el ensayo fuera de los requisitos de la norma, los resultados obtenidos son coherentes con los datos de los fabricantes.

A fin de poder comprobar el sistema desarrollado, se procede a la evaluación de cuatro muestras de supercondensadores, para poder comparar los resultados obtenidos con los datos proporcionados por el fabricante.

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1.INTRODUCCION Y OBJETIVOS

1.1 Introducción.

En la actualidad, se está extendiendo el uso de supercondensadores ya sea como sistemas independientes de almacenamiento de energía como de apoyo complementario a las baterías donde los supercondensadores son los encargados de proporcionar picos de potencia. [11]

Las principales ventajas de los supercondensadores con respecto a las baterías son:

- Velocidad de carga y descarga, es decir, corrientes de carga y descarga mucho mayores que las baterías, por lo que se reducen los tiempos de carga para determinadas aplicaciones.
- Vida útil media de miles de ciclos. En nuestras dos primeras muestras, el número de ciclos es de 500.000, por lo que tienen una vida útil mucho mayor que las baterías.
- Ausencia de productos químicos en su composición, ya que son de base carbono con un electrolito de metal alcalino, por lo que después de su vida útil es relativamente fácil su reciclaje, mientras que las baterías necesitan tratamientos especiales para su reciclaje.
- Casi nulo mantenimiento ya que solo necesitan operar dentro de sus límites de temperatura, en cambio las baterías necesitan un mantenimiento mayor con un rango de temperatura para operar menor que los supercondensadores.

Debido a sus amplias aplicaciones en la actualidad, deseamos poder analizar las características eléctricas de los supercondensadores, algunas de las aplicaciones que cabe destacar son:

- Automóviles híbridos: Su uso se está extendiendo en este sector debido a su rapidez en la carga y en la descarga, lo que proporciona un pico en la aceleración sin tener que sufrir una bajada muy acusada en el nivel de batería del automóvil, y en la frenada son muy efectivos debido a su gran rapidez en la carga, lo que permite aprovechar una mayor cantidad de energía en cada frenada.
- Apoyo energético: En aplicaciones donde se realiza un ciclo en el cual una parte demanda mucha energía y en la otra se genera, los supercondensadores pueden ayudar a minimizar el consumo de energía por su alta capacidad de almacenamiento de energía, de esta forma mejora la estabilidad de la red eléctrica. También se usan en aplicaciones de energía solar, son necesarios para estabilizar la tensión del sistema y así proveer una corriente constante, de esta forma los sistemas que cuelgan aguas abajo tendrán una vida útil mayor por la mejora de la señal, evitándose deterioros prematuros por picos en tensión y corriente.
- Almacenamiento de energía: posiblemente este es el uso más extendido, ya que permiten mantener en funcionamiento dispositivos durante horas o días, el uso más común hoy en día es su uso en sistemas de alimentación ininterrumpida (SAI), los cuales proporcionan seguridad en la red eléctrica, además de mejorar la red, ya que actúan como filtro de armónicos y protege nuestra red ante subidas o bajadas de tensión.

Por ello surge la necesidad de elaborar una técnica o un método para poder evaluar las principales características eléctricas de un supercondensador (capacidad, resistencia serie equivalente, corriente de fuga y tensión mantenida), todas estas técnicas están recogidas en la EN 62391-1:2016[12], donde se recogen los métodos para la realización de cada ensayo, así como los requisitos mínimos de los equipos necesarios para cada uno de los ensayos.

Algunos de los requisitos son, el control de la temperatura antes y durante el ensayo, siendo una variable que se debe medir y controlar para que no exceda en 2ºC la temperatura consigna en cada uno de los ensayos además antes de comenzar un ensayo se debe realizar un equilibrio térmico de supercondensador, es decir que la temperatura entre el centro y el exterior del supercondensador no debe diferir más de 1ºC. Este control se consigue mediante una sonda PT 100 y un PLC SIEMENS (CPU 1217C) y un módulo de entradas analógicas (AL 4x13BIT/AQ 2x14BIT), con lo que se realiza una programación para crear un registro de la temperatura y la tensión del condensador mediante una de las entradas analógicas del módulo. Dentro del laboratorio de proyectos encontramos una cámara con dos células Peltier, este conjunto de cámara y células Peltier serán nuestra cámara térmica, que controlaremos el sentido de la corriente con el PLC, de esta forma podemos variar el sentido cuando sea necesario cambiar el ciclo térmico. Cabe destacar la creación de una programación especial para la automatización de captura y registro de la tensión y la temperatura, lo que nos proporciona las siguientes ventajas:

- Mejor calidad en el ensayo, ya que se minimiza la intervención humana durante la ejecución de ensayos de larga duración.
- Repetitividad mucho mayor que con cualquier otro tipo de control, ya que se realizan acciones cíclicas.
- Registro permanente, es decir, no existe interferencia de horarios para la captura de los datos.
- Reducción en los tiempos de procesamiento de la información, ya que, dentro de la programación, se desarrolla la creación de un documento Excel que registra, el número de dato, hora, fecha, temperatura y tensión, lo que nos facilita enormemente el procesado de los datos de los ensayos.
- Aumento de la seguridad, ya que, durante el desarrollo de un ensayo, se minimiza la exposición a trabajos con tensiones.
- Seguimiento online, ya que este PLC cuenta con un servidor web, cuya conexión se puede realizar desde cualquier punto de red a la IP 155.210.29.135, mediante la cual podemos ver o cambiar el estado del PLC, descargar el archivo de registro, realizar modificaciones del programa, o ver fallos del mismo. De esta forma se facilita el seguimiento de los ensayos, así como la depuración de la programación, reduciendo el número de visitas al laboratorio.

Otro requisito que nos marca la norma, es la eficiencia de la fuente de alimentación y de la carga en un 95%, por ello se opta por utilizar los modelos EA-PSI-8080-60T para la fuente de alimentación y el modelo EA-EL 3160-60 para la carga electrónica. Ambos modelos cumplen este requisito, además son equipos que pueden programarse y controlarse mediante un PLC, pero en nuestro caso, el control se realiza de forma manual, ya que necesitamos una desconexión total de los cables de la fuente o de la carga, para de esta forma evitar interferencias en nuestro supercondensador, en los anexos 5 y 6 podemos encontrar más información de estos equipos.

En el presente Trabajo Fin de Grado se evalúan cuatro muestras de supercondensadores electrostáticos de doble capa (EDLC) que utilizan electrodos de carbono o derivados, con una capacitancia electrostática de doble capa mayor que la electroquímica. De esta forma se logra una separación de carga en una doble capa de Helmholtz en el límite entre la superficie de un electrodo conductor y un electrolito. A continuación, se clasifican las muestras y algunas de sus principales características:

Muestra 1: Fabricante, Eaton Bussmann, capacidad 400F, tensión nominal 2,7V.

Muestra 2: Fabricante, Eaton Bussmann, capacidad 300F, tensión nominal 2,7V.
Muestra 3: Fabricante, Nichicon, capacidad 150F, tensión nominal 2,5V.
Muestra 4: Fabricante, Rubycon, capacidad 100F, tensión nominal 2,5V.

Dentro del departamento de Ingeniería Eléctrica, y bajo la tutela de Francisco Javier Arcega Solsona, surge la necesidad de realizar un banco de pruebas para los supercondensadores, y que estas pruebas se realicen bajo los requisitos que marca la UNE 62391-1:2016.

1.2 Objetivos.

El principal objetivo de este Trabajo Fin de Grado es el diseño de un banco de ensayos mediante los cuales podemos caracterizar eléctricamente los supercondensadores que deseamos analizar.

La caracterización eléctrica de los supercondensadores se basa en el conocimiento de cuatro variables (capacidad, resistencia serie equivalente, corriente de fuga y tensión mantenida), para poder evaluar diferentes supercondensadores para una misma aplicación, y así conocer debilidades y fortalezas de diferentes muestras o fabricantes.

Para poder comenzar el diseño de las pruebas, necesitamos un análisis en profundidad de la norma EN 62391-1:2016, ya que es la norma la que nos marca los requisitos mínimos bajo los que debemos realizar los ensayos, así como el método y las fórmulas para cada una de las variables eléctricas que deseamos obtener bajo el estándar de la norma.

Después de este primer análisis obtenemos algunos de los requisitos que debemos cumplir antes de comenzar los ensayos, así como información de que equipos complementarios a los mencionados anteriormente que necesitaremos para la realización de cada uno de los ensayos.

Uno de los principales problemas es la búsqueda de estos equipos complementarios, ya que en ocasiones no cumplen con los requisitos que se necesitan para la elaboración del ensayo, por ejemplo, en el ensayo de corriente de fuga, conseguimos un óhmetro (Chauvin Arnoux C.A 6541) con el cual conseguimos medir la resistencia de fuga de cada uno de los condensadores, de esta forma, obtenemos la corriente de fuga de los condensadores.

Otro ejemplo es el ensayo de resistencia serie equivalente, se necesita un voltímetro con precisión de picoamperios en tensión alterna, este punto no pudo ser resuelto, y después de buscar soluciones se optó por no cumplir el valor máximo de corriente que marca la norma para poder obtener un resultado, ya que la única solución posible es la creación de una placa PCB con un amplificador operacional y su circuito auxiliar para poder medir picoamperios, pero sin conocer la precisión que tendrán estas medidas, ya que no podemos medir con ningún otro aparato de medida para comparar resultados. Este ensayo se realizó con un valor fuera del límite superior en corriente que marca la norma mediante el calibrador Fluke 5500 A y el voltímetro PeakTech 3442 el cual tiene la conexión Bluetooth, de esta forma se puede hacer un registro y salvar los datos mediante la conexión a un ordenador o con la aplicación móvil.

El ensayo de resistencia serie equivalente no está realizado bajo el estándar de la norma, pero los resultados obtenidos son coherentes con los datos proporcionados por los fabricantes, por lo que son resultados aceptables, pero fuera del estándar de la norma.

2.MUESTRAS Y CLASIFICACIÓN.

A continuación, en la Tabla I se hace un breve resumen de nuestras cuatro muestras de supercondensadores, con las principales características según fabricante para su posterior clasificación conforme a la norma.

Tabla I: Características de supercondensadores.

Muestra	Fabricante	Capacidad	Voltaje	Resistencia interna
1	Eaton Bussmann	400 F	2,7 V	3,2 mΩ
2	Eaton Bussmann	300 F	2,7 V	6 mΩ
3	Nichicon	150 F	2,5 V	40 mΩ
4	Rubycon	100 F	2,5 V	100 mΩ

Dada las características de alta capacidad y baja resistencia interna, podemos observar en la Fig. 1 que podemos estar hablando de clase 3 o clase 5, en nuestro caso nos vamos a decidir por la clase 3, por su capacidad, alta, pero existen muchos otros condensadores con mayor capacidad en el mercado y su aplicación, como fuente complementaria de energía.

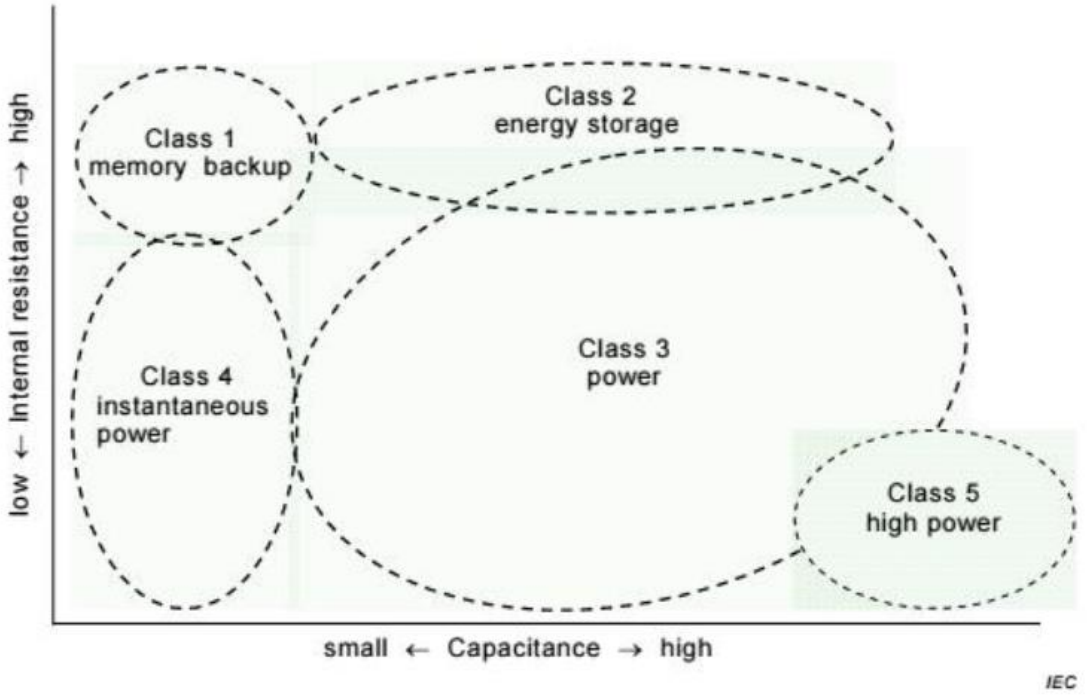


Fig. 1: Clasificación según UNE 62391-1:2016.

Una vez que tenemos clasificados las muestras según la norma, comenzamos el análisis de la norma para conocer los procedimientos que debemos seguir para la realización de cada uno de los ensayos.

3. VOLTAJE MANTENIDO.

Según la norma el método de medida deberá ser:

a) El condensador será descargado entre 1 hora hasta 24 horas antes del ensayo.
b) Se deberá aplicar la tensión nominal del condensador, y el tiempo de carga a esta tensión deberá ser de 8 horas incluyendo un máximo de 30 minutos para llegar al 95% de la tensión nominal.
c) Desconectar los terminales y esperar bajo condiciones de ensayo durante 16 h, 24 h, 48 h, o 96 h.
d) La resistencia interna del voltímetro deberá ser como mínimo de 1 MΩ.

A continuación, en la Fig. 2 se resume el proceso que debemos realizar para el ensayo.

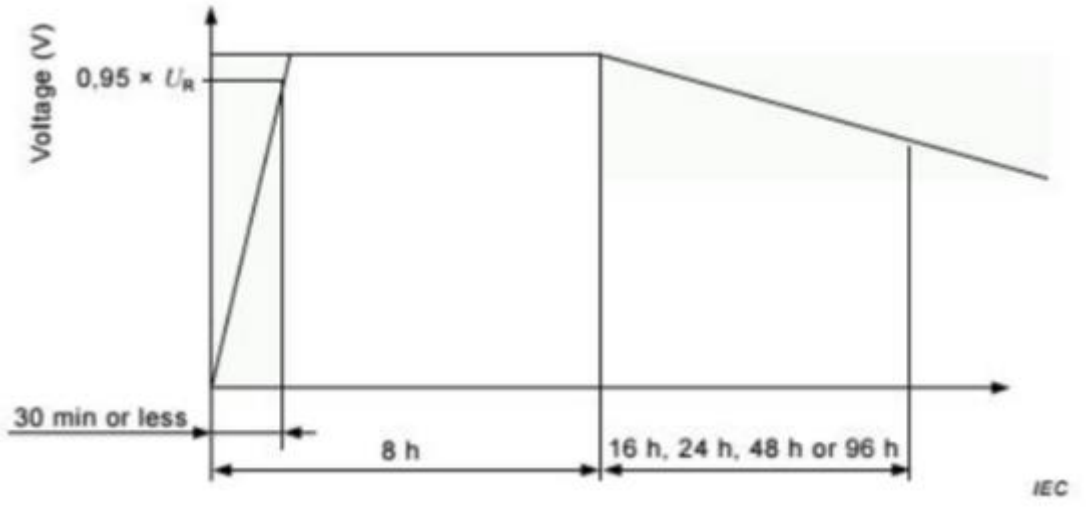


Fig. 2: Ensayo de tensión mantenida.

El porcentaje de voltaje mantenido será calculado mediante la siguiente formula:

$$A = \frac{U_{end}}{U_R} x\ 100$$

donde:

A	es el voltaje mantenido en tanto por ciento.
U_{end}	voltaje en bornes del supercondensador a las 72 horas.
U_R	voltaje nominal.

El proceso y los equipos que se necesitan para este ensayo se describen por orden de uso y son:

- La temperatura de ensayo está fijada a 20ºC según norma, con un margen de 2ºC, para asegurar la estabilidad de la cámara fijamos en el PLC un margen de 0,2 ºC, de esta forma conseguimos la estabilidad deseada en la cámara. En la Fig. 3 se puede apreciar la estabilidad de la temperatura durante el ensayo.

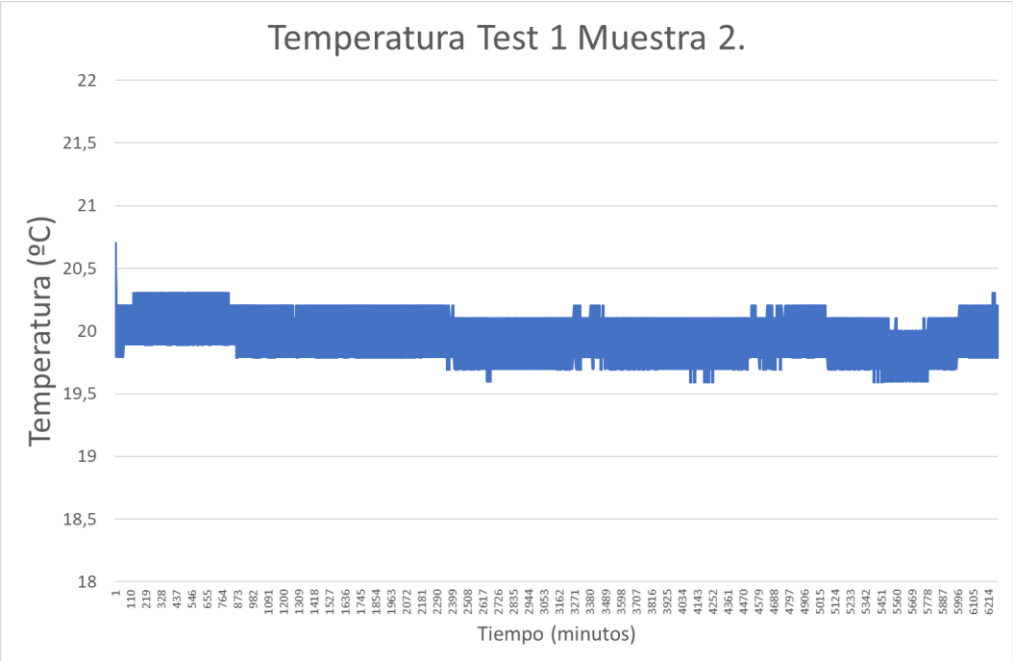


Fig. 3: Temperatura durante el ensayo con la muestra nº 2.

- Módulo de entradas analógicas AL 4x13BIT/AQ 2x14BIT, la resistencia interna de este módulo es de 9 MΩ (ver anexo 7).
- Carga electrónica EA-EL 3160-60, para la completa descarga de las muestras durante un periodo de 24 horas antes del comienzo del ensayo, este periodo de descarga es muy amplio para asegurar la completa descarga, y que no existan cargas residuales que puedan alterar el ensayo.
- Fuente de alimentación EA-PSI-8080-60T, la cual fijamos el valor de tensión nominal del condensador (2,7 V o 2,5 V) y debemos asegurar una carga al 95% en menos de 30 minutos, para ello realizamos el cálculo de tiempo de carga en el supercondensador con mayor capacidad.

$$\mathrm{Q} = \mathrm{C} * \mathrm{V} = 400\mathrm{F} * 2.7\mathrm{V} = 1080\mathrm{C}$$

$$\mathrm{Q} = \mathrm{I} * \mathrm{t} \rightarrow \text{Probamos con } \mathrm{I} = 1\ \mathrm{A} \rightarrow\ \mathrm{t} = \frac{Q}{I} = \frac{1080C}{1A} = 1080\ s \rightarrow 18\ minutos$$

Ya conocemos la corriente con la que cargaremos nuestros condensadores, 1A.

- Registro de la tensión en bornes del condensador, se automatiza con el PLC y se registra un dato cada minuto, dado a que la duración del ensayo es de 96 horas, se opta por el registro cada minuto para evitar demasiados datos. En la Fig. 4 se muestra el proceso temporal de la evolución de la tensión de la muestra 2 en toda la duración del ensayo (carga y desconexión).

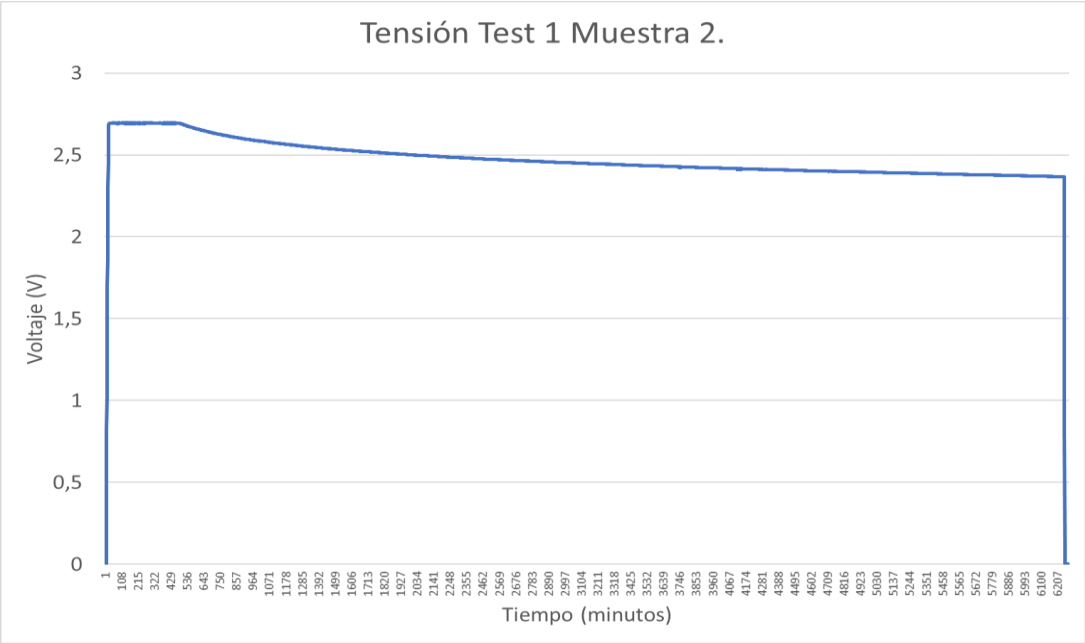


Fig.4: Tensión en bornes del condensador número 2.

En las siguientes imágenes se puede observar la instalación para este ensayo, en la Fig.5 se observa el exterior de la cámara, donde ubicamos la carga y la fuente de alimentación, así como la estructura que mantiene el PLC, también observamos un transformador encima de la carga, ya que, si conectamos a la misma base de enchufes la fuente y el PLC nuestra medida tiene una componente muy alta de ruido, por lo que con el transformador conseguimos el aislamiento perfecto para evitar ruidos. En la Fig.6 vemos el interior de la cámara con las conexiones del supercondensador, una para la medida y otra para la conexión de la carga o de la fuente, y la sonda de temperatura PT 100.

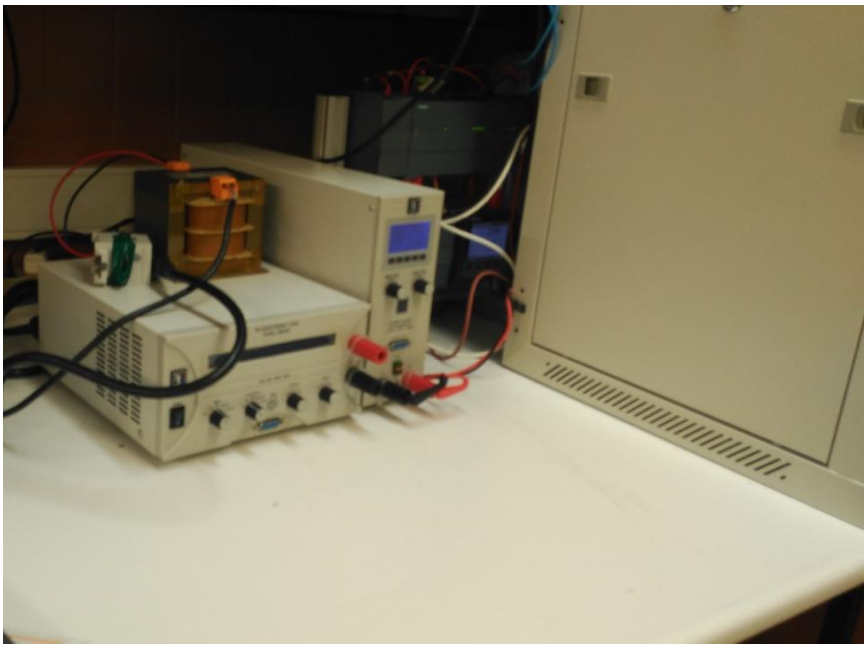


Fig.5: Carga electrónica, fuente de alimentación y PLC.



Fig.6: Conexiones en el interior de la cámara.

A continuación, en Tabla II se muestran los resultados de todas las muestras analizadas, cabe destacar que las muestras 1 y 2 tienen el mismo porcentaje de tensión mantenida, esto se debe a que son del mismo fabricante (EATON BUSSMAN) y la composición del supercondensador es la misma (electrostática de doble capa).

Tabla II: Resultados del ensayo de tensión mantenida.

Muestra	Fabricante	U_R	U_{end}	A
1	Cooper Bussmann	2,7 V	2,399 V	88,86 %
2	Cooper Bussmann	2,7 V	2,399 V	88,86 %
3	Nichicon	2,5 V	1,916 V	76,66 %
4	Rubycon	2,5 V	2,253 V	90,15 %

4.CORRIENTE DE FUGA.

El ensayo deberá cumplir los siguientes requisitos marcados en la norma:

a) Descarga completa del condensador antes de comenzar el ensayo, este proceso debe comprender entre 1 hora y 24 horas
b) Se deberá aplicar la tensión nominal del condensador, y el tiempo de carga a esta tensión deberá ser de 30 minutos teniendo que llegar al 95% de la tensión nominal y el periodo de medida puede ser 30 min, 1h,2h, 4h, 8h, 12h, 24h, 48h.
c) Se debe usar una fuente de potencia constante, para la carga del condensador.
d) La tensión se deberá aplicar a través de una resistencia 1000 Ω o menos.

Parte del montaje y del equipo usado es similar al ensayo anterior, por lo que no entramos en describirlo de nuevo. El único cambio que se realiza en este ensayo es que la carga se realiza a través de una resistencia, en nuestro caso una resistencia de precisión de valor 0,1 Ω. El montaje del ensayo se muestra en la Fig.7.

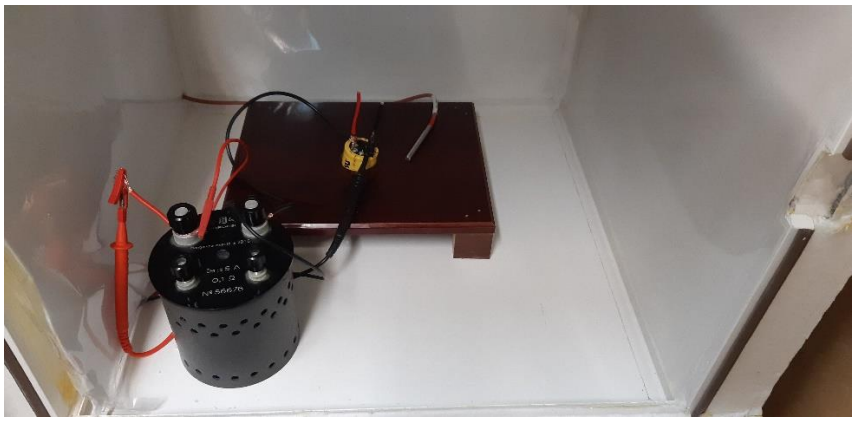


Fig.7: Montaje de ensayo corriente de fuga.

Para poder conocer la corriente de fuga, aplicaremos la siguiente fórmula [10]:

$$\mathrm{Q} = \mathrm{C} * \mathrm{V} = \mathrm{I} * \mathrm{t}$$

$$I = \frac{Q}{t} = C * \frac{V}{t}$$

$$I_{\mathrm{leak}} = C\frac{dV}{dt}$$

donde:

C	es la capacidad del supercondensador (F).
I_{leak}	es la corriente de fuga del supercondensador (A).
dV	es la variación de voltaje desde el comienzo del ensayo hasta el final (V).
dt	es la variación de tiempo desde el comienzo del ensayo hasta el final (s).

Los resultados se resumen en la Tabla III donde se realizan los cálculos para conocer la corriente de fuga a las 48 horas de ensayo. Se observa que todas las muestras están dentro de los limites proporcionados por los fabricantes cuando los fabricantes indican dicho valor en sus datasheets.

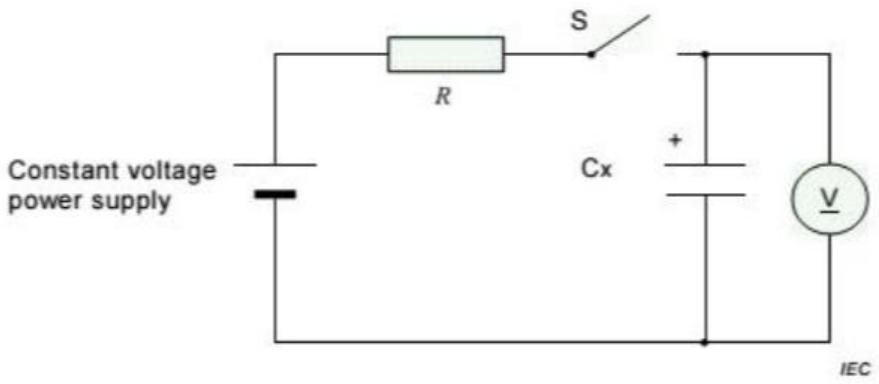
Cabe destacar el significado físico de esta corriente de fuga, ya que es una corriente que se pierde por imperfecciones en el material dieléctrico, si tenemos un buen material dieléctrico, la corriente de fuga será muy pequeña, mientras que, si nuestro dieléctrico es de baja calidad o está dañado, la corriente de fuga tendrá un valor más elevado.

Tabla III: Resultados ensayo corriente de fuga.

Muestra	Voltaje 0 h (V)	Voltaje 48 h (V)	Capacidad	dt	Intensidad de fuga (mA)	Valor según fabricante (mA)
1	2,6889	2,3612	400	172860	0,7583	0,85
2	2,6940	2,3110	300	172860	0,5648	0,6
3	2,4929	1,8939	150	172860	0,5197	75
4	2,4943	2,2607	100	172860	0,1351	---

5.CAPACIDAD.

Según la norma, para la realización de este ensayo debemos llevar a cabo el circuito de la Fig.9 obtenido de la UNE 62391-1:2016.



Key

R	series resistance
S	switch
V	d.c. voltmeter
Cx	capacitor under test

Fig.9: Circuito para la medida de capacidad.

Para la medida de capacidad se deberá seguir el siguiente procedimiento:

a) Cortocircuitar los terminales del supercondensador durante al menos 30 minutos.
b) Fijar una resistencia R cuyo valor haga que el valor de τ este entre 60 s y 120 s.
c) Medir τ con el voltaje nominal aplicado, hasta alcanzar el 0,632 X U_R y calcular la capacidad con la siguiente formula.

$$C = \frac{\tau}{R}$$

Para llevar a cabo este ensayo usaremos:

- Fuente de alimentación EA-PSI-8080-60T. Nos proporciona la suficiente intensidad (hasta 14 A) para llevar a cabo este ensayo.
- Carga electrónica EA-EL 3160-60. Se fija una resistencia para cada uno de los supercondensadores, lo que luego será una de las variables que nos permiten calcular la capacidad.
- Voltímetro PeakTech 3442. Gracias a su fácil conexión con el ordenador, podemos salvar los datos y revisar en que segundo se alcanza la tensión que se requiere para el cálculo de la capacidad. Para mayor información del voltímetro ver anexo 8.
- Supercondensador analizado.

En la Fig.10 se muestra el montaje que se realiza para completar el ensayo de capacidad, en la imagen se observa la muestra fuera de la cámara para una mejor comprensión del circuito.

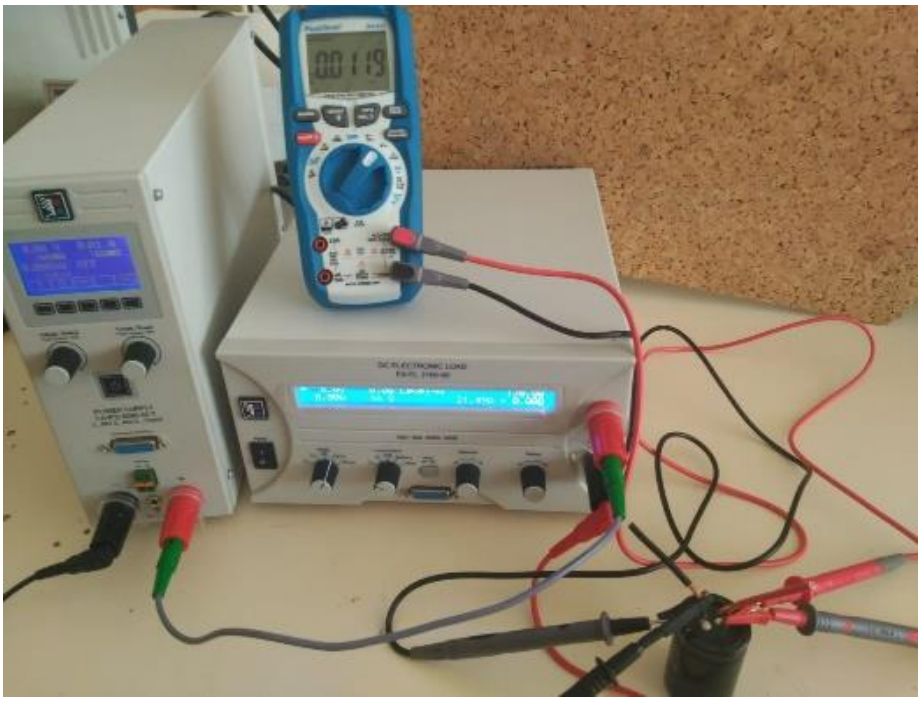


Fig.10: Montaje para ensayo de capacidad.

Para tener una referencia de que resistencia fijar, hacemos unos cálculos previos, estos cálculos son los mismo para todas las muestras, por lo que solo se hace para la primera muestra, a modo de resumen. En la Tabla IV se hace un resumen de los valores de capacidad obtenidos, así como la comparación con las tolerancias que nos proporcionan los fabricantes, nuestras muestras están dentro de tolerancia.

$$\mathrm{V} = \mathrm{I} * \mathrm{R} \rightarrow \text{Probamos con } \mathrm{R} = 0{,}2\Omega \rightarrow \mathrm{I} = \frac{V}{R} = \frac{1{,}7064}{0{,}2\Omega} = 8{,}5\ A$$

$$\mathrm{Q} = \mathrm{C} * \mathrm{V} = 400\mathrm{F} * 0{,}632 * 2{,}7\mathrm{V} = 682{,}56\mathrm{C}$$

$$\mathrm{Q} = \mathrm{I} * \mathrm{t} \rightarrow \mathrm{t} = \frac{Q}{I} = \frac{682.56\ C}{8.5\ \mathrm{A}} = 80\ segundos$$

Tabla IV: Resultados ensayo de capacidad.

Muestra	Tensión (V)	Resistencia (Ω)	τ (s)	Capacidad (F)	Tolerancia inferior (F)	Tolerancia superior (F)
1	1,7064	0,2	78	390	380 (-5%)	440 (+10%)
2	1,7064	0,2	62	310	285 (-5%)	330 (+10%)
3	1,58	0,8	118	147,5	120 (-20%)	180 (+20%)
4	1,58	0,6	67	111,66	80 (-20%)	120 (+20%)

6.RESISTENCIA SERIE EQUIVALENTE.

El circuito que debemos llevar a cabo, según norma es el de la Fig. 11.

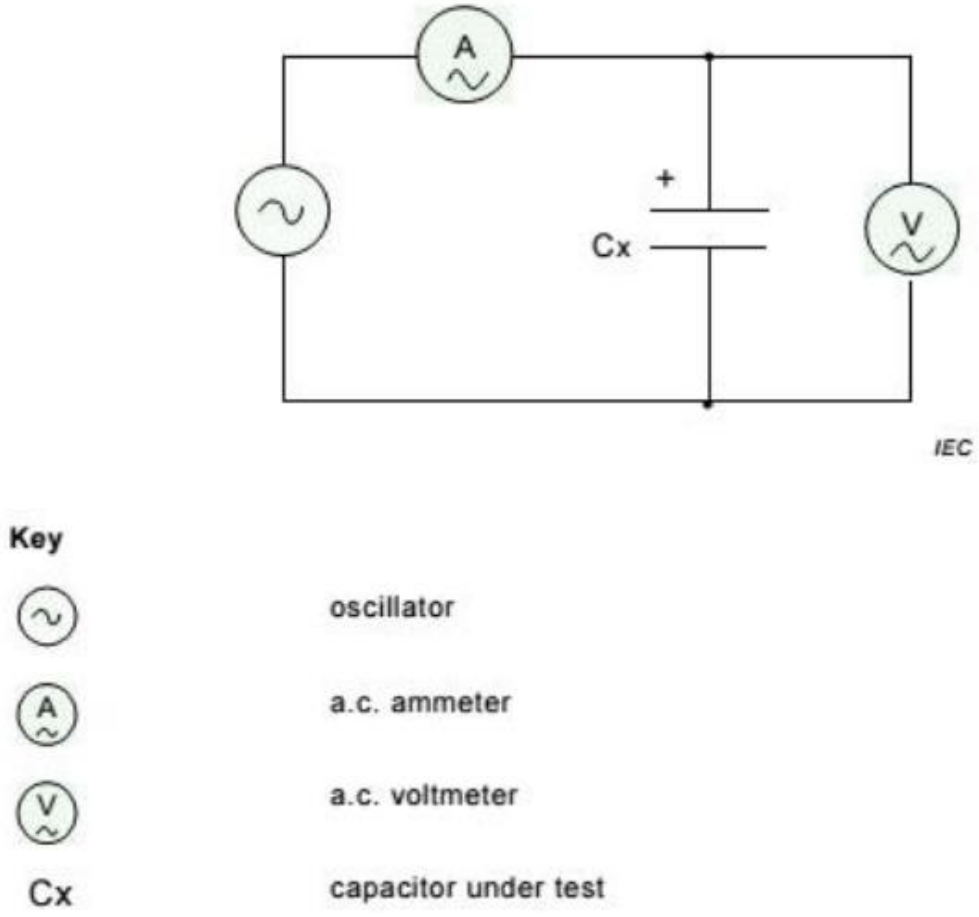


Fig. 11: Circuito para la medida de resistencia serie equivalente.

Para la medida de resistencia serie equivalente se realizará de la siguiente forma:

a) La frecuencia debe ser de 1 kHz.
b) La corriente debe estar comprendida entre 1 mA y 10mA.
c) La resistencia serie equivalente será calculada con la siguiente formula:

$$\mathrm{R} = \frac{U}{I}$$

Tras la intensa búsqueda de un voltímetro capaz de medir con precisión picovoltios de alterna, y no encontrar ninguna opción válida, se opta después de comentarlo con el tutor, por aumentar la corriente de ensayo hasta 1 A mediante el calibrador Fluke 5500 A (para ampliar información, anexo 10), de esta forma nuestro voltímetro PeakTech 3442 es capaz de registrar dichas medidas, y obtener un resultado, que no está bajo los requisitos de norma, pero de esta forma tenemos una buena aproximación a los valores reales. A continuación, se muestran las respectivas figuras con los resultados de las diferentes muestras, y por último en la Tabla V un resumen de los resultados, donde se aprecia que todos los supercondensadores están por debajo del límite de resistencia serie equivalente.

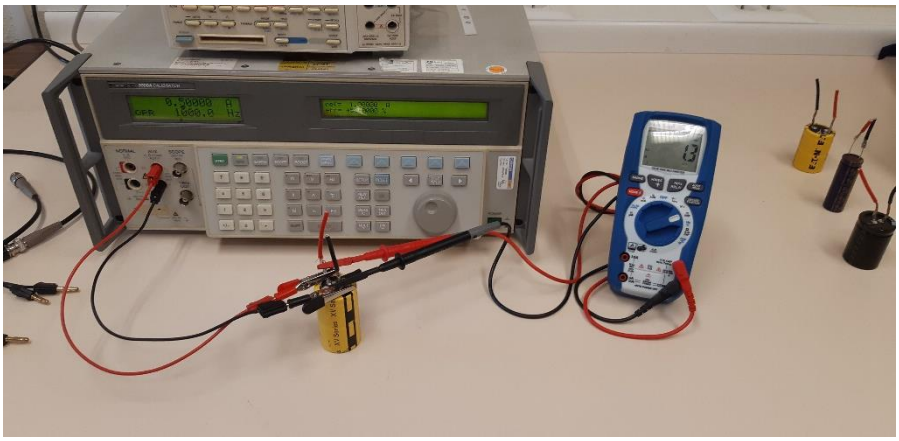


Fig.12: Resultados ESR muestra 1.

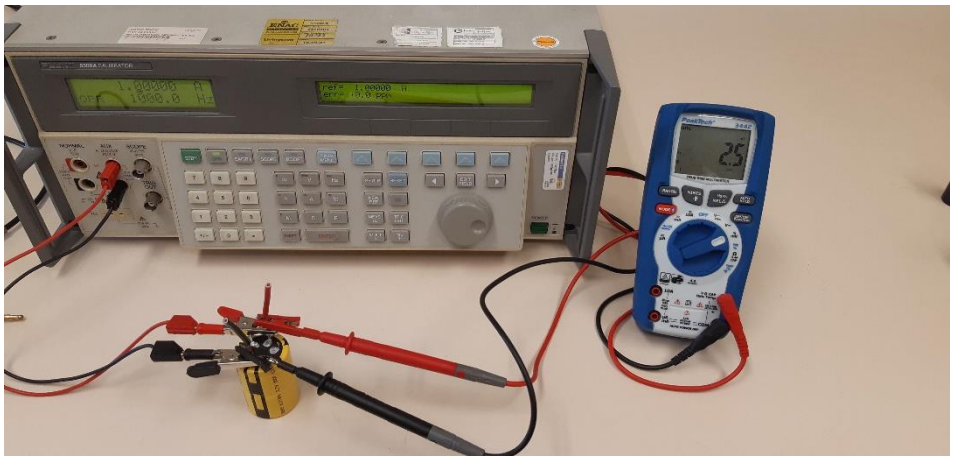


Fig.13: Resultados ESR muestra 2.

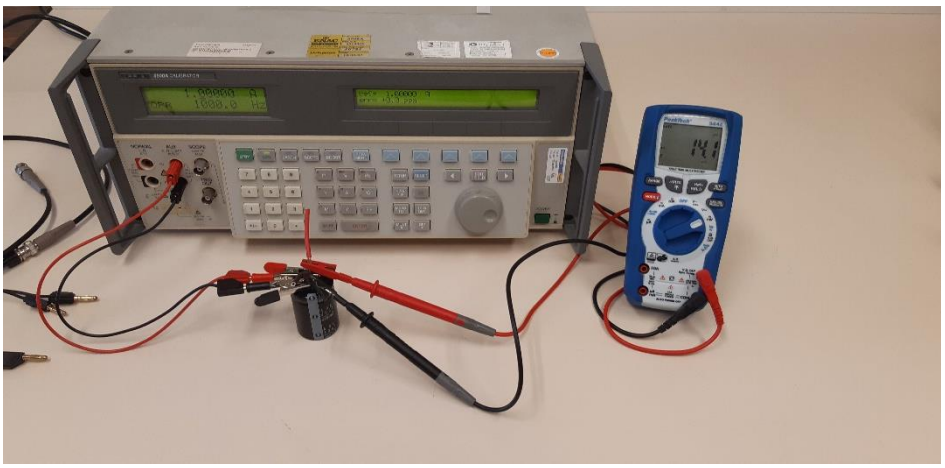


Fig.14: Resultados ESR muestra 3.

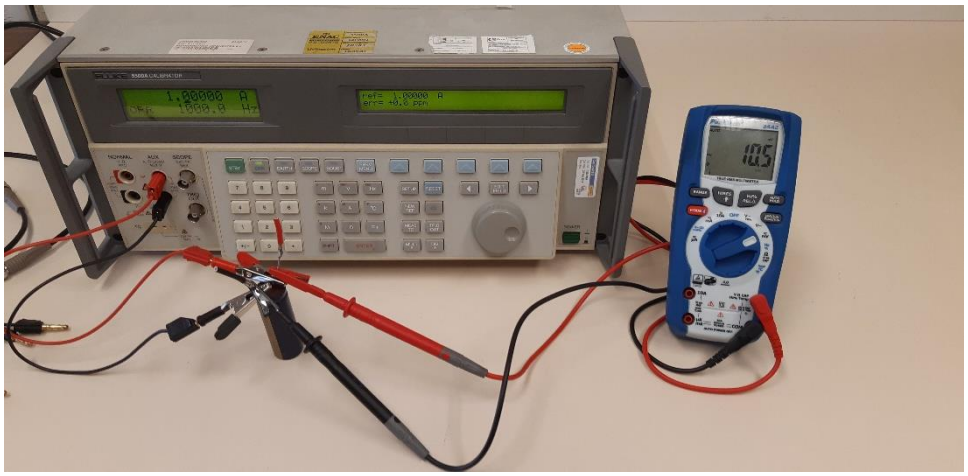


Fig.15: Resultados ESR muestra 4.

Tabla V: Resumen de resultados ESR.

Muestra	Intensidad (A)	Tensión (mV)	ESR (mΩ)	ESR fabricante (mΩ)
1	1	1,3	1,3	3,2
2	1	2,5	2,5	4,5
3	1	14,1	14,1	40
4	1	10,5	10,5	100

7.CONCLUSIONES.

Se realiza el diseño de las pruebas en base a la norma UNE 62391-1:2016, para la caracterización de los parámetros eléctricos de los supercondensadores, estos parámetros son, la tensión mantenida, corriente de fuga, capacidad y resistencia serie equivalente.

Se diseña un procedimiento a seguir para cada uno de los ensayos, paralelo al procedimiento que marca la norma, pero con las adaptaciones necesarias a los medios de los que se dispone dentro del departamento de Ingeniería Eléctrica.

Estos procedimientos hacen todos los ensayos validos conforme a la norma, excepto el ensayo de resistencia serie equivalente, ya que no se tienen los medios para la correcta lectura de una tensión de tan bajo valor. Pese a que este ensayo se realiza muy por encima del límite máximo de corriente, los resultados obtenidos son correctos conforme a los de fabricante.

En el desarrollo de este Trabajo Fin de Grado, se elabora una programación de PLC mediante la cual se automatiza el registro y control de las variables del sistema que deseamos. Gracias a la programación realizada a través de TIA Portal de SIEMENS, se consigue la elaboración de un programa estable, con el cual conseguimos un registro perfecto para el tiempo, temperatura y voltaje, pudiendo modificar el tiempo de registro, que para los ensayos anteriormente realizados fue de un minuto, ya que, al tratarse de ensayos de larga duración, es un tiempo que nos proporciona la suficiente información, sin llegar a saturar la memoria de almacenamiento del PLC. El registro de las variables se realiza mediante la creación de un reloj, el cual marca el tiempo de ciclo, y hace posible mandar una señal cada cierto tiempo, se puede modificar esta señal para que el tiempo de ciclo en el registro sea desde milisegundos, hasta horas o días.

El módulo de entradas analógicas, AL 4x13BIT/AQ 2x14BIT, nos proporciona una resolución para la entrada de tensión continua de 0 a 12V de microvoltios, lo cual para nuestra aplicación es una resolución suficiente para el registro.

Todos los registros se guardan en un archivo Excel, de extensión .CSV (archivo separado por comas), de esta forma se facilita la gestión y procesamiento de los datos. Este PLC cuenta con la opción de un servidor web, de esta forma podemos ver resultados, estado del PLC, detectar fallos, etc., desde un punto cualquiera de conexión a internet.

Para la elaboración de dicha programación se cuenta con la ayuda de José Carlos Millán de Cortés, persona al cargo del laboratorio de proyectos y experto en PLC SIEMENS.

8.BIBLIOGRAFÍA.

[1] Perfomance testing of supercapacitors: Important issues and uncertainties. www.elsevier.com/locate/jpowsour

[2] Noninvasive Online Condition Monitoring of Output Capacitor's ESR and C for a Flyback Converter Kai Yao, Member, IEEE, Cheng Cao, and Siwen Yang

[3] Testing of Supercapacitors: Capacitance, Resistance, and Energy Energy and Power Capacity Andrew Burke Institute of Transportation Studies University of California-Davis

[4] Test Procedures for Capacitance, ESR, Leakage Current and Self-Discharge Characterizations of Ultracapacitors Maxwell Technologies, Inc. June 2015

[5] New approach to supercapacitor testing and dynamic modelling Lucia Gauchia, Sandra Castaño, Javier Sanz Electric Engineering Department Carlos III University of Madrid 28911 Leganes (Madrid) Spain

[6] Cycle Testing of Supercapacitors for Long-Life Robust Applications Donal B. Murray, Member, IEEE, and John G. Hayes, Member, IEEE

[7] See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/265569734 TESTING OF SUPERCAPACITORS AT PSI

[8] TOWARDS SUPERCAPACITORS IN SPACE APPLICATIONS Brandon Buergler (1), Bertrand Faure (2), David Latif (3), Lukas Diblik (3), Petr Vasina (3), Valéry Gineste (2), Marek Simcak (4)

[9] UC Davis Recent Work Title Testing of Supercapacitors: Capacitance, Resistance, and Energy Energy and Power Capacity Permalink https://escholarship.org/uc/item/7sr95926 Author Burke, Andrew Publication Date 2009-07-01

[10] Testing Super-Capacitors Part 1: CV, EIS, and Leakage Current GAMRY INSTRUMENTS

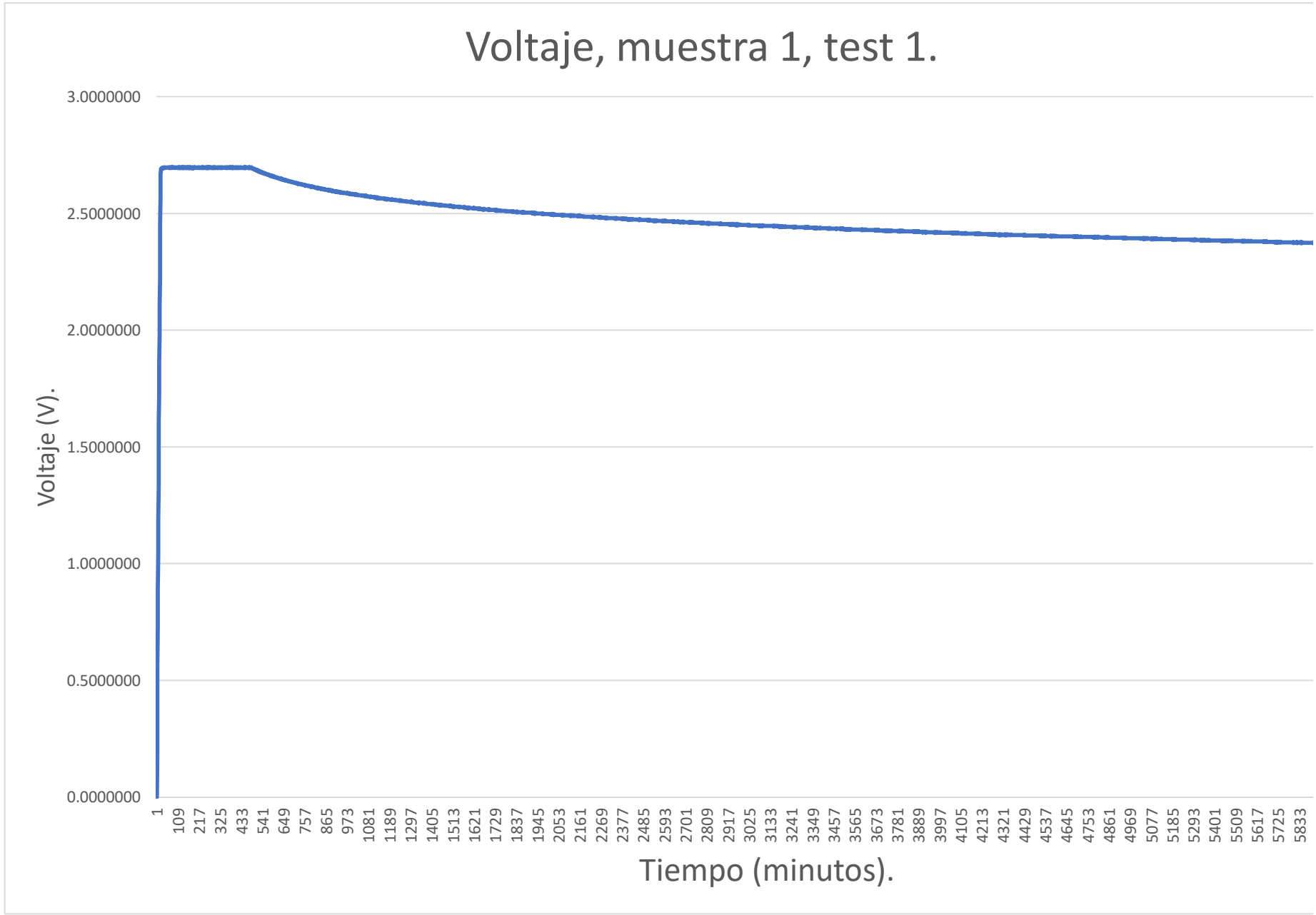
[11] https://twenergy.com/a/que-son-los-supercondensadores-y-cuales-son-sus-aplicaciones-2063

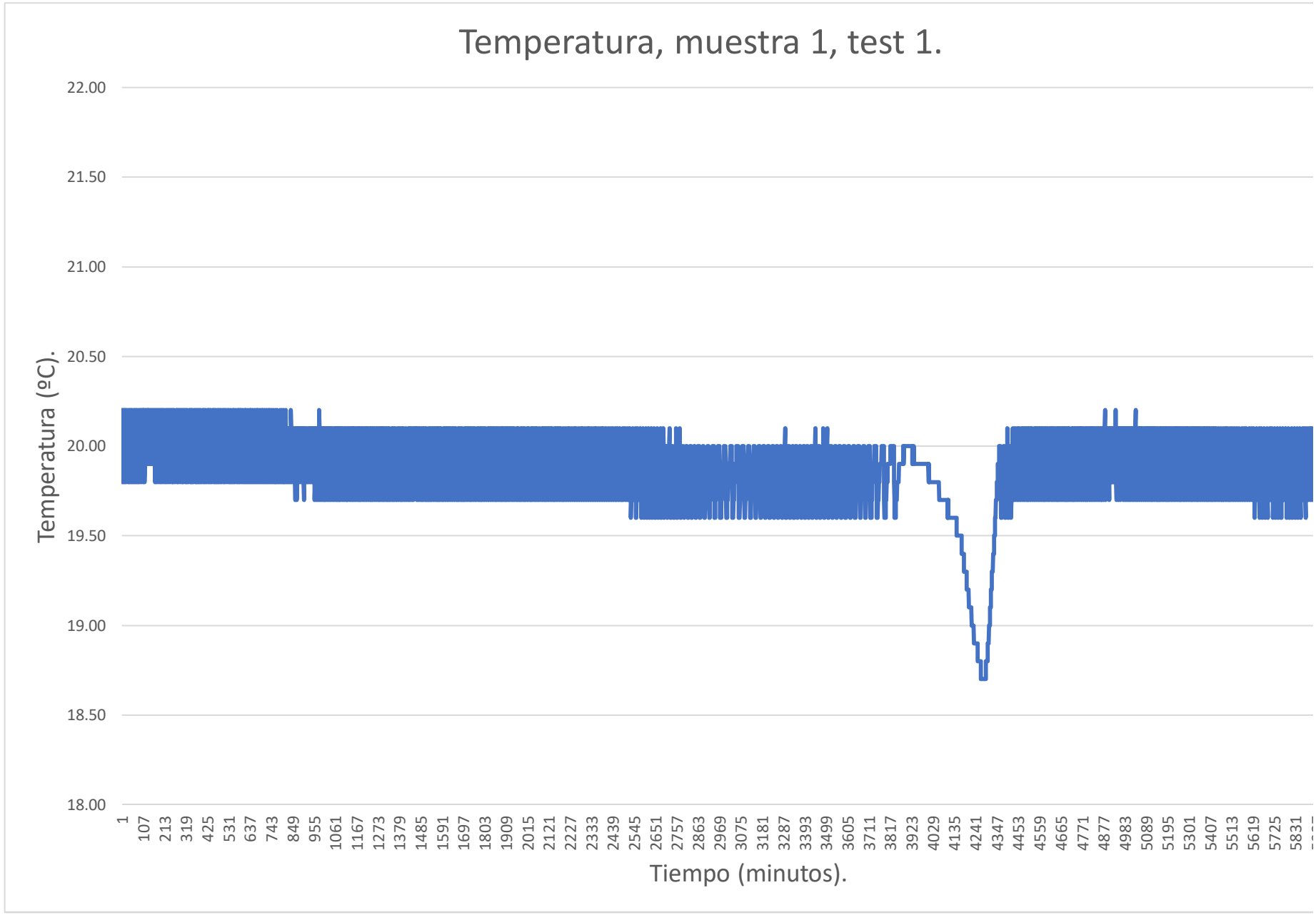
[12] https://es.wikipedia.org/wiki/Supercondensador

[13] **UNE-EN 62391-1:2016 (RATIFICADA)** Condensadores eléctricos fijos de doble capa para su uso en equipos eléctricos y electrónicos. Parte 1: Especificación genérica (Ratificada por AENOR en abril de 2016.)

ANEXO 1.

RESULTADOS ENSAYOS TENSIÓN MANTENIDA


Voltaje, muestra 1, test 1.
3.0000000
2.5000000
2.0000000
1.5000000
1.0000000
0.5000000
0.0000000
Voltaje (V).
1
109
217
325
433
541
649
757
865
973
1081
1189
1297
1405
1513
1621
1729
1837
1945
2053
2161
2269
2377
2485
2593
2701
2809
2917
3025
3133
3241
3349
3457
3565
3673
3781
3889
3997
4105
4213
4321
4429
4537
4645
4753
4861
4969
5077
5185
5293
5401
5509
5617
5725
5833
Tiempo (minutos).


Temperatura, muestra 1, test 1.
22.00
21.50
21.00
20.50
20.00
19.50
19.00
18.50
18.00
Temperatura (ºC).
1
107
213
319
425
531
637
743
849
955
1061
1167
1273
1379
1485
1591
1697
1803
1909
2015
2121
2227
2333
2439
2545
2651
2757
2863
2969
3075
3181
3287
3393
3499
3605
3711
3817
3923
4029
4135
4241
4347
4453
4559
4665
4771
4877
4983
5089
5195
5301
5407
5513
5619
5725
5831
Tiempo (minutos).

Numero	Fecha	Hora	Temperatura	Voltaje	Tension mantenida (test 1). Muesta 1	
1	3/5/2019	6:34:01	20.10	0.0000000		
2	3/5/2019	6:35:01	20.20	0.0007234	Uend(72h)	2.399242
3	3/5/2019	6:36:01	20.20	0.0010851	Ur(nominal)	2.7
4	3/5/2019	6:37:01	20.10	0.1884524	A(%)	88.860815%
5	3/5/2019	6:38:01	19.90	0.3787134		
6	3/5/2019	6:39:01	19.80	0.5577613		
7	3/5/2019	6:40:01	19.80	0.7284898		
8	3/5/2019	6:41:01	19.90	0.8880052		
9	3/5/2019	6:42:01	20.00	1.0395630		
10	3/5/2019	6:43:01	20.20	1.1864180		
11	3/5/2019	6:44:01	20.20	1.3274860		
12	3/5/2019	6:45:01	20.10	1.4645760		
13	3/5/2019	6:46:01	20.00	1.5976860		
14	3/5/2019	6:47:01	19.90	1.7271790		
15	3/5/2019	6:48:01	19.80	1.8545020		
16	3/5/2019	6:49:01	19.80	1.9800170		
17	3/5/2019	6:50:01	19.90	2.1019140		
18	3/5/2019	6:51:01	20.10	2.2209170		
19	3/5/2019	6:52:01	20.20	2.3395590		
20	3/5/2019	6:53:01	20.20	2.4545840		
21	3/5/2019	6:54:01	20.10	2.5670770		
22	3/5/2019	6:55:01	19.90	2.6654620		
23	3/5/2019	6:56:01	19.80	2.6868040		
24	3/5/2019	6:57:01	19.80	2.6900590		
25	3/5/2019	6:58:01	19.90	2.6911440		
26	3/5/2019	6:59:01	20.00	2.6918680		
27	3/5/2019	7:00:01	20.20	2.6933140		
28	3/5/2019	7:01:01	20.20	2.6936760		
29	3/5/2019	7:02:01	20.10	2.6936760		
30	3/5/2019	7:03:01	20.00	2.6947610		
31	3/5/2019	7:04:01	19.90	2.6940380	30 minutos, tensión minima que alcanzar 2,565 V.	
32	3/5/2019	7:05:01	19.80	2.6940380		
33	3/5/2019	7:06:01	19.90	2.6947610		
34	3/5/2019	7:07:01	20.00	2.6943990		
35	3/5/2019	7:08:01	20.10	2.6954850		
36	3/5/2019	7:09:01	20.20	2.6947610		
37	3/5/2019	7:10:01	20.20	2.6962080		
38	3/5/2019	7:11:01	20.00	2.6962080		
39	3/5/2019	7:12:01	19.90	2.6951230		
40	3/5/2019	7:13:01	19.80	2.6962080		
41	3/5/2019	7:14:01	19.80	2.6965700		
42	3/5/2019	7:15:01	19.90	2.6954850		
43	3/5/2019	7:16:01	20.10	2.6962080		
44	3/5/2019	7:17:01	20.20	2.6954850		
45	3/5/2019	7:18:01	20.20	2.6962080		
46	3/5/2019	7:19:01	20.10	2.6965700		
47	3/5/2019	7:20:01	19.90	2.6965700		
48	3/5/2019	7:21:01	19.80	2.6969310		
49	3/5/2019	7:22:01	19.80	2.6965700		

50	3/5/2019	7:23:01	19.90	2.6969310
51	3/5/2019	7:24:01	20.00	2.6969310
52	3/5/2019	7:25:01	20.20	2.6965700
53	3/5/2019	7:26:01	20.20	2.6969310
54	3/5/2019	7:27:01	20.10	2.6965700
55	3/5/2019	7:28:01	20.00	2.6969310
56	3/5/2019	7:29:01	19.80	2.6969310
57	3/5/2019	7:30:01	19.80	2.6969310
58	3/5/2019	7:31:01	19.90	2.6969310
59	3/5/2019	7:32:01	20.00	2.6969310
60	3/5/2019	7:33:01	20.10	2.6965700
61	3/5/2019	7:34:01	20.20	2.6969310
62	3/5/2019	7:35:01	20.20	2.6969310
63	3/5/2019	7:36:01	20.00	2.6965700
64	3/5/2019	7:37:01	19.90	2.6965700
65	3/5/2019	7:38:01	19.80	2.6962080
66	3/5/2019	7:39:01	19.80	2.6969310
67	3/5/2019	7:40:01	19.90	2.6965700
68	3/5/2019	7:41:01	20.00	2.6969310
69	3/5/2019	7:42:01	20.20	2.6965700
70	3/5/2019	7:43:01	20.20	2.6969310
71	3/5/2019	7:44:01	20.10	2.6958460
72	3/5/2019	7:45:01	19.90	2.6972930
73	3/5/2019	7:46:01	19.80	2.6969310
74	3/5/2019	7:47:01	19.80	2.6965700
75	3/5/2019	7:48:01	19.90	2.6958460
76	3/5/2019	7:49:01	20.00	2.6972930
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83	3/5/2019	7:56:01	19.90	2.6965700
84	3/5/2019	7:57:01	20.00	2.6969310
85	3/5/2019	7:58:01	20.10	2.6969310
86	3/5/2019	7:59:01	20.20	2.6972930
87	3/5/2019	8:00:01	20.20	2.6976550
88	3/5/2019	8:01:01	20.00	2.6969310
89	3/5/2019	8:02:01	19.90	2.6976550
90	3/5/2019	8:03:01	19.80	2.6972930
91	3/5/2019	8:04:01	19.90	2.6976550
92	3/5/2019	8:05:01	19.90	2.6969310
93	3/5/2019	8:06:01	20.10	2.6976550
94	3/5/2019	8:07:01	20.20	2.6969310
95	3/5/2019	8:08:01	20.20	2.6962080
96	3/5/2019	8:09:01	20.10	2.6972930
97	3/5/2019	8:10:01	20.00	2.6969310
98	3/5/2019	8:11:01	19.80	2.6969310
99	3/5/2019	8:12:01	19.80	2.6972930

100	3/5/2019	8:13:01	19.90	2.6969310
101	3/5/2019	8:14:01	20.00	2.6969310
102	3/5/2019	8:15:01	20.20	2.6972930
103	3/5/2019	8:16:01	20.20	2.6972930
104	3/5/2019	8:17:01	20.20	2.6972930
105	3/5/2019	8:18:01	20.00	2.6969310
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109	3/5/2019	8:22:01	20.00	2.6965700
110	3/5/2019	8:23:01	20.20	2.6972930
111	3/5/2019	8:24:01	20.20	2.6962080
112	3/5/2019	8:25:01	20.20	2.6965700
113	3/5/2019	8:26:01	20.10	2.6976550
114	3/5/2019	8:27:01	19.90	2.6969310
115	3/5/2019	8:28:01	19.80	2.6969310
116	3/5/2019	8:29:01	19.90	2.6951230
117	3/5/2019	8:30:01	19.90	2.6972930
118	3/5/2019	8:31:01	20.10	2.6969310
119	3/5/2019	8:32:01	20.20	2.6958460
120	3/5/2019	8:33:01	20.20	2.6965700
121	3/5/2019	8:34:01	20.10	2.6962080
122	3/5/2019	8:35:01	20.00	2.6958460
123	3/5/2019	8:36:01	19.90	2.6962080
124	3/5/2019	8:37:01	19.90	2.6969310
125	3/5/2019	8:38:01	19.90	2.6969310
126	3/5/2019	8:39:01	20.10	2.6965700
127	3/5/2019	8:40:01	20.20	2.6962080
128	3/5/2019	8:41:01	20.20	2.6962080
129	3/5/2019	8:42:01	20.20	2.6962080
130	3/5/2019	8:43:01	20.10	2.6969310
131	3/5/2019	8:44:01	19.90	2.6958460
132	3/5/2019	8:45:01	19.90	2.6958460
133	3/5/2019	8:46:01	19.90	2.6969310
134	3/5/2019	8:47:01	20.00	2.6969310
135	3/5/2019	8:48:01	20.20	2.6962080
136	3/5/2019	8:49:01	20.20	2.6965700
137	3/5/2019	8:50:01	20.20	2.6962080
138	3/5/2019	8:51:01	20.10	2.6965700
139	3/5/2019	8:52:01	20.00	2.6969310
140	3/5/2019	8:53:01	19.90	2.6969310
141	3/5/2019	8:54:01	19.90	2.6965700
142	3/5/2019	8:55:01	19.90	2.6972930
143	3/5/2019	8:56:01	20.10	2.6962080
144	3/5/2019	8:57:01	20.20	2.6969310
145	3/5/2019	8:58:01	20.20	2.6969310
146	3/5/2019	8:59:01	20.20	2.6954850
147	3/5/2019	9:00:01	20.00	2.6962080
148	3/5/2019	9:01:01	19.90	2.6965700
149	3/5/2019	9:02:01	19.90	2.6969310

150	3/5/2019	9:03:01	19.90	2.6972930
151	3/5/2019	9:04:01	20.00	2.6969310
152	3/5/2019	9:05:01	20.20	2.6965700
153	3/5/2019	9:06:01	20.20	2.6962080
154	3/5/2019	9:07:01	20.20	2.6972930
155	3/5/2019	9:08:01	20.10	2.6972930
156	3/5/2019	9:09:01	20.00	2.6969310
157	3/5/2019	9:10:01	19.90	2.6954850
158	3/5/2019	9:11:01	19.90	2.6972930
159	3/5/2019	9:12:01	19.90	2.6962080
160	3/5/2019	9:13:01	20.10	2.6972930
161	3/5/2019	9:14:01	20.20	2.6969310
162	3/5/2019	9:15:01	20.20	2.6969310
163	3/5/2019	9:16:01	20.10	2.6962080
164	3/5/2019	9:17:01	20.00	2.6965700
165	3/5/2019	9:18:01	19.90	2.6965700
166	3/5/2019	9:19:01	19.80	2.6972930
167	3/5/2019	9:20:01	19.90	2.6972930
168	3/5/2019	9:21:01	20.00	2.6954850
169	3/5/2019	9:22:01	20.20	2.6962080
170	3/5/2019	9:23:01	20.20	2.6965700
171	3/5/2019	9:24:01	20.20	2.6951230
172	3/5/2019	9:25:01	20.10	2.6965700
173	3/5/2019	9:26:01	19.90	2.6969310
174	3/5/2019	9:27:01	19.80	2.6958460
175	3/5/2019	9:28:01	19.90	2.6954850
176	3/5/2019	9:29:01	20.00	2.6954850
177	3/5/2019	9:30:01	20.10	2.6965700
178	3/5/2019	9:31:01	20.20	2.6972930
179	3/5/2019	9:32:01	20.20	2.6969310
180	3/5/2019	9:33:01	20.10	2.6969310
181	3/5/2019	9:34:01	19.90	2.6954850
182	3/5/2019	9:35:01	19.80	2.6962080
183	3/5/2019	9:36:01	19.90	2.6958460
184	3/5/2019	9:37:01	19.90	2.6954850
185	3/5/2019	9:38:01	20.10	2.6940380
186	3/5/2019	9:39:01	20.20	2.6965700
187	3/5/2019	9:40:01	20.20	2.6962080
188	3/5/2019	9:41:01	20.10	2.6958460
189	3/5/2019	9:42:01	20.00	2.6947610
190	3/5/2019	9:43:01	19.90	2.6954850
191	3/5/2019	9:44:01	19.80	2.6951230
192	3/5/2019	9:45:01	19.90	2.6947610
193	3/5/2019	9:46:01	20.00	2.6969310
194	3/5/2019	9:47:01	20.20	2.6969310
195	3/5/2019	9:48:01	20.20	2.6972930
196	3/5/2019	9:49:01	20.20	2.6958460
197	3/5/2019	9:50:01	20.00	2.6954850
198	3/5/2019	9:51:01	19.90	2.6962080
199	3/5/2019	9:52:01	19.80	2.6965700

200	3/5/2019	9:53:01	19.90	2.6947610
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202	3/5/2019	9:55:01	20.10	2.6951230
203	3/5/2019	9:56:01	20.20	2.6951230
204	3/5/2019	9:57:01	20.20	2.6951230
205	3/5/2019	9:58:01	20.10	2.6951230
206	3/5/2019	9:59:01	19.90	2.6954850
207	3/5/2019	10:00:01	19.80	2.6954850
208	3/5/2019	10:01:01	19.80	2.6962080
209	3/5/2019	10:02:01	19.90	2.6962080
210	3/5/2019	10:03:01	20.10	2.6962080
211	3/5/2019	10:04:01	20.20	2.6962080
212	3/5/2019	10:05:01	20.20	2.6969310
213	3/5/2019	10:06:01	20.10	2.6969310
214	3/5/2019	10:07:01	20.00	2.6962080
215	3/5/2019	10:08:01	19.90	2.6962080
216	3/5/2019	10:09:01	19.80	2.6951230
217	3/5/2019	10:10:01	19.90	2.6962080
218	3/5/2019	10:11:01	20.00	2.6962080
219	3/5/2019	10:12:01	20.10	2.6951230
220	3/5/2019	10:13:01	20.20	2.6962080
221	3/5/2019	10:14:01	20.20	2.6954850
222	3/5/2019	10:15:01	20.00	2.6965700
223	3/5/2019	10:16:01	19.90	2.6962080
224	3/5/2019	10:17:01	19.80	2.6965700
225	3/5/2019	10:18:01	19.90	2.6969310
226	3/5/2019	10:19:01	19.90	2.6969310
227	3/5/2019	10:20:01	20.10	2.6969310
228	3/5/2019	10:21:01	20.20	2.6969310
229	3/5/2019	10:22:01	20.20	2.6965700
230	3/5/2019	10:23:01	20.10	2.6962080
231	3/5/2019	10:24:01	19.90	2.6962080
232	3/5/2019	10:25:01	19.80	2.6962080
233	3/5/2019	10:26:01	19.80	2.6969310
234	3/5/2019	10:27:01	19.90	2.6958460
235	3/5/2019	10:28:01	20.00	2.6965700
236	3/5/2019	10:29:01	20.20	2.6965700
237	3/5/2019	10:30:01	20.20	2.6965700
238	3/5/2019	10:31:01	20.10	2.6962080
239	3/5/2019	10:32:01	20.00	2.6965700
240	3/5/2019	10:33:01	19.90	2.6965700
241	3/5/2019	10:34:01	19.80	2.6965700
242	3/5/2019	10:35:01	19.90	2.6962080
243	3/5/2019	10:36:01	20.00	2.6962080
244	3/5/2019	10:37:01	20.20	2.6962080
245	3/5/2019	10:38:01	20.20	2.6954850
246	3/5/2019	10:39:01	20.10	2.6958460
247	3/5/2019	10:40:01	20.00	2.6965700
248	3/5/2019	10:41:01	19.90	2.6969310
249	3/5/2019	10:42:01	19.80	2.6965700

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253	3/5/2019	10:46:01	20.20	2.6965700
254	3/5/2019	10:47:01	20.20	2.6965700
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262	3/5/2019	10:55:01	20.20	2.6962080
263	3/5/2019	10:56:01	20.10	2.6965700
264	3/5/2019	10:57:01	20.00	2.6965700
265	3/5/2019	10:58:01	19.90	2.6962080
266	3/5/2019	10:59:01	19.80	2.6965700
267	3/5/2019	11:00:01	19.90	2.6962080
268	3/5/2019	11:01:01	20.00	2.6969310
269	3/5/2019	11:02:01	20.10	2.6969310
270	3/5/2019	11:03:01	20.20	2.6947610
271	3/5/2019	11:04:01	20.10	2.6954850
272	3/5/2019	11:05:01	20.00	2.6962080
273	3/5/2019	11:06:01	19.90	2.6958460
274	3/5/2019	11:07:01	19.80	2.6962080
275	3/5/2019	11:08:01	19.90	2.6969310
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278	3/5/2019	11:11:01	20.20	2.6962080
279	3/5/2019	11:12:01	20.20	2.6962080
280	3/5/2019	11:13:01	20.10	2.6958460
281	3/5/2019	11:14:01	19.90	2.6969310
282	3/5/2019	11:15:01	19.80	2.6969310
283	3/5/2019	11:16:01	19.90	2.6969310
284	3/5/2019	11:17:01	19.90	2.6954850
285	3/5/2019	11:18:01	20.10	2.6962080
286	3/5/2019	11:19:01	20.20	2.6962080
287	3/5/2019	11:20:01	20.20	2.6965700
288	3/5/2019	11:21:01	20.10	2.6969310
289	3/5/2019	11:22:01	19.90	2.6969310
290	3/5/2019	11:23:01	19.80	2.6965700
291	3/5/2019	11:24:01	19.80	2.6947610
292	3/5/2019	11:25:01	19.90	2.6962080
293	3/5/2019	11:26:01	20.00	2.6965700
294	3/5/2019	11:27:01	20.20	2.6962080
295	3/5/2019	11:28:01	20.20	2.6962080
296	3/5/2019	11:29:01	20.10	2.6962080
297	3/5/2019	11:30:01	20.00	2.6972930
298	3/5/2019	11:31:01	19.90	2.6954850
299	3/5/2019	11:32:01	19.80	2.6969310

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303	3/5/2019	11:36:01	20.20	2.6962080
304	3/5/2019	11:37:01	20.20	2.6969310
305	3/5/2019	11:38:01	20.00	2.6965700
306	3/5/2019	11:39:01	19.90	2.6965700
307	3/5/2019	11:40:01	19.80	2.6969310
308	3/5/2019	11:41:01	19.90	2.6962080
309	3/5/2019	11:42:01	19.90	2.6958460
310	3/5/2019	11:43:01	20.10	2.6958460
311	3/5/2019	11:44:01	20.20	2.6958460
312	3/5/2019	11:45:01	20.20	2.6958460
313	3/5/2019	11:46:01	20.10	2.6969310
314	3/5/2019	11:47:01	19.90	2.6954850
315	3/5/2019	11:48:01	19.80	2.6969310
316	3/5/2019	11:49:01	19.80	2.6969310
317	3/5/2019	11:50:01	19.90	2.6965700
318	3/5/2019	11:51:01	20.10	2.6965700
319	3/5/2019	11:52:01	20.20	2.6965700
320	3/5/2019	11:53:01	20.20	2.6965700
321	3/5/2019	11:54:01	20.10	2.6962080
322	3/5/2019	11:55:01	19.90	2.6965700
323	3/5/2019	11:56:01	19.80	2.6969310
324	3/5/2019	11:57:01	19.80	2.6969310
325	3/5/2019	11:58:01	19.90	2.6969310
326	3/5/2019	11:59:01	20.00	2.6965700
327	3/5/2019	12:00:01	20.20	2.6965700
328	3/5/2019	12:01:01	20.20	2.6969310
329	3/5/2019	12:02:01	20.10	2.6962080
330	3/5/2019	12:03:01	20.00	2.6969310
331	3/5/2019	12:04:01	19.90	2.6972930
332	3/5/2019	12:05:01	19.80	2.6962080
333	3/5/2019	12:06:01	19.90	2.6962080
334	3/5/2019	12:07:01	20.00	2.6965700
335	3/5/2019	12:08:01	20.10	2.6969310
336	3/5/2019	12:09:01	20.20	2.6965700
337	3/5/2019	12:10:01	20.10	2.6962080
338	3/5/2019	12:11:01	20.00	2.6969310
339	3/5/2019	12:12:01	19.90	2.6969310
340	3/5/2019	12:13:01	19.80	2.6965700
341	3/5/2019	12:14:01	19.80	2.6969310
342	3/5/2019	12:15:01	19.90	2.6965700
343	3/5/2019	12:16:01	20.10	2.6965700
344	3/5/2019	12:17:01	20.20	2.6969310
345	3/5/2019	12:18:01	20.20	2.6969310
346	3/5/2019	12:19:01	20.10	2.6969310
347	3/5/2019	12:20:01	19.90	2.6965700
348	3/5/2019	12:21:01	19.80	2.6969310
349	3/5/2019	12:22:01	19.80	2.6969310

350	3/5/2019	12:23:01	19.90	2.6969310
351	3/5/2019	12:24:01	20.00	2.6965700
352	3/5/2019	12:25:01	20.20	2.6965700
353	3/5/2019	12:26:01	20.20	2.6965700
354	3/5/2019	12:27:01	20.10	2.6962080
355	3/5/2019	12:28:01	20.00	2.6965700
356	3/5/2019	12:29:01	19.90	2.6969310
357	3/5/2019	12:30:01	19.80	2.6965700
358	3/5/2019	12:31:01	19.90	2.6969310
359	3/5/2019	12:32:01	20.00	2.6962080
360	3/5/2019	12:33:01	20.10	2.6969310
361	3/5/2019	12:34:01	20.20	2.6969310
362	3/5/2019	12:35:01	20.20	2.6965700
363	3/5/2019	12:36:01	20.00	2.6969310
364	3/5/2019	12:37:01	19.90	2.6965700
365	3/5/2019	12:38:01	19.80	2.6962080
366	3/5/2019	12:39:01	19.90	2.6962080
367	3/5/2019	12:40:01	19.90	2.6958460
368	3/5/2019	12:41:01	20.10	2.6969310
369	3/5/2019	12:42:01	20.20	2.6958460
370	3/5/2019	12:43:01	20.20	2.6962080
371	3/5/2019	12:44:01	20.10	2.6954850
372	3/5/2019	12:45:01	19.90	2.6958460
373	3/5/2019	12:46:01	19.80	2.6962080
374	3/5/2019	12:47:01	19.80	2.6958460
375	3/5/2019	12:48:01	19.90	2.6965700
376	3/5/2019	12:49:01	20.10	2.6962080
377	3/5/2019	12:50:01	20.20	2.6969310
378	3/5/2019	12:51:01	20.20	2.6951230
379	3/5/2019	12:52:01	20.10	2.6947610
380	3/5/2019	12:53:01	19.90	2.6954850
381	3/5/2019	12:54:01	19.80	2.6969310
382	3/5/2019	12:55:01	19.80	2.6969310
383	3/5/2019	12:56:01	19.90	2.6965700
384	3/5/2019	12:57:01	20.00	2.6962080
385	3/5/2019	12:58:01	20.20	2.6962080
386	3/5/2019	12:59:01	20.20	2.6969310
387	3/5/2019	13:00:01	20.10	2.6962080
388	3/5/2019	13:01:01	20.00	2.6965700
389	3/5/2019	13:02:01	19.80	2.6962080
390	3/5/2019	13:03:01	19.80	2.6965700
391	3/5/2019	13:04:01	19.90	2.6962080
392	3/5/2019	13:05:01	20.00	2.6958460
393	3/5/2019	13:06:01	20.20	2.6969310
394	3/5/2019	13:07:01	20.20	2.6965700
395	3/5/2019	13:08:01	20.10	2.6958460
396	3/5/2019	13:09:01	20.00	2.6954850
397	3/5/2019	13:10:01	19.90	2.6962080
398	3/5/2019	13:11:01	19.80	2.6969310
399	3/5/2019	13:12:01	19.90	2.6969310

400	3/5/2019	13:13:01	20.00	2.6972930
401	3/5/2019	13:14:01	20.10	2.6958460
402	3/5/2019	13:15:01	20.20	2.6962080
403	3/5/2019	13:16:01	20.10	2.6958460
404	3/5/2019	13:17:01	20.00	2.6969310
405	3/5/2019	13:18:01	19.90	2.6954850
406	3/5/2019	13:19:01	19.80	2.6969310
407	3/5/2019	13:20:01	19.80	2.6969310
408	3/5/2019	13:21:01	19.90	2.6965700
409	3/5/2019	13:22:01	20.10	2.6962080
410	3/5/2019	13:23:01	20.20	2.6958460
411	3/5/2019	13:24:01	20.20	2.6965700
412	3/5/2019	13:25:01	20.10	2.6969310
413	3/5/2019	13:26:01	19.90	2.6965700
414	3/5/2019	13:27:01	19.80	2.6969310
415	3/5/2019	13:28:01	19.80	2.6962080
416	3/5/2019	13:29:01	19.90	2.6954850
417	3/5/2019	13:30:01	20.00	2.6965700
418	3/5/2019	13:31:01	20.20	2.6965700
419	3/5/2019	13:32:01	20.20	2.6962080
420	3/5/2019	13:33:01	20.10	2.6962080
421	3/5/2019	13:34:01	19.90	2.6962080
422	3/5/2019	13:35:01	19.80	2.6962080
423	3/5/2019	13:36:01	19.80	2.6962080
424	3/5/2019	13:37:01	19.90	2.6962080
425	3/5/2019	13:38:01	20.00	2.6969310
426	3/5/2019	13:39:01	20.10	2.6962080
427	3/5/2019	13:40:01	20.20	2.6947610
428	3/5/2019	13:41:01	20.10	2.6951230
429	3/5/2019	13:42:01	20.00	2.6954850
430	3/5/2019	13:43:01	19.90	2.6969310
431	3/5/2019	13:44:01	19.80	2.6965700
432	3/5/2019	13:45:01	19.80	2.6962080
433	3/5/2019	13:46:01	19.90	2.6965700
434	3/5/2019	13:47:01	20.10	2.6962080
435	3/5/2019	13:48:01	20.20	2.6951230
436	3/5/2019	13:49:01	20.20	2.6954850
437	3/5/2019	13:50:01	20.10	2.6962080
438	3/5/2019	13:51:01	19.90	2.6958460
439	3/5/2019	13:52:01	19.80	2.6962080
440	3/5/2019	13:53:01	19.80	2.6951230
441	3/5/2019	13:54:01	19.90	2.6962080
442	3/5/2019	13:55:01	20.00	2.6951230
443	3/5/2019	13:56:01	20.20	2.6951230
444	3/5/2019	13:57:01	20.20	2.6965700
445	3/5/2019	13:58:01	20.10	2.6969310
446	3/5/2019	13:59:01	20.00	2.6958460
447	3/5/2019	14:00:01	19.80	2.6965700
448	3/5/2019	14:01:01	19.80	2.6965700
449	3/5/2019	14:02:01	19.90	2.6962080

450	3/5/2019	14:03:01	20.00	2.6965700	
451	3/5/2019	14:04:01	20.10	2.6965700	
452	3/5/2019	14:05:01	20.20	2.6962080	
453	3/5/2019	14:06:01	20.10	2.6965700	
454	3/5/2019	14:07:01	20.00	2.6969310	
455	3/5/2019	14:08:01	19.90	2.6962080	
456	3/5/2019	14:09:01	19.80	2.6965700	
457	3/5/2019	14:10:01	19.90	2.6969310	
458	3/5/2019	14:11:01	19.90	2.6969310	
459	3/5/2019	14:12:01	20.10	2.6969310	
460	3/5/2019	14:13:01	20.20	2.6954850	
461	3/5/2019	14:14:01	20.20	2.6965700	
462	3/5/2019	14:15:01	20.10	2.6969310	
463	3/5/2019	14:16:01	19.90	2.6969310	
464	3/5/2019	14:17:01	19.80	2.6965700	
465	3/5/2019	14:18:01	19.80	2.6969310	
466	3/5/2019	14:19:01	19.90	2.6969310	
467	3/5/2019	14:20:01	20.00	2.6965700	
468	3/5/2019	14:21:01	20.20	2.6969310	
469	3/5/2019	14:22:01	20.20	2.6965700	
470	3/5/2019	14:23:01	20.10	2.6965700	
471	3/5/2019	14:24:01	20.00	2.6962080	
472	3/5/2019	14:25:01	19.90	2.6962080	
473	3/5/2019	14:26:01	19.80	2.6965700	
474	3/5/2019	14:27:01	19.80	2.6965700	
475	3/5/2019	14:28:01	19.90	2.6958460	
476	3/5/2019	14:29:01	20.10	2.6965700	
477	3/5/2019	14:30:01	20.20	2.6958460	
478	3/5/2019	14:31:01	20.20	2.6962080	
479	3/5/2019	14:32:01	20.10	2.6958460	
480	3/5/2019	14:33:01	19.90	2.6958460	
481	3/5/2019	14:34:01	19.80	2.6962080	8 horas
482	3/5/2019	14:35:01	19.80	2.6958460	
483	3/5/2019	14:36:01	19.90	2.6962080	
484	3/5/2019	14:37:01	20.10	2.6958460	
485	3/5/2019	14:38:01	20.20	2.6965700	
486	3/5/2019	14:39:01	20.20	2.6947610	
487	3/5/2019	14:40:01	20.10	2.6943990	
488	3/5/2019	14:41:01	19.90	2.6940380	
489	3/5/2019	14:42:01	19.80	2.6940380	
490	3/5/2019	14:43:01	19.80	2.6940380	
491	3/5/2019	14:44:01	19.90	2.6940380	
492	3/5/2019	14:45:01	20.00	2.6918680	
493	3/5/2019	14:46:01	20.20	2.6922290	
494	3/5/2019	14:47:01	20.20	2.6915060	
495	3/5/2019	14:48:01	20.10	2.6918680	
496	3/5/2019	14:49:01	20.00	2.6911440	
497	3/5/2019	14:50:01	19.90	2.6907820	
498	3/5/2019	14:51:01	19.80	2.6911440	
499	3/5/2019	14:52:01	19.90	2.6907820	

500	3/5/2019	14:53:01	20.00	2.6907820
501	3/5/2019	14:54:01	20.10	2.6893360
502	3/5/2019	14:55:01	20.20	2.6886120
503	3/5/2019	14:56:01	20.10	2.6882500
504	3/5/2019	14:57:01	20.00	2.6882500
505	3/5/2019	14:58:01	19.90	2.6882500
506	3/5/2019	14:59:01	19.80	2.6875270
507	3/5/2019	15:00:01	19.90	2.6871650
508	3/5/2019	15:01:01	20.00	2.6864420
509	3/5/2019	15:02:01	20.10	2.6860800
510	3/5/2019	15:03:01	20.20	2.6857180
511	3/5/2019	15:04:01	20.20	2.6853570
512	3/5/2019	15:05:01	20.00	2.6853570
513	3/5/2019	15:06:01	19.90	2.6853570
514	3/5/2019	15:07:01	19.80	2.6842720
515	3/5/2019	15:08:01	19.90	2.6849950
516	3/5/2019	15:09:01	19.90	2.6846330
517	3/5/2019	15:10:01	20.10	2.6835480
518	3/5/2019	15:11:01	20.20	2.6839100
519	3/5/2019	15:12:01	20.20	2.6828250
520	3/5/2019	15:13:01	20.10	2.6824630
521	3/5/2019	15:14:01	19.90	2.6821010
522	3/5/2019	15:15:01	19.90	2.6821010
523	3/5/2019	15:16:01	19.80	2.6821010
524	3/5/2019	15:17:01	19.90	2.6806550
525	3/5/2019	15:18:01	20.00	2.6810160
526	3/5/2019	15:19:01	20.20	2.6795690
527	3/5/2019	15:20:01	20.20	2.6799310
528	3/5/2019	15:21:01	20.10	2.6795690
529	3/5/2019	15:22:01	20.00	2.6792080
530	3/5/2019	15:23:01	19.90	2.6792080
531	3/5/2019	15:24:01	19.80	2.6792080
532	3/5/2019	15:25:01	19.90	2.6784840
533	3/5/2019	15:26:01	20.00	2.6777610
534	3/5/2019	15:27:01	20.10	2.6770370
535	3/5/2019	15:28:01	20.20	2.6766760
536	3/5/2019	15:29:01	20.10	2.6766760
537	3/5/2019	15:30:01	20.00	2.6766760
538	3/5/2019	15:31:01	19.90	2.6763140
539	3/5/2019	15:32:01	19.80	2.6759520
540	3/5/2019	15:33:01	19.80	2.6755910
541	3/5/2019	15:34:01	19.90	2.6748670
542	3/5/2019	15:35:01	20.10	2.6752290
543	3/5/2019	15:36:01	20.20	2.6745050
544	3/5/2019	15:37:01	20.20	2.6737820
545	3/5/2019	15:38:01	20.00	2.6737820
546	3/5/2019	15:39:01	19.90	2.6737820
547	3/5/2019	15:40:01	19.80	2.6737820
548	3/5/2019	15:41:01	19.80	2.6737820
549	3/5/2019	15:42:01	19.90	2.6730590

550	3/5/2019	15:43:01	20.10	2.6723350
551	3/5/2019	15:44:01	20.20	2.6712500
552	3/5/2019	15:45:01	20.20	2.6716120
553	3/5/2019	15:46:01	20.10	2.6712500
554	3/5/2019	15:47:01	19.90	2.6716120
555	3/5/2019	15:48:01	19.80	2.6708880
556	3/5/2019	15:49:01	19.80	2.6705260
557	3/5/2019	15:50:01	19.90	2.6708880
558	3/5/2019	15:51:01	20.00	2.6698030
559	3/5/2019	15:52:01	20.20	2.6701650
560	3/5/2019	15:53:01	20.20	2.6694410
561	3/5/2019	15:54:01	20.10	2.6687180
562	3/5/2019	15:55:01	20.00	2.6687180
563	3/5/2019	15:56:01	19.80	2.6679940
564	3/5/2019	15:57:01	19.80	2.6679940
565	3/5/2019	15:58:01	19.90	2.6679940
566	3/5/2019	15:59:01	20.00	2.6679940
567	3/5/2019	16:00:01	20.10	2.6679940
568	3/5/2019	16:01:01	20.20	2.6672710
569	3/5/2019	16:02:01	20.10	2.6661860
570	3/5/2019	16:03:01	20.00	2.6665480
571	3/5/2019	16:04:01	19.90	2.6658240
572	3/5/2019	16:05:01	19.80	2.6651010
573	3/5/2019	16:06:01	19.80	2.6658240
574	3/5/2019	16:07:01	19.90	2.6651010
575	3/5/2019	16:08:01	20.10	2.6647390
576	3/5/2019	16:09:01	20.20	2.6647390
577	3/5/2019	16:10:01	20.20	2.6640160
578	3/5/2019	16:11:01	20.10	2.6636540
579	3/5/2019	16:12:01	19.90	2.6640160
580	3/5/2019	16:13:01	19.80	2.6636540
581	3/5/2019	16:14:01	19.80	2.6622070
582	3/5/2019	16:15:01	19.90	2.6622070
583	3/5/2019	16:16:01	20.00	2.6622070
584	3/5/2019	16:17:01	20.20	2.6622070
585	3/5/2019	16:18:01	20.20	2.6622070
586	3/5/2019	16:19:01	20.10	2.6614840
587	3/5/2019	16:20:01	20.00	2.6607600
588	3/5/2019	16:21:01	19.80	2.6618450
589	3/5/2019	16:22:01	19.80	2.6603980
590	3/5/2019	16:23:01	19.90	2.6607600
591	3/5/2019	16:24:01	19.90	2.6596750
592	3/5/2019	16:25:01	20.10	2.6596750
593	3/5/2019	16:26:01	20.20	2.6596750
594	3/5/2019	16:27:01	20.10	2.6593130
595	3/5/2019	16:28:01	20.00	2.6593130
596	3/5/2019	16:29:01	19.90	2.6589520
597	3/5/2019	16:30:01	19.80	2.6589520
598	3/5/2019	16:31:01	19.80	2.6593130
599	3/5/2019	16:32:01	19.90	2.6578660

600	3/5/2019	16:33:01	20.00	2.6578660
601	3/5/2019	16:34:01	20.20	2.6571430
602	3/5/2019	16:35:01	20.20	2.6564200
603	3/5/2019	16:36:01	20.10	2.6564200
604	3/5/2019	16:37:01	19.90	2.6564200
605	3/5/2019	16:38:01	19.80	2.6564200
606	3/5/2019	16:39:01	19.80	2.6564200
607	3/5/2019	16:40:01	19.90	2.6556960
608	3/5/2019	16:41:01	20.00	2.6556960
609	3/5/2019	16:42:01	20.10	2.6542490
610	3/5/2019	16:43:01	20.20	2.6549730
611	3/5/2019	16:44:01	20.10	2.6542490
612	3/5/2019	16:45:01	20.00	2.6538880
613	3/5/2019	16:46:01	19.90	2.6535260
614	3/5/2019	16:47:01	19.80	2.6538880
615	3/5/2019	16:48:01	19.80	2.6535260
616	3/5/2019	16:49:01	19.90	2.6535260
617	3/5/2019	16:50:01	20.00	2.6524410
618	3/5/2019	16:51:01	20.20	2.6531640
619	3/5/2019	16:52:01	20.20	2.6531640
620	3/5/2019	16:53:01	20.10	2.6524410
621	3/5/2019	16:54:01	19.90	2.6517170
622	3/5/2019	16:55:01	19.80	2.6517170
623	3/5/2019	16:56:01	19.80	2.6509940
624	3/5/2019	16:57:01	19.90	2.6513560
625	3/5/2019	16:58:01	20.00	2.6509940
626	3/5/2019	16:59:01	20.10	2.6509940
627	3/5/2019	17:00:01	20.20	2.6509940
628	3/5/2019	17:01:01	20.10	2.6509940
629	3/5/2019	17:02:01	20.00	2.6509940
630	3/5/2019	17:03:01	19.80	2.6506320
631	3/5/2019	17:04:01	19.80	2.6502710
632	3/5/2019	17:05:01	19.90	2.6491850
633	3/5/2019	17:06:01	19.90	2.6495470
634	3/5/2019	17:07:01	20.10	2.6491850
635	3/5/2019	17:08:01	20.20	2.6484620
636	3/5/2019	17:09:01	20.10	2.6481000
637	3/5/2019	17:10:01	20.00	2.6481000
638	3/5/2019	17:11:01	19.90	2.6481000
639	3/5/2019	17:12:01	19.80	2.6473770
640	3/5/2019	17:13:01	19.80	2.6481000
641	3/5/2019	17:14:01	19.90	2.6470150
642	3/5/2019	17:15:01	20.00	2.6466530
643	3/5/2019	17:16:01	20.20	2.6473770
644	3/5/2019	17:17:01	20.20	2.6466530
645	3/5/2019	17:18:01	20.00	2.6462920
646	3/5/2019	17:19:01	19.90	2.6452060
647	3/5/2019	17:20:01	19.80	2.6452060
648	3/5/2019	17:21:01	19.80	2.6452060
649	3/5/2019	17:22:01	19.90	2.6452060

650	3/5/2019	17:23:01	20.00	2.6452060
651	3/5/2019	17:24:01	20.10	2.6452060
652	3/5/2019	17:25:01	20.20	2.6448450
653	3/5/2019	17:26:01	20.10	2.6452060
654	3/5/2019	17:27:01	19.90	2.6444830
655	3/5/2019	17:28:01	19.80	2.6433980
656	3/5/2019	17:29:01	19.80	2.6437600
657	3/5/2019	17:30:01	19.80	2.6426740
658	3/5/2019	17:31:01	19.90	2.6423130
659	3/5/2019	17:32:01	20.10	2.6423130
660	3/5/2019	17:33:01	20.20	2.6423130
661	3/5/2019	17:34:01	20.10	2.6423130
662	3/5/2019	17:35:01	20.00	2.6419510
663	3/5/2019	17:36:01	19.80	2.6415900
664	3/5/2019	17:37:01	19.80	2.6415900
665	3/5/2019	17:38:01	19.80	2.6412280
666	3/5/2019	17:39:01	19.90	2.6412280
667	3/5/2019	17:40:01	20.00	2.6412280
668	3/5/2019	17:41:01	20.10	2.6397810
669	3/5/2019	17:42:01	20.20	2.6405040
670	3/5/2019	17:43:01	20.10	2.6397810
671	3/5/2019	17:44:01	19.90	2.6394190
672	3/5/2019	17:45:01	19.80	2.6394190
673	3/5/2019	17:46:01	19.80	2.6394190
674	3/5/2019	17:47:01	19.80	2.6390580
675	3/5/2019	17:48:01	19.90	2.6390580
676	3/5/2019	17:49:01	20.10	2.6390580
677	3/5/2019	17:50:01	20.20	2.6394190
678	3/5/2019	17:51:01	20.10	2.6386960
679	3/5/2019	17:52:01	20.00	2.6379720
680	3/5/2019	17:53:01	19.90	2.6368870
681	3/5/2019	17:54:01	19.80	2.6372490
682	3/5/2019	17:55:01	19.80	2.6372490
683	3/5/2019	17:56:01	19.90	2.6368870
684	3/5/2019	17:57:01	20.00	2.6365250
685	3/5/2019	17:58:01	20.10	2.6372490
686	3/5/2019	17:59:01	20.20	2.6365250
687	3/5/2019	18:00:01	20.10	2.6365250
688	3/5/2019	18:01:01	19.90	2.6365250
689	3/5/2019	18:02:01	19.80	2.6365250
690	3/5/2019	18:03:01	19.80	2.6358020
691	3/5/2019	18:04:01	19.80	2.6350790
692	3/5/2019	18:05:01	19.90	2.6343550
693	3/5/2019	18:06:01	20.00	2.6354400
694	3/5/2019	18:07:01	20.20	2.6347170
695	3/5/2019	18:08:01	20.10	2.6339930
696	3/5/2019	18:09:01	20.00	2.6339930
697	3/5/2019	18:10:01	19.90	2.6336320
698	3/5/2019	18:11:01	19.80	2.6336320
699	3/5/2019	18:12:01	19.80	2.6332700

700	3/5/2019	18:13:01	19.90	2.6332700
701	3/5/2019	18:14:01	19.90	2.6332700
702	3/5/2019	18:15:01	20.10	2.6329080
703	3/5/2019	18:16:01	20.20	2.6336320
704	3/5/2019	18:17:01	20.10	2.6329080
705	3/5/2019	18:18:01	20.00	2.6325470
706	3/5/2019	18:19:01	19.80	2.6321850
707	3/5/2019	18:20:01	19.80	2.6311000
708	3/5/2019	18:21:01	19.80	2.6311000
709	3/5/2019	18:22:01	19.90	2.6314610
710	3/5/2019	18:23:01	20.00	2.6307380
711	3/5/2019	18:24:01	20.10	2.6307380
712	3/5/2019	18:25:01	20.20	2.6307380
713	3/5/2019	18:26:01	20.10	2.6307380
714	3/5/2019	18:27:01	19.90	2.6303760
715	3/5/2019	18:28:01	19.80	2.6307380
716	3/5/2019	18:29:01	19.80	2.6303760
717	3/5/2019	18:30:01	19.80	2.6300150
718	3/5/2019	18:31:01	19.90	2.6296530
719	3/5/2019	18:32:01	20.10	2.6292910
720	3/5/2019	18:33:01	20.20	2.6289290
721	3/5/2019	18:34:01	20.10	2.6278440
722	3/5/2019	18:35:01	20.00	2.6282060
723	3/5/2019	18:36:01	19.90	2.6282060
724	3/5/2019	18:37:01	19.80	2.6278440
725	3/5/2019	18:38:01	19.80	2.6278440
726	3/5/2019	18:39:01	19.90	2.6278440
727	3/5/2019	18:40:01	20.00	2.6278440
728	3/5/2019	18:41:01	20.10	2.6274830
729	3/5/2019	18:42:01	20.20	2.6278440
730	3/5/2019	18:43:01	20.10	2.6271210
731	3/5/2019	18:44:01	19.90	2.6260360
732	3/5/2019	18:45:01	19.80	2.6267590
733	3/5/2019	18:46:01	19.80	2.6263970
734	3/5/2019	18:47:01	19.80	2.6263970
735	3/5/2019	18:48:01	19.90	2.6256740
736	3/5/2019	18:49:01	20.00	2.6249510
737	3/5/2019	18:50:01	20.20	2.6249510
738	3/5/2019	18:51:01	20.10	2.6249510
739	3/5/2019	18:52:01	20.00	2.6253120
740	3/5/2019	18:53:01	19.90	2.6253120
741	3/5/2019	18:54:01	19.80	2.6245890
742	3/5/2019	18:55:01	19.80	2.6245890
743	3/5/2019	18:56:01	19.90	2.6249510
744	3/5/2019	18:57:01	20.00	2.6245890
745	3/5/2019	18:58:01	20.10	2.6249510
746	3/5/2019	18:59:01	20.20	2.6238660
747	3/5/2019	19:00:01	20.10	2.6231420
748	3/5/2019	19:01:01	19.90	2.6231420
749	3/5/2019	19:02:01	19.80	2.6227800

750	3/5/2019	19:03:01	19.80	2.6224190
751	3/5/2019	19:04:01	19.80	2.6224190
752	3/5/2019	19:05:01	19.90	2.6220570
753	3/5/2019	19:06:01	20.00	2.6224190
754	3/5/2019	19:07:01	20.10	2.6220570
755	3/5/2019	19:08:01	20.20	2.6220570
756	3/5/2019	19:09:01	20.10	2.6220570
757	3/5/2019	19:10:01	19.90	2.6216950
758	3/5/2019	19:11:01	19.80	2.6213340
759	3/5/2019	19:12:01	19.80	2.6216950
760	3/5/2019	19:13:01	19.80	2.6198860
761	3/5/2019	19:14:01	19.90	2.6206100
762	3/5/2019	19:15:01	20.10	2.6209720
763	3/5/2019	19:16:01	20.20	2.6202480
764	3/5/2019	19:17:01	20.10	2.6191630
765	3/5/2019	19:18:01	20.00	2.6195250
766	3/5/2019	19:19:01	19.80	2.6191630
767	3/5/2019	19:20:01	19.80	2.6191630
768	3/5/2019	19:21:01	19.80	2.6191630
769	3/5/2019	19:22:01	19.90	2.6188020
770	3/5/2019	19:23:01	20.00	2.6188020
771	3/5/2019	19:24:01	20.10	2.6191630
772	3/5/2019	19:25:01	20.20	2.6188020
773	3/5/2019	19:26:01	20.10	2.6191630
774	3/5/2019	19:27:01	19.90	2.6188020
775	3/5/2019	19:28:01	19.80	2.6184400
776	3/5/2019	19:29:01	19.80	2.6177160
777	3/5/2019	19:30:01	19.80	2.6180780
778	3/5/2019	19:31:01	19.90	2.6166310
779	3/5/2019	19:32:01	20.00	2.6166310
780	3/5/2019	19:33:01	20.10	2.6162700
781	3/5/2019	19:34:01	20.10	2.6162700
782	3/5/2019	19:35:01	20.00	2.6169930
783	3/5/2019	19:36:01	19.80	2.6166310
784	3/5/2019	19:37:01	19.80	2.6162700
785	3/5/2019	19:38:01	19.80	2.6162700
786	3/5/2019	19:39:01	19.90	2.6162700
787	3/5/2019	19:40:01	20.00	2.6162700
788	3/5/2019	19:41:01	20.10	2.6155460
789	3/5/2019	19:42:01	20.20	2.6159080
790	3/5/2019	19:43:01	20.10	2.6151840
791	3/5/2019	19:44:01	19.90	2.6140990
792	3/5/2019	19:45:01	19.80	2.6144610
793	3/5/2019	19:46:01	19.80	2.6148230
794	3/5/2019	19:47:01	19.80	2.6140990
795	3/5/2019	19:48:01	19.90	2.6133760
796	3/5/2019	19:49:01	20.00	2.6133760
797	3/5/2019	19:50:01	20.10	2.6144610
798	3/5/2019	19:51:01	20.20	2.6133760
799	3/5/2019	19:52:01	20.10	2.6133760

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803	3/5/2019	19:56:01	19.80	2.6133760
804	3/5/2019	19:57:01	19.90	2.6133760
805	3/5/2019	19:58:01	20.00	2.6130140
806	3/5/2019	19:59:01	20.20	2.6130140
807	3/5/2019	20:00:01	20.10	2.6126530
808	3/5/2019	20:01:01	20.00	2.6115670
809	3/5/2019	20:02:01	19.80	2.6119290
810	3/5/2019	20:03:01	19.80	2.6115670
811	3/5/2019	20:04:01	19.80	2.6108440
812	3/5/2019	20:05:01	19.90	2.6115670
813	3/5/2019	20:06:01	20.00	2.6104820
814	3/5/2019	20:07:01	20.10	2.6104820
815	3/5/2019	20:08:01	20.20	2.6104820
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817	3/5/2019	20:10:01	19.90	2.6104820
818	3/5/2019	20:11:01	19.80	2.6101210
819	3/5/2019	20:12:01	19.80	2.6104820
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821	3/5/2019	20:14:01	19.90	2.6101210
822	3/5/2019	20:15:01	20.00	2.6097590
823	3/5/2019	20:16:01	20.10	2.6090350
824	3/5/2019	20:17:01	20.10	2.6090350
825	3/5/2019	20:18:01	20.00	2.6090350
826	3/5/2019	20:19:01	19.90	2.6086730
827	3/5/2019	20:20:01	19.80	2.6075890
828	3/5/2019	20:21:01	19.80	2.6086730
829	3/5/2019	20:22:01	19.80	2.6075890
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831	3/5/2019	20:24:01	20.00	2.6075890
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833	3/5/2019	20:26:01	20.10	2.6075890
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835	3/5/2019	20:28:01	19.80	2.6068650
836	3/5/2019	20:29:01	19.80	2.6068650
837	3/5/2019	20:30:01	19.80	2.6065030
838	3/5/2019	20:31:01	19.90	2.6075890
839	3/5/2019	20:32:01	20.00	2.6072270
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841	3/5/2019	20:34:01	20.20	2.6068650
842	3/5/2019	20:35:01	20.10	2.6050560
843	3/5/2019	20:36:01	19.90	2.6054180
844	3/5/2019	20:37:01	19.80	2.6057800
845	3/5/2019	20:38:01	19.80	2.6054180
846	3/5/2019	20:39:01	19.80	2.6050560
847	3/5/2019	20:40:01	19.90	2.6054180
848	3/5/2019	20:41:01	20.00	2.6046950
849	3/5/2019	20:42:01	20.10	2.6046950

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852	3/5/2019	20:45:01	19.90	2.6043330
853	3/5/2019	20:46:01	19.80	2.6039710
854	3/5/2019	20:47:01	19.80	2.6043330
855	3/5/2019	20:48:01	19.80	2.6046950
856	3/5/2019	20:49:01	19.90	2.6028860
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858	3/5/2019	20:51:01	20.10	2.6032480
859	3/5/2019	20:52:01	20.10	2.6028860
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861	3/5/2019	20:54:01	19.90	2.6028860
862	3/5/2019	20:55:01	19.70	2.6028860
863	3/5/2019	20:56:01	19.80	2.6021630
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865	3/5/2019	20:58:01	19.90	2.6018010
866	3/5/2019	20:59:01	20.00	2.6018010
867	3/5/2019	21:00:01	20.10	2.6018010
868	3/5/2019	21:01:01	20.10	2.6018010
869	3/5/2019	21:02:01	19.90	2.6018010
870	3/5/2019	21:03:01	19.80	2.6018010
871	3/5/2019	21:04:01	19.70	2.6014390
872	3/5/2019	21:05:01	19.80	2.6018010
873	3/5/2019	21:06:01	19.90	2.6014390
874	3/5/2019	21:07:01	20.00	2.6018010
875	3/5/2019	21:08:01	20.10	2.6007160
876	3/5/2019	21:09:01	20.10	2.6007160
877	3/5/2019	21:10:01	20.00	2.6003540
878	3/5/2019	21:11:01	19.90	2.6007160
879	3/5/2019	21:12:01	19.80	2.5992690
880	3/5/2019	21:13:01	19.80	2.5992690
881	3/5/2019	21:14:01	19.80	2.5989070
882	3/5/2019	21:15:01	19.90	2.5992690
883	3/5/2019	21:16:01	20.00	2.5989070
884	3/5/2019	21:17:01	20.10	2.5992690
885	3/5/2019	21:18:01	20.10	2.5996310
886	3/5/2019	21:19:01	20.00	2.5989070
887	3/5/2019	21:20:01	19.80	2.5989070
888	3/5/2019	21:21:01	19.80	2.5985460
889	3/5/2019	21:22:01	19.80	2.5989070
890	3/5/2019	21:23:01	19.90	2.5989070
891	3/5/2019	21:24:01	19.90	2.5974610
892	3/5/2019	21:25:01	20.10	2.5985460
893	3/5/2019	21:26:01	20.10	2.5981840
894	3/5/2019	21:27:01	20.10	2.5974610
895	3/5/2019	21:28:01	19.90	2.5974610
896	3/5/2019	21:29:01	19.80	2.5970990
897	3/5/2019	21:30:01	19.80	2.5970990
898	3/5/2019	21:31:01	19.80	2.5970990
899	3/5/2019	21:32:01	19.90	2.5963750

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901	3/5/2019	21:34:01	20.10	2.5960140
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903	3/5/2019	21:36:01	20.00	2.5960140
904	3/5/2019	21:37:01	19.90	2.5960140
905	3/5/2019	21:38:01	19.80	2.5960140
906	3/5/2019	21:39:01	19.70	2.5960140
907	3/5/2019	21:40:01	19.80	2.5960140
908	3/5/2019	21:41:01	19.90	2.5956520
909	3/5/2019	21:42:01	20.00	2.5949290
910	3/5/2019	21:43:01	20.10	2.5960140
911	3/5/2019	21:44:01	20.10	2.5952900
912	3/5/2019	21:45:01	20.00	2.5945670
913	3/5/2019	21:46:01	19.90	2.5945670
914	3/5/2019	21:47:01	19.80	2.5952900
915	3/5/2019	21:48:01	19.80	2.5942050
916	3/5/2019	21:49:01	19.80	2.5938430
917	3/5/2019	21:50:01	19.90	2.5931200
918	3/5/2019	21:51:01	20.00	2.5934820
919	3/5/2019	21:52:01	20.10	2.5934820
920	3/5/2019	21:53:01	20.10	2.5938430
921	3/5/2019	21:54:01	20.00	2.5934820
922	3/5/2019	21:55:01	19.90	2.5931200
923	3/5/2019	21:56:01	19.80	2.5931200
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926	3/5/2019	21:59:01	19.90	2.5923960
927	3/5/2019	22:00:01	20.00	2.5931200
928	3/5/2019	22:01:01	20.10	2.5931200
929	3/5/2019	22:02:01	20.10	2.5931200
930	3/5/2019	22:03:01	20.00	2.5913110
931	3/5/2019	22:04:01	19.80	2.5916730
932	3/5/2019	22:05:01	19.80	2.5920350
933	3/5/2019	22:06:01	19.80	2.5916730
934	3/5/2019	22:07:01	19.80	2.5909500
935	3/5/2019	22:08:01	19.90	2.5909500
936	3/5/2019	22:09:01	20.10	2.5909500
937	3/5/2019	22:10:01	20.10	2.5905880
938	3/5/2019	22:11:01	20.10	2.5902260
939	3/5/2019	22:12:01	19.90	2.5902260
940	3/5/2019	22:13:01	19.80	2.5902260
941	3/5/2019	22:14:01	19.80	2.5909500
942	3/5/2019	22:15:01	19.80	2.5902260
943	3/5/2019	22:16:01	19.90	2.5902260
944	3/5/2019	22:17:01	20.00	2.5898640
945	3/5/2019	22:18:01	20.10	2.5902260
946	3/5/2019	22:19:01	20.10	2.5902260
947	3/5/2019	22:20:01	20.10	2.5898640
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949	3/5/2019	22:22:01	19.80	2.5898640

950	3/5/2019	22:23:01	19.80	2.5895030
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953	3/5/2019	22:26:01	20.00	2.5891410
954	3/5/2019	22:27:01	20.10	2.5887790
955	3/5/2019	22:28:01	20.10	2.5880560
956	3/5/2019	22:29:01	20.10	2.5873320
957	3/5/2019	22:30:01	19.90	2.5873320
958	3/5/2019	22:31:01	19.80	2.5873320
959	3/5/2019	22:32:01	19.70	2.5880560
960	3/5/2019	22:33:01	19.80	2.5873320
961	3/5/2019	22:34:01	19.90	2.5873320
962	3/5/2019	22:35:01	20.00	2.5873320
963	3/5/2019	22:36:01	20.10	2.5873320
964	3/5/2019	22:37:01	20.10	2.5873320
965	3/5/2019	22:38:01	20.10	2.5873320
966	3/5/2019	22:39:01	19.90	2.5873320
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968	3/5/2019	22:41:01	19.70	2.5873320
969	3/5/2019	22:42:01	19.80	2.5873320
970	3/5/2019	22:43:01	19.90	2.5873320
971	3/5/2019	22:44:01	20.00	2.5873320
972	3/5/2019	22:45:01	20.10	2.5873320
973	3/5/2019	22:46:01	20.10	2.5873320
974	3/5/2019	22:47:01	20.10	2.5866090
975	3/5/2019	22:48:01	19.90	2.5869710
976	3/5/2019	22:49:01	19.80	2.5873320
977	3/5/2019	22:50:01	19.70	2.5862470
978	3/5/2019	22:51:01	19.80	2.5862470
979	3/5/2019	22:52:01	19.90	2.5862470
980	3/5/2019	22:53:01	19.90	2.5862470
981	3/5/2019	22:54:01	20.10	2.5851620
982	3/5/2019	22:55:01	20.20	2.5851620
983	3/5/2019	22:56:01	20.10	2.5855240
984	3/5/2019	22:57:01	19.90	2.5851620
985	3/5/2019	22:58:01	19.80	2.5848000
986	3/5/2019	22:59:01	19.70	2.5848000
987	3/5/2019	23:00:01	19.80	2.5855240
988	3/5/2019	23:01:01	19.80	2.5848000
989	3/5/2019	23:02:01	19.90	2.5844390
990	3/5/2019	23:03:01	20.10	2.5844390
991	3/5/2019	23:04:01	20.10	2.5844390
992	3/5/2019	23:05:01	20.10	2.5844390
993	3/5/2019	23:06:01	19.90	2.5844390
994	3/5/2019	23:07:01	19.80	2.5844390
995	3/5/2019	23:08:01	19.70	2.5844390
996	3/5/2019	23:09:01	19.80	2.5837150
997	3/5/2019	23:10:01	19.80	2.5837150
998	3/5/2019	23:11:01	19.90	2.5840770
999	3/5/2019	23:12:01	20.00	2.5826300

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1001	3/5/2019	23:14:01	20.10	2.5822690
1002	3/5/2019	23:15:01	19.90	2.5833540
1003	3/5/2019	23:16:01	19.80	2.5826300
1004	3/5/2019	23:17:01	19.70	2.5826300
1005	3/5/2019	23:18:01	19.70	2.5822690
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1008	3/5/2019	23:21:01	20.00	2.5819070
1009	3/5/2019	23:22:01	20.10	2.5822690
1010	3/5/2019	23:23:01	20.10	2.5815450
1011	3/5/2019	23:24:01	20.00	2.5815450
1012	3/5/2019	23:25:01	19.80	2.5815450
1013	3/5/2019	23:26:01	19.70	2.5815450
1014	3/5/2019	23:27:01	19.80	2.5815450
1015	3/5/2019	23:28:01	19.80	2.5811830
1016	3/5/2019	23:29:01	19.90	2.5808220
1017	3/5/2019	23:30:01	20.00	2.5811830
1018	3/5/2019	23:31:01	20.10	2.5804600
1019	3/5/2019	23:32:01	20.10	2.5811830
1020	3/5/2019	23:33:01	20.00	2.5808220
1021	3/5/2019	23:34:01	19.80	2.5808220
1022	3/5/2019	23:35:01	19.70	2.5797360
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1024	3/5/2019	23:37:01	19.80	2.5790130
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1026	3/5/2019	23:39:01	20.00	2.5790130
1027	3/5/2019	23:40:01	20.10	2.5800980
1028	3/5/2019	23:41:01	20.10	2.5793750
1029	3/5/2019	23:42:01	20.00	2.5786510
1030	3/5/2019	23:43:01	19.90	2.5786510
1031	3/5/2019	23:44:01	19.80	2.5786510
1032	3/5/2019	23:45:01	19.70	2.5786510
1033	3/5/2019	23:46:01	19.80	2.5786510
1034	3/5/2019	23:47:01	19.90	2.5786510
1035	3/5/2019	23:48:01	20.00	2.5786510
1036	3/5/2019	23:49:01	20.10	2.5786510
1037	3/5/2019	23:50:01	20.10	2.5786510
1038	3/5/2019	23:51:01	20.00	2.5786510
1039	3/5/2019	23:52:01	19.90	2.5786510
1040	3/5/2019	23:53:01	19.70	2.5782900
1041	3/5/2019	23:54:01	19.70	2.5779280
1042	3/5/2019	23:55:01	19.80	2.5779280
1043	3/5/2019	23:56:01	19.90	2.5772040
1044	3/5/2019	23:57:01	20.00	2.5779280
1045	3/5/2019	23:58:01	20.10	2.5772040
1046	3/5/2019	23:59:01	20.10	2.5775660
1047	4/5/2019	0:00:01	20.10	2.5775660
1048	4/5/2019	0:01:01	19.90	2.5772040
1049	4/5/2019	0:02:01	19.80	2.5775660

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1051	4/5/2019	0:04:01	19.80	2.5764810
1052	4/5/2019	0:05:01	19.90	2.5757580
1053	4/5/2019	0:06:01	19.90	2.5761190
1054	4/5/2019	0:07:01	20.00	2.5757580
1055	4/5/2019	0:08:01	20.10	2.5761190
1056	4/5/2019	0:09:01	20.10	2.5757580
1057	4/5/2019	0:10:01	19.90	2.5761190
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1059	4/5/2019	0:12:01	19.70	2.5757580
1060	4/5/2019	0:13:01	19.80	2.5757580
1061	4/5/2019	0:14:01	19.80	2.5757580
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1064	4/5/2019	0:17:01	20.10	2.5750340
1065	4/5/2019	0:18:01	20.10	2.5750340
1066	4/5/2019	0:19:01	20.00	2.5753960
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1069	4/5/2019	0:22:01	19.70	2.5750340
1070	4/5/2019	0:23:01	19.80	2.5753960
1071	4/5/2019	0:24:01	19.90	2.5743110
1072	4/5/2019	0:25:01	20.00	2.5746720
1073	4/5/2019	0:26:01	20.10	2.5732260
1074	4/5/2019	0:27:01	20.10	2.5735880
1075	4/5/2019	0:28:01	20.00	2.5735880
1076	4/5/2019	0:29:01	19.80	2.5735880
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1078	4/5/2019	0:31:01	19.70	2.5728640
1079	4/5/2019	0:32:01	19.80	2.5728640
1080	4/5/2019	0:33:01	19.90	2.5728640
1081	4/5/2019	0:34:01	20.00	2.5728640
1082	4/5/2019	0:35:01	20.10	2.5725020
1083	4/5/2019	0:36:01	20.10	2.5728640
1084	4/5/2019	0:37:01	20.00	2.5721400
1085	4/5/2019	0:38:01	19.90	2.5728640
1086	4/5/2019	0:39:01	19.70	2.5725020
1087	4/5/2019	0:40:01	19.70	2.5728640
1088	4/5/2019	0:41:01	19.80	2.5725020
1089	4/5/2019	0:42:01	19.90	2.5714170
1090	4/5/2019	0:43:01	19.90	2.5721400
1091	4/5/2019	0:44:01	20.10	2.5721400
1092	4/5/2019	0:45:01	20.10	2.5725020
1093	4/5/2019	0:46:01	20.10	2.5710550
1094	4/5/2019	0:47:01	19.90	2.5717790
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1103	4/5/2019	0:56:01	19.90	2.5699700
1104	4/5/2019	0:57:01	19.80	2.5699700
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1109	4/5/2019	1:02:01	20.00	2.5699700
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1114	4/5/2019	1:07:01	19.70	2.5696080
1115	4/5/2019	1:08:01	19.70	2.5696080
1116	4/5/2019	1:09:01	19.80	2.5699700
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1121	4/5/2019	1:14:01	20.00	2.5688850
1122	4/5/2019	1:15:01	19.90	2.5678000
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1135	4/5/2019	1:28:01	19.80	2.5663530
1136	4/5/2019	1:29:01	19.90	2.5667150
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1138	4/5/2019	1:31:01	20.10	2.5670770
1139	4/5/2019	1:32:01	20.10	2.5667150
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1141	4/5/2019	1:34:01	19.80	2.5667150
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1143	4/5/2019	1:36:01	19.80	2.5652680
1144	4/5/2019	1:37:01	19.80	2.5652680
1145	4/5/2019	1:38:01	19.90	2.5649060
1146	4/5/2019	1:39:01	20.00	2.5652680
1147	4/5/2019	1:40:01	20.10	2.5641830
1148	4/5/2019	1:41:01	20.10	2.5649060
1149	4/5/2019	1:42:01	19.90	2.5652680

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1183	4/5/2019	2:16:01	20.00	2.5612890
1184	4/5/2019	2:17:01	20.10	2.5609270
1185	4/5/2019	2:18:01	20.10	2.5612890
1186	4/5/2019	2:19:01	20.00	2.5609270
1187	4/5/2019	2:20:01	19.80	2.5605660
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1191	4/5/2019	2:24:01	19.90	2.5605660
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1193	4/5/2019	2:26:01	20.00	2.5602040
1194	4/5/2019	2:27:01	20.10	2.5602040
1195	4/5/2019	2:28:01	20.10	2.5602040
1196	4/5/2019	2:29:01	19.90	2.5605660
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1198	4/5/2019	2:31:01	19.70	2.5598420
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1202	4/5/2019	2:35:01	20.00	2.5591190
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1204	4/5/2019	2:37:01	20.10	2.5583950
1205	4/5/2019	2:38:01	20.00	2.5587570
1206	4/5/2019	2:39:01	19.80	2.5587570
1207	4/5/2019	2:40:01	19.70	2.5583950
1208	4/5/2019	2:41:01	19.70	2.5583950
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1210	4/5/2019	2:43:01	19.80	2.5580340
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1212	4/5/2019	2:45:01	20.00	2.5583950
1213	4/5/2019	2:46:01	20.10	2.5583950
1214	4/5/2019	2:47:01	20.10	2.5583950
1215	4/5/2019	2:48:01	19.90	2.5580340
1216	4/5/2019	2:49:01	19.80	2.5580340
1217	4/5/2019	2:50:01	19.70	2.5576720
1218	4/5/2019	2:51:01	19.70	2.5576720
1219	4/5/2019	2:52:01	19.80	2.5580340
1220	4/5/2019	2:53:01	19.90	2.5576720
1221	4/5/2019	2:54:01	20.00	2.5576720
1222	4/5/2019	2:55:01	20.10	2.5565870
1223	4/5/2019	2:56:01	20.10	2.5573100
1224	4/5/2019	2:57:01	20.00	2.5569490
1225	4/5/2019	2:58:01	19.80	2.5569490
1226	4/5/2019	2:59:01	19.70	2.5562250
1227	4/5/2019	3:00:01	19.70	2.5562250
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1231	4/5/2019	3:04:01	20.00	2.5558640
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1237	4/5/2019	3:10:01	19.70	2.5555020
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1239	4/5/2019	3:12:01	19.90	2.5555020
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1241	4/5/2019	3:14:01	20.10	2.5551400
1242	4/5/2019	3:15:01	20.10	2.5547780
1243	4/5/2019	3:16:01	20.00	2.5555020
1244	4/5/2019	3:17:01	19.90	2.5555020
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1247	4/5/2019	3:20:01	19.70	2.5544160
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1253	4/5/2019	3:26:01	20.00	2.5544160
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1256	4/5/2019	3:29:01	19.70	2.5540550
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1262	4/5/2019	3:35:01	20.10	2.5529700
1263	4/5/2019	3:36:01	20.00	2.5526080
1264	4/5/2019	3:37:01	19.80	2.5526080
1265	4/5/2019	3:38:01	19.70	2.5526080
1266	4/5/2019	3:39:01	19.70	2.5526080
1267	4/5/2019	3:40:01	19.80	2.5526080
1268	4/5/2019	3:41:01	19.80	2.5526080
1269	4/5/2019	3:42:01	19.90	2.5526080
1270	4/5/2019	3:43:01	20.00	2.5518840
1271	4/5/2019	3:44:01	20.10	2.5526080
1272	4/5/2019	3:45:01	20.10	2.5526080
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1275	4/5/2019	3:48:01	19.70	2.5526080
1276	4/5/2019	3:49:01	19.70	2.5515230
1277	4/5/2019	3:50:01	19.80	2.5511610
1278	4/5/2019	3:51:01	19.90	2.5515230
1279	4/5/2019	3:52:01	19.90	2.5511610
1280	4/5/2019	3:53:01	20.00	2.5515230
1281	4/5/2019	3:54:01	20.10	2.5508000
1282	4/5/2019	3:55:01	20.00	2.5515230
1283	4/5/2019	3:56:01	19.90	2.5511610
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1290	4/5/2019	4:03:01	20.10	2.5504380
1291	4/5/2019	4:04:01	20.10	2.5497140
1292	4/5/2019	4:05:01	20.00	2.5497140
1293	4/5/2019	4:06:01	19.90	2.5497140
1294	4/5/2019	4:07:01	19.70	2.5497140
1295	4/5/2019	4:08:01	19.70	2.5497140
1296	4/5/2019	4:09:01	19.70	2.5497140
1297	4/5/2019	4:10:01	19.80	2.5500760
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1302	4/5/2019	4:15:01	20.00	2.5497140
1303	4/5/2019	4:16:01	19.80	2.5493530
1304	4/5/2019	4:17:01	19.70	2.5489910
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1306	4/5/2019	4:19:01	19.70	2.5486290
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1309	4/5/2019	4:22:01	20.00	2.5489910
1310	4/5/2019	4:23:01	20.10	2.5489910
1311	4/5/2019	4:24:01	20.10	2.5486290
1312	4/5/2019	4:25:01	20.00	2.5489910
1313	4/5/2019	4:26:01	19.80	2.5482680
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1316	4/5/2019	4:29:01	19.70	2.5475440
1317	4/5/2019	4:30:01	19.80	2.5471820
1318	4/5/2019	4:31:01	19.90	2.5471820
1319	4/5/2019	4:32:01	20.00	2.5468210
1320	4/5/2019	4:33:01	20.10	2.5471820
1321	4/5/2019	4:34:01	20.10	2.5468210
1322	4/5/2019	4:35:01	20.00	2.5468210
1323	4/5/2019	4:36:01	19.80	2.5468210
1324	4/5/2019	4:37:01	19.70	2.5468210
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1326	4/5/2019	4:39:01	19.70	2.5468210
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1328	4/5/2019	4:41:01	19.90	2.5460970
1329	4/5/2019	4:42:01	20.00	2.5468210
1330	4/5/2019	4:43:01	20.10	2.5468210
1331	4/5/2019	4:44:01	20.10	2.5464590
1332	4/5/2019	4:45:01	20.00	2.5468210
1333	4/5/2019	4:46:01	19.80	2.5468210
1334	4/5/2019	4:47:01	19.70	2.5468210
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1336	4/5/2019	4:49:01	19.70	2.5460970
1337	4/5/2019	4:50:01	19.80	2.5464590
1338	4/5/2019	4:51:01	19.90	2.5453740
1339	4/5/2019	4:52:01	19.90	2.5460970
1340	4/5/2019	4:53:01	20.00	2.5453740
1341	4/5/2019	4:54:01	20.10	2.5460970
1342	4/5/2019	4:55:01	20.00	2.5457350
1343	4/5/2019	4:56:01	19.90	2.5446510
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1346	4/5/2019	4:59:01	19.70	2.5442890
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1361	4/5/2019	5:14:01	20.10	2.5439270
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1381	4/5/2019	5:34:01	20.10	2.5410330
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1383	4/5/2019	5:36:01	19.90	2.5413950
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1385	4/5/2019	5:38:01	19.70	2.5410330
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1388	4/5/2019	5:41:01	19.80	2.5410330
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1399	4/5/2019	5:52:01	19.90	2.5410330

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1401	4/5/2019	5:54:01	20.00	2.5403100
1402	4/5/2019	5:55:01	20.10	2.5403100
1403	4/5/2019	5:56:01	20.00	2.5410330
1404	4/5/2019	5:57:01	19.90	2.5399480
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1437	4/5/2019	6:30:01	19.70	2.5366930
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1439	4/5/2019	6:32:01	19.80	2.5370540
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1441	4/5/2019	6:34:01	19.90	2.5356080
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1618	4/5/2019	9:38:01	20.10	2.5222240
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1660	4/5/2019	10:20:01	20.10	2.5189690
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1666	4/5/2019	10:26:01	19.70	2.5182450
1667	4/5/2019	10:27:01	19.80	2.5182450
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1669	4/5/2019	10:29:01	19.90	2.5186070
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1676	4/5/2019	10:36:01	19.70	2.5182450
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1690	4/5/2019	10:50:01	19.90	2.5175220
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1720	4/5/2019	11:20:01	19.80	2.5149900
1721	4/5/2019	11:21:01	19.90	2.5149900
1722	4/5/2019	11:22:01	19.90	2.5149900
1723	4/5/2019	11:23:01	20.00	2.5149900
1724	4/5/2019	11:24:01	20.10	2.5149900
1725	4/5/2019	11:25:01	20.10	2.5149900
1726	4/5/2019	11:26:01	19.90	2.5146280
1727	4/5/2019	11:27:01	19.80	2.5146280
1728	4/5/2019	11:28:01	19.70	2.5149900
1729	4/5/2019	11:29:01	19.70	2.5142660
1730	4/5/2019	11:30:01	19.70	2.5142660
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1733	4/5/2019	11:33:01	20.00	2.5146280
1734	4/5/2019	11:34:01	20.10	2.5139050
1735	4/5/2019	11:35:01	20.10	2.5146280
1736	4/5/2019	11:36:01	20.00	2.5142660
1737	4/5/2019	11:37:01	19.90	2.5120960
1738	4/5/2019	11:38:01	19.70	2.5142660
1739	4/5/2019	11:39:01	19.70	2.5131810
1740	4/5/2019	11:40:01	19.70	2.5131810
1741	4/5/2019	11:41:01	19.80	2.5128200
1742	4/5/2019	11:42:01	19.80	2.5135430
1743	4/5/2019	11:43:01	19.90	2.5131810
1744	4/5/2019	11:44:01	20.00	2.5124580
1745	4/5/2019	11:45:01	20.10	2.5135430
1746	4/5/2019	11:46:01	20.10	2.5128200
1747	4/5/2019	11:47:01	19.90	2.5128200
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1749	4/5/2019	11:49:01	19.70	2.5124580

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1757	4/5/2019	11:57:01	20.00	2.5120960
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1761	4/5/2019	12:01:01	19.70	2.5120960
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1765	4/5/2019	12:05:01	20.00	2.5120960
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1767	4/5/2019	12:07:01	20.10	2.5120960
1768	4/5/2019	12:08:01	19.90	2.5120960
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1774	4/5/2019	12:14:01	19.90	2.5113730
1775	4/5/2019	12:15:01	20.00	2.5117340
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1778	4/5/2019	12:18:01	20.00	2.5113730
1779	4/5/2019	12:19:01	19.80	2.5113730
1780	4/5/2019	12:20:01	19.70	2.5106490
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1782	4/5/2019	12:22:01	19.70	2.5106490
1783	4/5/2019	12:23:01	19.80	2.5106490
1784	4/5/2019	12:24:01	19.90	2.5106490
1785	4/5/2019	12:25:01	19.90	2.5102880
1786	4/5/2019	12:26:01	20.00	2.5102880
1787	4/5/2019	12:27:01	20.10	2.5102880
1788	4/5/2019	12:28:01	20.00	2.5095640
1789	4/5/2019	12:29:01	19.90	2.5092020
1790	4/5/2019	12:30:01	19.70	2.5095640
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1793	4/5/2019	12:33:01	19.80	2.5102880
1794	4/5/2019	12:34:01	19.90	2.5099260
1795	4/5/2019	12:35:01	19.90	2.5092020
1796	4/5/2019	12:36:01	20.00	2.5095640
1797	4/5/2019	12:37:01	20.10	2.5099260
1798	4/5/2019	12:38:01	20.10	2.5092020
1799	4/5/2019	12:39:01	19.90	2.5092020

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1807	4/5/2019	12:47:01	20.10	2.5092020
1808	4/5/2019	12:48:01	20.10	2.5092020
1809	4/5/2019	12:49:01	20.00	2.5092020
1810	4/5/2019	12:50:01	19.80	2.5092020
1811	4/5/2019	12:51:01	19.70	2.5088410
1812	4/5/2019	12:52:01	19.70	2.5092020
1813	4/5/2019	12:53:01	19.70	2.5088410
1814	4/5/2019	12:54:01	19.80	2.5088410
1815	4/5/2019	12:55:01	19.90	2.5092020
1816	4/5/2019	12:56:01	20.00	2.5084790
1817	4/5/2019	12:57:01	20.00	2.5084790
1818	4/5/2019	12:58:01	20.10	2.5077560
1819	4/5/2019	12:59:01	20.00	2.5088410
1820	4/5/2019	13:00:01	19.90	2.5092020
1821	4/5/2019	13:01:01	19.70	2.5088410
1822	4/5/2019	13:02:01	19.70	2.5081170
1823	4/5/2019	13:03:01	19.70	2.5084790
1824	4/5/2019	13:04:01	19.80	2.5077560
1825	4/5/2019	13:05:01	19.90	2.5081170
1826	4/5/2019	13:06:01	19.90	2.5084790
1827	4/5/2019	13:07:01	20.00	2.5077560
1828	4/5/2019	13:08:01	20.10	2.5077560
1829	4/5/2019	13:09:01	20.10	2.5077560
1830	4/5/2019	13:10:01	19.90	2.5077560
1831	4/5/2019	13:11:01	19.80	2.5081170
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1837	4/5/2019	13:17:01	20.00	2.5066700
1838	4/5/2019	13:18:01	20.10	2.5070320
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1845	4/5/2019	13:25:01	19.80	2.5063090
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1853	4/5/2019	13:33:01	19.70	2.5063090
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1857	4/5/2019	13:37:01	20.00	2.5063090
1858	4/5/2019	13:38:01	20.10	2.5063090
1859	4/5/2019	13:39:01	20.10	2.5063090
1860	4/5/2019	13:40:01	20.00	2.5059470
1861	4/5/2019	13:41:01	19.90	2.5055850
1862	4/5/2019	13:42:01	19.70	2.5059470
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1865	4/5/2019	13:45:01	19.80	2.5052240
1866	4/5/2019	13:46:01	19.90	2.5059470
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1868	4/5/2019	13:48:01	20.00	2.5041380
1869	4/5/2019	13:49:01	20.10	2.5059470
1870	4/5/2019	13:50:01	20.10	2.5055850
1871	4/5/2019	13:51:01	19.90	2.5063090
1872	4/5/2019	13:52:01	19.80	2.5041380
1873	4/5/2019	13:53:01	19.70	2.5055850
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1876	4/5/2019	13:56:01	19.90	2.5048620
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1878	4/5/2019	13:58:01	20.00	2.5041380
1879	4/5/2019	13:59:01	20.10	2.5041380
1880	4/5/2019	14:00:01	20.00	2.5041380
1881	4/5/2019	14:01:01	19.90	2.5041380
1882	4/5/2019	14:02:01	19.80	2.5045000
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1885	4/5/2019	14:05:01	19.80	2.5041380
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1894	4/5/2019	14:14:01	19.70	2.5034150
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1896	4/5/2019	14:16:01	19.90	2.5030530
1897	4/5/2019	14:17:01	19.90	2.5034150
1898	4/5/2019	14:18:01	20.00	2.5034150
1899	4/5/2019	14:19:01	20.10	2.5034150

1900	4/5/2019	14:20:01	20.10	2.5034150	
1901	4/5/2019	14:21:01	19.90	2.5034150	
1902	4/5/2019	14:22:01	19.80	2.5034150	
1903	4/5/2019	14:23:01	19.70	2.5034150	
1904	4/5/2019	14:24:01	19.70	2.5034150	
1905	4/5/2019	14:25:01	19.80	2.5034150	
1906	4/5/2019	14:26:01	19.80	2.5030530	
1907	4/5/2019	14:27:01	19.90	2.5034150	
1908	4/5/2019	14:28:01	20.00	2.5026920	
1909	4/5/2019	14:29:01	20.10	2.5026920	
1910	4/5/2019	14:30:01	20.10	2.5030530	
1911	4/5/2019	14:31:01	19.90	2.5030530	
1912	4/5/2019	14:32:01	19.80	2.5034150	
1913	4/5/2019	14:33:01	19.70	2.5034150	
1914	4/5/2019	14:34:01	19.70	2.5030530	
1915	4/5/2019	14:35:01	19.70	2.5026920	
1916	4/5/2019	14:36:01	19.80	2.5026920	
1917	4/5/2019	14:37:01	19.90	2.5023300	
1918	4/5/2019	14:38:01	20.00	2.5026920	
1919	4/5/2019	14:39:01	20.10	2.5019680	
1920	4/5/2019	14:40:01	20.10	2.5026920	
1921	4/5/2019	14:41:01	20.00	2.5016060	24 horas
1922	4/5/2019	14:42:01	19.90	2.5026920	
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1925	4/5/2019	14:45:01	19.70	2.5023300	
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1929	4/5/2019	14:49:01	20.00	2.5005210	
1930	4/5/2019	14:50:01	20.10	2.5012450	
1931	4/5/2019	14:51:01	20.10	2.5005210	
1932	4/5/2019	14:52:01	19.90	2.5016060	
1933	4/5/2019	14:53:01	19.80	2.5008830	
1934	4/5/2019	14:54:01	19.70	2.5008830	
1935	4/5/2019	14:55:01	19.70	2.5005210	
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1937	4/5/2019	14:57:01	19.80	2.5005210	
1938	4/5/2019	14:58:01	19.90	2.5005210	
1939	4/5/2019	14:59:01	20.00	2.5005210	
1940	4/5/2019	15:00:01	20.10	2.5005210	
1941	4/5/2019	15:01:01	20.10	2.5005210	
1942	4/5/2019	15:02:01	19.90	2.5005210	
1943	4/5/2019	15:03:01	19.80	2.5005210	
1944	4/5/2019	15:04:01	19.70	2.5005210	
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1949	4/5/2019	15:09:01	20.00	2.5005210	

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1951	4/5/2019	15:11:01	20.10	2.5005210
1952	4/5/2019	15:12:01	20.00	2.5005210
1953	4/5/2019	15:13:01	19.90	2.5005210
1954	4/5/2019	15:14:01	19.70	2.5005210
1955	4/5/2019	15:15:01	19.70	2.5005210
1956	4/5/2019	15:16:01	19.70	2.5001600
1957	4/5/2019	15:17:01	19.80	2.5005210
1958	4/5/2019	15:18:01	19.90	2.4997980
1959	4/5/2019	15:19:01	19.90	2.4990750
1960	4/5/2019	15:20:01	20.00	2.5001600
1961	4/5/2019	15:21:01	20.10	2.5005210
1962	4/5/2019	15:22:01	20.00	2.5001600
1963	4/5/2019	15:23:01	19.90	2.4997980
1964	4/5/2019	15:24:01	19.70	2.5001600
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1966	4/5/2019	15:26:01	19.70	2.4994360
1967	4/5/2019	15:27:01	19.80	2.4990750
1968	4/5/2019	15:28:01	19.80	2.4990750
1969	4/5/2019	15:29:01	19.90	2.4987130
1970	4/5/2019	15:30:01	20.00	2.4987130
1971	4/5/2019	15:31:01	20.10	2.4987130
1972	4/5/2019	15:32:01	20.10	2.4983510
1973	4/5/2019	15:33:01	20.00	2.4994360
1974	4/5/2019	15:34:01	19.80	2.4979890
1975	4/5/2019	15:35:01	19.70	2.4983510
1976	4/5/2019	15:36:01	19.70	2.4983510
1977	4/5/2019	15:37:01	19.70	2.4979890
1978	4/5/2019	15:38:01	19.80	2.4983510
1979	4/5/2019	15:39:01	19.90	2.4983510
1980	4/5/2019	15:40:01	19.90	2.4979890
1981	4/5/2019	15:41:01	20.00	2.4976280
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1983	4/5/2019	15:43:01	20.00	2.4976280
1984	4/5/2019	15:44:01	19.90	2.4983510
1985	4/5/2019	15:45:01	19.70	2.4983510
1986	4/5/2019	15:46:01	19.70	2.4976280
1987	4/5/2019	15:47:01	19.70	2.4976280
1988	4/5/2019	15:48:01	19.80	2.4976280
1989	4/5/2019	15:49:01	19.80	2.4976280
1990	4/5/2019	15:50:01	19.90	2.4976280
1991	4/5/2019	15:51:01	20.00	2.4979890
1992	4/5/2019	15:52:01	20.10	2.4976280
1993	4/5/2019	15:53:01	20.10	2.4972660
1994	4/5/2019	15:54:01	19.90	2.4976280
1995	4/5/2019	15:55:01	19.80	2.4976280
1996	4/5/2019	15:56:01	19.70	2.4976280
1997	4/5/2019	15:57:01	19.70	2.4972660
1998	4/5/2019	15:58:01	19.70	2.4976280
1999	4/5/2019	15:59:01	19.80	2.4976280

2000	4/5/2019	16:00:01	19.90	2.4976280
2001	4/5/2019	16:01:01	20.00	2.4972660
2002	4/5/2019	16:02:01	20.10	2.4976280
2003	4/5/2019	16:03:01	20.10	2.4976280
2004	4/5/2019	16:04:01	20.00	2.4972660
2005	4/5/2019	16:05:01	19.90	2.4976280
2006	4/5/2019	16:06:01	19.70	2.4972660
2007	4/5/2019	16:07:01	19.70	2.4972660
2008	4/5/2019	16:08:01	19.70	2.4972660
2009	4/5/2019	16:09:01	19.80	2.4965420
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2011	4/5/2019	16:11:01	19.90	2.4961810
2012	4/5/2019	16:12:01	20.00	2.4976280
2013	4/5/2019	16:13:01	20.10	2.4969040
2014	4/5/2019	16:14:01	20.10	2.4965420
2015	4/5/2019	16:15:01	19.90	2.4961810
2016	4/5/2019	16:16:01	19.80	2.4965420
2017	4/5/2019	16:17:01	19.70	2.4969040
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2019	4/5/2019	16:19:01	19.80	2.4969040
2020	4/5/2019	16:20:01	19.80	2.4969040
2021	4/5/2019	16:21:01	19.90	2.4965420
2022	4/5/2019	16:22:01	20.00	2.4969040
2023	4/5/2019	16:23:01	20.10	2.4958190
2024	4/5/2019	16:24:01	20.10	2.4965420
2025	4/5/2019	16:25:01	19.90	2.4954570
2026	4/5/2019	16:26:01	19.80	2.4950960
2027	4/5/2019	16:27:01	19.70	2.4950960
2028	4/5/2019	16:28:01	19.70	2.4947340
2029	4/5/2019	16:29:01	19.70	2.4950960
2030	4/5/2019	16:30:01	19.80	2.4947340
2031	4/5/2019	16:31:01	19.90	2.4950960
2032	4/5/2019	16:32:01	20.00	2.4950960
2033	4/5/2019	16:33:01	20.00	2.4954570
2034	4/5/2019	16:34:01	20.10	2.4950960
2035	4/5/2019	16:35:01	20.00	2.4950960
2036	4/5/2019	16:36:01	19.80	2.4954570
2037	4/5/2019	16:37:01	19.70	2.4947340
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2043	4/5/2019	16:43:01	20.00	2.4947340
2044	4/5/2019	16:44:01	20.10	2.4947340
2045	4/5/2019	16:45:01	20.10	2.4947340
2046	4/5/2019	16:46:01	19.90	2.4947340
2047	4/5/2019	16:47:01	19.80	2.4947340
2048	4/5/2019	16:48:01	19.70	2.4943720
2049	4/5/2019	16:49:01	19.70	2.4947340

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2052	4/5/2019	16:52:01	19.90	2.4940100
2053	4/5/2019	16:53:01	20.00	2.4947340
2054	4/5/2019	16:54:01	20.10	2.4947340
2055	4/5/2019	16:55:01	20.10	2.4940100
2056	4/5/2019	16:56:01	19.90	2.4947340
2057	4/5/2019	16:57:01	19.80	2.4940100
2058	4/5/2019	16:58:01	19.70	2.4940100
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2067	4/5/2019	17:07:01	19.90	2.4932870
2068	4/5/2019	17:08:01	19.70	2.4943720
2069	4/5/2019	17:09:01	19.70	2.4929250
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2096	4/5/2019	17:36:01	20.10	2.4918400
2097	4/5/2019	17:37:01	20.10	2.4918400
2098	4/5/2019	17:38:01	20.00	2.4914780
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2103	4/5/2019	17:43:01	19.80	2.4918400
2104	4/5/2019	17:44:01	19.90	2.4918400
2105	4/5/2019	17:45:01	19.90	2.4911170
2106	4/5/2019	17:46:01	20.00	2.4922020
2107	4/5/2019	17:47:01	20.10	2.4914780
2108	4/5/2019	17:48:01	20.00	2.4911170
2109	4/5/2019	17:49:01	19.90	2.4918400
2110	4/5/2019	17:50:01	19.70	2.4914780
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2112	4/5/2019	17:52:01	19.70	2.4903930
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2114	4/5/2019	17:54:01	19.80	2.4911170
2115	4/5/2019	17:55:01	19.90	2.4907550
2116	4/5/2019	17:56:01	20.00	2.4903930
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2118	4/5/2019	17:58:01	20.10	2.4911170
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2123	4/5/2019	18:03:01	19.70	2.4903930
2124	4/5/2019	18:04:01	19.80	2.4903930
2125	4/5/2019	18:05:01	19.80	2.4900320
2126	4/5/2019	18:06:01	19.90	2.4896700
2127	4/5/2019	18:07:01	20.00	2.4903930
2128	4/5/2019	18:08:01	20.10	2.4907550
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2137	4/5/2019	18:17:01	19.90	2.4893080
2138	4/5/2019	18:18:01	20.00	2.4893080
2139	4/5/2019	18:19:01	20.10	2.4889470
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2143	4/5/2019	18:23:01	19.70	2.4889470
2144	4/5/2019	18:24:01	19.70	2.4889470
2145	4/5/2019	18:25:01	19.70	2.4889470
2146	4/5/2019	18:26:01	19.80	2.4893080
2147	4/5/2019	18:27:01	19.90	2.4889470
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2153	4/5/2019	18:33:01	19.70	2.4889470
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2157	4/5/2019	18:37:01	19.80	2.4889470
2158	4/5/2019	18:38:01	19.90	2.4882230
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2162	4/5/2019	18:42:01	20.00	2.4882230
2163	4/5/2019	18:43:01	19.80	2.4875000
2164	4/5/2019	18:44:01	19.70	2.4882230
2165	4/5/2019	18:45:01	19.70	2.4889470
2166	4/5/2019	18:46:01	19.70	2.4882230
2167	4/5/2019	18:47:01	19.80	2.4885850
2168	4/5/2019	18:48:01	19.80	2.4885850
2169	4/5/2019	18:49:01	19.90	2.4878610
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2172	4/5/2019	18:52:01	20.10	2.4882230
2173	4/5/2019	18:53:01	20.00	2.4882230
2174	4/5/2019	18:54:01	19.80	2.4882230
2175	4/5/2019	18:55:01	19.70	2.4871380
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2177	4/5/2019	18:57:01	19.70	2.4875000
2178	4/5/2019	18:58:01	19.80	2.4871380
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2180	4/5/2019	19:00:01	19.90	2.4871380
2181	4/5/2019	19:01:01	20.00	2.4867760
2182	4/5/2019	19:02:01	20.10	2.4867760
2183	4/5/2019	19:03:01	20.10	2.4864150
2184	4/5/2019	19:04:01	19.90	2.4867760
2185	4/5/2019	19:05:01	19.80	2.4867760
2186	4/5/2019	19:06:01	19.70	2.4864150
2187	4/5/2019	19:07:01	19.70	2.4864150
2188	4/5/2019	19:08:01	19.70	2.4867760
2189	4/5/2019	19:09:01	19.80	2.4860530
2190	4/5/2019	19:10:01	19.90	2.4864150
2191	4/5/2019	19:11:01	19.90	2.4860530
2192	4/5/2019	19:12:01	20.00	2.4860530
2193	4/5/2019	19:13:01	20.10	2.4860530
2194	4/5/2019	19:14:01	20.00	2.4860530
2195	4/5/2019	19:15:01	19.90	2.4860530
2196	4/5/2019	19:16:01	19.70	2.4864150
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2198	4/5/2019	19:18:01	19.70	2.4860530
2199	4/5/2019	19:19:01	19.70	2.4860530

2200	4/5/2019	19:20:01	19.80	2.4860530
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2203	4/5/2019	19:23:01	20.00	2.4860530
2204	4/5/2019	19:24:01	20.10	2.4860530
2205	4/5/2019	19:25:01	20.00	2.4860530
2206	4/5/2019	19:26:01	19.80	2.4860530
2207	4/5/2019	19:27:01	19.70	2.4860530
2208	4/5/2019	19:28:01	19.70	2.4860530
2209	4/5/2019	19:29:01	19.70	2.4860530
2210	4/5/2019	19:30:01	19.80	2.4860530
2211	4/5/2019	19:31:01	19.80	2.4853290
2212	4/5/2019	19:32:01	19.90	2.4860530
2213	4/5/2019	19:33:01	20.00	2.4856910
2214	4/5/2019	19:34:01	20.00	2.4860530
2215	4/5/2019	19:35:01	20.10	2.4860530
2216	4/5/2019	19:36:01	20.00	2.4860530
2217	4/5/2019	19:37:01	19.80	2.4860530
2218	4/5/2019	19:38:01	19.70	2.4860530
2219	4/5/2019	19:39:01	19.70	2.4853290
2220	4/5/2019	19:40:01	19.70	2.4860530
2221	4/5/2019	19:41:01	19.80	2.4856910
2222	4/5/2019	19:42:01	19.80	2.4860530
2223	4/5/2019	19:43:01	19.90	2.4849680
2224	4/5/2019	19:44:01	20.00	2.4846060
2225	4/5/2019	19:45:01	20.00	2.4849680
2226	4/5/2019	19:46:01	20.10	2.4856910
2227	4/5/2019	19:47:01	20.00	2.4853290
2228	4/5/2019	19:48:01	19.80	2.4860530
2229	4/5/2019	19:49:01	19.70	2.4846060
2230	4/5/2019	19:50:01	19.70	2.4853290
2231	4/5/2019	19:51:01	19.70	2.4853290
2232	4/5/2019	19:52:01	19.80	2.4842440
2233	4/5/2019	19:53:01	19.80	2.4853290
2234	4/5/2019	19:54:01	19.90	2.4842440
2235	4/5/2019	19:55:01	20.00	2.4835210
2236	4/5/2019	19:56:01	20.00	2.4835210
2237	4/5/2019	19:57:01	20.10	2.4838820
2238	4/5/2019	19:58:01	20.00	2.4838820
2239	4/5/2019	19:59:01	19.80	2.4842440
2240	4/5/2019	20:00:01	19.70	2.4835210
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2242	4/5/2019	20:02:01	19.70	2.4838820
2243	4/5/2019	20:03:01	19.80	2.4842440
2244	4/5/2019	20:04:01	19.80	2.4831590
2245	4/5/2019	20:05:01	19.90	2.4838820
2246	4/5/2019	20:06:01	20.00	2.4835210
2247	4/5/2019	20:07:01	20.10	2.4835210
2248	4/5/2019	20:08:01	20.10	2.4846060
2249	4/5/2019	20:09:01	20.00	2.4831590

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2251	4/5/2019	20:11:01	19.70	2.4835210
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2253	4/5/2019	20:13:01	19.70	2.4835210
2254	4/5/2019	20:14:01	19.80	2.4831590
2255	4/5/2019	20:15:01	19.80	2.4831590
2256	4/5/2019	20:16:01	19.90	2.4831590
2257	4/5/2019	20:17:01	20.00	2.4831590
2258	4/5/2019	20:18:01	20.10	2.4827970
2259	4/5/2019	20:19:01	20.10	2.4831590
2260	4/5/2019	20:20:01	20.00	2.4831590
2261	4/5/2019	20:21:01	19.80	2.4831590
2262	4/5/2019	20:22:01	19.70	2.4831590
2263	4/5/2019	20:23:01	19.70	2.4835210
2264	4/5/2019	20:24:01	19.70	2.4831590
2265	4/5/2019	20:25:01	19.80	2.4827970
2266	4/5/2019	20:26:01	19.80	2.4831590
2267	4/5/2019	20:27:01	19.90	2.4827970
2268	4/5/2019	20:28:01	20.00	2.4824360
2269	4/5/2019	20:29:01	20.00	2.4831590
2270	4/5/2019	20:30:01	20.10	2.4831590
2271	4/5/2019	20:31:01	20.00	2.4831590
2272	4/5/2019	20:32:01	19.80	2.4831590
2273	4/5/2019	20:33:01	19.70	2.4820740
2274	4/5/2019	20:34:01	19.70	2.4827970
2275	4/5/2019	20:35:01	19.70	2.4827970
2276	4/5/2019	20:36:01	19.70	2.4820740
2277	4/5/2019	20:37:01	19.80	2.4827970
2278	4/5/2019	20:38:01	19.90	2.4827970
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2280	4/5/2019	20:40:01	20.00	2.4824360
2281	4/5/2019	20:41:01	20.10	2.4824360
2282	4/5/2019	20:42:01	20.00	2.4827970
2283	4/5/2019	20:43:01	19.90	2.4820740
2284	4/5/2019	20:44:01	19.70	2.4827970
2285	4/5/2019	20:45:01	19.70	2.4817120
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2287	4/5/2019	20:47:01	19.70	2.4820740
2288	4/5/2019	20:48:01	19.80	2.4813510
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2290	4/5/2019	20:50:01	19.90	2.4817120
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2292	4/5/2019	20:52:01	20.10	2.4820740
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2295	4/5/2019	20:55:01	19.70	2.4806270
2296	4/5/2019	20:56:01	19.70	2.4820740
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2299	4/5/2019	20:59:01	19.80	2.4813510

2300	4/5/2019	21:00:01	19.90	2.4802650
2301	4/5/2019	21:01:01	19.90	2.4806270
2302	4/5/2019	21:02:01	20.00	2.4806270
2303	4/5/2019	21:03:01	20.10	2.4806270
2304	4/5/2019	21:04:01	20.00	2.4806270
2305	4/5/2019	21:05:01	19.90	2.4809890
2306	4/5/2019	21:06:01	19.70	2.4809890
2307	4/5/2019	21:07:01	19.70	2.4809890
2308	4/5/2019	21:08:01	19.70	2.4802650
2309	4/5/2019	21:09:01	19.70	2.4802650
2310	4/5/2019	21:10:01	19.80	2.4809890
2311	4/5/2019	21:11:01	19.90	2.4806270
2312	4/5/2019	21:12:01	19.90	2.4802650
2313	4/5/2019	21:13:01	20.00	2.4799040
2314	4/5/2019	21:14:01	20.10	2.4802650
2315	4/5/2019	21:15:01	20.10	2.4802650
2316	4/5/2019	21:16:01	19.90	2.4802650
2317	4/5/2019	21:17:01	19.80	2.4802650
2318	4/5/2019	21:18:01	19.70	2.4802650
2319	4/5/2019	21:19:01	19.70	2.4795420
2320	4/5/2019	21:20:01	19.70	2.4802650
2321	4/5/2019	21:21:01	19.80	2.4802650
2322	4/5/2019	21:22:01	19.90	2.4799040
2323	4/5/2019	21:23:01	19.90	2.4802650
2324	4/5/2019	21:24:01	20.00	2.4802650
2325	4/5/2019	21:25:01	20.10	2.4802650
2326	4/5/2019	21:26:01	20.10	2.4802650
2327	4/5/2019	21:27:01	19.90	2.4802650
2328	4/5/2019	21:28:01	19.80	2.4799040
2329	4/5/2019	21:29:01	19.70	2.4795420
2330	4/5/2019	21:30:01	19.70	2.4802650
2331	4/5/2019	21:31:01	19.70	2.4795420
2332	4/5/2019	21:32:01	19.80	2.4799040
2333	4/5/2019	21:33:01	19.80	2.4802650
2334	4/5/2019	21:34:01	19.90	2.4799040
2335	4/5/2019	21:35:01	20.00	2.4799040
2336	4/5/2019	21:36:01	20.00	2.4795420
2337	4/5/2019	21:37:01	20.10	2.4802650
2338	4/5/2019	21:38:01	20.00	2.4799040
2339	4/5/2019	21:39:01	19.80	2.4799040
2340	4/5/2019	21:40:01	19.70	2.4791800
2341	4/5/2019	21:41:01	19.70	2.4799040
2342	4/5/2019	21:42:01	19.70	2.4780950
2343	4/5/2019	21:43:01	19.70	2.4788190
2344	4/5/2019	21:44:01	19.80	2.4799040
2345	4/5/2019	21:45:01	19.90	2.4795420
2346	4/5/2019	21:46:01	19.90	2.4799040
2347	4/5/2019	21:47:01	20.00	2.4788190
2348	4/5/2019	21:48:01	20.10	2.4788190
2349	4/5/2019	21:49:01	20.10	2.4795420

2350	4/5/2019	21:50:01	19.90	2.4780950
2351	4/5/2019	21:51:01	19.80	2.4788190
2352	4/5/2019	21:52:01	19.70	2.4788190
2353	4/5/2019	21:53:01	19.70	2.4788190
2354	4/5/2019	21:54:01	19.70	2.4780950
2355	4/5/2019	21:55:01	19.80	2.4780950
2356	4/5/2019	21:56:01	19.80	2.4780950
2357	4/5/2019	21:57:01	19.90	2.4784570
2358	4/5/2019	21:58:01	20.00	2.4777340
2359	4/5/2019	21:59:01	20.00	2.4777340
2360	4/5/2019	22:00:01	20.10	2.4777340
2361	4/5/2019	22:01:01	20.00	2.4788190
2362	4/5/2019	22:02:01	19.80	2.4777340
2363	4/5/2019	22:03:01	19.70	2.4773720
2364	4/5/2019	22:04:01	19.70	2.4780950
2365	4/5/2019	22:05:01	19.70	2.4773720
2366	4/5/2019	22:06:01	19.70	2.4773720
2367	4/5/2019	22:07:01	19.80	2.4777340
2368	4/5/2019	22:08:01	19.90	2.4773720
2369	4/5/2019	22:09:01	19.90	2.4773720
2370	4/5/2019	22:10:01	20.00	2.4773720
2371	4/5/2019	22:11:01	20.10	2.4773720
2372	4/5/2019	22:12:01	20.00	2.4773720
2373	4/5/2019	22:13:01	19.90	2.4773720
2374	4/5/2019	22:14:01	19.70	2.4773720
2375	4/5/2019	22:15:01	19.70	2.4780950
2376	4/5/2019	22:16:01	19.70	2.4773720
2377	4/5/2019	22:17:01	19.70	2.4770100
2378	4/5/2019	22:18:01	19.80	2.4773720
2379	4/5/2019	22:19:01	19.90	2.4773720
2380	4/5/2019	22:20:01	19.90	2.4773720
2381	4/5/2019	22:21:01	20.00	2.4773720
2382	4/5/2019	22:22:01	20.10	2.4773720
2383	4/5/2019	22:23:01	20.10	2.4770100
2384	4/5/2019	22:24:01	20.00	2.4773720
2385	4/5/2019	22:25:01	19.80	2.4773720
2386	4/5/2019	22:26:01	19.70	2.4770100
2387	4/5/2019	22:27:01	19.70	2.4766480
2388	4/5/2019	22:28:01	19.70	2.4770100
2389	4/5/2019	22:29:01	19.70	2.4773720
2390	4/5/2019	22:30:01	19.80	2.4770100
2391	4/5/2019	22:31:01	19.90	2.4766480
2392	4/5/2019	22:32:01	19.90	2.4770100
2393	4/5/2019	22:33:01	20.00	2.4766480
2394	4/5/2019	22:34:01	20.10	2.4770100
2395	4/5/2019	22:35:01	20.00	2.4766480
2396	4/5/2019	22:36:01	19.90	2.4766480
2397	4/5/2019	22:37:01	19.70	2.4766480
2398	4/5/2019	22:38:01	19.70	2.4770100
2399	4/5/2019	22:39:01	19.70	2.4773720

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2402	4/5/2019	22:42:01	19.80	2.4755630
2403	4/5/2019	22:43:01	19.90	2.4766480
2404	4/5/2019	22:44:01	20.00	2.4759250
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2406	4/5/2019	22:46:01	20.10	2.4766480
2407	4/5/2019	22:47:01	20.00	2.4766480
2408	4/5/2019	22:48:01	19.80	2.4762870
2409	4/5/2019	22:49:01	19.70	2.4762870
2410	4/5/2019	22:50:01	19.70	2.4752010
2411	4/5/2019	22:51:01	19.70	2.4759250
2412	4/5/2019	22:52:01	19.70	2.4762870
2413	4/5/2019	22:53:01	19.80	2.4755630
2414	4/5/2019	22:54:01	19.90	2.4752010
2415	4/5/2019	22:55:01	19.90	2.4748400
2416	4/5/2019	22:56:01	20.00	2.4762870
2417	4/5/2019	22:57:01	20.10	2.4752010
2418	4/5/2019	22:58:01	20.00	2.4748400
2419	4/5/2019	22:59:01	19.90	2.4755630
2420	4/5/2019	23:00:01	19.80	2.4752010
2421	4/5/2019	23:01:01	19.70	2.4748400
2422	4/5/2019	23:02:01	19.70	2.4741160
2423	4/5/2019	23:03:01	19.70	2.4748400
2424	4/5/2019	23:04:01	19.80	2.4744780
2425	4/5/2019	23:05:01	19.80	2.4752010
2426	4/5/2019	23:06:01	19.90	2.4748400
2427	4/5/2019	23:07:01	20.00	2.4752010
2428	4/5/2019	23:08:01	20.00	2.4752010
2429	4/5/2019	23:09:01	20.10	2.4755630
2430	4/5/2019	23:10:01	20.00	2.4744780
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2432	4/5/2019	23:12:01	19.70	2.4744780
2433	4/5/2019	23:13:01	19.70	2.4744780
2434	4/5/2019	23:14:01	19.70	2.4744780
2435	4/5/2019	23:15:01	19.70	2.4744780
2436	4/5/2019	23:16:01	19.80	2.4744780
2437	4/5/2019	23:17:01	19.90	2.4744780
2438	4/5/2019	23:18:01	19.90	2.4744780
2439	4/5/2019	23:19:01	20.00	2.4744780
2440	4/5/2019	23:20:01	20.10	2.4744780
2441	4/5/2019	23:21:01	20.10	2.4744780
2442	4/5/2019	23:22:01	19.90	2.4744780
2443	4/5/2019	23:23:01	19.80	2.4752010
2444	4/5/2019	23:24:01	19.70	2.4744780
2445	4/5/2019	23:25:01	19.70	2.4744780
2446	4/5/2019	23:26:01	19.70	2.4744780
2447	4/5/2019	23:27:01	19.80	2.4744780
2448	4/5/2019	23:28:01	19.80	2.4744780
2449	4/5/2019	23:29:01	19.90	2.4744780

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2451	4/5/2019	23:31:01	20.00	2.4741160
2452	4/5/2019	23:32:01	20.10	2.4741160
2453	4/5/2019	23:33:01	20.00	2.4748400
2454	4/5/2019	23:34:01	19.90	2.4741160
2455	4/5/2019	23:35:01	19.70	2.4737550
2456	4/5/2019	23:36:01	19.70	2.4737550
2457	4/5/2019	23:37:01	19.70	2.4744780
2458	4/5/2019	23:38:01	19.70	2.4741160
2459	4/5/2019	23:39:01	19.70	2.4744780
2460	4/5/2019	23:40:01	19.80	2.4741160
2461	4/5/2019	23:41:01	19.90	2.4744780
2462	4/5/2019	23:42:01	19.90	2.4733930
2463	4/5/2019	23:43:01	20.00	2.4733930
2464	4/5/2019	23:44:01	20.10	2.4730310
2465	4/5/2019	23:45:01	20.00	2.4733930
2466	4/5/2019	23:46:01	19.90	2.4730310
2467	4/5/2019	23:47:01	19.70	2.4733930
2468	4/5/2019	23:48:01	19.70	2.4730310
2469	4/5/2019	23:49:01	19.70	2.4737550
2470	4/5/2019	23:50:01	19.70	2.4733930
2471	4/5/2019	23:51:01	19.70	2.4723080
2472	4/5/2019	23:52:01	19.80	2.4723080
2473	4/5/2019	23:53:01	19.90	2.4730310
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2475	4/5/2019	23:55:01	20.00	2.4726690
2476	4/5/2019	23:56:01	20.10	2.4719460
2477	4/5/2019	23:57:01	20.00	2.4726690
2478	4/5/2019	23:58:01	19.90	2.4719460
2479	4/5/2019	23:59:01	19.70	2.4730310
2480	5/5/2019	0:00:01	19.70	2.4723080
2481	5/5/2019	0:01:01	19.70	2.4715840
2482	5/5/2019	0:02:01	19.70	2.4719460
2483	5/5/2019	0:03:01	19.70	2.4719460
2484	5/5/2019	0:04:01	19.80	2.4723080
2485	5/5/2019	0:05:01	19.90	2.4723080
2486	5/5/2019	0:06:01	19.90	2.4715840
2487	5/5/2019	0:07:01	20.00	2.4715840
2488	5/5/2019	0:08:01	20.10	2.4715840
2489	5/5/2019	0:09:01	20.00	2.4715840
2490	5/5/2019	0:10:01	19.90	2.4723080
2491	5/5/2019	0:11:01	19.70	2.4715840
2492	5/5/2019	0:12:01	19.70	2.4715840
2493	5/5/2019	0:13:01	19.70	2.4715840
2494	5/5/2019	0:14:01	19.70	2.4715840
2495	5/5/2019	0:15:01	19.80	2.4715840
2496	5/5/2019	0:16:01	19.80	2.4715840
2497	5/5/2019	0:17:01	19.90	2.4715840
2498	5/5/2019	0:18:01	19.90	2.4719460
2499	5/5/2019	0:19:01	20.00	2.4715840

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2501	5/5/2019	0:21:01	20.10	2.4715840
2502	5/5/2019	0:22:01	19.90	2.4715840
2503	5/5/2019	0:23:01	19.80	2.4715840
2504	5/5/2019	0:24:01	19.70	2.4715840
2505	5/5/2019	0:25:01	19.70	2.4715840
2506	5/5/2019	0:26:01	19.70	2.4715840
2507	5/5/2019	0:27:01	19.70	2.4715840
2508	5/5/2019	0:28:01	19.80	2.4708610
2509	5/5/2019	0:29:01	19.90	2.4715840
2510	5/5/2019	0:30:01	19.90	2.4715840
2511	5/5/2019	0:31:01	20.00	2.4715840
2512	5/5/2019	0:32:01	20.00	2.4712230
2513	5/5/2019	0:33:01	20.10	2.4715840
2514	5/5/2019	0:34:01	20.00	2.4708610
2515	5/5/2019	0:35:01	19.80	2.4715840
2516	5/5/2019	0:36:01	19.70	2.4715840
2517	5/5/2019	0:37:01	19.70	2.4708610
2518	5/5/2019	0:38:01	19.70	2.4715840
2519	5/5/2019	0:39:01	19.70	2.4708610
2520	5/5/2019	0:40:01	19.80	2.4708610
2521	5/5/2019	0:41:01	19.80	2.4712230
2522	5/5/2019	0:42:01	19.90	2.4708610
2523	5/5/2019	0:43:01	19.90	2.4704990
2524	5/5/2019	0:44:01	20.00	2.4712230
2525	5/5/2019	0:45:01	20.10	2.4712230
2526	5/5/2019	0:46:01	20.00	2.4704990
2527	5/5/2019	0:47:01	19.90	2.4701380
2528	5/5/2019	0:48:01	19.70	2.4697760
2529	5/5/2019	0:49:01	19.70	2.4701380
2530	5/5/2019	0:50:01	19.60	2.4701380
2531	5/5/2019	0:51:01	19.70	2.4701380
2532	5/5/2019	0:52:01	19.70	2.4701380
2533	5/5/2019	0:53:01	19.80	2.4704990
2534	5/5/2019	0:54:01	19.90	2.4697760
2535	5/5/2019	0:55:01	19.90	2.4701380
2536	5/5/2019	0:56:01	20.00	2.4690520
2537	5/5/2019	0:57:01	20.00	2.4694140
2538	5/5/2019	0:58:01	20.10	2.4704990
2539	5/5/2019	0:59:01	20.00	2.4697760
2540	5/5/2019	1:00:01	19.90	2.4690520
2541	5/5/2019	1:01:01	19.70	2.4694140
2542	5/5/2019	1:02:01	19.70	2.4697760
2543	5/5/2019	1:03:01	19.70	2.4697760
2544	5/5/2019	1:04:01	19.70	2.4694140
2545	5/5/2019	1:05:01	19.70	2.4690520
2546	5/5/2019	1:06:01	19.80	2.4690520
2547	5/5/2019	1:07:01	19.90	2.4690520
2548	5/5/2019	1:08:01	19.90	2.4694140
2549	5/5/2019	1:09:01	20.00	2.4686910

2550	5/5/2019	1:10:01	20.00	2.4701380
2551	5/5/2019	1:11:01	20.10	2.4690520
2552	5/5/2019	1:12:01	20.00	2.4690520
2553	5/5/2019	1:13:01	19.80	2.4686910
2554	5/5/2019	1:14:01	19.70	2.4686910
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2558	5/5/2019	1:18:01	19.70	2.4686910
2559	5/5/2019	1:19:01	19.80	2.4683290
2560	5/5/2019	1:20:01	19.90	2.4686910
2561	5/5/2019	1:21:01	19.90	2.4686910
2562	5/5/2019	1:22:01	19.90	2.4686910
2563	5/5/2019	1:23:01	20.00	2.4686910
2564	5/5/2019	1:24:01	20.10	2.4686910
2565	5/5/2019	1:25:01	20.00	2.4686910
2566	5/5/2019	1:26:01	19.80	2.4686910
2567	5/5/2019	1:27:01	19.70	2.4686910
2568	5/5/2019	1:28:01	19.70	2.4686910
2569	5/5/2019	1:29:01	19.70	2.4686910
2570	5/5/2019	1:30:01	19.70	2.4686910
2571	5/5/2019	1:31:01	19.70	2.4686910
2572	5/5/2019	1:32:01	19.80	2.4686910
2573	5/5/2019	1:33:01	19.90	2.4686910
2574	5/5/2019	1:34:01	19.90	2.4683290
2575	5/5/2019	1:35:01	20.00	2.4686910
2576	5/5/2019	1:36:01	20.00	2.4686910
2577	5/5/2019	1:37:01	20.10	2.4686910
2578	5/5/2019	1:38:01	20.00	2.4686910
2579	5/5/2019	1:39:01	19.80	2.4686910
2580	5/5/2019	1:40:01	19.70	2.4686910
2581	5/5/2019	1:41:01	19.60	2.4676060
2582	5/5/2019	1:42:01	19.60	2.4683290
2583	5/5/2019	1:43:01	19.70	2.4676060
2584	5/5/2019	1:44:01	19.70	2.4672440
2585	5/5/2019	1:45:01	19.80	2.4679670
2586	5/5/2019	1:46:01	19.80	2.4679670
2587	5/5/2019	1:47:01	19.90	2.4683290
2588	5/5/2019	1:48:01	19.90	2.4676060
2589	5/5/2019	1:49:01	20.00	2.4683290
2590	5/5/2019	1:50:01	20.00	2.4676060
2591	5/5/2019	1:51:01	20.10	2.4676060
2592	5/5/2019	1:52:01	19.90	2.4676060
2593	5/5/2019	1:53:01	19.80	2.4679670
2594	5/5/2019	1:54:01	19.70	2.4672440
2595	5/5/2019	1:55:01	19.60	2.4665200
2596	5/5/2019	1:56:01	19.70	2.4676060
2597	5/5/2019	1:57:01	19.70	2.4676060
2598	5/5/2019	1:58:01	19.80	2.4672440
2599	5/5/2019	1:59:01	19.80	2.4672440

2600	5/5/2019	2:00:01	19.90	2.4665200
2601	5/5/2019	2:01:01	19.90	2.4676060
2602	5/5/2019	2:02:01	20.00	2.4672440
2603	5/5/2019	2:03:01	20.00	2.4672440
2604	5/5/2019	2:04:01	20.10	2.4665200
2605	5/5/2019	2:05:01	20.00	2.4661590
2606	5/5/2019	2:06:01	19.90	2.4665200
2607	5/5/2019	2:07:01	19.70	2.4661590
2608	5/5/2019	2:08:01	19.60	2.4668820
2609	5/5/2019	2:09:01	19.70	2.4657970
2610	5/5/2019	2:10:01	19.70	2.4657970
2611	5/5/2019	2:11:01	19.70	2.4657970
2612	5/5/2019	2:12:01	19.80	2.4657970
2613	5/5/2019	2:13:01	19.80	2.4661590
2614	5/5/2019	2:14:01	19.90	2.4657970
2615	5/5/2019	2:15:01	19.90	2.4661590
2616	5/5/2019	2:16:01	20.00	2.4665200
2617	5/5/2019	2:17:01	20.00	2.4657970
2618	5/5/2019	2:18:01	20.10	2.4657970
2619	5/5/2019	2:19:01	19.90	2.4657970
2620	5/5/2019	2:20:01	19.80	2.4657970
2621	5/5/2019	2:21:01	19.70	2.4657970
2622	5/5/2019	2:22:01	19.60	2.4657970
2623	5/5/2019	2:23:01	19.60	2.4665200
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2625	5/5/2019	2:25:01	19.70	2.4657970
2626	5/5/2019	2:26:01	19.80	2.4657970
2627	5/5/2019	2:27:01	19.80	2.4657970
2628	5/5/2019	2:28:01	19.90	2.4661590
2629	5/5/2019	2:29:01	19.90	2.4657970
2630	5/5/2019	2:30:01	20.00	2.4657970
2631	5/5/2019	2:31:01	20.00	2.4657970
2632	5/5/2019	2:32:01	20.10	2.4657970
2633	5/5/2019	2:33:01	20.00	2.4657970
2634	5/5/2019	2:34:01	19.80	2.4657970
2635	5/5/2019	2:35:01	19.70	2.4657970
2636	5/5/2019	2:36:01	19.60	2.4650740
2637	5/5/2019	2:37:01	19.60	2.4657970
2638	5/5/2019	2:38:01	19.70	2.4654350
2639	5/5/2019	2:39:01	19.70	2.4657970
2640	5/5/2019	2:40:01	19.80	2.4650740
2641	5/5/2019	2:41:01	19.80	2.4657970
2642	5/5/2019	2:42:01	19.90	2.4654350
2643	5/5/2019	2:43:01	19.90	2.4654350
2644	5/5/2019	2:44:01	20.00	2.4657970
2645	5/5/2019	2:45:01	20.00	2.4650740
2646	5/5/2019	2:46:01	20.10	2.4654350
2647	5/5/2019	2:47:01	20.00	2.4654350
2648	5/5/2019	2:48:01	19.90	2.4650740
2649	5/5/2019	2:49:01	19.70	2.4654350

2650	5/5/2019	2:50:01	19.60	2.4647120
2651	5/5/2019	2:51:01	19.60	2.4643500
2652	5/5/2019	2:52:01	19.70	2.4647120
2653	5/5/2019	2:53:01	19.70	2.4654350
2654	5/5/2019	2:54:01	19.70	2.4647120
2655	5/5/2019	2:55:01	19.80	2.4643500
2656	5/5/2019	2:56:01	19.80	2.4643500
2657	5/5/2019	2:57:01	19.90	2.4650740
2658	5/5/2019	2:58:01	19.90	2.4647120
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2660	5/5/2019	3:00:01	20.00	2.4654350
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2676	5/5/2019	3:16:01	20.10	2.4639880
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2682	5/5/2019	3:22:01	19.70	2.4636270
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2738	5/5/2019	4:18:01	20.00	2.4621800
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2837	5/5/2019	5:57:01	19.80	2.4571160
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2871	5/5/2019	6:31:01	19.70	2.4567540
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2961	5/5/2019	8:01:01	19.90	2.4524140
2962	5/5/2019	8:02:01	19.90	2.4516900
2963	5/5/2019	8:03:01	20.00	2.4520520
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2969	5/5/2019	8:09:01	20.00	2.4520520
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2975	5/5/2019	8:15:01	19.60	2.4513290
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2978	5/5/2019	8:18:01	19.60	2.4513290
2979	5/5/2019	8:19:01	19.70	2.4520520
2980	5/5/2019	8:20:01	19.70	2.4513290
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3098	5/5/2019	10:18:01	19.60	2.4469880
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3105	5/5/2019	10:25:01	19.80	2.4466260
3106	5/5/2019	10:26:01	19.90	2.4477110
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3144	5/5/2019	11:04:01	20.00	2.4462650
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3182	5/5/2019	11:42:01	19.80	2.4433710
3183	5/5/2019	11:43:01	19.90	2.4440940
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3205	5/5/2019	12:05:01	19.80	2.4430090
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3207	5/5/2019	12:07:01	19.90	2.4433710
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3223	5/5/2019	12:23:01	19.70	2.4430090
3224	5/5/2019	12:24:01	19.70	2.4430090
3225	5/5/2019	12:25:01	19.80	2.4430090
3226	5/5/2019	12:26:01	19.80	2.4430090
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3242	5/5/2019	12:42:01	19.60	2.4422860
3243	5/5/2019	12:43:01	19.60	2.4430090
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3259	5/5/2019	12:59:01	19.70	2.4412000
3260	5/5/2019	13:00:01	19.60	2.4415620
3261	5/5/2019	13:01:01	19.60	2.4419240
3262	5/5/2019	13:02:01	19.60	2.4408390
3263	5/5/2019	13:03:01	19.60	2.4422860
3264	5/5/2019	13:04:01	19.70	2.4415620
3265	5/5/2019	13:05:01	19.70	2.4419240
3266	5/5/2019	13:06:01	19.70	2.4419240
3267	5/5/2019	13:07:01	19.80	2.4412000
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3271	5/5/2019	13:11:01	19.90	2.4412000
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3274	5/5/2019	13:14:01	20.00	2.4412000
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3276	5/5/2019	13:16:01	20.00	2.4408390
3277	5/5/2019	13:17:01	20.00	2.4412000
3278	5/5/2019	13:18:01	19.90	2.4401150
3279	5/5/2019	13:19:01	19.70	2.4404770
3280	5/5/2019	13:20:01	19.60	2.4404770
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3282	5/5/2019	13:22:01	19.60	2.4408390
3283	5/5/2019	13:23:01	19.60	2.4404770
3284	5/5/2019	13:24:01	19.70	2.4401150
3285	5/5/2019	13:25:01	19.70	2.4401150
3286	5/5/2019	13:26:01	19.70	2.4404770
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3288	5/5/2019	13:28:01	19.80	2.4404770
3289	5/5/2019	13:29:01	19.90	2.4401150
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3291	5/5/2019	13:31:01	19.90	2.4401150
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3293	5/5/2019	13:33:01	20.00	2.4404770
3294	5/5/2019	13:34:01	20.00	2.4401150
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3296	5/5/2019	13:36:01	20.10	2.4401150
3297	5/5/2019	13:37:01	20.00	2.4401150
3298	5/5/2019	13:38:01	19.80	2.4404770
3299	5/5/2019	13:39:01	19.70	2.4404770

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3362	5/5/2019	14:42:01	19.70	2.4383070	
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3598	5/5/2019	18:38:01	19.60	2.4310720
3599	5/5/2019	18:39:01	19.60	2.4303490

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3603	5/5/2019	18:43:01	19.80	2.4299870
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3605	5/5/2019	18:45:01	19.80	2.4303490
3606	5/5/2019	18:46:01	19.90	2.4303490
3607	5/5/2019	18:47:01	19.90	2.4307110
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3616	5/5/2019	18:56:01	19.90	2.4289020
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3623	5/5/2019	19:03:01	19.70	2.4292640
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3633	5/5/2019	19:13:01	19.90	2.4292640
3634	5/5/2019	19:14:01	20.00	2.4292640
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3643	5/5/2019	19:23:01	19.60	2.4285400
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3646	5/5/2019	19:26:01	19.60	2.4285400
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3673	5/5/2019	19:53:01	19.70	2.4278170
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3707	5/5/2019	20:27:01	19.90	2.4267320
3708	5/5/2019	20:28:01	19.90	2.4270940
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3714	5/5/2019	20:34:01	20.00	2.4270940
3715	5/5/2019	20:35:01	20.00	2.4274550
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3743	5/5/2019	21:03:01	20.00	2.4256470
3744	5/5/2019	21:04:01	20.00	2.4263700
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3762	5/5/2019	21:22:01	19.80	2.4252850
3763	5/5/2019	21:23:01	19.80	2.4252850
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3766	5/5/2019	21:26:01	19.90	2.4256470
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3772	5/5/2019	21:32:01	19.90	2.4245620
3773	5/5/2019	21:33:01	19.90	2.4252850
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3781	5/5/2019	21:41:01	20.00	2.4252850
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3786	5/5/2019	21:46:01	20.00	2.4256470
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3788	5/5/2019	21:48:01	19.70	2.4252850
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3792	5/5/2019	21:52:01	19.60	2.4242000
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3804	5/5/2019	22:04:01	19.80	2.4249230
3805	5/5/2019	22:05:01	19.80	2.4242000
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3836	5/5/2019	22:36:01	20.00	2.4234760
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3861	5/5/2019	23:01:01	19.90	2.4227530
3862	5/5/2019	23:02:01	19.90	2.4227530
3863	5/5/2019	23:03:01	19.90	2.4227530
3864	5/5/2019	23:04:01	19.90	2.4227530
3865	5/5/2019	23:05:01	19.90	2.4227530
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3899	5/5/2019	23:39:01	20.00	2.4220300

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3902	5/5/2019	23:42:01	20.00	2.4209450
3903	5/5/2019	23:43:01	20.00	2.4205830
3904	5/5/2019	23:44:01	20.00	2.4213060
3905	5/5/2019	23:45:01	20.00	2.4213060
3906	5/5/2019	23:46:01	20.00	2.4205830
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3912	5/5/2019	23:52:01	20.00	2.4209450
3913	5/5/2019	23:53:01	20.00	2.4202210
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3915	5/5/2019	23:55:01	20.00	2.4205830
3916	5/5/2019	23:56:01	20.00	2.4209450
3917	5/5/2019	23:57:01	20.00	2.4209450
3918	5/5/2019	23:58:01	20.00	2.4205830
3919	5/5/2019	23:59:01	20.00	2.4205830
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3922	6/5/2019	0:02:01	20.00	2.4198590
3923	6/5/2019	0:03:01	20.00	2.4202210
3924	6/5/2019	0:04:01	20.00	2.4205830
3925	6/5/2019	0:05:01	20.00	2.4198590
3926	6/5/2019	0:06:01	20.00	2.4198590
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3932	6/5/2019	0:12:01	19.90	2.4198590
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4212	6/5/2019	4:52:01	19.10	2.4119020
4213	6/5/2019	4:53:01	19.10	2.4115400
4214	6/5/2019	4:54:01	19.10	2.4119020
4215	6/5/2019	4:55:01	19.10	2.4115400
4216	6/5/2019	4:56:01	19.10	2.4115400
4217	6/5/2019	4:57:01	19.10	2.4111780
4218	6/5/2019	4:58:01	19.10	2.4115400
4219	6/5/2019	4:59:01	19.10	2.4119020
4220	6/5/2019	5:00:01	19.10	2.4111780
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4224	6/5/2019	5:04:01	19.00	2.4111780
4225	6/5/2019	5:05:01	19.00	2.4115400
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4227	6/5/2019	5:07:01	19.00	2.4111780
4228	6/5/2019	5:08:01	19.00	2.4111780
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4230	6/5/2019	5:10:01	19.00	2.4111780
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4235	6/5/2019	5:15:01	18.90	2.4111780
4236	6/5/2019	5:16:01	18.90	2.4111780
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4241	6/5/2019	5:21:01	18.90	2.4108170
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4243	6/5/2019	5:23:01	18.90	2.4111780
4244	6/5/2019	5:24:01	18.90	2.4108170
4245	6/5/2019	5:25:01	18.90	2.4104550
4246	6/5/2019	5:26:01	18.90	2.4111780
4247	6/5/2019	5:27:01	18.90	2.4111780
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4256	6/5/2019	5:36:01	18.80	2.4100930
4257	6/5/2019	5:37:01	18.80	2.4111780
4258	6/5/2019	5:38:01	18.80	2.4108170
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4263	6/5/2019	5:43:01	18.80	2.4104550
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4270	6/5/2019	5:50:01	18.70	2.4104550
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4273	6/5/2019	5:53:01	18.70	2.4093700
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4280	6/5/2019	6:00:01	18.70	2.4108170
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4282	6/5/2019	6:02:01	18.70	2.4104550
4283	6/5/2019	6:03:01	18.70	2.4100930
4284	6/5/2019	6:04:01	18.70	2.4104550
4285	6/5/2019	6:05:01	18.70	2.4093700
4286	6/5/2019	6:06:01	18.70	2.4097310
4287	6/5/2019	6:07:01	18.70	2.4093700
4288	6/5/2019	6:08:01	18.70	2.4097310
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4291	6/5/2019	6:11:01	18.70	2.4093700
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4293	6/5/2019	6:13:01	18.70	2.4104550
4294	6/5/2019	6:14:01	18.80	2.4097310
4295	6/5/2019	6:15:01	18.80	2.4097310
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4297	6/5/2019	6:17:01	18.80	2.4093700
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4306	6/5/2019	6:26:01	18.90	2.4086460
4307	6/5/2019	6:27:01	18.90	2.4086460
4308	6/5/2019	6:28:01	18.90	2.4086460
4309	6/5/2019	6:29:01	19.00	2.4097310
4310	6/5/2019	6:30:01	19.00	2.4086460
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4312	6/5/2019	6:32:01	19.00	2.4090080
4313	6/5/2019	6:33:01	19.00	2.4093700
4314	6/5/2019	6:34:01	19.10	2.4082850
4315	6/5/2019	6:35:01	19.10	2.4086460
4316	6/5/2019	6:36:01	19.10	2.4086460
4317	6/5/2019	6:37:01	19.10	2.4086460
4318	6/5/2019	6:38:01	19.10	2.4090080
4319	6/5/2019	6:39:01	19.20	2.4086460
4320	6/5/2019	6:40:01	19.20	2.4082850
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4322	6/5/2019	6:42:01	19.20	2.4086460
4323	6/5/2019	6:43:01	19.30	2.4082850
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4325	6/5/2019	6:45:01	19.30	2.4082850
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4328	6/5/2019	6:48:01	19.30	2.4082850
4329	6/5/2019	6:49:01	19.40	2.4097310
4330	6/5/2019	6:50:01	19.40	2.4082850
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4332	6/5/2019	6:52:01	19.40	2.4097310
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4334	6/5/2019	6:54:01	19.50	2.4090080
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4337	6/5/2019	6:57:01	19.50	2.4090080
4338	6/5/2019	6:58:01	19.50	2.4090080
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4340	6/5/2019	7:00:01	19.60	2.4090080
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4344	6/5/2019	7:04:01	19.70	2.4086460
4345	6/5/2019	7:05:01	19.70	2.4090080
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4360	6/5/2019	7:20:01	20.00	2.4086460
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4364	6/5/2019	7:24:01	20.00	2.4082850
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4373	6/5/2019	7:33:01	19.70	2.4082850
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4395	6/5/2019	7:55:01	19.90	2.4071990
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4398	6/5/2019	7:58:01	20.00	2.4079230
4399	6/5/2019	7:59:01	20.00	2.4082850

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4401	6/5/2019	8:01:01	20.00	2.4082850
4402	6/5/2019	8:02:01	19.90	2.4079230
4403	6/5/2019	8:03:01	19.70	2.4075610
4404	6/5/2019	8:04:01	19.70	2.4075610
4405	6/5/2019	8:05:01	19.60	2.4079230
4406	6/5/2019	8:06:01	19.60	2.4079230
4407	6/5/2019	8:07:01	19.70	2.4079230
4408	6/5/2019	8:08:01	19.70	2.4079230
4409	6/5/2019	8:09:01	19.80	2.4079230
4410	6/5/2019	8:10:01	19.90	2.4075610
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4413	6/5/2019	8:13:01	20.00	2.4075610
4414	6/5/2019	8:14:01	20.00	2.4079230
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4416	6/5/2019	8:16:01	19.90	2.4075610
4417	6/5/2019	8:17:01	19.80	2.4075610
4418	6/5/2019	8:18:01	19.70	2.4071990
4419	6/5/2019	8:19:01	19.60	2.4075610
4420	6/5/2019	8:20:01	19.70	2.4071990
4421	6/5/2019	8:21:01	19.70	2.4079230
4422	6/5/2019	8:22:01	19.80	2.4075610
4423	6/5/2019	8:23:01	19.80	2.4079230
4424	6/5/2019	8:24:01	19.90	2.4079230
4425	6/5/2019	8:25:01	19.90	2.4071990
4426	6/5/2019	8:26:01	20.00	2.4075610
4427	6/5/2019	8:27:01	20.10	2.4071990
4428	6/5/2019	8:28:01	20.00	2.4064760
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4430	6/5/2019	8:30:01	19.70	2.4075610
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4432	6/5/2019	8:32:01	19.70	2.4061140
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4436	6/5/2019	8:36:01	19.90	2.4071990
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4439	6/5/2019	8:39:01	20.10	2.4061140
4440	6/5/2019	8:40:01	20.00	2.4064760
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4442	6/5/2019	8:42:01	19.70	2.4057520
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4456	6/5/2019	8:56:01	19.80	2.4064760
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4460	6/5/2019	9:00:01	20.10	2.4064760
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4463	6/5/2019	9:03:01	19.80	2.4061140
4464	6/5/2019	9:04:01	19.70	2.4053910
4465	6/5/2019	9:05:01	19.70	2.4053910
4466	6/5/2019	9:06:01	19.80	2.4057520
4467	6/5/2019	9:07:01	19.80	2.4053910
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4479	6/5/2019	9:19:01	20.00	2.4053910
4480	6/5/2019	9:20:01	20.10	2.4050290
4481	6/5/2019	9:21:01	20.10	2.4053910
4482	6/5/2019	9:22:01	20.00	2.4053910
4483	6/5/2019	9:23:01	19.80	2.4053910
4484	6/5/2019	9:24:01	19.70	2.4053910
4485	6/5/2019	9:25:01	19.70	2.4053910
4486	6/5/2019	9:26:01	19.70	2.4053910
4487	6/5/2019	9:27:01	19.80	2.4053910
4488	6/5/2019	9:28:01	19.80	2.4053910
4489	6/5/2019	9:29:01	19.90	2.4053910
4490	6/5/2019	9:30:01	20.00	2.4053910
4491	6/5/2019	9:31:01	20.10	2.4050290
4492	6/5/2019	9:32:01	20.10	2.4053910
4493	6/5/2019	9:33:01	19.90	2.4053910
4494	6/5/2019	9:34:01	19.80	2.4053910
4495	6/5/2019	9:35:01	19.70	2.4053910
4496	6/5/2019	9:36:01	19.70	2.4050290
4497	6/5/2019	9:37:01	19.70	2.4053910
4498	6/5/2019	9:38:01	19.80	2.4053910
4499	6/5/2019	9:39:01	19.90	2.4050290

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4503	6/5/2019	9:43:01	20.00	2.4053910
4504	6/5/2019	9:44:01	19.90	2.4053910
4505	6/5/2019	9:45:01	19.70	2.4053910
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4508	6/5/2019	9:48:01	19.80	2.4053910
4509	6/5/2019	9:49:01	19.80	2.4050290
4510	6/5/2019	9:50:01	19.90	2.4050290
4511	6/5/2019	9:51:01	20.00	2.4050290
4512	6/5/2019	9:52:01	20.10	2.4053910
4513	6/5/2019	9:53:01	20.10	2.4053910
4514	6/5/2019	9:54:01	19.90	2.4046670
4515	6/5/2019	9:55:01	19.80	2.4053910
4516	6/5/2019	9:56:01	19.70	2.4046670
4517	6/5/2019	9:57:01	19.70	2.4050290
4518	6/5/2019	9:58:01	19.70	2.4043060
4519	6/5/2019	9:59:01	19.80	2.4050290
4520	6/5/2019	10:00:01	19.90	2.4050290
4521	6/5/2019	10:01:01	20.00	2.4053910
4522	6/5/2019	10:02:01	20.00	2.4046670
4523	6/5/2019	10:03:01	20.10	2.4053910
4524	6/5/2019	10:04:01	20.00	2.4053910
4525	6/5/2019	10:05:01	19.90	2.4046670
4526	6/5/2019	10:06:01	19.70	2.4043060
4527	6/5/2019	10:07:01	19.70	2.4046670
4528	6/5/2019	10:08:01	19.70	2.4046670
4529	6/5/2019	10:09:01	19.80	2.4046670
4530	6/5/2019	10:10:01	19.90	2.4050290
4531	6/5/2019	10:11:01	19.90	2.4046670
4532	6/5/2019	10:12:01	20.00	2.4043060
4533	6/5/2019	10:13:01	20.10	2.4039440
4534	6/5/2019	10:14:01	20.00	2.4046670
4535	6/5/2019	10:15:01	19.90	2.4053910
4536	6/5/2019	10:16:01	19.80	2.4046670
4537	6/5/2019	10:17:01	19.70	2.4050290
4538	6/5/2019	10:18:01	19.70	2.4035820
4539	6/5/2019	10:19:01	19.80	2.4039440
4540	6/5/2019	10:20:01	19.80	2.4035820
4541	6/5/2019	10:21:01	19.90	2.4043060
4542	6/5/2019	10:22:01	20.00	2.4035820
4543	6/5/2019	10:23:01	20.10	2.4039440
4544	6/5/2019	10:24:01	20.10	2.4046670
4545	6/5/2019	10:25:01	20.00	2.4032210
4546	6/5/2019	10:26:01	19.80	2.4035820
4547	6/5/2019	10:27:01	19.70	2.4032210
4548	6/5/2019	10:28:01	19.70	2.4039440
4549	6/5/2019	10:29:01	19.80	2.4043060

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4551	6/5/2019	10:31:01	19.90	2.4043060
4552	6/5/2019	10:32:01	20.00	2.4039440
4553	6/5/2019	10:33:01	20.10	2.4035820
4554	6/5/2019	10:34:01	20.10	2.4035820
4555	6/5/2019	10:35:01	20.00	2.4032210
4556	6/5/2019	10:36:01	19.80	2.4028590
4557	6/5/2019	10:37:01	19.70	2.4028590
4558	6/5/2019	10:38:01	19.70	2.4028590
4559	6/5/2019	10:39:01	19.70	2.4032210
4560	6/5/2019	10:40:01	19.80	2.4035820
4561	6/5/2019	10:41:01	19.90	2.4032210
4562	6/5/2019	10:42:01	20.00	2.4032210
4563	6/5/2019	10:43:01	20.10	2.4028590
4564	6/5/2019	10:44:01	20.10	2.4024970
4565	6/5/2019	10:45:01	20.00	2.4035820
4566	6/5/2019	10:46:01	19.80	2.4035820
4567	6/5/2019	10:47:01	19.70	2.4024970
4568	6/5/2019	10:48:01	19.70	2.4028590
4569	6/5/2019	10:49:01	19.70	2.4032210
4570	6/5/2019	10:50:01	19.80	2.4028590
4571	6/5/2019	10:51:01	19.90	2.4024970
4572	6/5/2019	10:52:01	20.00	2.4032210
4573	6/5/2019	10:53:01	20.10	2.4028590
4574	6/5/2019	10:54:01	20.10	2.4032210
4575	6/5/2019	10:55:01	20.00	2.4028590
4576	6/5/2019	10:56:01	19.80	2.4028590
4577	6/5/2019	10:57:01	19.70	2.4028590
4578	6/5/2019	10:58:01	19.70	2.4032210
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4580	6/5/2019	11:00:01	19.80	2.4028590
4581	6/5/2019	11:01:01	19.90	2.4024970
4582	6/5/2019	11:02:01	20.00	2.4024970
4583	6/5/2019	11:03:01	20.10	2.4024970
4584	6/5/2019	11:04:01	20.10	2.4024970
4585	6/5/2019	11:05:01	20.00	2.4024970
4586	6/5/2019	11:06:01	19.80	2.4024970
4587	6/5/2019	11:07:01	19.70	2.4028590
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4590	6/5/2019	11:10:01	19.80	2.4024970
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4599	6/5/2019	11:19:01	19.80	2.4024970

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4603	6/5/2019	11:23:01	20.10	2.4024970
4604	6/5/2019	11:24:01	20.10	2.4024970
4605	6/5/2019	11:25:01	19.90	2.4024970
4606	6/5/2019	11:26:01	19.80	2.4024970
4607	6/5/2019	11:27:01	19.70	2.4024970
4608	6/5/2019	11:28:01	19.70	2.4024970
4609	6/5/2019	11:29:01	19.80	2.4024970
4610	6/5/2019	11:30:01	19.90	2.4024970
4611	6/5/2019	11:31:01	19.90	2.4024970
4612	6/5/2019	11:32:01	20.00	2.4024970
4613	6/5/2019	11:33:01	20.10	2.4024970
4614	6/5/2019	11:34:01	20.00	2.4024970
4615	6/5/2019	11:35:01	19.90	2.4024970
4616	6/5/2019	11:36:01	19.80	2.4024970
4617	6/5/2019	11:37:01	19.70	2.4024970
4618	6/5/2019	11:38:01	19.70	2.4024970
4619	6/5/2019	11:39:01	19.80	2.4024970
4620	6/5/2019	11:40:01	19.90	2.4024970
4621	6/5/2019	11:41:01	20.00	2.4024970
4622	6/5/2019	11:42:01	20.10	2.4024970
4623	6/5/2019	11:43:01	20.10	2.4024970
4624	6/5/2019	11:44:01	20.00	2.4024970
4625	6/5/2019	11:45:01	19.90	2.4024970
4626	6/5/2019	11:46:01	19.70	2.4024970
4627	6/5/2019	11:47:01	19.70	2.4024970
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4632	6/5/2019	11:52:01	20.10	2.4024970
4633	6/5/2019	11:53:01	20.10	2.4024970
4634	6/5/2019	11:54:01	19.90	2.4024970
4635	6/5/2019	11:55:01	19.80	2.4024970
4636	6/5/2019	11:56:01	19.70	2.4024970
4637	6/5/2019	11:57:01	19.70	2.4024970
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4640	6/5/2019	12:00:01	19.90	2.4024970
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4642	6/5/2019	12:02:01	20.10	2.4024970
4643	6/5/2019	12:03:01	20.00	2.4024970
4644	6/5/2019	12:04:01	19.90	2.4024970
4645	6/5/2019	12:05:01	19.80	2.4024970
4646	6/5/2019	12:06:01	19.70	2.4024970
4647	6/5/2019	12:07:01	19.70	2.4024970
4648	6/5/2019	12:08:01	19.80	2.4024970
4649	6/5/2019	12:09:01	19.90	2.4024970

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4653	6/5/2019	12:13:01	20.00	2.4017740
4654	6/5/2019	12:14:01	19.80	2.4024970
4655	6/5/2019	12:15:01	19.70	2.4024970
4656	6/5/2019	12:16:01	19.70	2.4024970
4657	6/5/2019	12:17:01	19.80	2.4024970
4658	6/5/2019	12:18:01	19.80	2.4017740
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4660	6/5/2019	12:20:01	20.00	2.4024970
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4662	6/5/2019	12:22:01	20.10	2.4021360
4663	6/5/2019	12:23:01	19.90	2.4024970
4664	6/5/2019	12:24:01	19.80	2.4021360
4665	6/5/2019	12:25:01	19.70	2.4024970
4666	6/5/2019	12:26:01	19.70	2.4024970
4667	6/5/2019	12:27:01	19.80	2.4014120
4668	6/5/2019	12:28:01	19.90	2.4017740
4669	6/5/2019	12:29:01	20.00	2.4021360
4670	6/5/2019	12:30:01	20.10	2.4017740
4671	6/5/2019	12:31:01	20.10	2.4021360
4672	6/5/2019	12:32:01	20.00	2.4021360
4673	6/5/2019	12:33:01	19.90	2.4021360
4674	6/5/2019	12:34:01	19.70	2.4024970
4675	6/5/2019	12:35:01	19.70	2.4017740
4676	6/5/2019	12:36:01	19.80	2.4014120
4677	6/5/2019	12:37:01	19.90	2.4024970
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4680	6/5/2019	12:40:01	20.10	2.4021360
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4682	6/5/2019	12:42:01	19.90	2.4014120
4683	6/5/2019	12:43:01	19.80	2.4006890
4684	6/5/2019	12:44:01	19.70	2.4010500
4685	6/5/2019	12:45:01	19.70	2.4014120
4686	6/5/2019	12:46:01	19.80	2.4021360
4687	6/5/2019	12:47:01	19.90	2.4021360
4688	6/5/2019	12:48:01	20.00	2.4014120
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4694	6/5/2019	12:54:01	19.70	2.4014120
4695	6/5/2019	12:55:01	19.70	2.4006890
4696	6/5/2019	12:56:01	19.80	2.4014120
4697	6/5/2019	12:57:01	19.90	2.4010500
4698	6/5/2019	12:58:01	20.00	2.4014120
4699	6/5/2019	12:59:01	20.10	2.4003270

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4701	6/5/2019	13:01:01	20.00	2.4014120
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4703	6/5/2019	13:03:01	19.70	2.4010500
4704	6/5/2019	13:04:01	19.70	2.3999650
4705	6/5/2019	13:05:01	19.80	2.4006890
4706	6/5/2019	13:06:01	19.90	2.4003270
4707	6/5/2019	13:07:01	19.90	2.4003270
4708	6/5/2019	13:08:01	20.00	2.4006890
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4710	6/5/2019	13:10:01	20.00	2.4003270
4711	6/5/2019	13:11:01	19.90	2.4003270
4712	6/5/2019	13:12:01	19.80	2.3999650
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4715	6/5/2019	13:15:01	19.80	2.4006890
4716	6/5/2019	13:16:01	19.90	2.3999650
4717	6/5/2019	13:17:01	19.90	2.3999650
4718	6/5/2019	13:18:01	20.00	2.4006890
4719	6/5/2019	13:19:01	20.10	2.4010500
4720	6/5/2019	13:20:01	20.10	2.3999650
4721	6/5/2019	13:21:01	19.90	2.3999650
4722	6/5/2019	13:22:01	19.80	2.3996040
4723	6/5/2019	13:23:01	19.70	2.4003270
4724	6/5/2019	13:24:01	19.70	2.3996040
4725	6/5/2019	13:25:01	19.80	2.3996040
4726	6/5/2019	13:26:01	19.90	2.3996040
4727	6/5/2019	13:27:01	20.00	2.4006890
4728	6/5/2019	13:28:01	20.10	2.4003270
4729	6/5/2019	13:29:01	20.10	2.3999650
4730	6/5/2019	13:30:01	20.00	2.4003270
4731	6/5/2019	13:31:01	19.90	2.3999650
4732	6/5/2019	13:32:01	19.70	2.3996040
4733	6/5/2019	13:33:01	19.70	2.3996040
4734	6/5/2019	13:34:01	19.70	2.3999650
4735	6/5/2019	13:35:01	19.80	2.3999650
4736	6/5/2019	13:36:01	19.90	2.3996040
4737	6/5/2019	13:37:01	20.00	2.3996040
4738	6/5/2019	13:38:01	20.10	2.3999650
4739	6/5/2019	13:39:01	20.10	2.3996040
4740	6/5/2019	13:40:01	20.00	2.3996040
4741	6/5/2019	13:41:01	19.80	2.3996040
4742	6/5/2019	13:42:01	19.70	2.3999650
4743	6/5/2019	13:43:01	19.70	2.3996040
4744	6/5/2019	13:44:01	19.80	2.3996040
4745	6/5/2019	13:45:01	19.90	2.3996040
4746	6/5/2019	13:46:01	19.90	2.3996040
4747	6/5/2019	13:47:01	20.00	2.3999650
4748	6/5/2019	13:48:01	20.10	2.3999650
4749	6/5/2019	13:49:01	20.10	2.3996040

4750	6/5/2019	13:50:01	19.90	2.3996040
4751	6/5/2019	13:51:01	19.80	2.3996040
4752	6/5/2019	13:52:01	19.70	2.3996040
4753	6/5/2019	13:53:01	19.80	2.3992420
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4755	6/5/2019	13:55:01	19.90	2.3996040
4756	6/5/2019	13:56:01	20.00	2.3996040
4757	6/5/2019	13:57:01	20.10	2.3996040
4758	6/5/2019	13:58:01	20.10	2.3996040
4759	6/5/2019	13:59:01	20.00	2.3996040
4760	6/5/2019	14:00:01	19.80	2.3996040
4761	6/5/2019	14:01:01	19.70	2.3996040
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4763	6/5/2019	14:03:01	19.80	2.3996040
4764	6/5/2019	14:04:01	19.90	2.3996040
4765	6/5/2019	14:05:01	20.00	2.3996040
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4767	6/5/2019	14:07:01	20.10	2.3992420
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4769	6/5/2019	14:09:01	19.80	2.3996040
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4773	6/5/2019	14:13:01	19.90	2.3999650
4774	6/5/2019	14:14:01	19.90	2.3992420
4775	6/5/2019	14:15:01	20.10	2.3996040
4776	6/5/2019	14:16:01	20.10	2.3996040
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4778	6/5/2019	14:18:01	19.90	2.3996040
4779	6/5/2019	14:19:01	19.80	2.3996040
4780	6/5/2019	14:20:01	19.70	2.3992420
4781	6/5/2019	14:21:01	19.80	2.3988800
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4783	6/5/2019	14:23:01	19.90	2.3996040
4784	6/5/2019	14:24:01	20.00	2.3992420
4785	6/5/2019	14:25:01	20.10	2.3996040
4786	6/5/2019	14:26:01	20.10	2.3985180
4787	6/5/2019	14:27:01	19.90	2.3988800
4788	6/5/2019	14:28:01	19.80	2.3992420
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4791	6/5/2019	14:31:01	19.80	2.3992420
4792	6/5/2019	14:32:01	19.90	2.3988800
4793	6/5/2019	14:33:01	20.00	2.3992420
4794	6/5/2019	14:34:01	20.10	2.3992420
4795	6/5/2019	14:35:01	20.10	2.3996040
4796	6/5/2019	14:36:01	20.00	2.3988800
4797	6/5/2019	14:37:01	19.80	2.3988800
4798	6/5/2019	14:38:01	19.70	2.3985180
4799	6/5/2019	14:39:01	19.70	2.3988800

4800	6/5/2019	14:40:01	19.80	2.3988800	
4801	6/5/2019	14:41:01	19.90	2.3985180	72 horas
4802	6/5/2019	14:42:01	20.00	2.3992420	
4803	6/5/2019	14:43:01	20.10	2.3988800	
4804	6/5/2019	14:44:01	20.10	2.3985180	
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4806	6/5/2019	14:46:01	19.90	2.3981570	
4807	6/5/2019	14:47:01	19.80	2.3992420	
4808	6/5/2019	14:48:01	19.70	2.3977950	
4809	6/5/2019	14:49:01	19.80	2.3974330	
4810	6/5/2019	14:50:01	19.90	2.3985180	
4811	6/5/2019	14:51:01	20.00	2.3985180	
4812	6/5/2019	14:52:01	20.10	2.3977950	
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4814	6/5/2019	14:54:01	20.00	2.3981570	
4815	6/5/2019	14:55:01	19.90	2.3977950	
4816	6/5/2019	14:56:01	19.80	2.3974330	
4817	6/5/2019	14:57:01	19.70	2.3981570	
4818	6/5/2019	14:58:01	19.80	2.3977950	
4819	6/5/2019	14:59:01	19.90	2.3985180	
4820	6/5/2019	15:00:01	20.00	2.3977950	
4821	6/5/2019	15:01:01	20.10	2.3985180	
4822	6/5/2019	15:02:01	20.10	2.3977950	
4823	6/5/2019	15:03:01	20.10	2.3977950	
4824	6/5/2019	15:04:01	19.90	2.3977950	
4825	6/5/2019	15:05:01	19.80	2.3977950	
4826	6/5/2019	15:06:01	19.70	2.3974330	
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4830	6/5/2019	15:10:01	20.10	2.3974330	
4831	6/5/2019	15:11:01	20.10	2.3974330	
4832	6/5/2019	15:12:01	20.10	2.3974330	
4833	6/5/2019	15:13:01	19.90	2.3974330	
4834	6/5/2019	15:14:01	19.80	2.3985180	
4835	6/5/2019	15:15:01	19.70	2.3985180	
4836	6/5/2019	15:16:01	19.80	2.3974330	
4837	6/5/2019	15:17:01	19.80	2.3970710	
4838	6/5/2019	15:18:01	19.90	2.3970710	
4839	6/5/2019	15:19:01	20.00	2.3967100	
4840	6/5/2019	15:20:01	20.10	2.3967100	
4841	6/5/2019	15:21:01	20.10	2.3970710	
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4843	6/5/2019	15:23:01	19.80	2.3970710	
4844	6/5/2019	15:24:01	19.70	2.3970710	
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4846	6/5/2019	15:26:01	19.80	2.3977950	
4847	6/5/2019	15:27:01	19.90	2.3974330	
4848	6/5/2019	15:28:01	20.00	2.3967100	
4849	6/5/2019	15:29:01	20.10	2.3970710	

4850	6/5/2019	15:30:01	20.10	2.3967100
4851	6/5/2019	15:31:01	20.00	2.3970710
4852	6/5/2019	15:32:01	19.80	2.3970710
4853	6/5/2019	15:33:01	19.70	2.3970710
4854	6/5/2019	15:34:01	19.70	2.3967100
4855	6/5/2019	15:35:01	19.80	2.3967100
4856	6/5/2019	15:36:01	19.90	2.3967100
4857	6/5/2019	15:37:01	20.00	2.3967100
4858	6/5/2019	15:38:01	20.10	2.3967100
4859	6/5/2019	15:39:01	20.10	2.3970710
4860	6/5/2019	15:40:01	20.00	2.3967100
4861	6/5/2019	15:41:01	19.80	2.3970710
4862	6/5/2019	15:42:01	19.70	2.3967100
4863	6/5/2019	15:43:01	19.80	2.3967100
4864	6/5/2019	15:44:01	19.80	2.3967100
4865	6/5/2019	15:45:01	19.90	2.3967100
4866	6/5/2019	15:46:01	20.00	2.3967100
4867	6/5/2019	15:47:01	20.10	2.3967100
4868	6/5/2019	15:48:01	20.10	2.3967100
4869	6/5/2019	15:49:01	20.00	2.3967100
4870	6/5/2019	15:50:01	19.80	2.3967100
4871	6/5/2019	15:51:01	19.70	2.3967100
4872	6/5/2019	15:52:01	19.80	2.3967100
4873	6/5/2019	15:53:01	19.80	2.3967100
4874	6/5/2019	15:54:01	19.90	2.3967100
4875	6/5/2019	15:55:01	20.00	2.3967100
4876	6/5/2019	15:56:01	20.10	2.3967100
4877	6/5/2019	15:57:01	20.10	2.3967100
4878	6/5/2019	15:58:01	19.90	2.3967100
4879	6/5/2019	15:59:01	19.80	2.3967100
4880	6/5/2019	16:00:01	19.70	2.3967100
4881	6/5/2019	16:01:01	19.80	2.3967100
4882	6/5/2019	16:02:01	19.90	2.3967100
4883	6/5/2019	16:03:01	19.90	2.3967100
4884	6/5/2019	16:04:01	20.10	2.3967100
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4886	6/5/2019	16:06:01	20.10	2.3967100
4887	6/5/2019	16:07:01	19.90	2.3967100
4888	6/5/2019	16:08:01	19.80	2.3963480
4889	6/5/2019	16:09:01	19.70	2.3967100
4890	6/5/2019	16:10:01	19.80	2.3967100
4891	6/5/2019	16:11:01	19.90	2.3967100
4892	6/5/2019	16:12:01	20.00	2.3959860
4893	6/5/2019	16:13:01	20.10	2.3963480
4894	6/5/2019	16:14:01	20.10	2.3967100
4895	6/5/2019	16:15:01	20.00	2.3967100
4896	6/5/2019	16:16:01	19.90	2.3967100
4897	6/5/2019	16:17:01	19.80	2.3963480
4898	6/5/2019	16:18:01	19.80	2.3967100
4899	6/5/2019	16:19:01	19.80	2.3967100

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4901	6/5/2019	16:21:01	20.00	2.3959860
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4903	6/5/2019	16:23:01	20.10	2.3963480
4904	6/5/2019	16:24:01	20.00	2.3967100
4905	6/5/2019	16:25:01	19.90	2.3963480
4906	6/5/2019	16:26:01	19.70	2.3967100
4907	6/5/2019	16:27:01	19.80	2.3967100
4908	6/5/2019	16:28:01	19.80	2.3959860
4909	6/5/2019	16:29:01	19.90	2.3963480
4910	6/5/2019	16:30:01	20.00	2.3967100
4911	6/5/2019	16:31:01	20.10	2.3959860
4912	6/5/2019	16:32:01	20.10	2.3963480
4913	6/5/2019	16:33:01	20.00	2.3963480
4914	6/5/2019	16:34:01	19.80	2.3963480
4915	6/5/2019	16:35:01	19.80	2.3963480
4916	6/5/2019	16:36:01	19.80	2.3963480
4917	6/5/2019	16:37:01	19.80	2.3956250
4918	6/5/2019	16:38:01	19.90	2.3956250
4919	6/5/2019	16:39:01	20.00	2.3956250
4920	6/5/2019	16:40:01	20.10	2.3959860
4921	6/5/2019	16:41:01	20.10	2.3956250
4922	6/5/2019	16:42:01	20.00	2.3959860
4923	6/5/2019	16:43:01	19.80	2.3956250
4924	6/5/2019	16:44:01	19.80	2.3956250
4925	6/5/2019	16:45:01	19.80	2.3956250
4926	6/5/2019	16:46:01	19.80	2.3956250
4927	6/5/2019	16:47:01	19.90	2.3959860
4928	6/5/2019	16:48:01	20.00	2.3956250
4929	6/5/2019	16:49:01	20.10	2.3952630
4930	6/5/2019	16:50:01	20.10	2.3956250
4931	6/5/2019	16:51:01	20.00	2.3959860
4932	6/5/2019	16:52:01	19.80	2.3959860
4933	6/5/2019	16:53:01	19.80	2.3956250
4934	6/5/2019	16:54:01	19.80	2.3941780
4935	6/5/2019	16:55:01	19.90	2.3952630
4936	6/5/2019	16:56:01	19.90	2.3952630
4937	6/5/2019	16:57:01	20.10	2.3949010
4938	6/5/2019	16:58:01	20.20	2.3956250
4939	6/5/2019	16:59:01	20.10	2.3945400
4940	6/5/2019	17:00:01	19.90	2.3949010
4941	6/5/2019	17:01:01	19.80	2.3952630
4942	6/5/2019	17:02:01	19.70	2.3959860
4943	6/5/2019	17:03:01	19.80	2.3945400
4944	6/5/2019	17:04:01	19.90	2.3959860
4945	6/5/2019	17:05:01	20.00	2.3945400
4946	6/5/2019	17:06:01	20.10	2.3945400
4947	6/5/2019	17:07:01	20.10	2.3949010
4948	6/5/2019	17:08:01	20.10	2.3952630
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4956	6/5/2019	17:16:01	20.10	2.3945400
4957	6/5/2019	17:17:01	20.00	2.3941780
4958	6/5/2019	17:18:01	19.90	2.3938160
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4961	6/5/2019	17:21:01	19.80	2.3945400
4962	6/5/2019	17:22:01	19.90	2.3941780
4963	6/5/2019	17:23:01	20.00	2.3941780
4964	6/5/2019	17:24:01	20.10	2.3945400
4965	6/5/2019	17:25:01	20.10	2.3949010
4966	6/5/2019	17:26:01	20.00	2.3945400
4967	6/5/2019	17:27:01	19.80	2.3945400
4968	6/5/2019	17:28:01	19.80	2.3945400
4969	6/5/2019	17:29:01	19.80	2.3941780
4970	6/5/2019	17:30:01	19.80	2.3938160
4971	6/5/2019	17:31:01	19.90	2.3938160
4972	6/5/2019	17:32:01	20.00	2.3941780
4973	6/5/2019	17:33:01	20.10	2.3938160
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4975	6/5/2019	17:35:01	20.00	2.3938160
4976	6/5/2019	17:36:01	19.80	2.3945400
4977	6/5/2019	17:37:01	19.70	2.3941780
4978	6/5/2019	17:38:01	19.80	2.3945400
4979	6/5/2019	17:39:01	19.80	2.3938160
4980	6/5/2019	17:40:01	19.90	2.3938160
4981	6/5/2019	17:41:01	20.00	2.3938160
4982	6/5/2019	17:42:01	20.10	2.3938160
4983	6/5/2019	17:43:01	20.10	2.3938160
4984	6/5/2019	17:44:01	20.00	2.3938160
4985	6/5/2019	17:45:01	19.80	2.3938160
4986	6/5/2019	17:46:01	19.70	2.3938160
4987	6/5/2019	17:47:01	19.80	2.3938160
4988	6/5/2019	17:48:01	19.80	2.3938160
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4990	6/5/2019	17:50:01	20.00	2.3938160
4991	6/5/2019	17:51:01	20.10	2.3938160
4992	6/5/2019	17:52:01	20.10	2.3938160
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4994	6/5/2019	17:54:01	19.80	2.3938160
4995	6/5/2019	17:55:01	19.70	2.3938160
4996	6/5/2019	17:56:01	19.80	2.3938160
4997	6/5/2019	17:57:01	19.80	2.3938160
4998	6/5/2019	17:58:01	19.90	2.3938160
4999	6/5/2019	17:59:01	20.00	2.3938160

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5001	6/5/2019	18:01:01	20.10	2.3938160
5002	6/5/2019	18:02:01	20.00	2.3938160
5003	6/5/2019	18:03:01	19.80	2.3938160
5004	6/5/2019	18:04:01	19.70	2.3938160
5005	6/5/2019	18:05:01	19.80	2.3938160
5006	6/5/2019	18:06:01	19.80	2.3938160
5007	6/5/2019	18:07:01	19.90	2.3934540
5008	6/5/2019	18:08:01	20.00	2.3938160
5009	6/5/2019	18:09:01	20.10	2.3938160
5010	6/5/2019	18:10:01	20.10	2.3938160
5011	6/5/2019	18:11:01	20.00	2.3938160
5012	6/5/2019	18:12:01	19.80	2.3938160
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5014	6/5/2019	18:14:01	19.80	2.3930930
5015	6/5/2019	18:15:01	19.80	2.3934540
5016	6/5/2019	18:16:01	19.90	2.3934540
5017	6/5/2019	18:17:01	20.00	2.3938160
5018	6/5/2019	18:18:01	20.10	2.3930930
5019	6/5/2019	18:19:01	20.10	2.3938160
5020	6/5/2019	18:20:01	20.00	2.3938160
5021	6/5/2019	18:21:01	19.80	2.3938160
5022	6/5/2019	18:22:01	19.70	2.3938160
5023	6/5/2019	18:23:01	19.80	2.3930930
5024	6/5/2019	18:24:01	19.80	2.3934540
5025	6/5/2019	18:25:01	19.90	2.3927310
5026	6/5/2019	18:26:01	20.00	2.3934540
5027	6/5/2019	18:27:01	20.10	2.3938160
5028	6/5/2019	18:28:01	20.10	2.3934540
5029	6/5/2019	18:29:01	20.00	2.3938160
5030	6/5/2019	18:30:01	19.80	2.3938160
5031	6/5/2019	18:31:01	19.70	2.3938160
5032	6/5/2019	18:32:01	19.70	2.3930930
5033	6/5/2019	18:33:01	19.80	2.3938160
5034	6/5/2019	18:34:01	19.90	2.3927310
5035	6/5/2019	18:35:01	20.00	2.3934540
5036	6/5/2019	18:36:01	20.10	2.3930930
5037	6/5/2019	18:37:01	20.20	2.3927310
5038	6/5/2019	18:38:01	20.00	2.3930930
5039	6/5/2019	18:39:01	19.90	2.3930930
5040	6/5/2019	18:40:01	19.80	2.3927310
5041	6/5/2019	18:41:01	19.70	2.3930930
5042	6/5/2019	18:42:01	19.80	2.3930930
5043	6/5/2019	18:43:01	19.90	2.3923690
5044	6/5/2019	18:44:01	20.00	2.3930930
5045	6/5/2019	18:45:01	20.10	2.3930930
5046	6/5/2019	18:46:01	20.10	2.3927310
5047	6/5/2019	18:47:01	20.00	2.3930930
5048	6/5/2019	18:48:01	19.90	2.3923690
5049	6/5/2019	18:49:01	19.80	2.3934540

5050	6/5/2019	18:50:01	19.70	2.3934540
5051	6/5/2019	18:51:01	19.80	2.3923690
5052	6/5/2019	18:52:01	19.90	2.3927310
5053	6/5/2019	18:53:01	20.00	2.3927310
5054	6/5/2019	18:54:01	20.10	2.3916460
5055	6/5/2019	18:55:01	20.10	2.3923690
5056	6/5/2019	18:56:01	20.00	2.3916460
5057	6/5/2019	18:57:01	19.90	2.3920080
5058	6/5/2019	18:58:01	19.80	2.3930930
5059	6/5/2019	18:59:01	19.70	2.3923690
5060	6/5/2019	19:00:01	19.80	2.3916460
5061	6/5/2019	19:01:01	19.90	2.3920080
5062	6/5/2019	19:02:01	20.00	2.3923690
5063	6/5/2019	19:03:01	20.10	2.3927310
5064	6/5/2019	19:04:01	20.10	2.3916460
5065	6/5/2019	19:05:01	20.10	2.3923690
5066	6/5/2019	19:06:01	19.90	2.3923690
5067	6/5/2019	19:07:01	19.80	2.3916460
5068	6/5/2019	19:08:01	19.70	2.3920080
5069	6/5/2019	19:09:01	19.80	2.3912840
5070	6/5/2019	19:10:01	19.90	2.3923690
5071	6/5/2019	19:11:01	20.00	2.3923690
5072	6/5/2019	19:12:01	20.10	2.3927310
5073	6/5/2019	19:13:01	20.10	2.3916460
5074	6/5/2019	19:14:01	20.00	2.3916460
5075	6/5/2019	19:15:01	19.90	2.3916460
5076	6/5/2019	19:16:01	19.80	2.3920080
5077	6/5/2019	19:17:01	19.70	2.3909220
5078	6/5/2019	19:18:01	19.80	2.3912840
5079	6/5/2019	19:19:01	19.90	2.3912840
5080	6/5/2019	19:20:01	19.90	2.3912840
5081	6/5/2019	19:21:01	20.10	2.3912840
5082	6/5/2019	19:22:01	20.10	2.3909220
5083	6/5/2019	19:23:01	20.10	2.3909220
5084	6/5/2019	19:24:01	19.90	2.3912840
5085	6/5/2019	19:25:01	19.80	2.3909220
5086	6/5/2019	19:26:01	19.70	2.3916460
5087	6/5/2019	19:27:01	19.80	2.3909220
5088	6/5/2019	19:28:01	19.80	2.3912840
5089	6/5/2019	19:29:01	19.90	2.3916460
5090	6/5/2019	19:30:01	20.00	2.3909220
5091	6/5/2019	19:31:01	20.10	2.3916460
5092	6/5/2019	19:32:01	20.10	2.3909220
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5094	6/5/2019	19:34:01	19.80	2.3916460
5095	6/5/2019	19:35:01	19.70	2.3909220
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5097	6/5/2019	19:37:01	19.80	2.3912840
5098	6/5/2019	19:38:01	19.90	2.3909220
5099	6/5/2019	19:39:01	20.00	2.3909220

5100	6/5/2019	19:40:01	20.10	2.3909220
5101	6/5/2019	19:41:01	20.10	2.3909220
5102	6/5/2019	19:42:01	20.00	2.3909220
5103	6/5/2019	19:43:01	19.80	2.3916460
5104	6/5/2019	19:44:01	19.70	2.3912840
5105	6/5/2019	19:45:01	19.80	2.3909220
5106	6/5/2019	19:46:01	19.80	2.3909220
5107	6/5/2019	19:47:01	19.90	2.3909220
5108	6/5/2019	19:48:01	20.00	2.3909220
5109	6/5/2019	19:49:01	20.10	2.3912840
5110	6/5/2019	19:50:01	20.10	2.3909220
5111	6/5/2019	19:51:01	20.00	2.3909220
5112	6/5/2019	19:52:01	19.80	2.3909220
5113	6/5/2019	19:53:01	19.70	2.3909220
5114	6/5/2019	19:54:01	19.70	2.3909220
5115	6/5/2019	19:55:01	19.80	2.3909220
5116	6/5/2019	19:56:01	19.90	2.3909220
5117	6/5/2019	19:57:01	20.00	2.3909220
5118	6/5/2019	19:58:01	20.10	2.3909220
5119	6/5/2019	19:59:01	20.10	2.3905610
5120	6/5/2019	20:00:01	20.00	2.3909220
5121	6/5/2019	20:01:01	19.90	2.3909220
5122	6/5/2019	20:02:01	19.70	2.3909220
5123	6/5/2019	20:03:01	19.70	2.3909220
5124	6/5/2019	20:04:01	19.80	2.3909220
5125	6/5/2019	20:05:01	19.90	2.3905610
5126	6/5/2019	20:06:01	20.00	2.3909220
5127	6/5/2019	20:07:01	20.10	2.3909220
5128	6/5/2019	20:08:01	20.10	2.3905610
5129	6/5/2019	20:09:01	20.00	2.3912840
5130	6/5/2019	20:10:01	19.90	2.3909220
5131	6/5/2019	20:11:01	19.70	2.3909220
5132	6/5/2019	20:12:01	19.70	2.3909220
5133	6/5/2019	20:13:01	19.80	2.3909220
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5136	6/5/2019	20:16:01	20.10	2.3909220
5137	6/5/2019	20:17:01	20.10	2.3909220
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5139	6/5/2019	20:19:01	19.90	2.3905610
5140	6/5/2019	20:20:01	19.80	2.3909220
5141	6/5/2019	20:21:01	19.70	2.3909220
5142	6/5/2019	20:22:01	19.70	2.3909220
5143	6/5/2019	20:23:01	19.80	2.3909220
5144	6/5/2019	20:24:01	19.90	2.3909220
5145	6/5/2019	20:25:01	20.00	2.3909220
5146	6/5/2019	20:26:01	20.10	2.3905610
5147	6/5/2019	20:27:01	20.10	2.3905610
5148	6/5/2019	20:28:01	20.00	2.3901990
5149	6/5/2019	20:29:01	19.80	2.3909220

5150	6/5/2019	20:30:01	19.70	2.3901990
5151	6/5/2019	20:31:01	19.70	2.3909220
5152	6/5/2019	20:32:01	19.80	2.3901990
5153	6/5/2019	20:33:01	19.90	2.3901990
5154	6/5/2019	20:34:01	20.00	2.3901990
5155	6/5/2019	20:35:01	20.10	2.3898370
5156	6/5/2019	20:36:01	20.10	2.3905610
5157	6/5/2019	20:37:01	20.00	2.3905610
5158	6/5/2019	20:38:01	19.90	2.3905610
5159	6/5/2019	20:39:01	19.70	2.3909220
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5161	6/5/2019	20:41:01	19.80	2.3901990
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5163	6/5/2019	20:43:01	19.90	2.3905610
5164	6/5/2019	20:44:01	20.00	2.3901990
5165	6/5/2019	20:45:01	20.10	2.3901990
5166	6/5/2019	20:46:01	20.10	2.3905610
5167	6/5/2019	20:47:01	19.90	2.3905610
5168	6/5/2019	20:48:01	19.80	2.3901990
5169	6/5/2019	20:49:01	19.70	2.3909220
5170	6/5/2019	20:50:01	19.70	2.3894760
5171	6/5/2019	20:51:01	19.80	2.3905610
5172	6/5/2019	20:52:01	19.90	2.3894760
5173	6/5/2019	20:53:01	20.00	2.3894760
5174	6/5/2019	20:54:01	20.10	2.3898370
5175	6/5/2019	20:55:01	20.10	2.3898370
5176	6/5/2019	20:56:01	20.00	2.3898370
5177	6/5/2019	20:57:01	19.90	2.3901990
5178	6/5/2019	20:58:01	19.70	2.3894760
5179	6/5/2019	20:59:01	19.70	2.3901990
5180	6/5/2019	21:00:01	19.80	2.3901990
5181	6/5/2019	21:01:01	19.90	2.3898370
5182	6/5/2019	21:02:01	19.90	2.3894760
5183	6/5/2019	21:03:01	20.00	2.3894760
5184	6/5/2019	21:04:01	20.10	2.3905610
5185	6/5/2019	21:05:01	20.10	2.3898370
5186	6/5/2019	21:06:01	19.90	2.3887520
5187	6/5/2019	21:07:01	19.80	2.3891140
5188	6/5/2019	21:08:01	19.70	2.3901990
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5190	6/5/2019	21:10:01	19.80	2.3894760
5191	6/5/2019	21:11:01	19.90	2.3883900
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5195	6/5/2019	21:15:01	20.00	2.3894760
5196	6/5/2019	21:16:01	19.80	2.3898370
5197	6/5/2019	21:17:01	19.70	2.3887520
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5204	6/5/2019	21:24:01	20.10	2.3891140
5205	6/5/2019	21:25:01	19.90	2.3887520
5206	6/5/2019	21:26:01	19.80	2.3887520
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5213	6/5/2019	21:33:01	20.10	2.3880290
5214	6/5/2019	21:34:01	20.00	2.3880290
5215	6/5/2019	21:35:01	19.80	2.3883900
5216	6/5/2019	21:36:01	19.70	2.3880290
5217	6/5/2019	21:37:01	19.70	2.3880290
5218	6/5/2019	21:38:01	19.80	2.3887520
5219	6/5/2019	21:39:01	19.90	2.3887520
5220	6/5/2019	21:40:01	19.90	2.3883900
5221	6/5/2019	21:41:01	20.10	2.3883900
5222	6/5/2019	21:42:01	20.10	2.3887520
5223	6/5/2019	21:43:01	20.00	2.3883900
5224	6/5/2019	21:44:01	19.90	2.3880290
5225	6/5/2019	21:45:01	19.80	2.3880290
5226	6/5/2019	21:46:01	19.70	2.3880290
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5230	6/5/2019	21:50:01	20.00	2.3880290
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5237	6/5/2019	21:57:01	19.80	2.3880290
5238	6/5/2019	21:58:01	19.90	2.3880290
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5240	6/5/2019	22:00:01	20.10	2.3880290
5241	6/5/2019	22:01:01	20.10	2.3880290
5242	6/5/2019	22:02:01	20.00	2.3880290
5243	6/5/2019	22:03:01	19.90	2.3880290
5244	6/5/2019	22:04:01	19.80	2.3880290
5245	6/5/2019	22:05:01	19.70	2.3880290
5246	6/5/2019	22:06:01	19.80	2.3880290
5247	6/5/2019	22:07:01	19.80	2.3880290
5248	6/5/2019	22:08:01	19.90	2.3876670
5249	6/5/2019	22:09:01	20.00	2.3880290

5250	6/5/2019	22:10:01	20.10	2.3880290
5251	6/5/2019	22:11:01	20.10	2.3880290
5252	6/5/2019	22:12:01	19.90	2.3883900
5253	6/5/2019	22:13:01	19.80	2.3880290
5254	6/5/2019	22:14:01	19.70	2.3880290
5255	6/5/2019	22:15:01	19.70	2.3880290
5256	6/5/2019	22:16:01	19.80	2.3873050
5257	6/5/2019	22:17:01	19.90	2.3880290
5258	6/5/2019	22:18:01	20.00	2.3880290
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5262	6/5/2019	22:22:01	19.80	2.3880290
5263	6/5/2019	22:23:01	19.70	2.3880290
5264	6/5/2019	22:24:01	19.70	2.3876670
5265	6/5/2019	22:25:01	19.80	2.3876670
5266	6/5/2019	22:26:01	19.80	2.3873050
5267	6/5/2019	22:27:01	19.90	2.3873050
5268	6/5/2019	22:28:01	20.00	2.3880290
5269	6/5/2019	22:29:01	20.10	2.3876670
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5272	6/5/2019	22:32:01	19.80	2.3873050
5273	6/5/2019	22:33:01	19.70	2.3880290
5274	6/5/2019	22:34:01	19.70	2.3876670
5275	6/5/2019	22:35:01	19.80	2.3873050
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5280	6/5/2019	22:40:01	20.00	2.3880290
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5286	6/5/2019	22:46:01	19.90	2.3869440
5287	6/5/2019	22:47:01	20.00	2.3869440
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5301	6/5/2019	23:01:01	19.80	2.3865820
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5305	6/5/2019	23:05:01	19.90	2.3873050
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5310	6/5/2019	23:10:01	19.80	2.3858580
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5315	6/5/2019	23:15:01	20.00	2.3858580
5316	6/5/2019	23:16:01	20.10	2.3865820
5317	6/5/2019	23:17:01	20.10	2.3865820
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5324	6/5/2019	23:24:01	19.90	2.3862200
5325	6/5/2019	23:25:01	20.00	2.3858580
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5335	6/5/2019	23:35:01	20.00	2.3851350
5336	6/5/2019	23:36:01	20.10	2.3858580
5337	6/5/2019	23:37:01	20.10	2.3854970
5338	6/5/2019	23:38:01	19.90	2.3851350
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5340	6/5/2019	23:40:01	19.70	2.3851350
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5353	6/5/2019	23:53:01	19.90	2.3851350
5354	6/5/2019	23:54:01	20.00	2.3854970
5355	6/5/2019	23:55:01	20.10	2.3851350
5356	6/5/2019	23:56:01	20.10	2.3851350
5357	6/5/2019	23:57:01	19.90	2.3851350
5358	6/5/2019	23:58:01	19.80	2.3851350
5359	6/5/2019	23:59:01	19.70	2.3851350
5360	7/5/2019	0:00:01	19.70	2.3851350
5361	7/5/2019	0:01:01	19.80	2.3851350
5362	7/5/2019	0:02:01	19.80	2.3851350
5363	7/5/2019	0:03:01	19.90	2.3851350
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5371	7/5/2019	0:11:01	19.80	2.3851350
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5374	7/5/2019	0:14:01	20.00	2.3854970
5375	7/5/2019	0:15:01	20.10	2.3851350
5376	7/5/2019	0:16:01	20.10	2.3851350
5377	7/5/2019	0:17:01	19.90	2.3851350
5378	7/5/2019	0:18:01	19.80	2.3847730
5379	7/5/2019	0:19:01	19.70	2.3851350
5380	7/5/2019	0:20:01	19.70	2.3847730
5381	7/5/2019	0:21:01	19.80	2.3851350
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5384	7/5/2019	0:24:01	20.00	2.3851350
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5387	7/5/2019	0:27:01	20.00	2.3847730
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5401	7/5/2019	0:41:01	19.70	2.3844120
5402	7/5/2019	0:42:01	19.80	2.3851350
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5405	7/5/2019	0:45:01	20.00	2.3851350
5406	7/5/2019	0:46:01	20.10	2.3847730
5407	7/5/2019	0:47:01	20.10	2.3844120
5408	7/5/2019	0:48:01	19.90	2.3851350
5409	7/5/2019	0:49:01	19.80	2.3847730
5410	7/5/2019	0:50:01	19.70	2.3851350
5411	7/5/2019	0:51:01	19.70	2.3844120
5412	7/5/2019	0:52:01	19.70	2.3840500
5413	7/5/2019	0:53:01	19.80	2.3847730
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5416	7/5/2019	0:56:01	20.10	2.3847730
5417	7/5/2019	0:57:01	20.10	2.3847730
5418	7/5/2019	0:58:01	20.00	2.3836880
5419	7/5/2019	0:59:01	19.80	2.3844120
5420	7/5/2019	1:00:01	19.70	2.3847730
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5422	7/5/2019	1:02:01	19.70	2.3833270
5423	7/5/2019	1:03:01	19.80	2.3840500
5424	7/5/2019	1:04:01	19.80	2.3836880
5425	7/5/2019	1:05:01	19.90	2.3840500
5426	7/5/2019	1:06:01	20.00	2.3833270
5427	7/5/2019	1:07:01	20.10	2.3840500
5428	7/5/2019	1:08:01	20.10	2.3840500
5429	7/5/2019	1:09:01	20.00	2.3844120
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5435	7/5/2019	1:15:01	19.90	2.3833270
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5437	7/5/2019	1:17:01	20.00	2.3829650
5438	7/5/2019	1:18:01	20.10	2.3836880
5439	7/5/2019	1:19:01	20.00	2.3836880
5440	7/5/2019	1:20:01	19.90	2.3844120
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5443	7/5/2019	1:23:01	19.70	2.3833270
5444	7/5/2019	1:24:01	19.80	2.3840500
5445	7/5/2019	1:25:01	19.80	2.3836880
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5447	7/5/2019	1:27:01	20.00	2.3829650
5448	7/5/2019	1:28:01	20.00	2.3836880
5449	7/5/2019	1:29:01	20.10	2.3829650

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5455	7/5/2019	1:35:01	19.80	2.3829650
5456	7/5/2019	1:36:01	19.80	2.3826030
5457	7/5/2019	1:37:01	19.90	2.3829650
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5461	7/5/2019	1:41:01	20.00	2.3829650
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5464	7/5/2019	1:44:01	19.70	2.3822410
5465	7/5/2019	1:45:01	19.70	2.3829650
5466	7/5/2019	1:46:01	19.70	2.3829650
5467	7/5/2019	1:47:01	19.80	2.3829650
5468	7/5/2019	1:48:01	19.90	2.3822410
5469	7/5/2019	1:49:01	19.90	2.3826030
5470	7/5/2019	1:50:01	20.00	2.3822410
5471	7/5/2019	1:51:01	20.10	2.3822410
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5473	7/5/2019	1:53:01	19.90	2.3826030
5474	7/5/2019	1:54:01	19.70	2.3822410
5475	7/5/2019	1:55:01	19.70	2.3836880
5476	7/5/2019	1:56:01	19.70	2.3822410
5477	7/5/2019	1:57:01	19.70	2.3822410
5478	7/5/2019	1:58:01	19.80	2.3822410
5479	7/5/2019	1:59:01	19.90	2.3822410
5480	7/5/2019	2:00:01	19.90	2.3829650
5481	7/5/2019	2:01:01	20.00	2.3826030
5482	7/5/2019	2:02:01	20.10	2.3822410
5483	7/5/2019	2:03:01	20.10	2.3822410
5484	7/5/2019	2:04:01	19.90	2.3829650
5485	7/5/2019	2:05:01	19.70	2.3829650
5486	7/5/2019	2:06:01	19.70	2.3822410
5487	7/5/2019	2:07:01	19.70	2.3822410
5488	7/5/2019	2:08:01	19.70	2.3829650
5489	7/5/2019	2:09:01	19.80	2.3833270
5490	7/5/2019	2:10:01	19.80	2.3822410
5491	7/5/2019	2:11:01	19.90	2.3822410
5492	7/5/2019	2:12:01	20.00	2.3822410
5493	7/5/2019	2:13:01	20.10	2.3822410
5494	7/5/2019	2:14:01	20.10	2.3822410
5495	7/5/2019	2:15:01	20.00	2.3822410
5496	7/5/2019	2:16:01	19.80	2.3822410
5497	7/5/2019	2:17:01	19.70	2.3822410
5498	7/5/2019	2:18:01	19.70	2.3822410
5499	7/5/2019	2:19:01	19.70	2.3822410

5500	7/5/2019	2:20:01	19.70	2.3822410
5501	7/5/2019	2:21:01	19.80	2.3822410
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5504	7/5/2019	2:24:01	20.00	2.3822410
5505	7/5/2019	2:25:01	20.10	2.3822410
5506	7/5/2019	2:26:01	20.00	2.3822410
5507	7/5/2019	2:27:01	19.90	2.3826030
5508	7/5/2019	2:28:01	19.70	2.3822410
5509	7/5/2019	2:29:01	19.70	2.3822410
5510	7/5/2019	2:30:01	19.70	2.3826030
5511	7/5/2019	2:31:01	19.70	2.3822410
5512	7/5/2019	2:32:01	19.80	2.3818800
5513	7/5/2019	2:33:01	19.80	2.3822410
5514	7/5/2019	2:34:01	19.90	2.3822410
5515	7/5/2019	2:35:01	20.00	2.3822410
5516	7/5/2019	2:36:01	20.00	2.3822410
5517	7/5/2019	2:37:01	20.10	2.3822410
5518	7/5/2019	2:38:01	20.00	2.3818800
5519	7/5/2019	2:39:01	19.80	2.3826030
5520	7/5/2019	2:40:01	19.70	2.3822410
5521	7/5/2019	2:41:01	19.70	2.3815180
5522	7/5/2019	2:42:01	19.70	2.3818800
5523	7/5/2019	2:43:01	19.70	2.3822410
5524	7/5/2019	2:44:01	19.80	2.3822410
5525	7/5/2019	2:45:01	19.90	2.3818800
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5527	7/5/2019	2:47:01	20.00	2.3818800
5528	7/5/2019	2:48:01	20.10	2.3818800
5529	7/5/2019	2:49:01	20.10	2.3822410
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5531	7/5/2019	2:51:01	19.80	2.3818800
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5534	7/5/2019	2:54:01	19.70	2.3818800
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5536	7/5/2019	2:56:01	19.80	2.3822410
5537	7/5/2019	2:57:01	19.90	2.3815180
5538	7/5/2019	2:58:01	19.90	2.3822410
5539	7/5/2019	2:59:01	20.00	2.3815180
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5541	7/5/2019	3:01:01	20.00	2.3818800
5542	7/5/2019	3:02:01	19.90	2.3822410
5543	7/5/2019	3:03:01	19.70	2.3811560
5544	7/5/2019	3:04:01	19.70	2.3818800
5545	7/5/2019	3:05:01	19.70	2.3815180
5546	7/5/2019	3:06:01	19.70	2.3807950
5547	7/5/2019	3:07:01	19.80	2.3815180
5548	7/5/2019	3:08:01	19.80	2.3815180
5549	7/5/2019	3:09:01	19.90	2.3815180

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5551	7/5/2019	3:11:01	20.00	2.3807950
5552	7/5/2019	3:12:01	20.10	2.3811560
5553	7/5/2019	3:13:01	20.00	2.3815180
5554	7/5/2019	3:14:01	19.90	2.3811560
5555	7/5/2019	3:15:01	19.70	2.3807950
5556	7/5/2019	3:16:01	19.70	2.3811560
5557	7/5/2019	3:17:01	19.70	2.3815180
5558	7/5/2019	3:18:01	19.70	2.3818800
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5571	7/5/2019	3:31:01	19.80	2.3811560
5572	7/5/2019	3:32:01	19.90	2.3815180
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5584	7/5/2019	3:44:01	19.90	2.3800710
5585	7/5/2019	3:45:01	19.90	2.3811560
5586	7/5/2019	3:46:01	20.00	2.3815180
5587	7/5/2019	3:47:01	20.10	2.3797090
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5598	7/5/2019	3:58:01	20.00	2.3793480
5599	7/5/2019	3:59:01	20.00	2.3800710

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5601	7/5/2019	4:01:01	20.00	2.3800710
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5606	7/5/2019	4:06:01	19.70	2.3800710
5607	7/5/2019	4:07:01	19.80	2.3793480
5608	7/5/2019	4:08:01	19.80	2.3797090
5609	7/5/2019	4:09:01	19.90	2.3797090
5610	7/5/2019	4:10:01	20.00	2.3793480
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5612	7/5/2019	4:12:01	20.10	2.3800710
5613	7/5/2019	4:13:01	20.00	2.3800710
5614	7/5/2019	4:14:01	19.90	2.3797090
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5618	7/5/2019	4:18:01	19.70	2.3793480
5619	7/5/2019	4:19:01	19.80	2.3793480
5620	7/5/2019	4:20:01	19.80	2.3793480
5621	7/5/2019	4:21:01	19.90	2.3797090
5622	7/5/2019	4:22:01	19.90	2.3797090
5623	7/5/2019	4:23:01	20.00	2.3800710
5624	7/5/2019	4:24:01	20.10	2.3793480
5625	7/5/2019	4:25:01	20.00	2.3793480
5626	7/5/2019	4:26:01	19.90	2.3793480
5627	7/5/2019	4:27:01	19.70	2.3797090
5628	7/5/2019	4:28:01	19.70	2.3793480
5629	7/5/2019	4:29:01	19.60	2.3793480
5630	7/5/2019	4:30:01	19.70	2.3793480
5631	7/5/2019	4:31:01	19.70	2.3793480
5632	7/5/2019	4:32:01	19.80	2.3793480
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5635	7/5/2019	4:35:01	20.00	2.3793480
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5637	7/5/2019	4:37:01	20.10	2.3793480
5638	7/5/2019	4:38:01	20.00	2.3793480
5639	7/5/2019	4:39:01	19.80	2.3793480
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5643	7/5/2019	4:43:01	19.70	2.3797090
5644	7/5/2019	4:44:01	19.80	2.3793480
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5653	7/5/2019	4:53:01	19.70	2.3789860
5654	7/5/2019	4:54:01	19.60	2.3793480
5655	7/5/2019	4:55:01	19.70	2.3789860
5656	7/5/2019	4:56:01	19.70	2.3786240
5657	7/5/2019	4:57:01	19.80	2.3793480
5658	7/5/2019	4:58:01	19.80	2.3789860
5659	7/5/2019	4:59:01	19.90	2.3793480
5660	7/5/2019	5:00:01	19.90	2.3793480
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5662	7/5/2019	5:02:01	20.10	2.3793480
5663	7/5/2019	5:03:01	20.10	2.3793480
5664	7/5/2019	5:04:01	19.90	2.3793480
5665	7/5/2019	5:05:01	19.80	2.3789860
5666	7/5/2019	5:06:01	19.70	2.3786240
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5669	7/5/2019	5:09:01	19.70	2.3789860
5670	7/5/2019	5:10:01	19.80	2.3789860
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5673	7/5/2019	5:13:01	19.90	2.3782620
5674	7/5/2019	5:14:01	20.00	2.3789860
5675	7/5/2019	5:15:01	20.10	2.3789860
5676	7/5/2019	5:16:01	20.10	2.3786240
5677	7/5/2019	5:17:01	19.90	2.3786240
5678	7/5/2019	5:18:01	19.80	2.3786240
5679	7/5/2019	5:19:01	19.70	2.3786240
5680	7/5/2019	5:20:01	19.60	2.3786240
5681	7/5/2019	5:21:01	19.70	2.3789860
5682	7/5/2019	5:22:01	19.70	2.3775390
5683	7/5/2019	5:23:01	19.80	2.3786240
5684	7/5/2019	5:24:01	19.80	2.3786240
5685	7/5/2019	5:25:01	19.90	2.3789860
5686	7/5/2019	5:26:01	19.90	2.3786240
5687	7/5/2019	5:27:01	20.00	2.3779010
5688	7/5/2019	5:28:01	20.00	2.3786240
5689	7/5/2019	5:29:01	20.10	2.3789860
5690	7/5/2019	5:30:01	20.00	2.3782620
5691	7/5/2019	5:31:01	19.80	2.3782620
5692	7/5/2019	5:32:01	19.70	2.3786240
5693	7/5/2019	5:33:01	19.60	2.3782620
5694	7/5/2019	5:34:01	19.70	2.3786240
5695	7/5/2019	5:35:01	19.70	2.3782620
5696	7/5/2019	5:36:01	19.70	2.3786240
5697	7/5/2019	5:37:01	19.80	2.3782620
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5699	7/5/2019	5:39:01	19.90	2.3782620

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5701	7/5/2019	5:41:01	20.00	2.3782620
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5703	7/5/2019	5:43:01	20.00	2.3775390
5704	7/5/2019	5:44:01	19.80	2.3779010
5705	7/5/2019	5:45:01	19.70	2.3786240
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5707	7/5/2019	5:47:01	19.70	2.3771770
5708	7/5/2019	5:48:01	19.70	2.3779010
5709	7/5/2019	5:49:01	19.70	2.3786240
5710	7/5/2019	5:50:01	19.80	2.3775390
5711	7/5/2019	5:51:01	19.90	2.3775390
5712	7/5/2019	5:52:01	19.90	2.3782620
5713	7/5/2019	5:53:01	20.00	2.3775390
5714	7/5/2019	5:54:01	20.00	2.3775390
5715	7/5/2019	5:55:01	20.10	2.3771770
5716	7/5/2019	5:56:01	20.00	2.3782620
5717	7/5/2019	5:57:01	19.90	2.3768160
5718	7/5/2019	5:58:01	19.70	2.3771770
5719	7/5/2019	5:59:01	19.60	2.3779010
5720	7/5/2019	6:00:01	19.60	2.3775390
5721	7/5/2019	6:01:01	19.70	2.3764540
5722	7/5/2019	6:02:01	19.70	2.3782620
5723	7/5/2019	6:03:01	19.80	2.3779010
5724	7/5/2019	6:04:01	19.80	2.3782620
5725	7/5/2019	6:05:01	19.90	2.3771770
5726	7/5/2019	6:06:01	19.90	2.3768160
5727	7/5/2019	6:07:01	20.00	2.3768160
5728	7/5/2019	6:08:01	20.00	2.3771770
5729	7/5/2019	6:09:01	20.10	2.3768160
5730	7/5/2019	6:10:01	19.90	2.3775390
5731	7/5/2019	6:11:01	19.80	2.3771770
5732	7/5/2019	6:12:01	19.70	2.3768160
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5735	7/5/2019	6:15:01	19.70	2.3768160
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5737	7/5/2019	6:17:01	19.80	2.3768160
5738	7/5/2019	6:18:01	19.90	2.3775390
5739	7/5/2019	6:19:01	19.90	2.3768160
5740	7/5/2019	6:20:01	20.00	2.3764540
5741	7/5/2019	6:21:01	20.00	2.3768160
5742	7/5/2019	6:22:01	20.10	2.3764540
5743	7/5/2019	6:23:01	20.00	2.3768160
5744	7/5/2019	6:24:01	19.80	2.3771770
5745	7/5/2019	6:25:01	19.70	2.3768160
5746	7/5/2019	6:26:01	19.60	2.3764540
5747	7/5/2019	6:27:01	19.60	2.3764540
5748	7/5/2019	6:28:01	19.70	2.3764540
5749	7/5/2019	6:29:01	19.70	2.3764540

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5759	7/5/2019	6:39:01	19.70	2.3764540
5760	7/5/2019	6:40:01	19.60	2.3768160
5761	7/5/2019	6:41:01	19.60	2.3764540
5762	7/5/2019	6:42:01	19.70	2.3771770
5763	7/5/2019	6:43:01	19.70	2.3764540
5764	7/5/2019	6:44:01	19.80	2.3764540
5765	7/5/2019	6:45:01	19.90	2.3764540
5766	7/5/2019	6:46:01	19.90	2.3768160
5767	7/5/2019	6:47:01	19.90	2.3764540
5768	7/5/2019	6:48:01	20.00	2.3764540
5769	7/5/2019	6:49:01	20.10	2.3764540
5770	7/5/2019	6:50:01	20.00	2.3764540
5771	7/5/2019	6:51:01	19.90	2.3764540
5772	7/5/2019	6:52:01	19.70	2.3764540
5773	7/5/2019	6:53:01	19.70	2.3764540
5774	7/5/2019	6:54:01	19.70	2.3764540
5775	7/5/2019	6:55:01	19.70	2.3768160
5776	7/5/2019	6:56:01	19.70	2.3764540
5777	7/5/2019	6:57:01	19.80	2.3764540
5778	7/5/2019	6:58:01	19.80	2.3764540
5779	7/5/2019	6:59:01	19.90	2.3764540
5780	7/5/2019	7:00:01	19.90	2.3764540
5781	7/5/2019	7:01:01	20.00	2.3764540
5782	7/5/2019	7:02:01	20.00	2.3768160
5783	7/5/2019	7:03:01	20.10	2.3760920
5784	7/5/2019	7:04:01	20.00	2.3764540
5785	7/5/2019	7:05:01	19.80	2.3764540
5786	7/5/2019	7:06:01	19.70	2.3764540
5787	7/5/2019	7:07:01	19.60	2.3764540
5788	7/5/2019	7:08:01	19.60	2.3764540
5789	7/5/2019	7:09:01	19.70	2.3764540
5790	7/5/2019	7:10:01	19.70	2.3764540
5791	7/5/2019	7:11:01	19.80	2.3764540
5792	7/5/2019	7:12:01	19.80	2.3760920
5793	7/5/2019	7:13:01	19.90	2.3764540
5794	7/5/2019	7:14:01	19.90	2.3764540
5795	7/5/2019	7:15:01	20.00	2.3760920
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5797	7/5/2019	7:17:01	20.10	2.3760920
5798	7/5/2019	7:18:01	20.00	2.3764540
5799	7/5/2019	7:19:01	19.90	2.3764540

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5801	7/5/2019	7:21:01	19.60	2.3760920
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5803	7/5/2019	7:23:01	19.70	2.3753690
5804	7/5/2019	7:24:01	19.70	2.3764540
5805	7/5/2019	7:25:01	19.80	2.3750070
5806	7/5/2019	7:26:01	19.80	2.3764540
5807	7/5/2019	7:27:01	19.90	2.3764540
5808	7/5/2019	7:28:01	19.90	2.3764540
5809	7/5/2019	7:29:01	20.00	2.3757310
5810	7/5/2019	7:30:01	20.00	2.3757310
5811	7/5/2019	7:31:01	20.10	2.3764540
5812	7/5/2019	7:32:01	20.00	2.3757310
5813	7/5/2019	7:33:01	19.80	2.3760920
5814	7/5/2019	7:34:01	19.70	2.3757310
5815	7/5/2019	7:35:01	19.60	2.3757310
5816	7/5/2019	7:36:01	19.60	2.3760920
5817	7/5/2019	7:37:01	19.70	2.3764540
5818	7/5/2019	7:38:01	19.70	2.3764540
5819	7/5/2019	7:39:01	19.80	2.3753690
5820	7/5/2019	7:40:01	19.80	2.3757310
5821	7/5/2019	7:41:01	19.90	2.3760920
5822	7/5/2019	7:42:01	19.90	2.3753690
5823	7/5/2019	7:43:01	20.00	2.3764540
5824	7/5/2019	7:44:01	20.00	2.3757310
5825	7/5/2019	7:45:01	20.10	2.3764540
5826	7/5/2019	7:46:01	20.00	2.3760920
5827	7/5/2019	7:47:01	19.90	2.3760920
5828	7/5/2019	7:48:01	19.70	2.3753690
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5830	7/5/2019	7:50:01	19.60	2.3760920
5831	7/5/2019	7:51:01	19.70	2.3757310
5832	7/5/2019	7:52:01	19.70	2.3753690
5833	7/5/2019	7:53:01	19.80	2.3753690
5834	7/5/2019	7:54:01	19.80	2.3753690
5835	7/5/2019	7:55:01	19.90	2.3753690
5836	7/5/2019	7:56:01	19.90	2.3750070
5837	7/5/2019	7:57:01	20.00	2.3753690
5838	7/5/2019	7:58:01	20.00	2.3753690
5839	7/5/2019	7:59:01	20.10	2.3757310
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5842	7/5/2019	8:02:01	19.70	2.3757310
5843	7/5/2019	8:03:01	19.60	2.3753690
5844	7/5/2019	8:04:01	19.60	2.3757310
5845	7/5/2019	8:05:01	19.70	2.3742840
5846	7/5/2019	8:06:01	19.70	2.3757310
5847	7/5/2019	8:07:01	19.80	2.3750070
5848	7/5/2019	8:08:01	19.80	2.3746450
5849	7/5/2019	8:09:01	19.90	2.3757310

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5855	7/5/2019	8:15:01	19.80	2.3750070
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5860	7/5/2019	8:20:01	19.70	2.3739220
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5862	7/5/2019	8:22:01	19.90	2.3746450
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5866	7/5/2019	8:26:01	20.10	2.3739220
5867	7/5/2019	8:27:01	19.90	2.3739220
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5873	7/5/2019	8:33:01	19.80	2.3742840
5874	7/5/2019	8:34:01	19.90	2.3746450
5875	7/5/2019	8:35:01	19.90	2.3742840
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5877	7/5/2019	8:37:01	20.00	2.3735600
5878	7/5/2019	8:38:01	20.10	2.3735600
5879	7/5/2019	8:39:01	19.90	2.3750070
5880	7/5/2019	8:40:01	19.80	2.3742840
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5884	7/5/2019	8:44:01	19.70	2.3739220
5885	7/5/2019	8:45:01	19.80	2.3742840
5886	7/5/2019	8:46:01	19.90	2.3735600
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5890	7/5/2019	8:50:01	20.10	2.3739220
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5892	7/5/2019	8:52:01	19.80	2.3739220
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5899	7/5/2019	8:59:01	19.90	2.3739220

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5901	7/5/2019	9:01:01	20.10	2.3735600
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5903	7/5/2019	9:03:01	19.90	2.3742840
5904	7/5/2019	9:04:01	19.80	2.3735600
5905	7/5/2019	9:05:01	19.70	2.3739220
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5907	7/5/2019	9:07:01	19.70	2.3731990
5908	7/5/2019	9:08:01	19.80	2.3735600
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5910	7/5/2019	9:10:01	19.90	2.3731990
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5912	7/5/2019	9:12:01	20.00	2.3735600
5913	7/5/2019	9:13:01	20.10	2.3735600
5914	7/5/2019	9:14:01	20.00	2.3735600
5915	7/5/2019	9:15:01	19.90	2.3735600
5916	7/5/2019	9:16:01	19.70	2.3735600
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5919	7/5/2019	9:19:01	19.70	2.3735600
5920	7/5/2019	9:20:01	19.80	2.3735600
5921	7/5/2019	9:21:01	19.90	2.3735600
5922	7/5/2019	9:22:01	19.90	2.3735600
5923	7/5/2019	9:23:01	20.00	2.3735600
5924	7/5/2019	9:24:01	20.10	2.3731990
5925	7/5/2019	9:25:01	20.10	2.3735600
5926	7/5/2019	9:26:01	19.90	2.3731990
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5935	7/5/2019	9:35:01	20.10	2.3735600
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5941	7/5/2019	9:41:01	19.70	2.3735600
5942	7/5/2019	9:42:01	19.80	2.3735600
5943	7/5/2019	9:43:01	19.90	2.3735600
5944	7/5/2019	9:44:01	19.90	2.3735600
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5956	7/5/2019	9:56:01	20.10	2.3724750
5957	7/5/2019	9:57:01	20.10	2.3728370
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5959	7/5/2019	9:59:01	19.80	2.3728370
5960	7/5/2019	10:00:01	19.70	2.3721130
5961	7/5/2019	10:01:01	19.70	2.3717520
5962	7/5/2019	10:02:01	19.80	2.3728370
5963	7/5/2019	10:03:01	19.90	2.3728370
5964	7/5/2019	10:04:01	19.90	2.3724750
5965	7/5/2019	10:05:01	20.00	2.3724750
5966	7/5/2019	10:06:01	20.10	2.3728370
5967	7/5/2019	10:07:01	20.10	2.3731990
5968	7/5/2019	10:08:01	19.90	2.3728370
5969	7/5/2019	10:09:01	19.80	2.3731990
5970	7/5/2019	10:10:01	19.70	2.3728370
5971	7/5/2019	10:11:01	19.70	2.3724750
5972	7/5/2019	10:12:01	19.80	2.3713900
5973	7/5/2019	10:13:01	19.90	2.3717520
5974	7/5/2019	10:14:01	20.00	2.3731990
5975	7/5/2019	10:15:01	20.10	2.3735600
5976	7/5/2019	10:16:01	20.10	2.3731990
5977	7/5/2019	10:17:01	20.00	2.3724750
5978	7/5/2019	10:18:01	19.90	2.3728370
5979	7/5/2019	10:19:01	19.70	2.3724750
5980	7/5/2019	10:20:01	19.70	2.3721130
5981	7/5/2019	10:21:01	19.80	2.3724750
5982	7/5/2019	10:22:01	19.80	2.3724750
5983	7/5/2019	10:23:01	19.90	2.3713900
5984	7/5/2019	10:24:01	20.00	2.3731990
5985	7/5/2019	10:25:01	20.10	2.3724750
5986	7/5/2019	10:26:01	20.10	2.3724750
5987	7/5/2019	10:27:01	19.90	2.3721130
5988	7/5/2019	10:28:01	19.80	2.3728370
5989	7/5/2019	10:29:01	19.70	2.3724750
5990	7/5/2019	10:30:01	19.80	2.3731990
5991	7/5/2019	10:31:01	19.80	2.3724750
5992	7/5/2019	10:32:01	19.90	2.3713900
5993	7/5/2019	10:33:01	20.00	2.3721130
5994	7/5/2019	10:34:01	20.10	2.3713900
5995	7/5/2019	10:35:01	20.10	2.3724750
5996	7/5/2019	10:36:01	20.00	2.3721130
5997	7/5/2019	10:37:01	19.80	2.3717520
5998	7/5/2019	10:38:01	19.70	2.3713900
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6002	7/5/2019	10:42:01	20.00	2.3717520
6003	7/5/2019	10:43:01	20.10	2.3717520
6004	7/5/2019	10:44:01	20.10	2.3713900
6005	7/5/2019	10:45:01	20.00	2.3713900
6006	7/5/2019	10:46:01	19.90	2.3717520
6007	7/5/2019	10:47:01	19.80	2.3713900
6008	7/5/2019	10:48:01	19.70	2.3710280
6009	7/5/2019	10:49:01	19.80	2.3717520
6010	7/5/2019	10:50:01	19.90	2.3713900
6011	7/5/2019	10:51:01	20.00	2.3706670
6012	7/5/2019	10:52:01	20.10	2.3710280
6013	7/5/2019	10:53:01	20.10	2.3710280
6014	7/5/2019	10:54:01	20.00	2.3713900
6015	7/5/2019	10:55:01	19.90	2.3710280
6016	7/5/2019	10:56:01	19.80	2.3713900
6017	7/5/2019	10:57:01	19.80	2.3710280
6018	7/5/2019	10:58:01	19.80	2.3713900
6019	7/5/2019	10:59:01	19.90	2.3721130
6020	7/5/2019	11:00:01	20.00	2.3713900
6021	7/5/2019	11:01:01	20.10	2.3710280
6022	7/5/2019	11:02:01	20.10	2.3710280
6023	7/5/2019	11:03:01	20.00	2.3706670
6024	7/5/2019	11:04:01	19.90	2.3710280
6025	7/5/2019	11:05:01	19.80	2.3710280
6026	7/5/2019	11:06:01	19.80	2.3710280
6027	7/5/2019	11:07:01	19.80	2.3713900
6028	7/5/2019	11:08:01	19.90	2.3706670
6029	7/5/2019	11:09:01	20.00	2.3713900
6030	7/5/2019	11:10:01	20.10	2.3713900
6031	7/5/2019	11:11:01	20.10	2.3710280
6032	7/5/2019	11:12:01	20.00	2.3713900
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6034	7/5/2019	11:14:01	19.80	2.3706670
6035	7/5/2019	11:15:01	19.80	2.3706670
6036	7/5/2019	11:16:01	19.90	2.3706670
6037	7/5/2019	11:17:01	20.00	2.3706670
6038	7/5/2019	11:18:01	20.10	2.3706670
6039	7/5/2019	11:19:01	20.20	2.3706670
6040	7/5/2019	11:20:01	20.10	2.3706670
6041	7/5/2019	11:21:01	19.90	2.3706670
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6045	7/5/2019	11:25:01	19.90	2.3710280
6046	7/5/2019	11:26:01	20.00	2.3706670
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6048	7/5/2019	11:28:01	20.10	2.3710280
6049	7/5/2019	11:29:01	20.10	2.3706670

6050	7/5/2019	11:30:01	19.90	2.3706670
6051	7/5/2019	11:31:01	19.80	2.3706670
6052	7/5/2019	11:32:01	19.80	2.3706670
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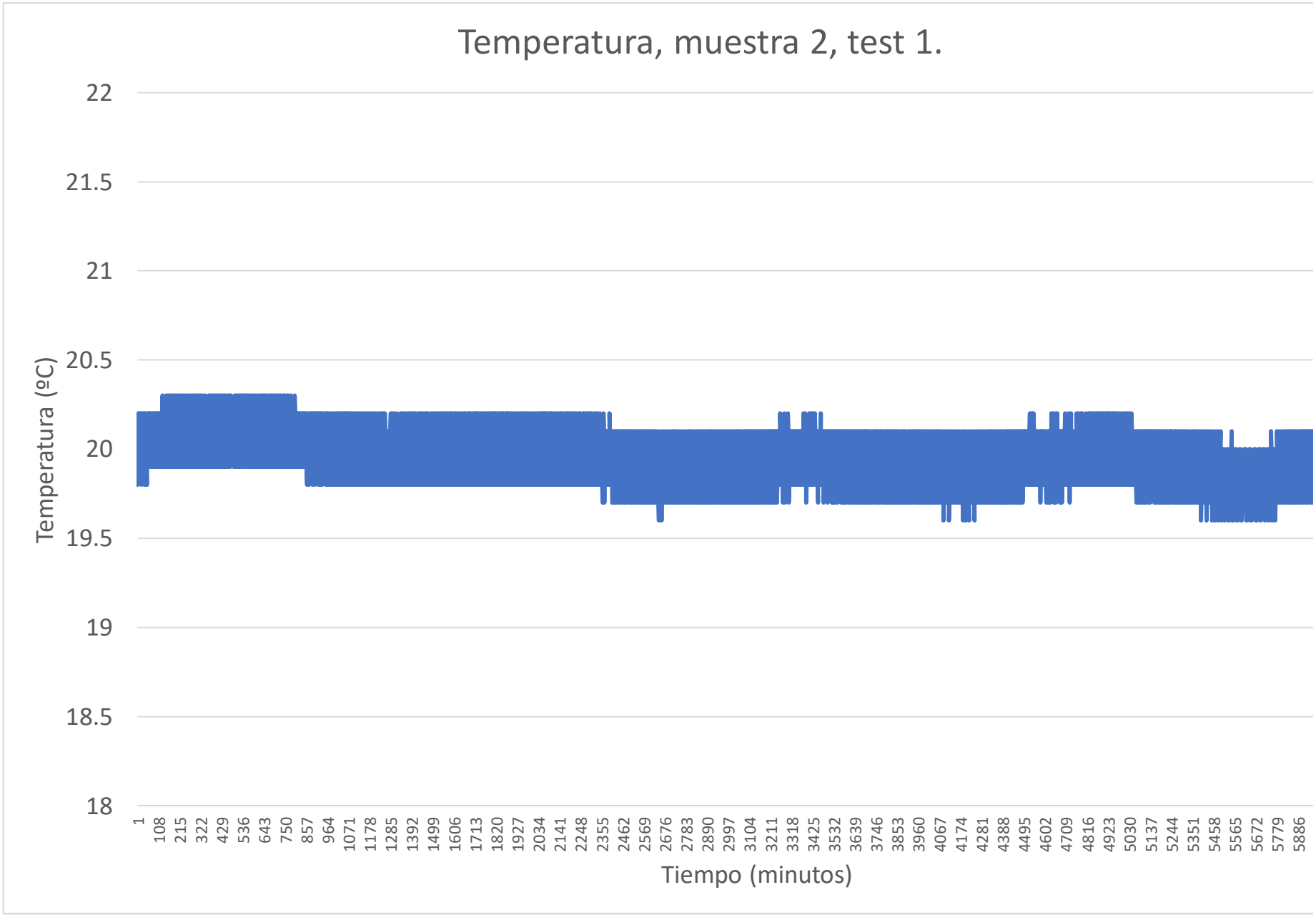
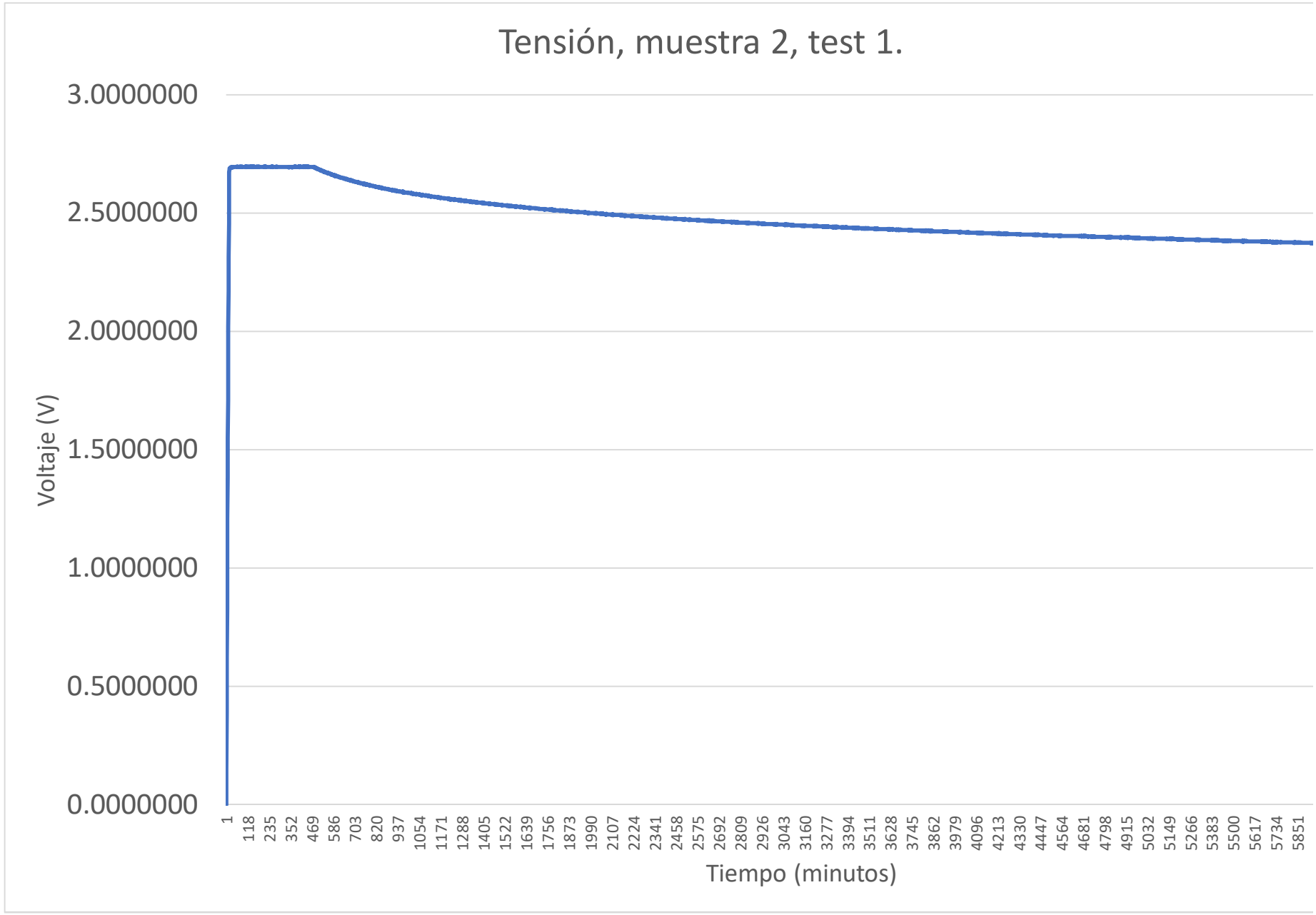
6057	7/5/2019	11:37:01	20.10	2.3706670
6058	7/5/2019	11:38:01	20.00	2.3706670
6059	7/5/2019	11:39:01	19.90	2.3706670
6060	7/5/2019	11:40:01	19.80	2.3706670
6061	7/5/2019	11:41:01	19.80	2.3706670
6062	7/5/2019	11:42:01	19.80	2.3706670
6063	7/5/2019	11:43:01	19.90	2.3706670
6064	7/5/2019	11:44:01	20.00	2.3710280
6065	7/5/2019	11:45:01	20.10	2.3706670
6066	7/5/2019	11:46:01	20.10	2.3706670
6067	7/5/2019	11:47:01	20.00	2.3710280
6068	7/5/2019	11:48:01	19.90	2.3706670
6069	7/5/2019	11:49:01	19.80	2.3706670
6070	7/5/2019	11:50:01	19.80	2.3706670
6071	7/5/2019	11:51:01	19.90	2.3706670
6072	7/5/2019	11:52:01	19.90	2.3706670
6073	7/5/2019	11:53:01	20.10	2.3703050
6074	7/5/2019	11:54:01	20.10	2.3706670
6075	7/5/2019	11:55:01	20.10	2.3703050
6076	7/5/2019	11:56:01	19.90	2.3706670
6077	7/5/2019	11:57:01	19.80	2.3706670
6078	7/5/2019	11:58:01	19.80	2.3703050
6079	7/5/2019	11:59:01	19.80	2.3706670
6080	7/5/2019	12:00:01	19.90	2.3706670
6081	7/5/2019	12:01:01	20.00	2.3706670
6082	7/5/2019	12:02:01	20.10	2.3706670
6083	7/5/2019	12:03:01	20.20	2.3699430
6084	7/5/2019	12:04:01	20.10	2.3706670
6085	7/5/2019	12:05:01	19.90	2.3706670
6086	7/5/2019	12:06:01	19.80	2.3706670
6087	7/5/2019	12:07:01	19.80	2.3706670
6088	7/5/2019	12:08:01	19.80	2.3703050
6089	7/5/2019	12:09:01	19.90	2.3706670
6090	7/5/2019	12:10:01	20.00	2.3699430
6091	7/5/2019	12:11:01	20.20	2.3699430
6092	7/5/2019	12:12:01	20.10	2.3706670
6093	7/5/2019	12:13:01	20.00	2.3706670
6094	7/5/2019	12:14:01	19.90	2.3706670
6095	7/5/2019	12:15:01	19.80	2.3706670
6096	7/5/2019	12:16:01	19.80	2.3703050
6097	7/5/2019	12:17:01	19.90	2.3699430
6098	7/5/2019	12:18:01	20.00	2.3706670
6099	7/5/2019	12:19:01	20.10	2.3703050

6100	7/5/2019	12:20:01	20.20	2.3703050
6101	7/5/2019	12:21:01	20.10	2.3695810
6102	7/5/2019	12:22:01	19.90	2.3703050
6103	7/5/2019	12:23:01	19.80	2.3706670
6104	7/5/2019	12:24:01	19.80	2.3695810
6105	7/5/2019	12:25:01	19.80	2.3703050
6106	7/5/2019	12:26:01	19.90	2.3699430
6107	7/5/2019	12:27:01	20.10	2.3695810
6108	7/5/2019	12:28:01	20.20	2.3699430
6109	7/5/2019	12:29:01	20.10	2.3706670
6110	7/5/2019	12:30:01	20.00	2.3699430
6111	7/5/2019	12:31:01	19.90	2.3703050
6112	7/5/2019	12:32:01	19.80	2.3695810
6113	7/5/2019	12:33:01	19.80	2.3695810
6114	7/5/2019	12:34:01	19.90	2.3695810
6115	7/5/2019	12:35:01	20.00	2.3703050
6116	7/5/2019	12:36:01	20.10	2.3699430
6117	7/5/2019	12:37:01	20.20	2.3695810
6118	7/5/2019	12:38:01	20.10	2.3699430
6119	7/5/2019	12:39:01	20.00	2.3699430
6120	7/5/2019	12:40:01	19.90	2.3699430
6121	7/5/2019	12:41:01	19.80	2.3699430
6122	7/5/2019	12:42:01	19.80	2.3688580
6123	7/5/2019	12:43:01	19.90	2.3692200
6124	7/5/2019	12:44:01	20.00	2.3692200
6125	7/5/2019	12:45:01	20.10	2.3688580
6126	7/5/2019	12:46:01	20.20	2.3692200
6127	7/5/2019	12:47:01	20.10	2.3692200
6128	7/5/2019	12:48:01	20.00	2.3692200
6129	7/5/2019	12:49:01	19.90	2.3699430
6130	7/5/2019	12:50:01	19.80	2.3692200
6131	7/5/2019	12:51:01	19.80	2.3695810
6132	7/5/2019	12:52:01	19.90	2.3692200
6133	7/5/2019	12:53:01	20.00	2.3692200
6134	7/5/2019	12:54:01	20.10	2.3703050
6135	7/5/2019	12:55:01	20.20	2.3692200
6136	7/5/2019	12:56:01	20.10	2.3692200
6137	7/5/2019	12:57:01	20.00	2.3688580
6138	7/5/2019	12:58:01	19.90	2.3688580
6139	7/5/2019	12:59:01	19.80	2.3688580
6140	7/5/2019	13:00:01	19.80	2.3688580
6141	7/5/2019	13:01:01	19.80	2.3692200
6142	7/5/2019	13:02:01	19.90	2.3688580
6143	7/5/2019	13:03:01	20.00	2.3684960
6144	7/5/2019	13:04:01	20.20	2.3688580
6145	7/5/2019	13:05:01	20.20	2.3688580
6146	7/5/2019	13:06:01	20.10	2.3692200
6147	7/5/2019	13:07:01	19.90	2.3695810
6148	7/5/2019	13:08:01	19.80	2.3684960
6149	7/5/2019	13:09:01	19.80	2.3695810

6150	7/5/2019	13:10:01	19.80	2.3684960
6151	7/5/2019	13:11:01	19.90	2.3688580
6152	7/5/2019	13:12:01	20.00	2.3688580
6153	7/5/2019	13:13:01	20.20	2.3681340
6154	7/5/2019	13:14:01	20.20	2.3684960
6155	7/5/2019	13:15:01	20.10	2.3695810
6156	7/5/2019	13:16:01	19.90	2.3681340
6157	7/5/2019	13:17:01	19.80	2.3684960
6158	7/5/2019	13:18:01	19.80	2.3692200
6159	7/5/2019	13:19:01	19.80	2.3681340
6160	7/5/2019	13:20:01	19.90	2.3677730
6161	7/5/2019	13:21:01	20.00	2.3684960
6162	7/5/2019	13:22:01	20.10	2.3681340
6163	7/5/2019	13:23:01	20.20	2.3699430
6164	7/5/2019	13:24:01	20.10	2.3684960
6165	7/5/2019	13:25:01	19.90	2.3684960
6166	7/5/2019	13:26:01	19.80	2.3688580
6167	7/5/2019	13:27:01	19.80	2.3684960
6168	7/5/2019	13:28:01	19.80	2.3681340
6169	7/5/2019	13:29:01	19.90	2.3684960
6170	7/5/2019	13:30:01	20.00	2.3677730
6171	7/5/2019	13:31:01	20.10	2.3677730
6172	7/5/2019	13:32:01	20.20	2.3681340
6173	7/5/2019	13:33:01	20.10	2.3684960
6174	7/5/2019	13:34:01	20.00	2.3681340
6175	7/5/2019	13:35:01	19.80	2.3677730
6176	7/5/2019	13:36:01	19.80	2.3677730
6177	7/5/2019	13:37:01	19.80	2.3681340
6178	7/5/2019	13:38:01	19.90	2.3681340
6179	7/5/2019	13:39:01	19.90	2.3677730
6180	7/5/2019	13:40:01	20.10	2.3677730
6181	7/5/2019	13:41:01	20.20	2.3681340
6182	7/5/2019	13:42:01	20.10	2.3681340
6183	7/5/2019	13:43:01	20.00	2.3681340
6184	7/5/2019	13:44:01	19.90	2.3681340
6185	7/5/2019	13:45:01	19.80	2.3677730
6186	7/5/2019	13:46:01	19.80	2.3677730
6187	7/5/2019	13:47:01	19.80	2.3677730
6188	7/5/2019	13:48:01	19.90	2.3677730
6189	7/5/2019	13:49:01	20.00	2.3677730
6190	7/5/2019	13:50:01	20.10	2.3677730
6191	7/5/2019	13:51:01	20.20	2.3684960
6192	7/5/2019	13:52:01	20.10	2.3677730
6193	7/5/2019	13:53:01	19.90	2.3677730
6194	7/5/2019	13:54:01	19.80	2.3688580
6195	7/5/2019	13:55:01	19.80	2.3677730
6196	7/5/2019	13:56:01	19.80	2.3677730
6197	7/5/2019	13:57:01	19.90	2.3677730
6198	7/5/2019	13:58:01	20.00	2.3677730
6199	7/5/2019	13:59:01	20.10	2.3677730

6200	7/5/2019	14:00:01	20.20	2.3677730	
6201	7/5/2019	14:01:01	20.10	2.3677730	
6202	7/5/2019	14:02:01	20.00	2.3677730	
6203	7/5/2019	14:03:01	19.80	2.3677730	
6204	7/5/2019	14:04:01	19.80	2.3677730	
6205	7/5/2019	14:05:01	19.80	2.3677730	
6206	7/5/2019	14:06:01	19.90	2.3677730	
6207	7/5/2019	14:07:01	20.00	2.3677730	
6208	7/5/2019	14:08:01	20.10	2.3677730	
6209	7/5/2019	14:09:01	20.20	2.3677730	
6210	7/5/2019	14:10:01	20.10	2.3677730	
6211	7/5/2019	14:11:01	20.00	2.3681340	
6212	7/5/2019	14:12:01	19.90	2.3677730	
6213	7/5/2019	14:13:01	19.80	2.3674110	
6214	7/5/2019	14:14:01	19.80	2.3677730	
6215	7/5/2019	14:15:01	19.90	2.3677730	
6216	7/5/2019	14:16:01	20.00	2.3677730	
6217	7/5/2019	14:17:01	20.10	2.3677730	
6218	7/5/2019	14:18:01	20.20	2.3677730	
6219	7/5/2019	14:19:01	20.10	2.3677730	
6220	7/5/2019	14:20:01	20.00	2.3677730	
6221	7/5/2019	14:21:01	19.90	2.3677730	
6222	7/5/2019	14:22:01	19.80	2.3677730	
6223	7/5/2019	14:23:01	19.80	2.3674110	
6224	7/5/2019	14:24:01	19.90	2.3677730	
6225	7/5/2019	14:25:01	19.90	2.3674110	
6226	7/5/2019	14:26:01	20.10	2.3677730	
6227	7/5/2019	14:27:01	20.20	2.3677730	
6228	7/5/2019	14:28:01	20.20	2.3674110	
6229	7/5/2019	14:29:01	20.10	2.3677730	
6230	7/5/2019	14:30:01	19.90	2.3670490	
6231	7/5/2019	14:31:01	19.80	2.3677730	
6232	7/5/2019	14:32:01	19.80	2.3670490	
6233	7/5/2019	14:33:01	19.80	2.3677730	
6234	7/5/2019	14:34:01	19.90	2.3677730	
6235	7/5/2019	14:35:01	19.9	2.367411	
6236	7/5/2019	14:36:01	20	2.367411	
6237	7/5/2019	14:37:01	20.2	2.367773	
6238	7/5/2019	14:38:01	20.3	2.367049	
6239	7/5/2019	14:39:01	20.2	2.366688	
6240	7/5/2019	14:40:01	20.2	2.366688	
6241	7/5/2019	14:41:01	20	2.367049	96 horas


Temperatura, muestra 2, test 1.
Temperatura (ºC)
22
21.5
21
20.5
20
19.5
19
18.5
18
1
108
215
322
429
536
643
750
857
964
1071
1178
1285
1392
1499
1606
1713
1820
1927
2034
2141
2248
2355
2462
2569
2676
2783
2890
2997
3104
3211
3318
3425
3532
3639
3746
3853
3960
4067
4174
4281
4388
4495
4602
4709
4816
4923
5030
5137
5244
5351
5458
5565
5672
5779
5886
Tiempo (minutos)


Tensión, muestra 2, test 1.
3.0000000
2.5000000
2.0000000
1.5000000
1.0000000
0.5000000
0.0000000
Voltaje (V)
1
118
235
352
469
586
703
820
937
1054
1171
1288
1405
1522
1639
1756
1873
1990
2107
2224
2341
2458
2575
2692
2809
2926
3043
3160
3277
3394
3511
3628
3745
3862
3979
4096
4213
4330
4447
4564
4681
4798
4915
5032
5149
5266
5383
5500
5617
5734
5851
Tiempo (minutos)

Numero	Fecha	Hora	Voltaje	Temperatura
1	10/5/2019	8:16:01	0.0000000	19.8
2	10/5/2019	8:17:01	0.148664	19.8
3	10/5/2019	8:18:01	0.3920968	19.9
4	10/5/2019	8:19:01	0.6188908	20
5	10/5/2019	8:20:01	0.8286843	20.2
6	10/5/2019	8:21:01	1.023648	20.2
7	10/5/2019	8:22:01	1.207398	20.2
8	10/5/2019	8:23:01	1.381382	20.1
9	10/5/2019	8:24:01	1.547408	19.9
10	10/5/2019	8:25:01	1.70837	19.9
11	10/5/2019	8:26:01	1.865715	19.9
12	10/5/2019	8:27:01	2.019805	19.9
13	10/5/2019	8:28:01	2.168831	20
14	10/5/2019	8:29:01	2.313878	20.2
15	10/5/2019	8:30:01	2.454946	20.2
16	10/5/2019	8:31:01	2.591311	20.2
17	10/5/2019	8:32:01	2.67342	20.1
18	10/5/2019	8:33:01	2.684995	20
19	10/5/2019	8:34:01	2.686804	19.9
20	10/5/2019	8:35:01	2.68825	19.8
21	10/5/2019	8:36:01	2.689697	19.9
22	10/5/2019	8:37:01	2.690421	20
23	10/5/2019	8:38:01	2.691144	20.1
24	10/5/2019	8:39:01	2.691144	20.2
25	10/5/2019	8:40:01	2.692591	20.2
26	10/5/2019	8:41:01	2.691868	20.1
27	10/5/2019	8:42:01	2.691506	20
28	10/5/2019	8:43:01	2.692953	19.9
29	10/5/2019	8:44:01	2.692953	19.9
30	10/5/2019	8:45:01	2.693314	19.9
31	10/5/2019	8:46:01	2.694038	19.9
32	10/5/2019	8:47:01	2.694399	20.1
33	10/5/2019	8:48:01	2.694038	20.2
34	10/5/2019	8:49:01	2.694038	20.2
35	10/5/2019	8:50:01	2.694038	20.2
36	10/5/2019	8:51:01	2.693676	20
37	10/5/2019	8:52:01	2.693314	19.9
38	10/5/2019	8:53:01	2.694761	19.8
39	10/5/2019	8:54:01	2.694399	19.8
40	10/5/2019	8:55:01	2.694399	19.9
41	10/5/2019	8:56:01	2.694399	20
42	10/5/2019	8:57:01	2.694038	20.2
43	10/5/2019	8:58:01	2.695123	20.2
44	10/5/2019	8:59:01	2.694038	20.2
45	10/5/2019	9:00:01	2.694399	20.1
46	10/5/2019	9:01:01	2.694038	20

Tension mantenida (test 1). Muesta 2	
Uend(72h)	2.399242
Ur(nominal)	2.7
A(%)	88.860815%

30 minutos, tensión minima que alcanzar 2,565 V.

47	10/5/2019	9:02:01	2.694038	19.9
48	10/5/2019	9:03:01	2.694399	19.8
49	10/5/2019	9:04:01	2.694038	19.9
50	10/5/2019	9:05:01	2.694038	20
51	10/5/2019	9:06:01	2.694038	20.1
52	10/5/2019	9:07:01	2.694038	20.2
53	10/5/2019	9:08:01	2.694761	20.2
54	10/5/2019	9:09:01	2.695123	20.1
55	10/5/2019	9:10:01	2.695123	20
56	10/5/2019	9:11:01	2.693676	19.9
57	10/5/2019	9:12:01	2.694399	19.9
58	10/5/2019	9:13:01	2.694399	19.9
59	10/5/2019	9:14:01	2.695123	20
60	10/5/2019	9:15:01	2.695846	20.1
61	10/5/2019	9:16:01	2.694399	20.2
62	10/5/2019	9:17:01	2.694399	20.2
63	10/5/2019	9:18:01	2.694761	20.1
64	10/5/2019	9:19:01	2.694399	20
65	10/5/2019	9:20:01	2.694399	19.9
66	10/5/2019	9:21:01	2.694038	19.9
67	10/5/2019	9:22:01	2.694038	19.9
68	10/5/2019	9:23:01	2.694038	20
69	10/5/2019	9:24:01	2.694761	20.1
70	10/5/2019	9:25:01	2.694761	20.2
71	10/5/2019	9:26:01	2.694038	20.2
72	10/5/2019	9:27:01	2.694761	20.2
73	10/5/2019	9:28:01	2.694399	20
74	10/5/2019	9:29:01	2.694038	19.9
75	10/5/2019	9:30:01	2.695846	19.9
76	10/5/2019	9:31:01	2.694761	19.9
77	10/5/2019	9:32:01	2.694399	19.9
78	10/5/2019	9:33:01	2.695123	20.1
79	10/5/2019	9:34:01	2.694038	20.2
80	10/5/2019	9:35:01	2.694038	20.2
81	10/5/2019	9:36:01	2.694038	20.2
82	10/5/2019	9:37:01	2.694038	20.1
83	10/5/2019	9:38:01	2.694399	20
84	10/5/2019	9:39:01	2.695123	19.9
85	10/5/2019	9:40:01	2.695846	19.9
86	10/5/2019	9:41:01	2.694761	19.9
87	10/5/2019	9:42:01	2.694038	20
88	10/5/2019	9:43:01	2.694038	20.2
89	10/5/2019	9:44:01	2.694761	20.2
90	10/5/2019	9:45:01	2.694399	20.2
91	10/5/2019	9:46:01	2.694038	20.1
92	10/5/2019	9:47:01	2.694038	20
93	10/5/2019	9:48:01	2.694761	19.9

94	10/5/2019	9:49:01	2.694399	19.9
95	10/5/2019	9:50:01	2.694038	19.9
96	10/5/2019	9:51:01	2.694761	20
97	10/5/2019	9:52:01	2.694761	20.1
98	10/5/2019	9:53:01	2.694399	20.2
99	10/5/2019	9:54:01	2.694038	20.2
100	10/5/2019	9:55:01	2.694399	20.2
101	10/5/2019	9:56:01	2.694399	20.1
102	10/5/2019	9:57:01	2.694761	20
103	10/5/2019	9:58:01	2.694038	19.9
104	10/5/2019	9:59:01	2.695123	19.9
105	10/5/2019	10:00:01	2.695485	19.9
106	10/5/2019	10:01:01	2.696208	20.1
107	10/5/2019	10:02:01	2.695123	20.2
108	10/5/2019	10:03:01	2.696208	20.2
109	10/5/2019	10:04:01	2.695846	20.2
110	10/5/2019	10:05:01	2.695123	20.1
111	10/5/2019	10:06:01	2.695485	20
112	10/5/2019	10:07:01	2.696208	19.9
113	10/5/2019	10:08:01	2.696931	19.9
114	10/5/2019	10:09:01	2.695846	19.9
115	10/5/2019	10:10:01	2.694399	20
116	10/5/2019	10:11:01	2.694399	20.2
117	10/5/2019	10:12:01	2.694761	20.2
118	10/5/2019	10:13:01	2.694761	20.2
119	10/5/2019	10:14:01	2.694399	20.1
120	10/5/2019	10:15:01	2.695485	20
121	10/5/2019	10:16:01	2.694399	19.9
122	10/5/2019	10:17:01	2.694399	19.9
123	10/5/2019	10:18:01	2.694761	19.9
124	10/5/2019	10:19:01	2.696208	20
125	10/5/2019	10:20:01	2.695485	20.1
126	10/5/2019	10:21:01	2.695485	20.2
127	10/5/2019	10:22:01	2.694761	20.3
128	10/5/2019	10:23:01	2.694761	20.2
129	10/5/2019	10:24:01	2.695485	20.1
130	10/5/2019	10:25:01	2.695485	20
131	10/5/2019	10:26:01	2.695123	19.9
132	10/5/2019	10:27:01	2.694761	19.9
133	10/5/2019	10:28:01	2.695485	19.9
134	10/5/2019	10:29:01	2.695846	20
135	10/5/2019	10:30:01	2.695485	20.1
136	10/5/2019	10:31:01	2.696931	20.2
137	10/5/2019	10:32:01	2.696931	20.2
138	10/5/2019	10:33:01	2.696931	20.2
139	10/5/2019	10:34:01	2.696208	20.1
140	10/5/2019	10:35:01	2.696208	20

141	10/5/2019	10:36:01	2.695846	19.9
142	10/5/2019	10:37:01	2.696208	19.9
143	10/5/2019	10:38:01	2.696208	19.9
144	10/5/2019	10:39:01	2.696208	20.1
145	10/5/2019	10:40:01	2.695485	20.2
146	10/5/2019	10:41:01	2.695846	20.3
147	10/5/2019	10:42:01	2.696208	20.2
148	10/5/2019	10:43:01	2.695485	20.2
149	10/5/2019	10:44:01	2.695485	20.1
150	10/5/2019	10:45:01	2.694761	19.9
151	10/5/2019	10:46:01	2.695123	19.9
152	10/5/2019	10:47:01	2.695846	19.9
153	10/5/2019	10:48:01	2.695846	20
154	10/5/2019	10:49:01	2.694761	20.1
155	10/5/2019	10:50:01	2.695123	20.2
156	10/5/2019	10:51:01	2.694761	20.3
157	10/5/2019	10:52:01	2.694038	20.2
158	10/5/2019	10:53:01	2.695123	20.1
159	10/5/2019	10:54:01	2.695485	20
160	10/5/2019	10:55:01	2.694399	19.9
161	10/5/2019	10:56:01	2.694761	19.9
162	10/5/2019	10:57:01	2.695123	19.9
163	10/5/2019	10:58:01	2.694761	20
164	10/5/2019	10:59:01	2.695485	20.2
165	10/5/2019	11:00:01	2.695123	20.3
166	10/5/2019	11:01:01	2.694761	20.3
167	10/5/2019	11:02:01	2.694761	20.2
168	10/5/2019	11:03:01	2.695123	20.1
169	10/5/2019	11:04:01	2.695846	20
170	10/5/2019	11:05:01	2.694761	19.9
171	10/5/2019	11:06:01	2.694761	19.9
172	10/5/2019	11:07:01	2.694761	19.9
173	10/5/2019	11:08:01	2.695485	20.1
174	10/5/2019	11:09:01	2.694761	20.2
175	10/5/2019	11:10:01	2.694399	20.3
176	10/5/2019	11:11:01	2.695485	20.2
177	10/5/2019	11:12:01	2.695485	20.2
178	10/5/2019	11:13:01	2.695123	20.1
179	10/5/2019	11:14:01	2.696208	20
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181	10/5/2019	11:16:01	2.694038	19.9
182	10/5/2019	11:17:01	2.694761	19.9
183	10/5/2019	11:18:01	2.695485	20.1
184	10/5/2019	11:19:01	2.694399	20.2
185	10/5/2019	11:20:01	2.695123	20.3
186	10/5/2019	11:21:01	2.695123	20.2
187	10/5/2019	11:22:01	2.694038	20.2

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191	10/5/2019	11:26:01	2.694399	19.9
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193	10/5/2019	11:28:01	2.694761	20.1
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201	10/5/2019	11:36:01	2.694038	19.9
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203	10/5/2019	11:38:01	2.694399	20.1
204	10/5/2019	11:39:01	2.694038	20.2
205	10/5/2019	11:40:01	2.694761	20.3
206	10/5/2019	11:41:01	2.694761	20.2
207	10/5/2019	11:42:01	2.696208	20.2
208	10/5/2019	11:43:01	2.695485	20.1
209	10/5/2019	11:44:01	2.694761	20
210	10/5/2019	11:45:01	2.695485	19.9
211	10/5/2019	11:46:01	2.694399	19.9
212	10/5/2019	11:47:01	2.69657	20
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216	10/5/2019	11:51:01	2.694399	20.2
217	10/5/2019	11:52:01	2.695123	20.2
218	10/5/2019	11:53:01	2.695485	20
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220	10/5/2019	11:55:01	2.694399	19.9
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222	10/5/2019	11:57:01	2.695485	20
223	10/5/2019	11:58:01	2.694399	20.2
224	10/5/2019	11:59:01	2.694399	20.3
225	10/5/2019	12:00:01	2.694399	20.3
226	10/5/2019	12:01:01	2.694761	20.2
227	10/5/2019	12:02:01	2.694761	20.1
228	10/5/2019	12:03:01	2.694038	20
229	10/5/2019	12:04:01	2.694399	19.9
230	10/5/2019	12:05:01	2.694399	19.9
231	10/5/2019	12:06:01	2.694399	19.9
232	10/5/2019	12:07:01	2.694038	20
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238	10/5/2019	12:13:01	2.694038	20
239	10/5/2019	12:14:01	2.694038	19.9
240	10/5/2019	12:15:01	2.694399	19.9
241	10/5/2019	12:16:01	2.695485	20
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243	10/5/2019	12:18:01	2.694761	20.2
244	10/5/2019	12:19:01	2.694761	20.3
245	10/5/2019	12:20:01	2.694399	20.2
246	10/5/2019	12:21:01	2.694761	20.2
247	10/5/2019	12:22:01	2.695123	20.1
248	10/5/2019	12:23:01	2.695846	20
249	10/5/2019	12:24:01	2.694399	19.9
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251	10/5/2019	12:26:01	2.695846	20
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253	10/5/2019	12:28:01	2.695485	20.2
254	10/5/2019	12:29:01	2.695846	20.3
255	10/5/2019	12:30:01	2.694761	20.2
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258	10/5/2019	12:33:01	2.694038	20
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260	10/5/2019	12:35:01	2.694761	19.9
261	10/5/2019	12:36:01	2.695123	20
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263	10/5/2019	12:38:01	2.694399	20.2
264	10/5/2019	12:39:01	2.694399	20.3
265	10/5/2019	12:40:01	2.694038	20.2
266	10/5/2019	12:41:01	2.694038	20.1
267	10/5/2019	12:42:01	2.694038	20
268	10/5/2019	12:43:01	2.694038	19.9
269	10/5/2019	12:44:01	2.694038	19.9
270	10/5/2019	12:45:01	2.694038	19.9
271	10/5/2019	12:46:01	2.695123	20
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276	10/5/2019	12:51:01	2.694399	20.1
277	10/5/2019	12:52:01	2.694038	20
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285	10/5/2019	13:00:01	2.694399	20.2
286	10/5/2019	13:01:01	2.694399	20.1
287	10/5/2019	13:02:01	2.694761	20
288	10/5/2019	13:03:01	2.694038	19.9
289	10/5/2019	13:04:01	2.694761	19.9
290	10/5/2019	13:05:01	2.694399	20
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293	10/5/2019	13:08:01	2.693676	20.3
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304	10/5/2019	13:19:01	2.694038	20.2
305	10/5/2019	13:20:01	2.694761	20.2
306	10/5/2019	13:21:01	2.694038	20.1
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309	10/5/2019	13:24:01	2.694038	19.9
310	10/5/2019	13:25:01	2.694038	20
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312	10/5/2019	13:27:01	2.694038	20.2
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314	10/5/2019	13:29:01	2.694399	20.2
315	10/5/2019	13:30:01	2.693676	20.1
316	10/5/2019	13:31:01	2.694038	20.1
317	10/5/2019	13:32:01	2.693676	20
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319	10/5/2019	13:34:01	2.694399	19.9
320	10/5/2019	13:35:01	2.694399	20
321	10/5/2019	13:36:01	2.693676	20.2
322	10/5/2019	13:37:01	2.693676	20.3
323	10/5/2019	13:38:01	2.694038	20.3
324	10/5/2019	13:39:01	2.694038	20.2
325	10/5/2019	13:40:01	2.694038	20.1
326	10/5/2019	13:41:01	2.694038	20
327	10/5/2019	13:42:01	2.694761	19.9
328	10/5/2019	13:43:01	2.693676	19.9

329	10/5/2019	13:44:01	2.694038	19.9
330	10/5/2019	13:45:01	2.694038	20
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334	10/5/2019	13:49:01	2.694761	20.2
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336	10/5/2019	13:51:01	2.694399	20
337	10/5/2019	13:52:01	2.694038	19.9
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343	10/5/2019	13:58:01	2.694399	20.2
344	10/5/2019	13:59:01	2.693314	20.2
345	10/5/2019	14:00:01	2.694038	20
346	10/5/2019	14:01:01	2.694038	19.9
347	10/5/2019	14:02:01	2.693676	19.9
348	10/5/2019	14:03:01	2.694038	19.9
349	10/5/2019	14:04:01	2.694038	20
350	10/5/2019	14:05:01	2.694038	20.2
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352	10/5/2019	14:07:01	2.694038	20.2
353	10/5/2019	14:08:01	2.693676	20.2
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363	10/5/2019	14:18:01	2.694038	20.2
364	10/5/2019	14:19:01	2.693676	20.1
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367	10/5/2019	14:22:01	2.694399	19.9
368	10/5/2019	14:23:01	2.693676	20
369	10/5/2019	14:24:01	2.693676	20.1
370	10/5/2019	14:25:01	2.694038	20.2
371	10/5/2019	14:26:01	2.694038	20.3
372	10/5/2019	14:27:01	2.695485	20.2
373	10/5/2019	14:28:01	2.694399	20.2
374	10/5/2019	14:29:01	2.696208	20.1
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377	10/5/2019	14:32:01	2.694038	19.9
378	10/5/2019	14:33:01	2.694038	20
379	10/5/2019	14:34:01	2.694038	20.1
380	10/5/2019	14:35:01	2.695846	20.2
381	10/5/2019	14:36:01	2.695123	20.3
382	10/5/2019	14:37:01	2.694761	20.3
383	10/5/2019	14:38:01	2.695485	20.2
384	10/5/2019	14:39:01	2.694761	20.1
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386	10/5/2019	14:41:01	2.694399	19.9
387	10/5/2019	14:42:01	2.694761	19.9
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392	10/5/2019	14:47:01	2.694399	20.2
393	10/5/2019	14:48:01	2.694399	20.2
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399	10/5/2019	14:54:01	2.696208	20.1
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402	10/5/2019	14:57:01	2.696208	20.3
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405	10/5/2019	15:00:01	2.696208	20
406	10/5/2019	15:01:01	2.696208	19.9
407	10/5/2019	15:02:01	2.695485	19.9
408	10/5/2019	15:03:01	2.695123	19.9
409	10/5/2019	15:04:01	2.694761	20.1
410	10/5/2019	15:05:01	2.694399	20.2
411	10/5/2019	15:06:01	2.694038	20.3
412	10/5/2019	15:07:01	2.695123	20.3
413	10/5/2019	15:08:01	2.694761	20.2
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416	10/5/2019	15:11:01	2.695485	19.9
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419	10/5/2019	15:14:01	2.694761	20.1
420	10/5/2019	15:15:01	2.695485	20.2
421	10/5/2019	15:16:01	2.695846	20.3
422	10/5/2019	15:17:01	2.695485	20.3

423	10/5/2019	15:18:01	2.695846	20.2
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425	10/5/2019	15:20:01	2.694761	20
426	10/5/2019	15:21:01	2.695846	19.9
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434	10/5/2019	15:29:01	2.695846	20.1
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436	10/5/2019	15:31:01	2.696208	20
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439	10/5/2019	15:34:01	2.695485	20
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441	10/5/2019	15:36:01	2.695485	20.3
442	10/5/2019	15:37:01	2.694761	20.3
443	10/5/2019	15:38:01	2.695846	20.3
444	10/5/2019	15:39:01	2.695846	20.2
445	10/5/2019	15:40:01	2.695485	20.1
446	10/5/2019	15:41:01	2.695846	20
447	10/5/2019	15:42:01	2.694761	19.9
448	10/5/2019	15:43:01	2.695123	19.9
449	10/5/2019	15:44:01	2.696208	19.9
450	10/5/2019	15:45:01	2.694399	20.1
451	10/5/2019	15:46:01	2.694761	20.2
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453	10/5/2019	15:48:01	2.694761	20.3
454	10/5/2019	15:49:01	2.695485	20.2
455	10/5/2019	15:50:01	2.694038	20.2
456	10/5/2019	15:51:01	2.693676	20.1
457	10/5/2019	15:52:01	2.694038	20
458	10/5/2019	15:53:01	2.694399	19.9
459	10/5/2019	15:54:01	2.694761	19.9
460	10/5/2019	15:55:01	2.694038	20
461	10/5/2019	15:56:01	2.694038	20.1
462	10/5/2019	15:57:01	2.694038	20.2
463	10/5/2019	15:58:01	2.694399	20.3
464	10/5/2019	15:59:01	2.694038	20.3
465	10/5/2019	16:00:01	2.694038	20.3
466	10/5/2019	16:01:01	2.694399	20.2
467	10/5/2019	16:02:01	2.694038	20.1
468	10/5/2019	16:03:01	2.694399	20
469	10/5/2019	16:04:01	2.694038	20

470	10/5/2019	16:05:01	2.694038	19.9	
471	10/5/2019	16:06:01	2.694038	19.9	
472	10/5/2019	16:07:01	2.694399	20	
473	10/5/2019	16:08:01	2.694399	20.2	
474	10/5/2019	16:09:01	2.693676	20.3	
475	10/5/2019	16:10:01	2.694038	20.3	
476	10/5/2019	16:11:01	2.694038	20.3	
477	10/5/2019	16:12:01	2.694399	20.2	
478	10/5/2019	16:13:01	2.693676	20.2	
479	10/5/2019	16:14:01	2.693676	20.1	
480	10/5/2019	16:15:01	2.692591	20	
481	10/5/2019	16:16:01	2.694038	20	8 horas
482	10/5/2019	16:17:01	2.691868	20	
483	10/5/2019	16:18:01	2.692229	20.1	
484	10/5/2019	16:19:01	2.692229	20.1	
485	10/5/2019	16:20:01	2.691868	20.1	
486	10/5/2019	16:21:01	2.691144	20.1	
487	10/5/2019	16:22:01	2.690782	20.1	
488	10/5/2019	16:23:01	2.690421	20	
489	10/5/2019	16:24:01	2.690421	20	
490	10/5/2019	16:25:01	2.689336	19.9	
491	10/5/2019	16:26:01	2.690059	20	
492	10/5/2019	16:27:01	2.688612	20.1	
493	10/5/2019	16:28:01	2.68825	20.2	
494	10/5/2019	16:29:01	2.68825	20.3	
495	10/5/2019	16:30:01	2.687889	20.3	
496	10/5/2019	16:31:01	2.687889	20.3	
497	10/5/2019	16:32:01	2.687527	20.2	
498	10/5/2019	16:33:01	2.68608	20.1	
499	10/5/2019	16:34:01	2.686804	20.1	
500	10/5/2019	16:35:01	2.685357	20	
501	10/5/2019	16:36:01	2.685718	19.9	
502	10/5/2019	16:37:01	2.685357	19.9	
503	10/5/2019	16:38:01	2.685357	20	
504	10/5/2019	16:39:01	2.685357	20.2	
505	10/5/2019	16:40:01	2.684995	20.3	
506	10/5/2019	16:41:01	2.684633	20.3	
507	10/5/2019	16:42:01	2.684633	20.3	
508	10/5/2019	16:43:01	2.68391	20.2	
509	10/5/2019	16:44:01	2.682463	20.2	
510	10/5/2019	16:45:01	2.682463	20.1	
511	10/5/2019	16:46:01	2.682825	20	
512	10/5/2019	16:47:01	2.682463	20	
513	10/5/2019	16:48:01	2.682463	19.9	
514	10/5/2019	16:49:01	2.68174	19.9	
515	10/5/2019	16:50:01	2.680655	20.1	
516	10/5/2019	16:51:01	2.68174	20.2	

517	10/5/2019	16:52:01	2.679931	20.3
518	10/5/2019	16:53:01	2.680293	20.3
519	10/5/2019	16:54:01	2.679569	20.3
520	10/5/2019	16:55:01	2.679569	20.2
521	10/5/2019	16:56:01	2.679569	20.1
522	10/5/2019	16:57:01	2.679569	20
523	10/5/2019	16:58:01	2.678484	20
524	10/5/2019	16:59:01	2.678484	19.9
525	10/5/2019	17:00:01	2.677399	19.9
526	10/5/2019	17:01:01	2.676676	20.1
527	10/5/2019	17:02:01	2.677037	20.2
528	10/5/2019	17:03:01	2.677037	20.3
529	10/5/2019	17:04:01	2.676676	20.3
530	10/5/2019	17:05:01	2.676676	20.3
531	10/5/2019	17:06:01	2.676314	20.2
532	10/5/2019	17:07:01	2.675952	20.1
533	10/5/2019	17:08:01	2.675229	20.1
534	10/5/2019	17:09:01	2.674867	20
535	10/5/2019	17:10:01	2.674144	19.9
536	10/5/2019	17:11:01	2.674505	19.9
537	10/5/2019	17:12:01	2.673782	20
538	10/5/2019	17:13:01	2.673782	20.2
539	10/5/2019	17:14:01	2.674144	20.3
540	10/5/2019	17:15:01	2.673782	20.3
541	10/5/2019	17:16:01	2.673782	20.3
542	10/5/2019	17:17:01	2.672335	20.2
543	10/5/2019	17:18:01	2.672335	20.2
544	10/5/2019	17:19:01	2.672335	20.1
545	10/5/2019	17:20:01	2.672335	20
546	10/5/2019	17:21:01	2.670888	19.9
547	10/5/2019	17:22:01	2.670888	19.9
548	10/5/2019	17:23:01	2.670526	20
549	10/5/2019	17:24:01	2.670888	20.2
550	10/5/2019	17:25:01	2.670888	20.3
551	10/5/2019	17:26:01	2.670526	20.3
552	10/5/2019	17:27:01	2.670165	20.3
553	10/5/2019	17:28:01	2.669803	20.2
554	10/5/2019	17:29:01	2.66908	20.2
555	10/5/2019	17:30:01	2.667994	20.1
556	10/5/2019	17:31:01	2.667994	20
557	10/5/2019	17:32:01	2.668718	20
558	10/5/2019	17:33:01	2.667994	19.9
559	10/5/2019	17:34:01	2.667994	20
560	10/5/2019	17:35:01	2.667633	20.1
561	10/5/2019	17:36:01	2.667994	20.2
562	10/5/2019	17:37:01	2.667271	20.3
563	10/5/2019	17:38:01	2.666909	20.3

564	10/5/2019	17:39:01	2.666909	20.3
565	10/5/2019	17:40:01	2.665824	20.2
566	10/5/2019	17:41:01	2.665462	20.2
567	10/5/2019	17:42:01	2.665462	20.1
568	10/5/2019	17:43:01	2.665101	20
569	10/5/2019	17:44:01	2.665101	19.9
570	10/5/2019	17:45:01	2.664739	19.9
571	10/5/2019	17:46:01	2.665101	20
572	10/5/2019	17:47:01	2.664739	20.2
573	10/5/2019	17:48:01	2.663654	20.3
574	10/5/2019	17:49:01	2.66293	20.3
575	10/5/2019	17:50:01	2.662569	20.3
576	10/5/2019	17:51:01	2.66293	20.2
577	10/5/2019	17:52:01	2.662207	20.2
578	10/5/2019	17:53:01	2.662207	20.1
579	10/5/2019	17:54:01	2.662207	20
580	10/5/2019	17:55:01	2.662207	19.9
581	10/5/2019	17:56:01	2.661845	19.9
582	10/5/2019	17:57:01	2.661484	20
583	10/5/2019	17:58:01	2.661845	20.1
584	10/5/2019	17:59:01	2.660398	20.3
585	10/5/2019	18:00:01	2.659675	20.3
586	10/5/2019	18:01:01	2.660037	20.3
587	10/5/2019	18:02:01	2.659313	20.2
588	10/5/2019	18:03:01	2.659675	20.2
589	10/5/2019	18:04:01	2.659313	20.1
590	10/5/2019	18:05:01	2.659313	20
591	10/5/2019	18:06:01	2.65859	20
592	10/5/2019	18:07:01	2.659313	19.9
593	10/5/2019	18:08:01	2.658952	19.9
594	10/5/2019	18:09:01	2.658228	20.1
595	10/5/2019	18:10:01	2.656781	20.2
596	10/5/2019	18:11:01	2.657143	20.3
597	10/5/2019	18:12:01	2.65642	20.3
598	10/5/2019	18:13:01	2.656781	20.2
599	10/5/2019	18:14:01	2.657143	20.2
600	10/5/2019	18:15:01	2.65642	20.1
601	10/5/2019	18:16:01	2.65642	20
602	10/5/2019	18:17:01	2.65642	19.9
603	10/5/2019	18:18:01	2.656058	19.9
604	10/5/2019	18:19:01	2.656058	20
605	10/5/2019	18:20:01	2.656058	20.1
606	10/5/2019	18:21:01	2.655334	20.2
607	10/5/2019	18:22:01	2.654249	20.3
608	10/5/2019	18:23:01	2.654249	20.3
609	10/5/2019	18:24:01	2.653526	20.2
610	10/5/2019	18:25:01	2.653526	20.2

611	10/5/2019	18:26:01	2.653526	20.1
612	10/5/2019	18:27:01	2.653526	20
613	10/5/2019	18:28:01	2.653526	19.9
614	10/5/2019	18:29:01	2.653526	19.9
615	10/5/2019	18:30:01	2.653526	20
616	10/5/2019	18:31:01	2.652803	20.1
617	10/5/2019	18:32:01	2.652803	20.3
618	10/5/2019	18:33:01	2.651717	20.3
619	10/5/2019	18:34:01	2.651717	20.3
620	10/5/2019	18:35:01	2.652079	20.2
621	10/5/2019	18:36:01	2.650994	20.1
622	10/5/2019	18:37:01	2.650994	20
623	10/5/2019	18:38:01	2.650994	19.9
624	10/5/2019	18:39:01	2.650994	19.9
625	10/5/2019	18:40:01	2.649547	19.9
626	10/5/2019	18:41:01	2.650271	20.1
627	10/5/2019	18:42:01	2.650271	20.2
628	10/5/2019	18:43:01	2.649547	20.3
629	10/5/2019	18:44:01	2.649185	20.3
630	10/5/2019	18:45:01	2.648462	20.2
631	10/5/2019	18:46:01	2.648823	20.1
632	10/5/2019	18:47:01	2.648823	20
633	10/5/2019	18:48:01	2.648823	20
634	10/5/2019	18:49:01	2.6481	19.9
635	10/5/2019	18:50:01	2.6481	19.9
636	10/5/2019	18:51:01	2.6481	20
637	10/5/2019	18:52:01	2.647739	20.2
638	10/5/2019	18:53:01	2.6481	20.3
639	10/5/2019	18:54:01	2.647377	20.3
640	10/5/2019	18:55:01	2.647739	20.2
641	10/5/2019	18:56:01	2.647377	20.2
642	10/5/2019	18:57:01	2.646653	20.1
643	10/5/2019	18:58:01	2.645568	20
644	10/5/2019	18:59:01	2.64593	19.9
645	10/5/2019	19:00:01	2.645568	19.9
646	10/5/2019	19:01:01	2.645206	20
647	10/5/2019	19:02:01	2.645206	20.2
648	10/5/2019	19:03:01	2.645206	20.3
649	10/5/2019	19:04:01	2.645206	20.3
650	10/5/2019	19:05:01	2.644483	20.2
651	10/5/2019	19:06:01	2.645206	20.2
652	10/5/2019	19:07:01	2.644121	20.1
653	10/5/2019	19:08:01	2.644121	20
654	10/5/2019	19:09:01	2.644121	19.9
655	10/5/2019	19:10:01	2.643398	19.9
656	10/5/2019	19:11:01	2.643036	20
657	10/5/2019	19:12:01	2.64376	20.1

658	10/5/2019	19:13:01	2.642313	20.3
659	10/5/2019	19:14:01	2.642313	20.3
660	10/5/2019	19:15:01	2.642674	20.3
661	10/5/2019	19:16:01	2.641951	20.2
662	10/5/2019	19:17:01	2.64159	20.1
663	10/5/2019	19:18:01	2.641951	20
664	10/5/2019	19:19:01	2.641951	19.9
665	10/5/2019	19:20:01	2.641228	19.9
666	10/5/2019	19:21:01	2.641228	19.9
667	10/5/2019	19:22:01	2.640866	20.1
668	10/5/2019	19:23:01	2.640142	20.2
669	10/5/2019	19:24:01	2.639781	20.3
670	10/5/2019	19:25:01	2.639781	20.3
671	10/5/2019	19:26:01	2.640142	20.2
672	10/5/2019	19:27:01	2.639419	20.1
673	10/5/2019	19:28:01	2.639419	20
674	10/5/2019	19:29:01	2.639419	19.9
675	10/5/2019	19:30:01	2.639419	19.9
676	10/5/2019	19:31:01	2.639058	19.9
677	10/5/2019	19:32:01	2.639058	20
678	10/5/2019	19:33:01	2.638696	20.2
679	10/5/2019	19:34:01	2.638696	20.3
680	10/5/2019	19:35:01	2.63761	20.3
681	10/5/2019	19:36:01	2.637249	20.2
682	10/5/2019	19:37:01	2.63761	20.1
683	10/5/2019	19:38:01	2.63761	20
684	10/5/2019	19:39:01	2.636887	19.9
685	10/5/2019	19:40:01	2.636525	19.9
686	10/5/2019	19:41:01	2.636525	19.9
687	10/5/2019	19:42:01	2.636164	20.1
688	10/5/2019	19:43:01	2.636525	20.2
689	10/5/2019	19:44:01	2.636525	20.3
690	10/5/2019	19:45:01	2.635802	20.2
691	10/5/2019	19:46:01	2.635802	20.2
692	10/5/2019	19:47:01	2.634717	20.1
693	10/5/2019	19:48:01	2.635079	20
694	10/5/2019	19:49:01	2.634355	19.9
695	10/5/2019	19:50:01	2.634355	19.9
696	10/5/2019	19:51:01	2.633993	19.9
697	10/5/2019	19:52:01	2.633632	20.1
698	10/5/2019	19:53:01	2.633632	20.2
699	10/5/2019	19:54:01	2.633632	20.3
700	10/5/2019	19:55:01	2.633632	20.3
701	10/5/2019	19:56:01	2.633632	20.2
702	10/5/2019	19:57:01	2.633632	20.1
703	10/5/2019	19:58:01	2.632908	20
704	10/5/2019	19:59:01	2.632908	19.9

705	10/5/2019	20:00:01	2.631823	19.9
706	10/5/2019	20:01:01	2.632185	19.9
707	10/5/2019	20:02:01	2.632185	20
708	10/5/2019	20:03:01	2.631461	20.2
709	10/5/2019	20:04:01	2.630738	20.3
710	10/5/2019	20:05:01	2.630738	20.3
711	10/5/2019	20:06:01	2.6311	20.2
712	10/5/2019	20:07:01	2.630738	20.1
713	10/5/2019	20:08:01	2.630738	20
714	10/5/2019	20:09:01	2.630738	19.9
715	10/5/2019	20:10:01	2.630738	19.9
716	10/5/2019	20:11:01	2.630738	19.9
717	10/5/2019	20:12:01	2.630738	20
718	10/5/2019	20:13:01	2.630376	20.2
719	10/5/2019	20:14:01	2.629653	20.3
720	10/5/2019	20:15:01	2.630376	20.3
721	10/5/2019	20:16:01	2.630376	20.2
722	10/5/2019	20:17:01	2.629291	20.1
723	10/5/2019	20:18:01	2.628929	20
724	10/5/2019	20:19:01	2.628206	19.9
725	10/5/2019	20:20:01	2.627844	19.9
726	10/5/2019	20:21:01	2.627844	19.9
727	10/5/2019	20:22:01	2.627483	20
728	10/5/2019	20:23:01	2.627844	20.2
729	10/5/2019	20:24:01	2.627844	20.3
730	10/5/2019	20:25:01	2.627844	20.2
731	10/5/2019	20:26:01	2.627483	20.2
732	10/5/2019	20:27:01	2.627121	20.1
733	10/5/2019	20:28:01	2.626759	20
734	10/5/2019	20:29:01	2.627121	19.9
735	10/5/2019	20:30:01	2.627121	19.9
736	10/5/2019	20:31:01	2.626397	19.9
737	10/5/2019	20:32:01	2.625674	20.1
738	10/5/2019	20:33:01	2.625674	20.2
739	10/5/2019	20:34:01	2.625312	20.3
740	10/5/2019	20:35:01	2.624951	20.2
741	10/5/2019	20:36:01	2.624951	20.2
742	10/5/2019	20:37:01	2.624951	20.1
743	10/5/2019	20:38:01	2.625312	20
744	10/5/2019	20:39:01	2.624951	19.9
745	10/5/2019	20:40:01	2.624589	19.9
746	10/5/2019	20:41:01	2.624951	20
747	10/5/2019	20:42:01	2.624951	20.1
748	10/5/2019	20:43:01	2.623142	20.2
749	10/5/2019	20:44:01	2.624589	20.3
750	10/5/2019	20:45:01	2.623866	20.2
751	10/5/2019	20:46:01	2.62278	20.1

752	10/5/2019	20:47:01	2.622419	20
753	10/5/2019	20:48:01	2.622057	19.9
754	10/5/2019	20:49:01	2.622419	19.9
755	10/5/2019	20:50:01	2.62278	19.9
756	10/5/2019	20:51:01	2.622057	20
757	10/5/2019	20:52:01	2.622057	20.2
758	10/5/2019	20:53:01	2.622057	20.3
759	10/5/2019	20:54:01	2.622419	20.2
760	10/5/2019	20:55:01	2.622057	20.2
761	10/5/2019	20:56:01	2.622057	20.1
762	10/5/2019	20:57:01	2.622057	20
763	10/5/2019	20:58:01	2.621695	19.9
764	10/5/2019	20:59:01	2.62061	19.9
765	10/5/2019	21:00:01	2.619886	19.9
766	10/5/2019	21:01:01	2.620248	20
767	10/5/2019	21:02:01	2.620248	20.2
768	10/5/2019	21:03:01	2.619525	20.3
769	10/5/2019	21:04:01	2.619525	20.2
770	10/5/2019	21:05:01	2.62061	20.2
771	10/5/2019	21:06:01	2.619163	20.1
772	10/5/2019	21:07:01	2.619163	20
773	10/5/2019	21:08:01	2.619163	19.9
774	10/5/2019	21:09:01	2.619163	19.9
775	10/5/2019	21:10:01	2.619163	19.9
776	10/5/2019	21:11:01	2.619163	20.1
777	10/5/2019	21:12:01	2.61844	20.2
778	10/5/2019	21:13:01	2.61844	20.3
779	10/5/2019	21:14:01	2.61844	20.2
780	10/5/2019	21:15:01	2.618078	20.1
781	10/5/2019	21:16:01	2.617716	20.1
782	10/5/2019	21:17:01	2.616993	19.9
783	10/5/2019	21:18:01	2.617355	19.9
784	10/5/2019	21:19:01	2.617355	19.9
785	10/5/2019	21:20:01	2.61627	20
786	10/5/2019	21:21:01	2.616631	20.1
787	10/5/2019	21:22:01	2.61627	20.2
788	10/5/2019	21:23:01	2.61627	20.2
789	10/5/2019	21:24:01	2.61627	20.2
790	10/5/2019	21:25:01	2.61627	20.1
791	10/5/2019	21:26:01	2.61627	20
792	10/5/2019	21:27:01	2.61627	19.9
793	10/5/2019	21:28:01	2.615184	19.9
794	10/5/2019	21:29:01	2.615546	19.9
795	10/5/2019	21:30:01	2.615908	20
796	10/5/2019	21:31:01	2.615546	20.2
797	10/5/2019	21:32:01	2.615546	20.2
798	10/5/2019	21:33:01	2.615546	20.3

799	10/5/2019	21:34:01	2.614823	20.2
800	10/5/2019	21:35:01	2.614461	20.1
801	10/5/2019	21:36:01	2.613738	20
802	10/5/2019	21:37:01	2.613738	19.9
803	10/5/2019	21:38:01	2.613376	19.9
804	10/5/2019	21:39:01	2.613738	19.9
805	10/5/2019	21:40:01	2.613376	20
806	10/5/2019	21:41:01	2.613376	20.2
807	10/5/2019	21:42:01	2.613738	20.2
808	10/5/2019	21:43:01	2.613376	20.2
809	10/5/2019	21:44:01	2.613014	20.2
810	10/5/2019	21:45:01	2.613376	20.1
811	10/5/2019	21:46:01	2.612653	19.9
812	10/5/2019	21:47:01	2.611567	19.9
813	10/5/2019	21:48:01	2.612291	19.9
814	10/5/2019	21:49:01	2.612291	19.9
815	10/5/2019	21:50:01	2.611929	20.1
816	10/5/2019	21:51:01	2.611567	20.2
817	10/5/2019	21:52:01	2.610844	20.2
818	10/5/2019	21:53:01	2.611567	20.2
819	10/5/2019	21:54:01	2.610482	20.1
820	10/5/2019	21:55:01	2.610482	20
821	10/5/2019	21:56:01	2.610482	19.9
822	10/5/2019	21:57:01	2.610482	19.9
823	10/5/2019	21:58:01	2.610482	19.9
824	10/5/2019	21:59:01	2.610121	20
825	10/5/2019	22:00:01	2.610482	20.2
826	10/5/2019	22:01:01	2.610482	20.2
827	10/5/2019	22:02:01	2.609759	20.2
828	10/5/2019	22:03:01	2.610121	20.2
829	10/5/2019	22:04:01	2.609759	20.1
830	10/5/2019	22:05:01	2.609035	19.9
831	10/5/2019	22:06:01	2.609035	19.9
832	10/5/2019	22:07:01	2.608673	19.9
833	10/5/2019	22:08:01	2.608312	19.9
834	10/5/2019	22:09:01	2.608312	20.1
835	10/5/2019	22:10:01	2.608673	20.2
836	10/5/2019	22:11:01	2.608312	20.2
837	10/5/2019	22:12:01	2.60795	20.2
838	10/5/2019	22:13:01	2.60795	20.1
839	10/5/2019	22:14:01	2.607227	20
840	10/5/2019	22:15:01	2.607589	19.9
841	10/5/2019	22:16:01	2.607589	19.9
842	10/5/2019	22:17:01	2.607589	19.9
843	10/5/2019	22:18:01	2.607589	20
844	10/5/2019	22:19:01	2.606865	20.1
845	10/5/2019	22:20:01	2.607227	20.2

846	10/5/2019	22:21:01	2.606865	20.2
847	10/5/2019	22:22:01	2.606503	20.2
848	10/5/2019	22:23:01	2.607227	20.1
849	10/5/2019	22:24:01	2.605418	19.9
850	10/5/2019	22:25:01	2.60578	19.9
851	10/5/2019	22:26:01	2.606142	19.9
852	10/5/2019	22:27:01	2.604695	19.9
853	10/5/2019	22:28:01	2.605418	20.1
854	10/5/2019	22:29:01	2.604695	20.2
855	10/5/2019	22:30:01	2.604695	20.2
856	10/5/2019	22:31:01	2.604695	20.2
857	10/5/2019	22:32:01	2.604695	20.1
858	10/5/2019	22:33:01	2.604695	20
859	10/5/2019	22:34:01	2.604695	19.9
860	10/5/2019	22:35:01	2.604695	19.8
861	10/5/2019	22:36:01	2.604695	19.9
862	10/5/2019	22:37:01	2.603971	19.9
863	10/5/2019	22:38:01	2.604333	20.1
864	10/5/2019	22:39:01	2.60361	20.2
865	10/5/2019	22:40:01	2.60361	20.2
866	10/5/2019	22:41:01	2.602886	20.2
867	10/5/2019	22:42:01	2.603248	20.1
868	10/5/2019	22:43:01	2.602524	20
869	10/5/2019	22:44:01	2.602524	19.9
870	10/5/2019	22:45:01	2.602163	19.8
871	10/5/2019	22:46:01	2.602524	19.9
872	10/5/2019	22:47:01	2.602163	20
873	10/5/2019	22:48:01	2.601801	20.1
874	10/5/2019	22:49:01	2.601801	20.2
875	10/5/2019	22:50:01	2.601801	20.2
876	10/5/2019	22:51:01	2.601439	20.2
877	10/5/2019	22:52:01	2.601801	20.1
878	10/5/2019	22:53:01	2.601439	20
879	10/5/2019	22:54:01	2.601801	19.9
880	10/5/2019	22:55:01	2.601439	19.9
881	10/5/2019	22:56:01	2.601801	19.9
882	10/5/2019	22:57:01	2.601439	20
883	10/5/2019	22:58:01	2.601439	20.2
884	10/5/2019	22:59:01	2.600354	20.2
885	10/5/2019	23:00:01	2.599992	20.2
886	10/5/2019	23:01:01	2.600354	20.1
887	10/5/2019	23:02:01	2.599992	20
888	10/5/2019	23:03:01	2.600354	19.9
889	10/5/2019	23:04:01	2.599631	19.8
890	10/5/2019	23:05:01	2.599631	19.9
891	10/5/2019	23:06:01	2.599631	20
892	10/5/2019	23:07:01	2.599631	20.1

893	10/5/2019	23:08:01	2.598907	20.2
894	10/5/2019	23:09:01	2.598907	20.2
895	10/5/2019	23:10:01	2.598907	20.2
896	10/5/2019	23:11:01	2.598907	20.1
897	10/5/2019	23:12:01	2.598184	20
898	10/5/2019	23:13:01	2.598184	19.9
899	10/5/2019	23:14:01	2.598907	19.8
900	10/5/2019	23:15:01	2.598184	19.9
901	10/5/2019	23:16:01	2.598184	20
902	10/5/2019	23:17:01	2.597822	20.2
903	10/5/2019	23:18:01	2.597822	20.2
904	10/5/2019	23:19:01	2.597461	20.2
905	10/5/2019	23:20:01	2.596737	20.1
906	10/5/2019	23:21:01	2.597822	20
907	10/5/2019	23:22:01	2.597099	19.9
908	10/5/2019	23:23:01	2.596375	19.9
909	10/5/2019	23:24:01	2.596014	19.9
910	10/5/2019	23:25:01	2.596375	19.9
911	10/5/2019	23:26:01	2.596014	20.1
912	10/5/2019	23:27:01	2.596014	20.2
913	10/5/2019	23:28:01	2.596014	20.2
914	10/5/2019	23:29:01	2.596014	20.2
915	10/5/2019	23:30:01	2.596014	20.1
916	10/5/2019	23:31:01	2.596014	19.9
917	10/5/2019	23:32:01	2.596014	19.9
918	10/5/2019	23:33:01	2.596014	19.8
919	10/5/2019	23:34:01	2.596014	19.9
920	10/5/2019	23:35:01	2.594929	20
921	10/5/2019	23:36:01	2.595652	20.2
922	10/5/2019	23:37:01	2.595652	20.2
923	10/5/2019	23:38:01	2.594929	20.2
924	10/5/2019	23:39:01	2.594205	20.1
925	10/5/2019	23:40:01	2.594567	20
926	10/5/2019	23:41:01	2.594205	19.9
927	10/5/2019	23:42:01	2.593843	19.8
928	10/5/2019	23:43:01	2.593843	19.9
929	10/5/2019	23:44:01	2.593482	20
930	10/5/2019	23:45:01	2.593482	20.1
931	10/5/2019	23:46:01	2.59312	20.2
932	10/5/2019	23:47:01	2.593482	20.2
933	10/5/2019	23:48:01	2.59312	20.2
934	10/5/2019	23:49:01	2.59312	20.1
935	10/5/2019	23:50:01	2.59312	19.9
936	10/5/2019	23:51:01	2.592758	19.8
937	10/5/2019	23:52:01	2.59312	19.9
938	10/5/2019	23:53:01	2.59312	19.9
939	10/5/2019	23:54:01	2.59312	20

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941	10/5/2019	23:56:01	2.592035	20.2
942	10/5/2019	23:57:01	2.591673	20.2
943	10/5/2019	23:58:01	2.591673	20.1
944	10/5/2019	23:59:01	2.591673	20
945	11/5/2019	0:00:01	2.591673	19.9
946	11/5/2019	0:01:01	2.59095	19.9
947	11/5/2019	0:02:01	2.590588	19.9
948	11/5/2019	0:03:01	2.59095	20
949	11/5/2019	0:04:01	2.590588	20.1
950	11/5/2019	0:05:01	2.59095	20.2
951	11/5/2019	0:06:01	2.590588	20.2
952	11/5/2019	0:07:01	2.590226	20.1
953	11/5/2019	0:08:01	2.590226	20
954	11/5/2019	0:09:01	2.590588	19.9
955	11/5/2019	0:10:01	2.590226	19.8
956	11/5/2019	0:11:01	2.590226	19.9
957	11/5/2019	0:12:01	2.590226	19.9
958	11/5/2019	0:13:01	2.589864	20.1
959	11/5/2019	0:14:01	2.590226	20.2
960	11/5/2019	0:15:01	2.589503	20.2
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962	11/5/2019	0:17:01	2.588779	20
963	11/5/2019	0:18:01	2.589141	19.9
964	11/5/2019	0:19:01	2.589503	19.8
965	11/5/2019	0:20:01	2.588418	19.8
966	11/5/2019	0:21:01	2.589503	19.9
967	11/5/2019	0:22:01	2.588056	20
968	11/5/2019	0:23:01	2.588056	20.2
969	11/5/2019	0:24:01	2.587332	20.2
970	11/5/2019	0:25:01	2.588418	20.2
971	11/5/2019	0:26:01	2.587332	20.1
972	11/5/2019	0:27:01	2.588056	20
973	11/5/2019	0:28:01	2.587332	19.9
974	11/5/2019	0:29:01	2.587332	19.8
975	11/5/2019	0:30:01	2.587332	19.9
976	11/5/2019	0:31:01	2.587332	20
977	11/5/2019	0:32:01	2.587332	20.1
978	11/5/2019	0:33:01	2.587332	20.2
979	11/5/2019	0:34:01	2.587332	20.2
980	11/5/2019	0:35:01	2.587332	20.1
981	11/5/2019	0:36:01	2.587332	20
982	11/5/2019	0:37:01	2.587332	19.9
983	11/5/2019	0:38:01	2.586971	19.8
984	11/5/2019	0:39:01	2.586609	19.9
985	11/5/2019	0:40:01	2.586971	19.9
986	11/5/2019	0:41:01	2.587332	20.1

987	11/5/2019	0:42:01	2.587332	20.2
988	11/5/2019	0:43:01	2.586971	20.2
989	11/5/2019	0:44:01	2.586971	20.2
990	11/5/2019	0:45:01	2.586971	20.1
991	11/5/2019	0:46:01	2.585886	19.9
992	11/5/2019	0:47:01	2.586247	19.9
993	11/5/2019	0:48:01	2.586247	19.8
994	11/5/2019	0:49:01	2.585162	19.9
995	11/5/2019	0:50:01	2.585162	20
996	11/5/2019	0:51:01	2.584439	20.1
997	11/5/2019	0:52:01	2.585162	20.2
998	11/5/2019	0:53:01	2.584439	20.2
999	11/5/2019	0:54:01	2.584439	20.1
1000	11/5/2019	0:55:01	2.584439	20
1001	11/5/2019	0:56:01	2.5848	19.9
1002	11/5/2019	0:57:01	2.5848	19.8
1003	11/5/2019	0:58:01	2.584077	19.9
1004	11/5/2019	0:59:01	2.584439	19.9
1005	11/5/2019	1:00:01	2.584439	20.1
1006	11/5/2019	1:01:01	2.585162	20.2
1007	11/5/2019	1:02:01	2.584077	20.2
1008	11/5/2019	1:03:01	2.584439	20.1
1009	11/5/2019	1:04:01	2.584439	20
1010	11/5/2019	1:05:01	2.584439	19.9
1011	11/5/2019	1:06:01	2.583354	19.8
1012	11/5/2019	1:07:01	2.583354	19.8
1013	11/5/2019	1:08:01	2.583715	19.9
1014	11/5/2019	1:09:01	2.583354	20
1015	11/5/2019	1:10:01	2.58263	20.2
1016	11/5/2019	1:11:01	2.583354	20.2
1017	11/5/2019	1:12:01	2.581907	20.2
1018	11/5/2019	1:13:01	2.58263	20.1
1019	11/5/2019	1:14:01	2.581545	19.9
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1021	11/5/2019	1:16:01	2.581907	19.8
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1023	11/5/2019	1:18:01	2.581545	19.9
1024	11/5/2019	1:19:01	2.581545	20.1
1025	11/5/2019	1:20:01	2.581545	20.2
1026	11/5/2019	1:21:01	2.581545	20.2
1027	11/5/2019	1:22:01	2.581545	20.1
1028	11/5/2019	1:23:01	2.581545	20
1029	11/5/2019	1:24:01	2.581545	19.9
1030	11/5/2019	1:25:01	2.581545	19.8
1031	11/5/2019	1:26:01	2.580822	19.8
1032	11/5/2019	1:27:01	2.580822	19.9
1033	11/5/2019	1:28:01	2.580822	20

1034	11/5/2019	1:29:01	2.581545	20.2
1035	11/5/2019	1:30:01	2.580822	20.2
1036	11/5/2019	1:31:01	2.580822	20.2
1037	11/5/2019	1:32:01	2.579736	20.1
1038	11/5/2019	1:33:01	2.579375	19.9
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1041	11/5/2019	1:36:01	2.579375	19.9
1042	11/5/2019	1:37:01	2.579375	20
1043	11/5/2019	1:38:01	2.579375	20.1
1044	11/5/2019	1:39:01	2.579375	20.2
1045	11/5/2019	1:40:01	2.578651	20.2
1046	11/5/2019	1:41:01	2.579013	20.1
1047	11/5/2019	1:42:01	2.578651	20
1048	11/5/2019	1:43:01	2.579013	19.9
1049	11/5/2019	1:44:01	2.578651	19.8
1050	11/5/2019	1:45:01	2.578651	19.8
1051	11/5/2019	1:46:01	2.57829	19.9
1052	11/5/2019	1:47:01	2.578651	20
1053	11/5/2019	1:48:01	2.578651	20.2
1054	11/5/2019	1:49:01	2.578651	20.2
1055	11/5/2019	1:50:01	2.578651	20.1
1056	11/5/2019	1:51:01	2.577928	20
1057	11/5/2019	1:52:01	2.577204	19.9
1058	11/5/2019	1:53:01	2.577928	19.8
1059	11/5/2019	1:54:01	2.577566	19.8
1060	11/5/2019	1:55:01	2.577566	19.9
1061	11/5/2019	1:56:01	2.576843	20
1062	11/5/2019	1:57:01	2.576843	20.1
1063	11/5/2019	1:58:01	2.576843	20.2
1064	11/5/2019	1:59:01	2.577566	20.2
1065	11/5/2019	2:00:01	2.575758	20.1
1066	11/5/2019	2:01:01	2.576119	20
1067	11/5/2019	2:02:01	2.576119	19.9
1068	11/5/2019	2:03:01	2.576119	19.8
1069	11/5/2019	2:04:01	2.576119	19.8
1070	11/5/2019	2:05:01	2.575758	19.9
1071	11/5/2019	2:06:01	2.576119	20.1
1072	11/5/2019	2:07:01	2.576119	20.2
1073	11/5/2019	2:08:01	2.575758	20.2
1074	11/5/2019	2:09:01	2.575758	20.1
1075	11/5/2019	2:10:01	2.575758	20
1076	11/5/2019	2:11:01	2.575758	19.9
1077	11/5/2019	2:12:01	2.575758	19.8
1078	11/5/2019	2:13:01	2.575034	19.8
1079	11/5/2019	2:14:01	2.575396	19.9
1080	11/5/2019	2:15:01	2.575034	20

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1082	11/5/2019	2:17:01	2.575396	20.2
1083	11/5/2019	2:18:01	2.575034	20.2
1084	11/5/2019	2:19:01	2.574672	20.1
1085	11/5/2019	2:20:01	2.574672	19.9
1086	11/5/2019	2:21:01	2.575034	19.8
1087	11/5/2019	2:22:01	2.574311	19.8
1088	11/5/2019	2:23:01	2.573949	19.9
1089	11/5/2019	2:24:01	2.573949	19.9
1090	11/5/2019	2:25:01	2.572864	20.1
1091	11/5/2019	2:26:01	2.573226	20.2
1092	11/5/2019	2:27:01	2.573949	20.2
1093	11/5/2019	2:28:01	2.573226	20.1
1094	11/5/2019	2:29:01	2.572864	20
1095	11/5/2019	2:30:01	2.573226	19.9
1096	11/5/2019	2:31:01	2.572864	19.8
1097	11/5/2019	2:32:01	2.572864	19.8
1098	11/5/2019	2:33:01	2.572864	19.9
1099	11/5/2019	2:34:01	2.572864	20
1100	11/5/2019	2:35:01	2.572864	20.1
1101	11/5/2019	2:36:01	2.572864	20.2
1102	11/5/2019	2:37:01	2.572864	20.1
1103	11/5/2019	2:38:01	2.572864	20
1104	11/5/2019	2:39:01	2.571779	19.9
1105	11/5/2019	2:40:01	2.572502	19.8
1106	11/5/2019	2:41:01	2.571779	19.8
1107	11/5/2019	2:42:01	2.57214	19.9
1108	11/5/2019	2:43:01	2.571055	19.9
1109	11/5/2019	2:44:01	2.570694	20.1
1110	11/5/2019	2:45:01	2.570694	20.2
1111	11/5/2019	2:46:01	2.571055	20.2
1112	11/5/2019	2:47:01	2.570694	20.1
1113	11/5/2019	2:48:01	2.571417	20
1114	11/5/2019	2:49:01	2.570332	19.9
1115	11/5/2019	2:50:01	2.570332	19.8
1116	11/5/2019	2:51:01	2.570694	19.8
1117	11/5/2019	2:52:01	2.56997	19.9
1118	11/5/2019	2:53:01	2.570694	20
1119	11/5/2019	2:54:01	2.570332	20.1
1120	11/5/2019	2:55:01	2.56997	20.2
1121	11/5/2019	2:56:01	2.56997	20.1
1122	11/5/2019	2:57:01	2.56997	20
1123	11/5/2019	2:58:01	2.56997	19.9
1124	11/5/2019	2:59:01	2.56997	19.8
1125	11/5/2019	3:00:01	2.56997	19.8
1126	11/5/2019	3:01:01	2.56997	19.9
1127	11/5/2019	3:02:01	2.569608	19.9

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1129	11/5/2019	3:04:01	2.569608	20.2
1130	11/5/2019	3:05:01	2.569608	20.2
1131	11/5/2019	3:06:01	2.568885	20.1
1132	11/5/2019	3:07:01	2.568162	20
1133	11/5/2019	3:08:01	2.568523	19.9
1134	11/5/2019	3:09:01	2.568523	19.8
1135	11/5/2019	3:10:01	2.569608	19.8
1136	11/5/2019	3:11:01	2.568523	19.9
1137	11/5/2019	3:12:01	2.568523	20
1138	11/5/2019	3:13:01	2.568523	20.1
1139	11/5/2019	3:14:01	2.568162	20.2
1140	11/5/2019	3:15:01	2.567438	20.1
1141	11/5/2019	3:16:01	2.567438	20
1142	11/5/2019	3:17:01	2.567077	19.9
1143	11/5/2019	3:18:01	2.567077	19.8
1144	11/5/2019	3:19:01	2.5678	19.8
1145	11/5/2019	3:20:01	2.567077	19.8
1146	11/5/2019	3:21:01	2.567438	19.9
1147	11/5/2019	3:22:01	2.567077	20
1148	11/5/2019	3:23:01	2.567077	20.1
1149	11/5/2019	3:24:01	2.567077	20.2
1150	11/5/2019	3:25:01	2.567077	20.1
1151	11/5/2019	3:26:01	2.567077	20
1152	11/5/2019	3:27:01	2.566715	19.9
1153	11/5/2019	3:28:01	2.566715	19.8
1154	11/5/2019	3:29:01	2.566353	19.8
1155	11/5/2019	3:30:01	2.566353	19.9
1156	11/5/2019	3:31:01	2.56563	19.9
1157	11/5/2019	3:32:01	2.565991	20.1
1158	11/5/2019	3:33:01	2.566715	20.2
1159	11/5/2019	3:34:01	2.566353	20.2
1160	11/5/2019	3:35:01	2.566353	20.1
1161	11/5/2019	3:36:01	2.565991	19.9
1162	11/5/2019	3:37:01	2.565268	19.8
1163	11/5/2019	3:38:01	2.56563	19.8
1164	11/5/2019	3:39:01	2.56563	19.8
1165	11/5/2019	3:40:01	2.56563	19.9
1166	11/5/2019	3:41:01	2.564545	20
1167	11/5/2019	3:42:01	2.564906	20.1
1168	11/5/2019	3:43:01	2.56563	20.2
1169	11/5/2019	3:44:01	2.564545	20.2
1170	11/5/2019	3:45:01	2.564183	20.1
1171	11/5/2019	3:46:01	2.564906	19.9
1172	11/5/2019	3:47:01	2.564183	19.8
1173	11/5/2019	3:48:01	2.564183	19.8
1174	11/5/2019	3:49:01	2.564183	19.8

1175	11/5/2019	3:50:01	2.564183	19.9
1176	11/5/2019	3:51:01	2.564183	20
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1179	11/5/2019	3:54:01	2.564183	20.1
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1181	11/5/2019	3:56:01	2.564183	19.9
1182	11/5/2019	3:57:01	2.564183	19.8
1183	11/5/2019	3:58:01	2.563459	19.8
1184	11/5/2019	3:59:01	2.563821	19.9
1185	11/5/2019	4:00:01	2.563459	19.9
1186	11/5/2019	4:01:01	2.562736	20.1
1187	11/5/2019	4:02:01	2.563459	20.2
1188	11/5/2019	4:03:01	2.563098	20.2
1189	11/5/2019	4:04:01	2.563459	20
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1191	11/5/2019	4:06:01	2.562374	19.8
1192	11/5/2019	4:07:01	2.561651	19.8
1193	11/5/2019	4:08:01	2.561651	19.8
1194	11/5/2019	4:09:01	2.561289	19.9
1195	11/5/2019	4:10:01	2.561289	20
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1202	11/5/2019	4:17:01	2.561289	19.8
1203	11/5/2019	4:18:01	2.560927	19.9
1204	11/5/2019	4:19:01	2.561289	19.9
1205	11/5/2019	4:20:01	2.561289	20.1
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1207	11/5/2019	4:22:01	2.560927	20.2
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1210	11/5/2019	4:25:01	2.560927	19.8
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1212	11/5/2019	4:27:01	2.559842	19.8
1213	11/5/2019	4:28:01	2.560927	19.9
1214	11/5/2019	4:29:01	2.560204	20
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1220	11/5/2019	4:35:01	2.558757	19.8
1221	11/5/2019	4:36:01	2.558395	19.8

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1223	11/5/2019	4:38:01	2.558395	19.9
1224	11/5/2019	4:39:01	2.558395	20
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1226	11/5/2019	4:41:01	2.558757	20.2
1227	11/5/2019	4:42:01	2.559119	20.1
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1230	11/5/2019	4:45:01	2.558395	19.8
1231	11/5/2019	4:46:01	2.558395	19.8
1232	11/5/2019	4:47:01	2.558395	19.9
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1236	11/5/2019	4:51:01	2.558395	20.2
1237	11/5/2019	4:52:01	2.558395	20.1
1238	11/5/2019	4:53:01	2.557672	19.9
1239	11/5/2019	4:54:01	2.55731	19.8
1240	11/5/2019	4:55:01	2.556949	19.8
1241	11/5/2019	4:56:01	2.556949	19.8
1242	11/5/2019	4:57:01	2.556949	19.9
1243	11/5/2019	4:58:01	2.557672	20
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1245	11/5/2019	5:00:01	2.556225	20.2
1246	11/5/2019	5:01:01	2.55731	20.1
1247	11/5/2019	5:02:01	2.556949	20
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1249	11/5/2019	5:04:01	2.555502	19.8
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1253	11/5/2019	5:08:01	2.555502	20
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1263	11/5/2019	5:18:01	2.555502	20.1
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1265	11/5/2019	5:20:01	2.55514	20.1
1266	11/5/2019	5:21:01	2.555502	20
1267	11/5/2019	5:22:01	2.555502	19.9
1268	11/5/2019	5:23:01	2.554416	19.8

1269	11/5/2019	5:24:01	2.554055	19.8
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1271	11/5/2019	5:26:01	2.554778	19.9
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1273	11/5/2019	5:28:01	2.553332	20.1
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1281	11/5/2019	5:36:01	2.55297	19.9
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1283	11/5/2019	5:38:01	2.55297	20.1
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1285	11/5/2019	5:40:01	2.552608	20.1
1286	11/5/2019	5:41:01	2.552608	20
1287	11/5/2019	5:42:01	2.55297	19.9
1288	11/5/2019	5:43:01	2.552608	19.8
1289	11/5/2019	5:44:01	2.552608	19.8
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1298	11/5/2019	5:53:01	2.551884	19.8
1299	11/5/2019	5:54:01	2.552608	19.8
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1301	11/5/2019	5:56:01	2.551523	19.9
1302	11/5/2019	5:57:01	2.550438	20
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1306	11/5/2019	6:01:01	2.549714	20
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1309	11/5/2019	6:04:01	2.550076	19.8
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1311	11/5/2019	6:06:01	2.550076	19.9
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1319	11/5/2019	6:14:01	2.549714	19.8
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1321	11/5/2019	6:16:01	2.549714	19.9
1322	11/5/2019	6:17:01	2.548991	20
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1325	11/5/2019	6:20:01	2.549714	20.1
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1327	11/5/2019	6:22:01	2.548991	19.8
1328	11/5/2019	6:23:01	2.548991	19.8
1329	11/5/2019	6:24:01	2.548268	19.8
1330	11/5/2019	6:25:01	2.549353	19.9
1331	11/5/2019	6:26:01	2.548991	20
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1333	11/5/2019	6:28:01	2.548991	20.2
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1338	11/5/2019	6:33:01	2.547182	19.8
1339	11/5/2019	6:34:01	2.547544	19.8
1340	11/5/2019	6:35:01	2.547544	19.9
1341	11/5/2019	6:36:01	2.547544	20
1342	11/5/2019	6:37:01	2.547182	20.1
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1344	11/5/2019	6:39:01	2.547544	20.1
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1350	11/5/2019	6:45:01	2.546821	19.9
1351	11/5/2019	6:46:01	2.546821	20
1352	11/5/2019	6:47:01	2.546821	20.1
1353	11/5/2019	6:48:01	2.546821	20.2
1354	11/5/2019	6:49:01	2.546821	20.1
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1357	11/5/2019	6:52:01	2.546459	19.8
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1360	11/5/2019	6:55:01	2.545374	19.9
1361	11/5/2019	6:56:01	2.546821	20
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1365	11/5/2019	7:00:01	2.546459	20
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1368	11/5/2019	7:03:01	2.545374	19.8
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1371	11/5/2019	7:06:01	2.544651	20.1
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1374	11/5/2019	7:09:01	2.544289	20
1375	11/5/2019	7:10:01	2.544289	19.9
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1379	11/5/2019	7:14:01	2.543927	19.9
1380	11/5/2019	7:15:01	2.543927	20
1381	11/5/2019	7:16:01	2.544289	20.1
1382	11/5/2019	7:17:01	2.543927	20.2
1383	11/5/2019	7:18:01	2.543927	20.1
1384	11/5/2019	7:19:01	2.543565	20
1385	11/5/2019	7:20:01	2.543927	19.9
1386	11/5/2019	7:21:01	2.543565	19.8
1387	11/5/2019	7:22:01	2.543927	19.8
1388	11/5/2019	7:23:01	2.543565	19.8
1389	11/5/2019	7:24:01	2.543927	19.9
1390	11/5/2019	7:25:01	2.543927	20.1
1391	11/5/2019	7:26:01	2.543927	20.2
1392	11/5/2019	7:27:01	2.543565	20.2
1393	11/5/2019	7:28:01	2.543927	20.1
1394	11/5/2019	7:29:01	2.543203	19.9
1395	11/5/2019	7:30:01	2.543203	19.8
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1403	11/5/2019	7:38:01	2.542842	20.1
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1405	11/5/2019	7:40:01	2.541757	19.8
1406	11/5/2019	7:41:01	2.541757	19.8
1407	11/5/2019	7:42:01	2.541395	19.8
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1424	11/5/2019	7:59:01	2.54031	19.9
1425	11/5/2019	8:00:01	2.54031	19.8
1426	11/5/2019	8:01:01	2.54031	19.8
1427	11/5/2019	8:02:01	2.541033	19.8
1428	11/5/2019	8:03:01	2.539948	19.9
1429	11/5/2019	8:04:01	2.539586	20
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1432	11/5/2019	8:07:01	2.539586	20.1
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1434	11/5/2019	8:09:01	2.539948	19.8
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1441	11/5/2019	8:16:01	2.539586	20.1
1442	11/5/2019	8:17:01	2.538501	20
1443	11/5/2019	8:18:01	2.538501	19.9
1444	11/5/2019	8:19:01	2.538501	19.8
1445	11/5/2019	8:20:01	2.53814	19.8
1446	11/5/2019	8:21:01	2.538501	19.8
1447	11/5/2019	8:22:01	2.53814	19.9
1448	11/5/2019	8:23:01	2.53814	20
1449	11/5/2019	8:24:01	2.53814	20.2
1450	11/5/2019	8:25:01	2.53814	20.2
1451	11/5/2019	8:26:01	2.53814	20.1
1452	11/5/2019	8:27:01	2.537416	20
1453	11/5/2019	8:28:01	2.53814	19.8
1454	11/5/2019	8:29:01	2.537778	19.8
1455	11/5/2019	8:30:01	2.537778	19.8
1456	11/5/2019	8:31:01	2.537778	19.9

1457	11/5/2019	8:32:01	2.537778	20
1458	11/5/2019	8:33:01	2.537416	20.1
1459	11/5/2019	8:34:01	2.537778	20.2
1460	11/5/2019	8:35:01	2.53814	20.2
1461	11/5/2019	8:36:01	2.537778	20
1462	11/5/2019	8:37:01	2.53814	19.9
1463	11/5/2019	8:38:01	2.537416	19.8
1464	11/5/2019	8:39:01	2.537416	19.8
1465	11/5/2019	8:40:01	2.537054	19.8
1466	11/5/2019	8:41:01	2.537416	19.9
1467	11/5/2019	8:42:01	2.537416	20
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1469	11/5/2019	8:44:01	2.536331	20.2
1470	11/5/2019	8:45:01	2.536331	20.1
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1473	11/5/2019	8:48:01	2.536331	19.8
1474	11/5/2019	8:49:01	2.536693	19.8
1475	11/5/2019	8:50:01	2.536331	19.9
1476	11/5/2019	8:51:01	2.535246	19.9
1477	11/5/2019	8:52:01	2.535608	20.1
1478	11/5/2019	8:53:01	2.535608	20.2
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1484	11/5/2019	8:59:01	2.535246	19.8
1485	11/5/2019	9:00:01	2.535246	19.9
1486	11/5/2019	9:01:01	2.535608	20
1487	11/5/2019	9:02:01	2.534884	20.1
1488	11/5/2019	9:03:01	2.535246	20.2
1489	11/5/2019	9:04:01	2.534522	20.1
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1492	11/5/2019	9:07:01	2.535246	19.8
1493	11/5/2019	9:08:01	2.534522	19.8
1494	11/5/2019	9:09:01	2.534884	19.9
1495	11/5/2019	9:10:01	2.534522	19.9
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1502	11/5/2019	9:17:01	2.533799	19.8
1503	11/5/2019	9:18:01	2.533437	19.8

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1505	11/5/2019	9:20:01	2.533076	20
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1507	11/5/2019	9:22:01	2.533437	20.2
1508	11/5/2019	9:23:01	2.533076	20.1
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1514	11/5/2019	9:29:01	2.532352	19.9
1515	11/5/2019	9:30:01	2.532352	20
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1518	11/5/2019	9:33:01	2.532352	20.1
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1520	11/5/2019	9:35:01	2.532352	19.8
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1522	11/5/2019	9:37:01	2.532352	19.8
1523	11/5/2019	9:38:01	2.532352	19.9
1524	11/5/2019	9:39:01	2.532352	20
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1526	11/5/2019	9:41:01	2.532352	20.2
1527	11/5/2019	9:42:01	2.53199	20.1
1528	11/5/2019	9:43:01	2.532352	20
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1531	11/5/2019	9:46:01	2.53199	19.8
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1535	11/5/2019	9:50:01	2.532352	20.2
1536	11/5/2019	9:51:01	2.531629	20.2
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1539	11/5/2019	9:54:01	2.531267	19.8
1540	11/5/2019	9:55:01	2.530905	19.8
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1542	11/5/2019	9:57:01	2.530544	19.9
1543	11/5/2019	9:58:01	2.530544	20
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1545	11/5/2019	10:00:01	2.529459	20.2
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1549	11/5/2019	10:04:01	2.52982	19.8
1550	11/5/2019	10:05:01	2.52982	19.8

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1557	11/5/2019	10:12:01	2.529459	20
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1562	11/5/2019	10:17:01	2.529459	20
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1567	11/5/2019	10:22:01	2.529459	19.9
1568	11/5/2019	10:23:01	2.528735	19.8
1569	11/5/2019	10:24:01	2.529097	19.8
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1578	11/5/2019	10:33:01	2.52765	19.8
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1582	11/5/2019	10:37:01	2.526927	20.1
1583	11/5/2019	10:38:01	2.52765	20.2
1584	11/5/2019	10:39:01	2.528012	20.1
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1586	11/5/2019	10:41:01	2.526927	19.9
1587	11/5/2019	10:42:01	2.526927	19.8
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1597	11/5/2019	10:52:01	2.526565	19.8

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1608	11/5/2019	11:03:01	2.526203	19.8
1609	11/5/2019	11:04:01	2.525118	19.9
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1613	11/5/2019	11:08:01	2.526203	20.1
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1622	11/5/2019	11:17:01	2.524395	20.1
1623	11/5/2019	11:18:01	2.524033	20
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1625	11/5/2019	11:20:01	2.524395	19.8
1626	11/5/2019	11:21:01	2.523671	19.8
1627	11/5/2019	11:22:01	2.524395	19.9
1628	11/5/2019	11:23:01	2.523671	20
1629	11/5/2019	11:24:01	2.523671	20.1
1630	11/5/2019	11:25:01	2.523671	20.2
1631	11/5/2019	11:26:01	2.523671	20.2
1632	11/5/2019	11:27:01	2.524033	20.1
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1634	11/5/2019	11:29:01	2.523671	19.8
1635	11/5/2019	11:30:01	2.523671	19.8
1636	11/5/2019	11:31:01	2.523671	19.8
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1638	11/5/2019	11:33:01	2.523671	20
1639	11/5/2019	11:34:01	2.523671	20.2
1640	11/5/2019	11:35:01	2.523671	20.2
1641	11/5/2019	11:36:01	2.522948	20.1
1642	11/5/2019	11:37:01	2.523671	20
1643	11/5/2019	11:38:01	2.523671	19.9
1644	11/5/2019	11:39:01	2.522948	19.8

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1647	11/5/2019	11:42:01	2.523309	19.9
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1656	11/5/2019	11:51:01	2.522224	19.9
1657	11/5/2019	11:52:01	2.522948	20
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1659	11/5/2019	11:54:01	2.521863	20.2
1660	11/5/2019	11:55:01	2.521501	20.1
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1662	11/5/2019	11:57:01	2.521139	19.9
1663	11/5/2019	11:58:01	2.521139	19.8
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1665	11/5/2019	12:00:01	2.521501	19.9
1666	11/5/2019	12:01:01	2.521139	20
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1670	11/5/2019	12:05:01	2.520777	20.1
1671	11/5/2019	12:06:01	2.520777	20
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1681	11/5/2019	12:16:01	2.520777	19.9
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1684	11/5/2019	12:19:01	2.520777	19.8
1685	11/5/2019	12:20:01	2.520416	19.9
1686	11/5/2019	12:21:01	2.520416	20.1
1687	11/5/2019	12:22:01	2.520416	20.2
1688	11/5/2019	12:23:01	2.520054	20.2
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1690	11/5/2019	12:25:01	2.520054	20
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1693	11/5/2019	12:28:01	2.519331	19.8
1694	11/5/2019	12:29:01	2.518245	19.9
1695	11/5/2019	12:30:01	2.518969	20
1696	11/5/2019	12:31:01	2.519331	20.1
1697	11/5/2019	12:32:01	2.519331	20.2
1698	11/5/2019	12:33:01	2.519331	20.1
1699	11/5/2019	12:34:01	2.518607	20
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1701	11/5/2019	12:36:01	2.518245	19.8
1702	11/5/2019	12:37:01	2.518607	19.8
1703	11/5/2019	12:38:01	2.518245	19.9
1704	11/5/2019	12:39:01	2.519331	20
1705	11/5/2019	12:40:01	2.518245	20.1
1706	11/5/2019	12:41:01	2.518245	20.2
1707	11/5/2019	12:42:01	2.518245	20.2
1708	11/5/2019	12:43:01	2.518245	20.1
1709	11/5/2019	12:44:01	2.517884	19.9
1710	11/5/2019	12:45:01	2.517884	19.8
1711	11/5/2019	12:46:01	2.517884	19.8
1712	11/5/2019	12:47:01	2.517884	19.9
1713	11/5/2019	12:48:01	2.517884	20
1714	11/5/2019	12:49:01	2.517884	20.1
1715	11/5/2019	12:50:01	2.517884	20.2
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1717	11/5/2019	12:52:01	2.517884	20.1
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1723	11/5/2019	12:58:01	2.517884	20
1724	11/5/2019	12:59:01	2.517884	20.2
1725	11/5/2019	13:00:01	2.517884	20.2
1726	11/5/2019	13:01:01	2.516798	20.1
1727	11/5/2019	13:02:01	2.517884	20
1728	11/5/2019	13:03:01	2.516798	19.9
1729	11/5/2019	13:04:01	2.516798	19.8
1730	11/5/2019	13:05:01	2.51716	19.8
1731	11/5/2019	13:06:01	2.516437	19.9
1732	11/5/2019	13:07:01	2.516798	20
1733	11/5/2019	13:08:01	2.516075	20.1
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1736	11/5/2019	13:11:01	2.51716	20.1
1737	11/5/2019	13:12:01	2.515713	20
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1742	11/5/2019	13:17:01	2.516075	20
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1749	11/5/2019	13:24:01	2.51499	19.8
1750	11/5/2019	13:25:01	2.51499	19.9
1751	11/5/2019	13:26:01	2.51499	20
1752	11/5/2019	13:27:01	2.515352	20.1
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1762	11/5/2019	13:37:01	2.51499	20.2
1763	11/5/2019	13:38:01	2.51499	20.2
1764	11/5/2019	13:39:01	2.51499	20.1
1765	11/5/2019	13:40:01	2.51499	20
1766	11/5/2019	13:41:01	2.514266	19.9
1767	11/5/2019	13:42:01	2.51499	19.8
1768	11/5/2019	13:43:01	2.513905	19.8
1769	11/5/2019	13:44:01	2.51499	19.9
1770	11/5/2019	13:45:01	2.514266	20
1771	11/5/2019	13:46:01	2.514266	20.1
1772	11/5/2019	13:47:01	2.514266	20.2
1773	11/5/2019	13:48:01	2.514266	20.2
1774	11/5/2019	13:49:01	2.514628	20.1
1775	11/5/2019	13:50:01	2.51499	20
1776	11/5/2019	13:51:01	2.513905	19.9
1777	11/5/2019	13:52:01	2.514266	19.8
1778	11/5/2019	13:53:01	2.514266	19.9
1779	11/5/2019	13:54:01	2.513905	19.9
1780	11/5/2019	13:55:01	2.512458	20.1
1781	11/5/2019	13:56:01	2.513905	20.2
1782	11/5/2019	13:57:01	2.514266	20.2
1783	11/5/2019	13:58:01	2.512096	20.1
1784	11/5/2019	13:59:01	2.512458	20
1785	11/5/2019	14:00:01	2.51282	19.9

1786	11/5/2019	14:01:01	2.51282	19.8
1787	11/5/2019	14:02:01	2.512458	19.8
1788	11/5/2019	14:03:01	2.512458	19.9
1789	11/5/2019	14:04:01	2.51282	20
1790	11/5/2019	14:05:01	2.512096	20.1
1791	11/5/2019	14:06:01	2.51282	20.2
1792	11/5/2019	14:07:01	2.512458	20.2
1793	11/5/2019	14:08:01	2.512096	20.1
1794	11/5/2019	14:09:01	2.512096	19.9
1795	11/5/2019	14:10:01	2.512096	19.8
1796	11/5/2019	14:11:01	2.512458	19.8
1797	11/5/2019	14:12:01	2.512096	19.9
1798	11/5/2019	14:13:01	2.512096	19.9
1799	11/5/2019	14:14:01	2.512096	20.1
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1801	11/5/2019	14:16:01	2.512096	20.2
1802	11/5/2019	14:17:01	2.512096	20.1
1803	11/5/2019	14:18:01	2.512096	20
1804	11/5/2019	14:19:01	2.512096	19.9
1805	11/5/2019	14:20:01	2.512096	19.8
1806	11/5/2019	14:21:01	2.511734	19.8
1807	11/5/2019	14:22:01	2.512096	19.9
1808	11/5/2019	14:23:01	2.512096	20
1809	11/5/2019	14:24:01	2.511734	20.1
1810	11/5/2019	14:25:01	2.511373	20.2
1811	11/5/2019	14:26:01	2.512096	20.2
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1813	11/5/2019	14:28:01	2.510649	19.9
1814	11/5/2019	14:29:01	2.511011	19.9
1815	11/5/2019	14:30:01	2.512096	19.8
1816	11/5/2019	14:31:01	2.511734	19.9
1817	11/5/2019	14:32:01	2.511373	19.9
1818	11/5/2019	14:33:01	2.511011	20.1
1819	11/5/2019	14:34:01	2.511011	20.2
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1821	11/5/2019	14:36:01	2.511373	20.1
1822	11/5/2019	14:37:01	2.511011	20
1823	11/5/2019	14:38:01	2.509926	19.9
1824	11/5/2019	14:39:01	2.510288	19.8
1825	11/5/2019	14:40:01	2.509926	19.8
1826	11/5/2019	14:41:01	2.509926	19.9
1827	11/5/2019	14:42:01	2.509564	20
1828	11/5/2019	14:43:01	2.509926	20.1
1829	11/5/2019	14:44:01	2.510288	20.2
1830	11/5/2019	14:45:01	2.509926	20.1
1831	11/5/2019	14:46:01	2.509926	20
1832	11/5/2019	14:47:01	2.509564	19.9

1833	11/5/2019	14:48:01	2.509202	19.8
1834	11/5/2019	14:49:01	2.509926	19.8
1835	11/5/2019	14:50:01	2.509564	19.9
1836	11/5/2019	14:51:01	2.509202	20
1837	11/5/2019	14:52:01	2.509202	20.1
1838	11/5/2019	14:53:01	2.509202	20.2
1839	11/5/2019	14:54:01	2.510288	20.2
1840	11/5/2019	14:55:01	2.509202	20.1
1841	11/5/2019	14:56:01	2.509202	19.9
1842	11/5/2019	14:57:01	2.509202	19.8
1843	11/5/2019	14:58:01	2.509202	19.8
1844	11/5/2019	14:59:01	2.509202	19.9
1845	11/5/2019	15:00:01	2.509202	20
1846	11/5/2019	15:01:01	2.509202	20.1
1847	11/5/2019	15:02:01	2.509202	20.2
1848	11/5/2019	15:03:01	2.509202	20.2
1849	11/5/2019	15:04:01	2.509202	20.1
1850	11/5/2019	15:05:01	2.508841	20
1851	11/5/2019	15:06:01	2.508841	19.9
1852	11/5/2019	15:07:01	2.509202	19.8
1853	11/5/2019	15:08:01	2.508479	19.9
1854	11/5/2019	15:09:01	2.509202	19.9
1855	11/5/2019	15:10:01	2.509202	20
1856	11/5/2019	15:11:01	2.508479	20.2
1857	11/5/2019	15:12:01	2.508117	20.2
1858	11/5/2019	15:13:01	2.508479	20.1
1859	11/5/2019	15:14:01	2.507756	20
1860	11/5/2019	15:15:01	2.508479	19.9
1861	11/5/2019	15:16:01	2.508841	19.8
1862	11/5/2019	15:17:01	2.509202	19.8
1863	11/5/2019	15:18:01	2.507756	19.9
1864	11/5/2019	15:19:01	2.508479	20
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1866	11/5/2019	15:21:01	2.508117	20.2
1867	11/5/2019	15:22:01	2.507394	20.2
1868	11/5/2019	15:23:01	2.508117	20.1
1869	11/5/2019	15:24:01	2.507756	19.9
1870	11/5/2019	15:25:01	2.507032	19.8
1871	11/5/2019	15:26:01	2.507394	19.8
1872	11/5/2019	15:27:01	2.507394	19.9
1873	11/5/2019	15:28:01	2.507032	20
1874	11/5/2019	15:29:01	2.507032	20.1
1875	11/5/2019	15:30:01	2.50667	20.2
1876	11/5/2019	15:31:01	2.507032	20.2
1877	11/5/2019	15:32:01	2.50667	20.1
1878	11/5/2019	15:33:01	2.507394	20
1879	11/5/2019	15:34:01	2.50667	19.9

1880	11/5/2019	15:35:01	2.506309	19.8	
1881	11/5/2019	15:36:01	2.50667	19.8	
1882	11/5/2019	15:37:01	2.506309	19.9	
1883	11/5/2019	15:38:01	2.506309	20	
1884	11/5/2019	15:39:01	2.506309	20.2	
1885	11/5/2019	15:40:01	2.507032	20.2	
1886	11/5/2019	15:41:01	2.50667	20.2	
1887	11/5/2019	15:42:01	2.506309	20	
1888	11/5/2019	15:43:01	2.506309	19.9	
1889	11/5/2019	15:44:01	2.506309	19.8	
1890	11/5/2019	15:45:01	2.506309	19.8	
1891	11/5/2019	15:46:01	2.506309	19.9	
1892	11/5/2019	15:47:01	2.506309	20	
1893	11/5/2019	15:48:01	2.505947	20.1	
1894	11/5/2019	15:49:01	2.506309	20.2	
1895	11/5/2019	15:50:01	2.506309	20.2	
1896	11/5/2019	15:51:01	2.505947	20.1	
1897	11/5/2019	15:52:01	2.505585	20	
1898	11/5/2019	15:53:01	2.505947	19.9	
1899	11/5/2019	15:54:01	2.505585	19.8	
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1902	11/5/2019	15:57:01	2.505947	20	
1903	11/5/2019	15:58:01	2.505585	20.2	
1904	11/5/2019	15:59:01	2.506309	20.2	
1905	11/5/2019	16:00:01	2.506309	20.2	
1906	11/5/2019	16:01:01	2.505585	20.1	
1907	11/5/2019	16:02:01	2.505585	19.9	
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1909	11/5/2019	16:04:01	2.505947	19.8	
1910	11/5/2019	16:05:01	2.505585	19.9	
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1913	11/5/2019	16:08:01	2.504862	20.2	
1914	11/5/2019	16:09:01	2.505224	20.2	
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1916	11/5/2019	16:11:01	2.504138	20	
1917	11/5/2019	16:12:01	2.504138	19.8	
1918	11/5/2019	16:13:01	2.5045	19.8	
1919	11/5/2019	16:14:01	2.503777	19.8	
1920	11/5/2019	16:15:01	2.503415	19.9	
1921	11/5/2019	16:16:01	2.504138	20	24 horas
1922	11/5/2019	16:17:01	2.5045	20.2	
1923	11/5/2019	16:18:01	2.503777	20.2	
1924	11/5/2019	16:19:01	2.503777	20.1	
1925	11/5/2019	16:20:01	2.503777	20	
1926	11/5/2019	16:21:01	2.503415	19.9	

1927	11/5/2019	16:22:01	2.503415	19.8
1928	11/5/2019	16:23:01	2.503777	19.8
1929	11/5/2019	16:24:01	2.503415	19.9
1930	11/5/2019	16:25:01	2.503415	20
1931	11/5/2019	16:26:01	2.503415	20.1
1932	11/5/2019	16:27:01	2.503415	20.2
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1934	11/5/2019	16:29:01	2.503415	20.1
1935	11/5/2019	16:30:01	2.503415	20
1936	11/5/2019	16:31:01	2.503415	19.9
1937	11/5/2019	16:32:01	2.503053	19.8
1938	11/5/2019	16:33:01	2.503415	19.8
1939	11/5/2019	16:34:01	2.503415	19.9
1940	11/5/2019	16:35:01	2.503415	20
1941	11/5/2019	16:36:01	2.503415	20.2
1942	11/5/2019	16:37:01	2.503415	20.2
1943	11/5/2019	16:38:01	2.503415	20.1
1944	11/5/2019	16:39:01	2.503415	20
1945	11/5/2019	16:40:01	2.503415	19.9
1946	11/5/2019	16:41:01	2.503415	19.8
1947	11/5/2019	16:42:01	2.503053	19.8
1948	11/5/2019	16:43:01	2.503415	19.9
1949	11/5/2019	16:44:01	2.502692	19.9
1950	11/5/2019	16:45:01	2.502692	20.1
1951	11/5/2019	16:46:01	2.503053	20.2
1952	11/5/2019	16:47:01	2.502692	20.2
1953	11/5/2019	16:48:01	2.502692	20.1
1954	11/5/2019	16:49:01	2.503053	20
1955	11/5/2019	16:50:01	2.502692	19.9
1956	11/5/2019	16:51:01	2.502692	19.8
1957	11/5/2019	16:52:01	2.502692	19.8
1958	11/5/2019	16:53:01	2.50233	19.9
1959	11/5/2019	16:54:01	2.50233	20
1960	11/5/2019	16:55:01	2.503053	20.1
1961	11/5/2019	16:56:01	2.501968	20.2
1962	11/5/2019	16:57:01	2.502692	20.2
1963	11/5/2019	16:58:01	2.501245	20.1
1964	11/5/2019	16:59:01	2.501245	19.9
1965	11/5/2019	17:00:01	2.500883	19.8
1966	11/5/2019	17:01:01	2.501245	19.8
1967	11/5/2019	17:02:01	2.501606	19.9
1968	11/5/2019	17:03:01	2.501606	19.9
1969	11/5/2019	17:04:01	2.501968	20.1
1970	11/5/2019	17:05:01	2.501606	20.2
1971	11/5/2019	17:06:01	2.500883	20.2
1972	11/5/2019	17:07:01	2.501606	20.1
1973	11/5/2019	17:08:01	2.501245	20

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1975	11/5/2019	17:10:01	2.500521	19.8
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1977	11/5/2019	17:12:01	2.500521	19.9
1978	11/5/2019	17:13:01	2.501245	20
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1980	11/5/2019	17:15:01	2.500883	20.2
1981	11/5/2019	17:16:01	2.500521	20.2
1982	11/5/2019	17:17:01	2.500521	20.1
1983	11/5/2019	17:18:01	2.500521	19.9
1984	11/5/2019	17:19:01	2.500521	19.8
1985	11/5/2019	17:20:01	2.50016	19.8
1986	11/5/2019	17:21:01	2.500521	19.9
1987	11/5/2019	17:22:01	2.500521	19.9
1988	11/5/2019	17:23:01	2.500521	20.1
1989	11/5/2019	17:24:01	2.500521	20.2
1990	11/5/2019	17:25:01	2.500521	20.2
1991	11/5/2019	17:26:01	2.500521	20.1
1992	11/5/2019	17:27:01	2.50016	20
1993	11/5/2019	17:28:01	2.500521	19.9
1994	11/5/2019	17:29:01	2.500521	19.8
1995	11/5/2019	17:30:01	2.500521	19.8
1996	11/5/2019	17:31:01	2.500521	19.9
1997	11/5/2019	17:32:01	2.499075	20
1998	11/5/2019	17:33:01	2.500521	20.1
1999	11/5/2019	17:34:01	2.50016	20.2
2000	11/5/2019	17:35:01	2.50016	20.2
2001	11/5/2019	17:36:01	2.499798	20.1
2002	11/5/2019	17:37:01	2.500521	19.9
2003	11/5/2019	17:38:01	2.499798	19.8
2004	11/5/2019	17:39:01	2.499436	19.8
2005	11/5/2019	17:40:01	2.499798	19.9
2006	11/5/2019	17:41:01	2.50016	19.9
2007	11/5/2019	17:42:01	2.500521	20.1
2008	11/5/2019	17:43:01	2.498713	20.2
2009	11/5/2019	17:44:01	2.499798	20.2
2010	11/5/2019	17:45:01	2.499075	20.1
2011	11/5/2019	17:46:01	2.499075	20
2012	11/5/2019	17:47:01	2.498713	19.8
2013	11/5/2019	17:48:01	2.497989	19.8
2014	11/5/2019	17:49:01	2.498351	19.9
2015	11/5/2019	17:50:01	2.498351	19.9
2016	11/5/2019	17:51:01	2.498351	20.1
2017	11/5/2019	17:52:01	2.498351	20.2
2018	11/5/2019	17:53:01	2.498713	20.2
2019	11/5/2019	17:54:01	2.497989	20.1
2020	11/5/2019	17:55:01	2.497628	20

2021	11/5/2019	17:56:01	2.497628	19.9
2022	11/5/2019	17:57:01	2.498713	19.8
2023	11/5/2019	17:58:01	2.497628	19.8
2024	11/5/2019	17:59:01	2.497628	19.9
2025	11/5/2019	18:00:01	2.497628	20
2026	11/5/2019	18:01:01	2.497628	20.1
2027	11/5/2019	18:02:01	2.497989	20.2
2028	11/5/2019	18:03:01	2.497628	20.2
2029	11/5/2019	18:04:01	2.497628	20.1
2030	11/5/2019	18:05:01	2.497628	19.9
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2032	11/5/2019	18:07:01	2.497628	19.8
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2034	11/5/2019	18:09:01	2.497628	19.9
2035	11/5/2019	18:10:01	2.497628	20
2036	11/5/2019	18:11:01	2.497628	20.2
2037	11/5/2019	18:12:01	2.497628	20.2
2038	11/5/2019	18:13:01	2.497628	20.1
2039	11/5/2019	18:14:01	2.497628	20
2040	11/5/2019	18:15:01	2.497266	19.9
2041	11/5/2019	18:16:01	2.497266	19.8
2042	11/5/2019	18:17:01	2.497628	19.8
2043	11/5/2019	18:18:01	2.497628	19.9
2044	11/5/2019	18:19:01	2.496542	20
2045	11/5/2019	18:20:01	2.497628	20.1
2046	11/5/2019	18:21:01	2.497628	20.2
2047	11/5/2019	18:22:01	2.497628	20.2
2048	11/5/2019	18:23:01	2.497628	20.1
2049	11/5/2019	18:24:01	2.497628	20
2050	11/5/2019	18:25:01	2.497266	19.9
2051	11/5/2019	18:26:01	2.496904	19.8
2052	11/5/2019	18:27:01	2.496904	19.8
2053	11/5/2019	18:28:01	2.497628	19.9
2054	11/5/2019	18:29:01	2.496904	20
2055	11/5/2019	18:30:01	2.496542	20.2
2056	11/5/2019	18:31:01	2.496904	20.2
2057	11/5/2019	18:32:01	2.496181	20.1
2058	11/5/2019	18:33:01	2.496904	20
2059	11/5/2019	18:34:01	2.496181	19.9
2060	11/5/2019	18:35:01	2.495457	19.8
2061	11/5/2019	18:36:01	2.495819	19.8
2062	11/5/2019	18:37:01	2.496542	19.9
2063	11/5/2019	18:38:01	2.495819	20
2064	11/5/2019	18:39:01	2.495457	20.1
2065	11/5/2019	18:40:01	2.495819	20.2
2066	11/5/2019	18:41:01	2.496181	20.2
2067	11/5/2019	18:42:01	2.496181	20.1

2068	11/5/2019	18:43:01	2.495096	19.9
2069	11/5/2019	18:44:01	2.495819	19.8
2070	11/5/2019	18:45:01	2.494734	19.8
2071	11/5/2019	18:46:01	2.495096	19.8
2072	11/5/2019	18:47:01	2.495457	19.9
2073	11/5/2019	18:48:01	2.494734	20
2074	11/5/2019	18:49:01	2.495096	20.2
2075	11/5/2019	18:50:01	2.495096	20.2
2076	11/5/2019	18:51:01	2.494734	20.1
2077	11/5/2019	18:52:01	2.495096	20
2078	11/5/2019	18:53:01	2.494734	19.9
2079	11/5/2019	18:54:01	2.494734	19.8
2080	11/5/2019	18:55:01	2.494734	19.8
2081	11/5/2019	18:56:01	2.494734	19.9
2082	11/5/2019	18:57:01	2.494734	20
2083	11/5/2019	18:58:01	2.494734	20.1
2084	11/5/2019	18:59:01	2.494734	20.2
2085	11/5/2019	19:00:01	2.494734	20.2
2086	11/5/2019	19:01:01	2.494372	20
2087	11/5/2019	19:02:01	2.494734	19.9
2088	11/5/2019	19:03:01	2.494734	19.8
2089	11/5/2019	19:04:01	2.494734	19.8
2090	11/5/2019	19:05:01	2.494734	19.9
2091	11/5/2019	19:06:01	2.494734	20
2092	11/5/2019	19:07:01	2.494734	20.1
2093	11/5/2019	19:08:01	2.494734	20.2
2094	11/5/2019	19:09:01	2.494734	20.2
2095	11/5/2019	19:10:01	2.494734	20.1
2096	11/5/2019	19:11:01	2.494734	20
2097	11/5/2019	19:12:01	2.494372	19.9
2098	11/5/2019	19:13:01	2.494734	19.8
2099	11/5/2019	19:14:01	2.493649	19.8
2100	11/5/2019	19:15:01	2.49401	19.9
2101	11/5/2019	19:16:01	2.49401	20
2102	11/5/2019	19:17:01	2.494734	20.2
2103	11/5/2019	19:18:01	2.494372	20.2
2104	11/5/2019	19:19:01	2.49401	20.1
2105	11/5/2019	19:20:01	2.49401	20
2106	11/5/2019	19:21:01	2.493287	19.9
2107	11/5/2019	19:22:01	2.492564	19.8
2108	11/5/2019	19:23:01	2.493287	19.8
2109	11/5/2019	19:24:01	2.493649	19.9
2110	11/5/2019	19:25:01	2.493287	20
2111	11/5/2019	19:26:01	2.493287	20.1
2112	11/5/2019	19:27:01	2.492564	20.2
2113	11/5/2019	19:28:01	2.493287	20.2
2114	11/5/2019	19:29:01	2.492202	20.1

2115	11/5/2019	19:30:01	2.492925	20
2116	11/5/2019	19:31:01	2.492564	19.8
2117	11/5/2019	19:32:01	2.49184	19.8
2118	11/5/2019	19:33:01	2.492564	19.8
2119	11/5/2019	19:34:01	2.492564	19.9
2120	11/5/2019	19:35:01	2.492564	20
2121	11/5/2019	19:36:01	2.492564	20.1
2122	11/5/2019	19:37:01	2.492202	20.2
2123	11/5/2019	19:38:01	2.492564	20.1
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2125	11/5/2019	19:40:01	2.492202	19.9
2126	11/5/2019	19:41:01	2.49184	19.8
2127	11/5/2019	19:42:01	2.49184	19.8
2128	11/5/2019	19:43:01	2.49184	19.9
2129	11/5/2019	19:44:01	2.49184	19.9
2130	11/5/2019	19:45:01	2.491478	20.1
2131	11/5/2019	19:46:01	2.49184	20.2
2132	11/5/2019	19:47:01	2.49184	20.2
2133	11/5/2019	19:48:01	2.49184	20.1
2134	11/5/2019	19:49:01	2.49184	20
2135	11/5/2019	19:50:01	2.492202	19.9
2136	11/5/2019	19:51:01	2.49184	19.8
2137	11/5/2019	19:52:01	2.49184	19.8
2138	11/5/2019	19:53:01	2.49184	19.9
2139	11/5/2019	19:54:01	2.491478	20
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2141	11/5/2019	19:56:01	2.49184	20.2
2142	11/5/2019	19:57:01	2.491478	20.2
2143	11/5/2019	19:58:01	2.49184	20.1
2144	11/5/2019	19:59:01	2.49184	19.9
2145	11/5/2019	20:00:01	2.49184	19.8
2146	11/5/2019	20:01:01	2.49184	19.8
2147	11/5/2019	20:02:01	2.491117	19.8
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2149	11/5/2019	20:04:01	2.491478	20
2150	11/5/2019	20:05:01	2.491478	20.2
2151	11/5/2019	20:06:01	2.491478	20.2
2152	11/5/2019	20:07:01	2.491117	20.1
2153	11/5/2019	20:08:01	2.491117	20
2154	11/5/2019	20:09:01	2.490393	19.9
2155	11/5/2019	20:10:01	2.491117	19.8
2156	11/5/2019	20:11:01	2.491478	19.8
2157	11/5/2019	20:12:01	2.491478	19.9
2158	11/5/2019	20:13:01	2.490755	20
2159	11/5/2019	20:14:01	2.490755	20.1
2160	11/5/2019	20:15:01	2.491117	20.2
2161	11/5/2019	20:16:01	2.490755	20.1

2162	11/5/2019	20:17:01	2.490393	20.1
2163	11/5/2019	20:18:01	2.491117	19.9
2164	11/5/2019	20:19:01	2.48967	19.8
2165	11/5/2019	20:20:01	2.490393	19.8
2166	11/5/2019	20:21:01	2.490032	19.9
2167	11/5/2019	20:22:01	2.490393	20
2168	11/5/2019	20:23:01	2.489308	20.1
2169	11/5/2019	20:24:01	2.490393	20.2
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2171	11/5/2019	20:26:01	2.490032	20.1
2172	11/5/2019	20:27:01	2.489308	19.9
2173	11/5/2019	20:28:01	2.48967	19.8
2174	11/5/2019	20:29:01	2.488947	19.8
2175	11/5/2019	20:30:01	2.48967	19.8
2176	11/5/2019	20:31:01	2.489308	19.9
2177	11/5/2019	20:32:01	2.488947	20
2178	11/5/2019	20:33:01	2.488947	20.1
2179	11/5/2019	20:34:01	2.48967	20.2
2180	11/5/2019	20:35:01	2.488947	20.1
2181	11/5/2019	20:36:01	2.488947	20
2182	11/5/2019	20:37:01	2.488947	19.9
2183	11/5/2019	20:38:01	2.488947	19.8
2184	11/5/2019	20:39:01	2.488947	19.8
2185	11/5/2019	20:40:01	2.488947	19.9
2186	11/5/2019	20:41:01	2.488947	19.9
2187	11/5/2019	20:42:01	2.488947	20.1
2188	11/5/2019	20:43:01	2.488947	20.2
2189	11/5/2019	20:44:01	2.488947	20.2
2190	11/5/2019	20:45:01	2.488947	20.1
2191	11/5/2019	20:46:01	2.488947	19.9
2192	11/5/2019	20:47:01	2.488947	19.8
2193	11/5/2019	20:48:01	2.488947	19.8
2194	11/5/2019	20:49:01	2.488947	19.8
2195	11/5/2019	20:50:01	2.488947	19.9
2196	11/5/2019	20:51:01	2.488585	20
2197	11/5/2019	20:52:01	2.488947	20.1
2198	11/5/2019	20:53:01	2.488585	20.2
2199	11/5/2019	20:54:01	2.488585	20.1
2200	11/5/2019	20:55:01	2.488947	20
2201	11/5/2019	20:56:01	2.488585	19.9
2202	11/5/2019	20:57:01	2.488947	19.8
2203	11/5/2019	20:58:01	2.488585	19.8
2204	11/5/2019	20:59:01	2.488585	19.8
2205	11/5/2019	21:00:01	2.488947	19.9
2206	11/5/2019	21:01:01	2.488585	20
2207	11/5/2019	21:02:01	2.488585	20.1
2208	11/5/2019	21:03:01	2.488223	20.2

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2212	11/5/2019	21:07:01	2.4875	19.8
2213	11/5/2019	21:08:01	2.486776	19.8
2214	11/5/2019	21:09:01	2.488223	19.9
2215	11/5/2019	21:10:01	2.488223	19.9
2216	11/5/2019	21:11:01	2.486776	20
2217	11/5/2019	21:12:01	2.487138	20.2
2218	11/5/2019	21:13:01	2.486776	20.2
2219	11/5/2019	21:14:01	2.487138	20.1
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2221	11/5/2019	21:16:01	2.4875	19.8
2222	11/5/2019	21:17:01	2.487138	19.8
2223	11/5/2019	21:18:01	2.486776	19.8
2224	11/5/2019	21:19:01	2.487138	19.9
2225	11/5/2019	21:20:01	2.487138	20
2226	11/5/2019	21:21:01	2.486053	20.1
2227	11/5/2019	21:22:01	2.486053	20.2
2228	11/5/2019	21:23:01	2.486415	20.1
2229	11/5/2019	21:24:01	2.486415	20
2230	11/5/2019	21:25:01	2.486776	19.9
2231	11/5/2019	21:26:01	2.486415	19.8
2232	11/5/2019	21:27:01	2.486053	19.8
2233	11/5/2019	21:28:01	2.486053	19.8
2234	11/5/2019	21:29:01	2.486053	19.9
2235	11/5/2019	21:30:01	2.486415	20
2236	11/5/2019	21:31:01	2.486053	20.1
2237	11/5/2019	21:32:01	2.486053	20.2
2238	11/5/2019	21:33:01	2.486053	20.1
2239	11/5/2019	21:34:01	2.486053	20
2240	11/5/2019	21:35:01	2.486053	19.8
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2242	11/5/2019	21:37:01	2.486053	19.8
2243	11/5/2019	21:38:01	2.485691	19.9
2244	11/5/2019	21:39:01	2.486053	19.9
2245	11/5/2019	21:40:01	2.486053	20.1
2246	11/5/2019	21:41:01	2.486053	20.2
2247	11/5/2019	21:42:01	2.486053	20.1
2248	11/5/2019	21:43:01	2.486053	20
2249	11/5/2019	21:44:01	2.486053	19.9
2250	11/5/2019	21:45:01	2.486053	19.8
2251	11/5/2019	21:46:01	2.486053	19.8
2252	11/5/2019	21:47:01	2.486053	19.8
2253	11/5/2019	21:48:01	2.485691	19.9
2254	11/5/2019	21:49:01	2.486053	20
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2258	11/5/2019	21:53:01	2.486053	20
2259	11/5/2019	21:54:01	2.484968	19.9
2260	11/5/2019	21:55:01	2.484968	19.8
2261	11/5/2019	21:56:01	2.484606	19.8
2262	11/5/2019	21:57:01	2.485329	19.8
2263	11/5/2019	21:58:01	2.484968	19.9
2264	11/5/2019	21:59:01	2.485691	20
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2266	11/5/2019	22:01:01	2.484606	20.2
2267	11/5/2019	22:02:01	2.484968	20.1
2268	11/5/2019	22:03:01	2.484606	20
2269	11/5/2019	22:04:01	2.484968	19.9
2270	11/5/2019	22:05:01	2.484968	19.8
2271	11/5/2019	22:06:01	2.485329	19.8
2272	11/5/2019	22:07:01	2.484606	19.9
2273	11/5/2019	22:08:01	2.484606	19.9
2274	11/5/2019	22:09:01	2.484968	20.1
2275	11/5/2019	22:10:01	2.483882	20.2
2276	11/5/2019	22:11:01	2.483882	20.2
2277	11/5/2019	22:12:01	2.483882	20
2278	11/5/2019	22:13:01	2.484244	19.9
2279	11/5/2019	22:14:01	2.484244	19.8
2280	11/5/2019	22:15:01	2.483159	19.8
2281	11/5/2019	22:16:01	2.483882	19.8
2282	11/5/2019	22:17:01	2.483521	19.9
2283	11/5/2019	22:18:01	2.483521	20
2284	11/5/2019	22:19:01	2.483521	20.1
2285	11/5/2019	22:20:01	2.483521	20.2
2286	11/5/2019	22:21:01	2.483521	20.1
2287	11/5/2019	22:22:01	2.483521	20
2288	11/5/2019	22:23:01	2.483882	19.8
2289	11/5/2019	22:24:01	2.483882	19.8
2290	11/5/2019	22:25:01	2.483159	19.8
2291	11/5/2019	22:26:01	2.483159	19.8
2292	11/5/2019	22:27:01	2.483159	19.9
2293	11/5/2019	22:28:01	2.483882	20
2294	11/5/2019	22:29:01	2.483159	20.2
2295	11/5/2019	22:30:01	2.483159	20.2
2296	11/5/2019	22:31:01	2.483159	20.1
2297	11/5/2019	22:32:01	2.483159	20
2298	11/5/2019	22:33:01	2.483159	19.9
2299	11/5/2019	22:34:01	2.483521	19.8
2300	11/5/2019	22:35:01	2.483159	19.8
2301	11/5/2019	22:36:01	2.483159	19.9
2302	11/5/2019	22:37:01	2.483159	19.9

2303	11/5/2019	22:38:01	2.483159	20.1
2304	11/5/2019	22:39:01	2.483159	20.2
2305	11/5/2019	22:40:01	2.483159	20.1
2306	11/5/2019	22:41:01	2.482797	20.1
2307	11/5/2019	22:42:01	2.483159	19.9
2308	11/5/2019	22:43:01	2.483159	19.8
2309	11/5/2019	22:44:01	2.482074	19.8
2310	11/5/2019	22:45:01	2.482074	19.8
2311	11/5/2019	22:46:01	2.482797	19.9
2312	11/5/2019	22:47:01	2.482797	20
2313	11/5/2019	22:48:01	2.482797	20.1
2314	11/5/2019	22:49:01	2.482797	20.2
2315	11/5/2019	22:50:01	2.483159	20.1
2316	11/5/2019	22:51:01	2.482797	20
2317	11/5/2019	22:52:01	2.483159	19.9
2318	11/5/2019	22:53:01	2.483159	19.8
2319	11/5/2019	22:54:01	2.482797	19.8
2320	11/5/2019	22:55:01	2.482074	19.8
2321	11/5/2019	22:56:01	2.482074	19.9
2322	11/5/2019	22:57:01	2.482797	20
2323	11/5/2019	22:58:01	2.482074	20.1
2324	11/5/2019	22:59:01	2.482436	20.2
2325	11/5/2019	23:00:01	2.482797	20.1
2326	11/5/2019	23:01:01	2.482436	20
2327	11/5/2019	23:02:01	2.481712	19.8
2328	11/5/2019	23:03:01	2.482436	19.8
2329	11/5/2019	23:04:01	2.482074	19.8
2330	11/5/2019	23:05:01	2.481712	19.8
2331	11/5/2019	23:06:01	2.482074	19.9
2332	11/5/2019	23:07:01	2.482074	20
2333	11/5/2019	23:08:01	2.480989	20.1
2334	11/5/2019	23:09:01	2.481712	20.2
2335	11/5/2019	23:10:01	2.481712	20.1
2336	11/5/2019	23:11:01	2.481712	19.9
2337	11/5/2019	23:12:01	2.480627	19.8
2338	11/5/2019	23:13:01	2.480989	19.8
2339	11/5/2019	23:14:01	2.481351	19.8
2340	11/5/2019	23:15:01	2.481351	19.8
2341	11/5/2019	23:16:01	2.481351	19.9
2342	11/5/2019	23:17:01	2.480627	20
2343	11/5/2019	23:18:01	2.480989	20.1
2344	11/5/2019	23:19:01	2.480265	20.2
2345	11/5/2019	23:20:01	2.480265	20.1
2346	11/5/2019	23:21:01	2.480265	20
2347	11/5/2019	23:22:01	2.480265	19.8
2348	11/5/2019	23:23:01	2.480265	19.8
2349	11/5/2019	23:24:01	2.480265	19.8

2350	11/5/2019	23:25:01	2.480989	19.8
2351	11/5/2019	23:26:01	2.480265	19.9
2352	11/5/2019	23:27:01	2.480265	20
2353	11/5/2019	23:28:01	2.480265	20.1
2354	11/5/2019	23:29:01	2.480265	20.1
2355	11/5/2019	23:30:01	2.480265	20.1
2356	11/5/2019	23:31:01	2.480989	19.9
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2358	11/5/2019	23:33:01	2.480265	19.7
2359	11/5/2019	23:34:01	2.480265	19.8
2360	11/5/2019	23:35:01	2.480265	19.8
2361	11/5/2019	23:36:01	2.480265	19.9
2362	11/5/2019	23:37:01	2.480265	20
2363	11/5/2019	23:38:01	2.479904	20.1
2364	11/5/2019	23:39:01	2.480265	20.2
2365	11/5/2019	23:40:01	2.480265	20.1
2366	11/5/2019	23:41:01	2.480265	19.9
2367	11/5/2019	23:42:01	2.480265	19.8
2368	11/5/2019	23:43:01	2.479542	19.7
2369	11/5/2019	23:44:01	2.479904	19.8
2370	11/5/2019	23:45:01	2.479904	19.8
2371	11/5/2019	23:46:01	2.480265	19.9
2372	11/5/2019	23:47:01	2.480265	20
2373	11/5/2019	23:48:01	2.479542	20.1
2374	11/5/2019	23:49:01	2.480265	20.1
2375	11/5/2019	23:50:01	2.479542	20.1
2376	11/5/2019	23:51:01	2.479904	20
2377	11/5/2019	23:52:01	2.479542	19.8
2378	11/5/2019	23:53:01	2.47918	19.8
2379	11/5/2019	23:54:01	2.478819	19.8
2380	11/5/2019	23:55:01	2.479904	19.8
2381	11/5/2019	23:56:01	2.479542	19.9
2382	11/5/2019	23:57:01	2.47918	20
2383	11/5/2019	23:58:01	2.479542	20.1
2384	11/5/2019	23:59:01	2.479542	20.1
2385	12/5/2019	0:00:01	2.478819	20.1
2386	12/5/2019	0:01:01	2.47918	19.9
2387	12/5/2019	0:02:01	2.478095	19.8
2388	12/5/2019	0:03:01	2.47918	19.8
2389	12/5/2019	0:04:01	2.478457	19.8
2390	12/5/2019	0:05:01	2.478457	19.8
2391	12/5/2019	0:06:01	2.47918	19.9
2392	12/5/2019	0:07:01	2.477734	20
2393	12/5/2019	0:08:01	2.47918	20.1
2394	12/5/2019	0:09:01	2.478095	20.2
2395	12/5/2019	0:10:01	2.478095	20.1
2396	12/5/2019	0:11:01	2.478095	20

2397	12/5/2019	0:12:01	2.478819	19.8
2398	12/5/2019	0:13:01	2.477372	19.8
2399	12/5/2019	0:14:01	2.477372	19.8
2400	12/5/2019	0:15:01	2.477734	19.8
2401	12/5/2019	0:16:01	2.477734	19.9
2402	12/5/2019	0:17:01	2.477734	20
2403	12/5/2019	0:18:01	2.478095	20.1
2404	12/5/2019	0:19:01	2.477734	20.1
2405	12/5/2019	0:20:01	2.477372	20.1
2406	12/5/2019	0:21:01	2.478095	20
2407	12/5/2019	0:22:01	2.478095	19.8
2408	12/5/2019	0:23:01	2.477734	19.7
2409	12/5/2019	0:24:01	2.477372	19.7
2410	12/5/2019	0:25:01	2.477372	19.8
2411	12/5/2019	0:26:01	2.477372	19.9
2412	12/5/2019	0:27:01	2.477734	19.9
2413	12/5/2019	0:28:01	2.477372	20.1
2414	12/5/2019	0:29:01	2.477372	20.1
2415	12/5/2019	0:30:01	2.477372	20.1
2416	12/5/2019	0:31:01	2.477372	20
2417	12/5/2019	0:32:01	2.477372	19.9
2418	12/5/2019	0:33:01	2.477372	19.8
2419	12/5/2019	0:34:01	2.477372	19.7
2420	12/5/2019	0:35:01	2.477372	19.8
2421	12/5/2019	0:36:01	2.477372	19.8
2422	12/5/2019	0:37:01	2.477372	19.9
2423	12/5/2019	0:38:01	2.477372	20
2424	12/5/2019	0:39:01	2.47701	20.1
2425	12/5/2019	0:40:01	2.477372	20.1
2426	12/5/2019	0:41:01	2.477372	20
2427	12/5/2019	0:42:01	2.477372	19.9
2428	12/5/2019	0:43:01	2.47701	19.8
2429	12/5/2019	0:44:01	2.477372	19.7
2430	12/5/2019	0:45:01	2.477372	19.8
2431	12/5/2019	0:46:01	2.47701	19.8
2432	12/5/2019	0:47:01	2.477372	19.9
2433	12/5/2019	0:48:01	2.476287	20
2434	12/5/2019	0:49:01	2.476648	20.1
2435	12/5/2019	0:50:01	2.477372	20.1
2436	12/5/2019	0:51:01	2.47701	20.1
2437	12/5/2019	0:52:01	2.47701	19.9
2438	12/5/2019	0:53:01	2.477372	19.8
2439	12/5/2019	0:54:01	2.476648	19.7
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2441	12/5/2019	0:56:01	2.476287	19.8
2442	12/5/2019	0:57:01	2.475925	19.9
2443	12/5/2019	0:58:01	2.475563	19.9

2444	12/5/2019	0:59:01	2.475563	20.1
2445	12/5/2019	1:00:01	2.475925	20.1
2446	12/5/2019	1:01:01	2.475925	20.1
2447	12/5/2019	1:02:01	2.47484	20
2448	12/5/2019	1:03:01	2.475563	19.8
2449	12/5/2019	1:04:01	2.475563	19.8
2450	12/5/2019	1:05:01	2.475563	19.7
2451	12/5/2019	1:06:01	2.475925	19.8
2452	12/5/2019	1:07:01	2.475563	19.8
2453	12/5/2019	1:08:01	2.475201	19.9
2454	12/5/2019	1:09:01	2.475563	20
2455	12/5/2019	1:10:01	2.47484	20.1
2456	12/5/2019	1:11:01	2.475201	20.1
2457	12/5/2019	1:12:01	2.475563	20
2458	12/5/2019	1:13:01	2.475925	19.9
2459	12/5/2019	1:14:01	2.475201	19.8
2460	12/5/2019	1:15:01	2.47484	19.7
2461	12/5/2019	1:16:01	2.474478	19.8
2462	12/5/2019	1:17:01	2.474478	19.8
2463	12/5/2019	1:18:01	2.474478	19.9
2464	12/5/2019	1:19:01	2.47484	20
2465	12/5/2019	1:20:01	2.474478	20.1
2466	12/5/2019	1:21:01	2.47484	20.1
2467	12/5/2019	1:22:01	2.474478	20
2468	12/5/2019	1:23:01	2.474478	19.9
2469	12/5/2019	1:24:01	2.474478	19.8
2470	12/5/2019	1:25:01	2.474478	19.7
2471	12/5/2019	1:26:01	2.474478	19.7
2472	12/5/2019	1:27:01	2.474478	19.8
2473	12/5/2019	1:28:01	2.474478	19.9
2474	12/5/2019	1:29:01	2.474478	20
2475	12/5/2019	1:30:01	2.474478	20.1
2476	12/5/2019	1:31:01	2.474478	20.1
2477	12/5/2019	1:32:01	2.474478	20.1
2478	12/5/2019	1:33:01	2.474478	19.9
2479	12/5/2019	1:34:01	2.474478	19.8
2480	12/5/2019	1:35:01	2.474478	19.7
2481	12/5/2019	1:36:01	2.474478	19.8
2482	12/5/2019	1:37:01	2.474478	19.8
2483	12/5/2019	1:38:01	2.474116	19.9
2484	12/5/2019	1:39:01	2.474116	20
2485	12/5/2019	1:40:01	2.473755	20.1
2486	12/5/2019	1:41:01	2.474478	20.1
2487	12/5/2019	1:42:01	2.474116	20.1
2488	12/5/2019	1:43:01	2.474116	20
2489	12/5/2019	1:44:01	2.474478	19.8
2490	12/5/2019	1:45:01	2.474116	19.7

2491	12/5/2019	1:46:01	2.474478	19.7
2492	12/5/2019	1:47:01	2.474116	19.8
2493	12/5/2019	1:48:01	2.473031	19.8
2494	12/5/2019	1:49:01	2.473755	19.9
2495	12/5/2019	1:50:01	2.474116	20
2496	12/5/2019	1:51:01	2.474478	20.1
2497	12/5/2019	1:52:01	2.473755	20.1
2498	12/5/2019	1:53:01	2.473755	20
2499	12/5/2019	1:54:01	2.473031	19.9
2500	12/5/2019	1:55:01	2.473755	19.8
2501	12/5/2019	1:56:01	2.473755	19.7
2502	12/5/2019	1:57:01	2.472308	19.7
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2504	12/5/2019	1:59:01	2.473755	19.9
2505	12/5/2019	2:00:01	2.473393	20
2506	12/5/2019	2:01:01	2.474116	20.1
2507	12/5/2019	2:02:01	2.472308	20.1
2508	12/5/2019	2:03:01	2.473031	20.1
2509	12/5/2019	2:04:01	2.473393	20
2510	12/5/2019	2:05:01	2.472669	19.8
2511	12/5/2019	2:06:01	2.472669	19.7
2512	12/5/2019	2:07:01	2.473393	19.7
2513	12/5/2019	2:08:01	2.472669	19.8
2514	12/5/2019	2:09:01	2.471946	19.8
2515	12/5/2019	2:10:01	2.471946	19.9
2516	12/5/2019	2:11:01	2.471946	20
2517	12/5/2019	2:12:01	2.471946	20.1
2518	12/5/2019	2:13:01	2.471946	20.1
2519	12/5/2019	2:14:01	2.472308	20
2520	12/5/2019	2:15:01	2.471946	19.9
2521	12/5/2019	2:16:01	2.471946	19.8
2522	12/5/2019	2:17:01	2.472669	19.7
2523	12/5/2019	2:18:01	2.472308	19.8
2524	12/5/2019	2:19:01	2.472669	19.8
2525	12/5/2019	2:20:01	2.471946	19.9
2526	12/5/2019	2:21:01	2.471946	20
2527	12/5/2019	2:22:01	2.472669	20.1
2528	12/5/2019	2:23:01	2.471584	20.1
2529	12/5/2019	2:24:01	2.471946	20
2530	12/5/2019	2:25:01	2.471946	19.9
2531	12/5/2019	2:26:01	2.471946	19.8
2532	12/5/2019	2:27:01	2.471946	19.7
2533	12/5/2019	2:28:01	2.471584	19.7
2534	12/5/2019	2:29:01	2.472308	19.8
2535	12/5/2019	2:30:01	2.471946	19.9
2536	12/5/2019	2:31:01	2.471584	20
2537	12/5/2019	2:32:01	2.471584	20.1

2538	12/5/2019	2:33:01	2.471584	20.1
2539	12/5/2019	2:34:01	2.471584	20.1
2540	12/5/2019	2:35:01	2.471584	20
2541	12/5/2019	2:36:01	2.471223	19.8
2542	12/5/2019	2:37:01	2.471584	19.7
2543	12/5/2019	2:38:01	2.471584	19.7
2544	12/5/2019	2:39:01	2.471584	19.8
2545	12/5/2019	2:40:01	2.471584	19.9
2546	12/5/2019	2:41:01	2.471584	19.9
2547	12/5/2019	2:42:01	2.471584	20
2548	12/5/2019	2:43:01	2.471223	20.1
2549	12/5/2019	2:44:01	2.471584	20.1
2550	12/5/2019	2:45:01	2.471584	20
2551	12/5/2019	2:46:01	2.471223	19.9
2552	12/5/2019	2:47:01	2.471223	19.8
2553	12/5/2019	2:48:01	2.470861	19.7
2554	12/5/2019	2:49:01	2.471584	19.8
2555	12/5/2019	2:50:01	2.471584	19.8
2556	12/5/2019	2:51:01	2.471584	19.9
2557	12/5/2019	2:52:01	2.471223	20
2558	12/5/2019	2:53:01	2.470861	20.1
2559	12/5/2019	2:54:01	2.471223	20.1
2560	12/5/2019	2:55:01	2.470499	20.1
2561	12/5/2019	2:56:01	2.471223	19.9
2562	12/5/2019	2:57:01	2.469776	19.8
2563	12/5/2019	2:58:01	2.470861	19.7
2564	12/5/2019	2:59:01	2.470499	19.7
2565	12/5/2019	3:00:01	2.470861	19.8
2566	12/5/2019	3:01:01	2.470861	19.8
2567	12/5/2019	3:02:01	2.470861	19.9
2568	12/5/2019	3:03:01	2.470499	20
2569	12/5/2019	3:04:01	2.470499	20.1
2570	12/5/2019	3:05:01	2.469776	20.1
2571	12/5/2019	3:06:01	2.470861	20
2572	12/5/2019	3:07:01	2.469414	19.9
2573	12/5/2019	3:08:01	2.469414	19.8
2574	12/5/2019	3:09:01	2.470138	19.7
2575	12/5/2019	3:10:01	2.470138	19.7
2576	12/5/2019	3:11:01	2.469776	19.8
2577	12/5/2019	3:12:01	2.470138	19.9
2578	12/5/2019	3:13:01	2.469052	19.9
2579	12/5/2019	3:14:01	2.469776	20
2580	12/5/2019	3:15:01	2.469776	20.1
2581	12/5/2019	3:16:01	2.468691	20.1
2582	12/5/2019	3:17:01	2.470138	20
2583	12/5/2019	3:18:01	2.469776	19.9
2584	12/5/2019	3:19:01	2.469776	19.7

2585	12/5/2019	3:20:01	2.469414	19.7
2586	12/5/2019	3:21:01	2.469052	19.7
2587	12/5/2019	3:22:01	2.469414	19.8
2588	12/5/2019	3:23:01	2.469414	19.9
2589	12/5/2019	3:24:01	2.469052	19.9
2590	12/5/2019	3:25:01	2.469052	20
2591	12/5/2019	3:26:01	2.468691	20.1
2592	12/5/2019	3:27:01	2.468691	20.1
2593	12/5/2019	3:28:01	2.468691	20
2594	12/5/2019	3:29:01	2.468691	19.9
2595	12/5/2019	3:30:01	2.468691	19.7
2596	12/5/2019	3:31:01	2.468691	19.7
2597	12/5/2019	3:32:01	2.468691	19.7
2598	12/5/2019	3:33:01	2.469414	19.8
2599	12/5/2019	3:34:01	2.468691	19.8
2600	12/5/2019	3:35:01	2.468691	19.9
2601	12/5/2019	3:36:01	2.468691	20
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2603	12/5/2019	3:38:01	2.468691	20.1
2604	12/5/2019	3:39:01	2.468691	20
2605	12/5/2019	3:40:01	2.468691	19.9
2606	12/5/2019	3:41:01	2.468691	19.7
2607	12/5/2019	3:42:01	2.468691	19.7
2608	12/5/2019	3:43:01	2.468691	19.7
2609	12/5/2019	3:44:01	2.468691	19.8
2610	12/5/2019	3:45:01	2.468329	19.9
2611	12/5/2019	3:46:01	2.468691	19.9
2612	12/5/2019	3:47:01	2.468691	20
2613	12/5/2019	3:48:01	2.468691	20.1
2614	12/5/2019	3:49:01	2.468691	20.1
2615	12/5/2019	3:50:01	2.468329	20
2616	12/5/2019	3:51:01	2.467244	19.9
2617	12/5/2019	3:52:01	2.468691	19.7
2618	12/5/2019	3:53:01	2.468691	19.7
2619	12/5/2019	3:54:01	2.467967	19.7
2620	12/5/2019	3:55:01	2.468691	19.8
2621	12/5/2019	3:56:01	2.467967	19.9
2622	12/5/2019	3:57:01	2.467967	19.9
2623	12/5/2019	3:58:01	2.467967	20
2624	12/5/2019	3:59:01	2.468691	20.1
2625	12/5/2019	4:00:01	2.468329	20.1
2626	12/5/2019	4:01:01	2.468329	20
2627	12/5/2019	4:02:01	2.467606	19.9
2628	12/5/2019	4:03:01	2.468691	19.7
2629	12/5/2019	4:04:01	2.468329	19.7
2630	12/5/2019	4:05:01	2.466882	19.7
2631	12/5/2019	4:06:01	2.467244	19.7

2632	12/5/2019	4:07:01	2.466882	19.8
2633	12/5/2019	4:08:01	2.467244	19.8
2634	12/5/2019	4:09:01	2.467244	19.9
2635	12/5/2019	4:10:01	2.466882	19.9
2636	12/5/2019	4:11:01	2.468329	20
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2638	12/5/2019	4:13:01	2.467967	20.1
2639	12/5/2019	4:14:01	2.467606	20
2640	12/5/2019	4:15:01	2.466882	19.8
2641	12/5/2019	4:16:01	2.46652	19.7
2642	12/5/2019	4:17:01	2.466159	19.7
2643	12/5/2019	4:18:01	2.467244	19.6
2644	12/5/2019	4:19:01	2.466882	19.7
2645	12/5/2019	4:20:01	2.466159	19.7
2646	12/5/2019	4:21:01	2.46652	19.8
2647	12/5/2019	4:22:01	2.465797	19.8
2648	12/5/2019	4:23:01	2.466882	19.9
2649	12/5/2019	4:24:01	2.465797	19.9
2650	12/5/2019	4:25:01	2.46652	20
2651	12/5/2019	4:26:01	2.466159	20
2652	12/5/2019	4:27:01	2.465797	20
2653	12/5/2019	4:28:01	2.466882	20.1
2654	12/5/2019	4:29:01	2.466882	20
2655	12/5/2019	4:30:01	2.465797	19.8
2656	12/5/2019	4:31:01	2.466159	19.7
2657	12/5/2019	4:32:01	2.46652	19.6
2658	12/5/2019	4:33:01	2.465797	19.6
2659	12/5/2019	4:34:01	2.465797	19.6
2660	12/5/2019	4:35:01	2.465797	19.7
2661	12/5/2019	4:36:01	2.465797	19.7
2662	12/5/2019	4:37:01	2.466159	19.7
2663	12/5/2019	4:38:01	2.465797	19.8
2664	12/5/2019	4:39:01	2.465797	19.9
2665	12/5/2019	4:40:01	2.465435	19.9
2666	12/5/2019	4:41:01	2.465797	19.9
2667	12/5/2019	4:42:01	2.465797	20
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2669	12/5/2019	4:44:01	2.466159	20
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2672	12/5/2019	4:47:01	2.465797	19.9
2673	12/5/2019	4:48:01	2.465797	19.7
2674	12/5/2019	4:49:01	2.465797	19.7
2675	12/5/2019	4:50:01	2.465435	19.7
2676	12/5/2019	4:51:01	2.465797	19.7
2677	12/5/2019	4:52:01	2.465797	19.7
2678	12/5/2019	4:53:01	2.465797	19.8

2679	12/5/2019	4:54:01	2.465435	19.8
2680	12/5/2019	4:55:01	2.465074	19.9
2681	12/5/2019	4:56:01	2.465797	19.9
2682	12/5/2019	4:57:01	2.465435	20
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2684	12/5/2019	4:59:01	2.465797	20.1
2685	12/5/2019	5:00:01	2.465435	20
2686	12/5/2019	5:01:01	2.464712	19.9
2687	12/5/2019	5:02:01	2.465435	19.8
2688	12/5/2019	5:03:01	2.465435	19.7
2689	12/5/2019	5:04:01	2.465435	19.7
2690	12/5/2019	5:05:01	2.465435	19.7
2691	12/5/2019	5:06:01	2.465074	19.7
2692	12/5/2019	5:07:01	2.465797	19.7
2693	12/5/2019	5:08:01	2.46435	19.8
2694	12/5/2019	5:09:01	2.465435	19.8
2695	12/5/2019	5:10:01	2.46435	19.9
2696	12/5/2019	5:11:01	2.463988	19.9
2697	12/5/2019	5:12:01	2.465074	20
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2699	12/5/2019	5:14:01	2.465074	20.1
2700	12/5/2019	5:15:01	2.465435	20
2701	12/5/2019	5:16:01	2.464712	19.9
2702	12/5/2019	5:17:01	2.46435	19.7
2703	12/5/2019	5:18:01	2.464712	19.7
2704	12/5/2019	5:19:01	2.46435	19.7
2705	12/5/2019	5:20:01	2.463988	19.7
2706	12/5/2019	5:21:01	2.463988	19.7
2707	12/5/2019	5:22:01	2.463627	19.8
2708	12/5/2019	5:23:01	2.463988	19.8
2709	12/5/2019	5:24:01	2.463265	19.9
2710	12/5/2019	5:25:01	2.463627	19.9
2711	12/5/2019	5:26:01	2.463265	20
2712	12/5/2019	5:27:01	2.463265	20
2713	12/5/2019	5:28:01	2.462903	20.1
2714	12/5/2019	5:29:01	2.463627	20
2715	12/5/2019	5:30:01	2.462903	19.9
2716	12/5/2019	5:31:01	2.462903	19.8
2717	12/5/2019	5:32:01	2.463988	19.7
2718	12/5/2019	5:33:01	2.463988	19.7
2719	12/5/2019	5:34:01	2.463265	19.7
2720	12/5/2019	5:35:01	2.463627	19.7
2721	12/5/2019	5:36:01	2.462903	19.8
2722	12/5/2019	5:37:01	2.462903	19.8
2723	12/5/2019	5:38:01	2.462903	19.9
2724	12/5/2019	5:39:01	2.463265	19.9
2725	12/5/2019	5:40:01	2.462903	20

2726	12/5/2019	5:41:01	2.462903	20.1
2727	12/5/2019	5:42:01	2.462903	20.1
2728	12/5/2019	5:43:01	2.463627	20
2729	12/5/2019	5:44:01	2.462903	19.8
2730	12/5/2019	5:45:01	2.462903	19.7
2731	12/5/2019	5:46:01	2.462903	19.7
2732	12/5/2019	5:47:01	2.462542	19.7
2733	12/5/2019	5:48:01	2.463265	19.7
2734	12/5/2019	5:49:01	2.462903	19.7
2735	12/5/2019	5:50:01	2.462903	19.8
2736	12/5/2019	5:51:01	2.462903	19.9
2737	12/5/2019	5:52:01	2.463265	19.9
2738	12/5/2019	5:53:01	2.462903	20
2739	12/5/2019	5:54:01	2.462903	20
2740	12/5/2019	5:55:01	2.462903	20.1
2741	12/5/2019	5:56:01	2.462903	20
2742	12/5/2019	5:57:01	2.462903	19.9
2743	12/5/2019	5:58:01	2.462903	19.8
2744	12/5/2019	5:59:01	2.462903	19.7
2745	12/5/2019	6:00:01	2.462903	19.7
2746	12/5/2019	6:01:01	2.462903	19.7
2747	12/5/2019	6:02:01	2.462903	19.7
2748	12/5/2019	6:03:01	2.462542	19.8
2749	12/5/2019	6:04:01	2.462903	19.8
2750	12/5/2019	6:05:01	2.46218	19.9
2751	12/5/2019	6:06:01	2.462903	19.9
2752	12/5/2019	6:07:01	2.46218	20
2753	12/5/2019	6:08:01	2.46218	20.1
2754	12/5/2019	6:09:01	2.462903	20
2755	12/5/2019	6:10:01	2.462903	19.9
2756	12/5/2019	6:11:01	2.462542	19.8
2757	12/5/2019	6:12:01	2.46218	19.7
2758	12/5/2019	6:13:01	2.461818	19.7
2759	12/5/2019	6:14:01	2.462903	19.7
2760	12/5/2019	6:15:01	2.46218	19.7
2761	12/5/2019	6:16:01	2.461818	19.7
2762	12/5/2019	6:17:01	2.461818	19.8
2763	12/5/2019	6:18:01	2.461818	19.9
2764	12/5/2019	6:19:01	2.46218	19.9
2765	12/5/2019	6:20:01	2.461818	20
2766	12/5/2019	6:21:01	2.46218	20
2767	12/5/2019	6:22:01	2.46218	20.1
2768	12/5/2019	6:23:01	2.46218	20
2769	12/5/2019	6:24:01	2.461456	19.9
2770	12/5/2019	6:25:01	2.461456	19.8
2771	12/5/2019	6:26:01	2.461456	19.7
2772	12/5/2019	6:27:01	2.461818	19.7

2773	12/5/2019	6:28:01	2.46218	19.7
2774	12/5/2019	6:29:01	2.460733	19.7
2775	12/5/2019	6:30:01	2.460733	19.8
2776	12/5/2019	6:31:01	2.461818	19.8
2777	12/5/2019	6:32:01	2.460733	19.9
2778	12/5/2019	6:33:01	2.460733	19.9
2779	12/5/2019	6:34:01	2.460733	20
2780	12/5/2019	6:35:01	2.460371	20.1
2781	12/5/2019	6:36:01	2.461456	20.1
2782	12/5/2019	6:37:01	2.460733	20
2783	12/5/2019	6:38:01	2.461818	19.8
2784	12/5/2019	6:39:01	2.461095	19.7
2785	12/5/2019	6:40:01	2.46001	19.7
2786	12/5/2019	6:41:01	2.46001	19.7
2787	12/5/2019	6:42:01	2.46001	19.7
2788	12/5/2019	6:43:01	2.460371	19.7
2789	12/5/2019	6:44:01	2.46001	19.8
2790	12/5/2019	6:45:01	2.460733	19.9
2791	12/5/2019	6:46:01	2.460371	19.9
2792	12/5/2019	6:47:01	2.46001	20
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2795	12/5/2019	6:50:01	2.460733	20
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2797	12/5/2019	6:52:01	2.46001	19.7
2798	12/5/2019	6:53:01	2.46001	19.7
2799	12/5/2019	6:54:01	2.46001	19.7
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2811	12/5/2019	7:06:01	2.46001	19.7
2812	12/5/2019	7:07:01	2.46001	19.7
2813	12/5/2019	7:08:01	2.46001	19.7
2814	12/5/2019	7:09:01	2.46001	19.7
2815	12/5/2019	7:10:01	2.46001	19.8
2816	12/5/2019	7:11:01	2.46001	19.8
2817	12/5/2019	7:12:01	2.46001	19.9
2818	12/5/2019	7:13:01	2.459648	19.9
2819	12/5/2019	7:14:01	2.46001	20

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2822	12/5/2019	7:17:01	2.459286	20
2823	12/5/2019	7:18:01	2.459648	19.9
2824	12/5/2019	7:19:01	2.46001	19.7
2825	12/5/2019	7:20:01	2.459286	19.7
2826	12/5/2019	7:21:01	2.459286	19.7
2827	12/5/2019	7:22:01	2.459286	19.7
2828	12/5/2019	7:23:01	2.46001	19.7
2829	12/5/2019	7:24:01	2.459286	19.8
2830	12/5/2019	7:25:01	2.458925	19.9
2831	12/5/2019	7:26:01	2.46001	19.9
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2835	12/5/2019	7:30:01	2.459648	20
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2837	12/5/2019	7:32:01	2.458201	19.8
2838	12/5/2019	7:33:01	2.459286	19.7
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2840	12/5/2019	7:35:01	2.458563	19.7
2841	12/5/2019	7:36:01	2.457839	19.8
2842	12/5/2019	7:37:01	2.458563	19.8
2843	12/5/2019	7:38:01	2.458201	19.9
2844	12/5/2019	7:39:01	2.458925	19.9
2845	12/5/2019	7:40:01	2.458563	20
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2847	12/5/2019	7:42:01	2.459286	20.1
2848	12/5/2019	7:43:01	2.458201	20
2849	12/5/2019	7:44:01	2.457116	19.8
2850	12/5/2019	7:45:01	2.458201	19.7
2851	12/5/2019	7:46:01	2.458925	19.7
2852	12/5/2019	7:47:01	2.457478	19.7
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2854	12/5/2019	7:49:01	2.457478	19.8
2855	12/5/2019	7:50:01	2.458201	19.8
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2858	12/5/2019	7:53:01	2.457116	20
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2861	12/5/2019	7:56:01	2.457116	19.9
2862	12/5/2019	7:57:01	2.457839	19.8
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2865	12/5/2019	8:00:01	2.457839	19.7
2866	12/5/2019	8:01:01	2.457839	19.7

2867	12/5/2019	8:02:01	2.457839	19.8
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2869	12/5/2019	8:04:01	2.457478	19.9
2870	12/5/2019	8:05:01	2.457116	20
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2872	12/5/2019	8:07:01	2.457478	20.1
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2874	12/5/2019	8:09:01	2.457478	19.9
2875	12/5/2019	8:10:01	2.457116	19.8
2876	12/5/2019	8:11:01	2.457478	19.7
2877	12/5/2019	8:12:01	2.457478	19.7
2878	12/5/2019	8:13:01	2.457116	19.7
2879	12/5/2019	8:14:01	2.457116	19.7
2880	12/5/2019	8:15:01	2.456392	19.8
2881	12/5/2019	8:16:01	2.457116	19.9
2882	12/5/2019	8:17:01	2.457116	19.9
2883	12/5/2019	8:18:01	2.456754	20
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2886	12/5/2019	8:21:01	2.457116	20
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2888	12/5/2019	8:23:01	2.457478	19.7
2889	12/5/2019	8:24:01	2.457116	19.7
2890	12/5/2019	8:25:01	2.456754	19.7
2891	12/5/2019	8:26:01	2.456392	19.7
2892	12/5/2019	8:27:01	2.456754	19.8
2893	12/5/2019	8:28:01	2.456754	19.8
2894	12/5/2019	8:29:01	2.456754	19.9
2895	12/5/2019	8:30:01	2.456754	19.9
2896	12/5/2019	8:31:01	2.456754	20
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2903	12/5/2019	8:38:01	2.456031	19.7
2904	12/5/2019	8:39:01	2.456392	19.7
2905	12/5/2019	8:40:01	2.456031	19.8
2906	12/5/2019	8:41:01	2.455669	19.9
2907	12/5/2019	8:42:01	2.456031	19.9
2908	12/5/2019	8:43:01	2.456392	20
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2910	12/5/2019	8:45:01	2.455669	20.1
2911	12/5/2019	8:46:01	2.456031	20
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2916	12/5/2019	8:51:01	2.454946	19.7
2917	12/5/2019	8:52:01	2.454946	19.8
2918	12/5/2019	8:53:01	2.455669	19.8
2919	12/5/2019	8:54:01	2.454946	19.9
2920	12/5/2019	8:55:01	2.454946	20
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2925	12/5/2019	9:00:01	2.454946	19.8
2926	12/5/2019	9:01:01	2.454222	19.7
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2929	12/5/2019	9:04:01	2.454222	19.7
2930	12/5/2019	9:05:01	2.454946	19.8
2931	12/5/2019	9:06:01	2.454946	19.9
2932	12/5/2019	9:07:01	2.454222	19.9
2933	12/5/2019	9:08:01	2.454222	20
2934	12/5/2019	9:09:01	2.454222	20.1
2935	12/5/2019	9:10:01	2.454584	20.1
2936	12/5/2019	9:11:01	2.454222	20
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2938	12/5/2019	9:13:01	2.454222	19.7
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2941	12/5/2019	9:16:01	2.454222	19.7
2942	12/5/2019	9:17:01	2.454584	19.8
2943	12/5/2019	9:18:01	2.454222	19.9
2944	12/5/2019	9:19:01	2.454222	19.9
2945	12/5/2019	9:20:01	2.454222	20
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2947	12/5/2019	9:22:01	2.454222	20.1
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2951	12/5/2019	9:26:01	2.454222	19.7
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2953	12/5/2019	9:28:01	2.454222	19.7
2954	12/5/2019	9:29:01	2.454222	19.8
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2956	12/5/2019	9:31:01	2.454222	19.9
2957	12/5/2019	9:32:01	2.454222	20
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2960	12/5/2019	9:35:01	2.454222	20

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2963	12/5/2019	9:38:01	2.45386	19.7
2964	12/5/2019	9:39:01	2.45386	19.7
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2966	12/5/2019	9:41:01	2.453499	19.8
2967	12/5/2019	9:42:01	2.45386	19.9
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2969	12/5/2019	9:44:01	2.453499	20
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2971	12/5/2019	9:46:01	2.45386	20.1
2972	12/5/2019	9:47:01	2.453499	20
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2974	12/5/2019	9:49:01	2.453137	19.7
2975	12/5/2019	9:50:01	2.454222	19.7
2976	12/5/2019	9:51:01	2.454222	19.7
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2978	12/5/2019	9:53:01	2.452775	19.8
2979	12/5/2019	9:54:01	2.453499	19.9
2980	12/5/2019	9:55:01	2.453137	19.9
2981	12/5/2019	9:56:01	2.453499	20
2982	12/5/2019	9:57:01	2.45386	20.1
2983	12/5/2019	9:58:01	2.453499	20.1
2984	12/5/2019	9:59:01	2.45386	20
2985	12/5/2019	10:00:01	2.452775	19.9
2986	12/5/2019	10:01:01	2.453137	19.7
2987	12/5/2019	10:02:01	2.452775	19.7
2988	12/5/2019	10:03:01	2.453137	19.7
2989	12/5/2019	10:04:01	2.452775	19.7
2990	12/5/2019	10:05:01	2.452414	19.8
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2992	12/5/2019	10:07:01	2.45169	19.9
2993	12/5/2019	10:08:01	2.452414	20
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2995	12/5/2019	10:10:01	2.452414	20.1
2996	12/5/2019	10:11:01	2.453137	20
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2998	12/5/2019	10:13:01	2.452414	19.7
2999	12/5/2019	10:14:01	2.452414	19.7
3000	12/5/2019	10:15:01	2.451329	19.7
3001	12/5/2019	10:16:01	2.451329	19.7
3002	12/5/2019	10:17:01	2.452414	19.8
3003	12/5/2019	10:18:01	2.452052	19.9
3004	12/5/2019	10:19:01	2.452052	20
3005	12/5/2019	10:20:01	2.451329	20.1
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3009	12/5/2019	10:24:01	2.451329	19.8
3010	12/5/2019	10:25:01	2.452052	19.7
3011	12/5/2019	10:26:01	2.451329	19.7
3012	12/5/2019	10:27:01	2.45169	19.7
3013	12/5/2019	10:28:01	2.451329	19.8
3014	12/5/2019	10:29:01	2.451329	19.9
3015	12/5/2019	10:30:01	2.451329	19.9
3016	12/5/2019	10:31:01	2.45169	20
3017	12/5/2019	10:32:01	2.451329	20.1
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3022	12/5/2019	10:37:01	2.45169	19.7
3023	12/5/2019	10:38:01	2.451329	19.7
3024	12/5/2019	10:39:01	2.452052	19.8
3025	12/5/2019	10:40:01	2.451329	19.8
3026	12/5/2019	10:41:01	2.451329	19.9
3027	12/5/2019	10:42:01	2.451329	20
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3029	12/5/2019	10:44:01	2.451329	20.1
3030	12/5/2019	10:45:01	2.451329	20
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3038	12/5/2019	10:53:01	2.450605	20
3039	12/5/2019	10:54:01	2.450605	20.1
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3041	12/5/2019	10:56:01	2.450967	20
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3045	12/5/2019	11:00:01	2.451329	19.7
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3047	12/5/2019	11:02:01	2.451329	19.9
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3049	12/5/2019	11:04:01	2.450243	20
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3052	12/5/2019	11:07:01	2.450243	20
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3060	12/5/2019	11:15:01	2.450243	20
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3062	12/5/2019	11:17:01	2.450605	20.1
3063	12/5/2019	11:18:01	2.44952	20
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3065	12/5/2019	11:20:01	2.44952	19.7
3066	12/5/2019	11:21:01	2.44952	19.7
3067	12/5/2019	11:22:01	2.449158	19.7
3068	12/5/2019	11:23:01	2.449158	19.8
3069	12/5/2019	11:24:01	2.449158	19.9
3070	12/5/2019	11:25:01	2.450243	19.9
3071	12/5/2019	11:26:01	2.449158	20
3072	12/5/2019	11:27:01	2.450605	20.1
3073	12/5/2019	11:28:01	2.449882	20.1
3074	12/5/2019	11:29:01	2.448797	20
3075	12/5/2019	11:30:01	2.449158	19.9
3076	12/5/2019	11:31:01	2.449882	19.7
3077	12/5/2019	11:32:01	2.448797	19.7
3078	12/5/2019	11:33:01	2.449158	19.7
3079	12/5/2019	11:34:01	2.449158	19.8
3080	12/5/2019	11:35:01	2.449158	19.9
3081	12/5/2019	11:36:01	2.44952	19.9
3082	12/5/2019	11:37:01	2.448797	20
3083	12/5/2019	11:38:01	2.448797	20.1
3084	12/5/2019	11:39:01	2.449158	20.1
3085	12/5/2019	11:40:01	2.449158	20
3086	12/5/2019	11:41:01	2.448435	19.9
3087	12/5/2019	11:42:01	2.449158	19.8
3088	12/5/2019	11:43:01	2.448435	19.7
3089	12/5/2019	11:44:01	2.448797	19.7
3090	12/5/2019	11:45:01	2.448435	19.8
3091	12/5/2019	11:46:01	2.448435	19.9
3092	12/5/2019	11:47:01	2.449158	19.9
3093	12/5/2019	11:48:01	2.448435	20
3094	12/5/2019	11:49:01	2.448435	20.1
3095	12/5/2019	11:50:01	2.448435	20.1
3096	12/5/2019	11:51:01	2.448435	20
3097	12/5/2019	11:52:01	2.448435	19.9
3098	12/5/2019	11:53:01	2.449158	19.7
3099	12/5/2019	11:54:01	2.448073	19.7
3100	12/5/2019	11:55:01	2.448435	19.7
3101	12/5/2019	11:56:01	2.448435	19.8

3102	12/5/2019	11:57:01	2.448435	19.9
3103	12/5/2019	11:58:01	2.448435	19.9
3104	12/5/2019	11:59:01	2.448435	20.1
3105	12/5/2019	12:00:01	2.448435	20.1
3106	12/5/2019	12:01:01	2.448435	20.1
3107	12/5/2019	12:02:01	2.448435	19.9
3108	12/5/2019	12:03:01	2.448435	19.8
3109	12/5/2019	12:04:01	2.448435	19.7
3110	12/5/2019	12:05:01	2.448073	19.7
3111	12/5/2019	12:06:01	2.448435	19.7
3112	12/5/2019	12:07:01	2.448073	19.8
3113	12/5/2019	12:08:01	2.448435	19.9
3114	12/5/2019	12:09:01	2.448435	20
3115	12/5/2019	12:10:01	2.448435	20.1
3116	12/5/2019	12:11:01	2.448073	20.1
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3122	12/5/2019	12:17:01	2.447711	19.8
3123	12/5/2019	12:18:01	2.448435	19.8
3124	12/5/2019	12:19:01	2.447711	19.9
3125	12/5/2019	12:20:01	2.448073	20
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3130	12/5/2019	12:25:01	2.447711	19.8
3131	12/5/2019	12:26:01	2.447711	19.7
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3134	12/5/2019	12:29:01	2.447711	19.9
3135	12/5/2019	12:30:01	2.447711	20
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3137	12/5/2019	12:32:01	2.447711	20.1
3138	12/5/2019	12:33:01	2.44735	20.1
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3140	12/5/2019	12:35:01	2.44735	19.8
3141	12/5/2019	12:36:01	2.447711	19.7
3142	12/5/2019	12:37:01	2.446626	19.7
3143	12/5/2019	12:38:01	2.446265	19.8
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3145	12/5/2019	12:40:01	2.447711	19.9
3146	12/5/2019	12:41:01	2.446988	20
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3148	12/5/2019	12:43:01	2.446988	20.1

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3151	12/5/2019	12:46:01	2.446265	19.7
3152	12/5/2019	12:47:01	2.445903	19.7
3153	12/5/2019	12:48:01	2.446265	19.8
3154	12/5/2019	12:49:01	2.446626	19.9
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3156	12/5/2019	12:51:01	2.445903	20
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3161	12/5/2019	12:56:01	2.445903	19.7
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3163	12/5/2019	12:58:01	2.446265	19.8
3164	12/5/2019	12:59:01	2.446265	19.8
3165	12/5/2019	13:00:01	2.446265	19.9
3166	12/5/2019	13:01:01	2.446265	20
3167	12/5/2019	13:02:01	2.446265	20.1
3168	12/5/2019	13:03:01	2.446265	20.1
3169	12/5/2019	13:04:01	2.446265	20.1
3170	12/5/2019	13:05:01	2.445903	20
3171	12/5/2019	13:06:01	2.445903	19.8
3172	12/5/2019	13:07:01	2.445903	19.7
3173	12/5/2019	13:08:01	2.445903	19.7
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3177	12/5/2019	13:12:01	2.445903	20
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3180	12/5/2019	13:15:01	2.445903	20
3181	12/5/2019	13:16:01	2.445903	19.9
3182	12/5/2019	13:17:01	2.445903	19.8
3183	12/5/2019	13:18:01	2.445903	19.7
3184	12/5/2019	13:19:01	2.446265	19.8
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3186	12/5/2019	13:21:01	2.445903	19.9
3187	12/5/2019	13:22:01	2.445903	20
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3197	12/5/2019	13:32:01	2.445179	20
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3203	12/5/2019	13:38:01	2.445903	19.7
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3206	12/5/2019	13:41:01	2.445179	19.9
3207	12/5/2019	13:42:01	2.445903	20
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3210	12/5/2019	13:45:01	2.445179	20.1
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3212	12/5/2019	13:47:01	2.445179	19.8
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3217	12/5/2019	13:52:01	2.444818	20
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3219	12/5/2019	13:54:01	2.445179	20.1
3220	12/5/2019	13:55:01	2.444094	20.1
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3223	12/5/2019	13:58:01	2.444094	19.8
3224	12/5/2019	13:59:01	2.444456	19.7
3225	12/5/2019	14:00:01	2.444094	19.8
3226	12/5/2019	14:01:01	2.443733	19.9
3227	12/5/2019	14:02:01	2.444456	20
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3229	12/5/2019	14:04:01	2.444818	20.1
3230	12/5/2019	14:05:01	2.444094	20.1
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3236	12/5/2019	14:11:01	2.443733	19.9
3237	12/5/2019	14:12:01	2.443733	20
3238	12/5/2019	14:13:01	2.443733	20.1
3239	12/5/2019	14:14:01	2.443371	20.1
3240	12/5/2019	14:15:01	2.443371	20.1
3241	12/5/2019	14:16:01	2.443371	19.9
3242	12/5/2019	14:17:01	2.443733	19.8

3243	12/5/2019	14:18:01	2.443371	19.7
3244	12/5/2019	14:19:01	2.443371	19.8
3245	12/5/2019	14:20:01	2.443009	19.8
3246	12/5/2019	14:21:01	2.443009	19.9
3247	12/5/2019	14:22:01	2.443009	20
3248	12/5/2019	14:23:01	2.443733	20.1
3249	12/5/2019	14:24:01	2.443009	20.1
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3254	12/5/2019	14:29:01	2.443009	19.8
3255	12/5/2019	14:30:01	2.443009	19.8
3256	12/5/2019	14:31:01	2.443371	19.9
3257	12/5/2019	14:32:01	2.443009	20
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3259	12/5/2019	14:34:01	2.442647	20.2
3260	12/5/2019	14:35:01	2.443733	20.1
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3262	12/5/2019	14:37:01	2.442647	19.8
3263	12/5/2019	14:38:01	2.443009	19.8
3264	12/5/2019	14:39:01	2.443009	19.8
3265	12/5/2019	14:40:01	2.443009	19.8
3266	12/5/2019	14:41:01	2.443009	19.9
3267	12/5/2019	14:42:01	2.443009	20
3268	12/5/2019	14:43:01	2.443009	20.1
3269	12/5/2019	14:44:01	2.443009	20.1
3270	12/5/2019	14:45:01	2.443009	20.1
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3273	12/5/2019	14:48:01	2.443009	19.7
3274	12/5/2019	14:49:01	2.443009	19.8
3275	12/5/2019	14:50:01	2.442286	19.8
3276	12/5/2019	14:51:01	2.443009	19.9
3277	12/5/2019	14:52:01	2.443009	20
3278	12/5/2019	14:53:01	2.443009	20.1
3279	12/5/2019	14:54:01	2.442647	20.2
3280	12/5/2019	14:55:01	2.442647	20.1
3281	12/5/2019	14:56:01	2.443009	19.9
3282	12/5/2019	14:57:01	2.443009	19.8
3283	12/5/2019	14:58:01	2.442286	19.7
3284	12/5/2019	14:59:01	2.442647	19.8
3285	12/5/2019	15:00:01	2.442286	19.8
3286	12/5/2019	15:01:01	2.442286	19.9
3287	12/5/2019	15:02:01	2.443009	20
3288	12/5/2019	15:03:01	2.442286	20.1
3289	12/5/2019	15:04:01	2.442647	20.1

3290	12/5/2019	15:05:01	2.442286	20.1
3291	12/5/2019	15:06:01	2.442286	19.9
3292	12/5/2019	15:07:01	2.442286	19.8
3293	12/5/2019	15:08:01	2.442286	19.8
3294	12/5/2019	15:09:01	2.442286	19.8
3295	12/5/2019	15:10:01	2.441562	19.8
3296	12/5/2019	15:11:01	2.441924	19.9
3297	12/5/2019	15:12:01	2.4412	20
3298	12/5/2019	15:13:01	2.442286	20.1
3299	12/5/2019	15:14:01	2.4412	20.2
3300	12/5/2019	15:15:01	2.442286	20.1
3301	12/5/2019	15:16:01	2.441924	19.9
3302	12/5/2019	15:17:01	2.442286	19.8
3303	12/5/2019	15:18:01	2.441562	19.7
3304	12/5/2019	15:19:01	2.441562	19.8
3305	12/5/2019	15:20:01	2.440839	19.8
3306	12/5/2019	15:21:01	2.441924	19.9
3307	12/5/2019	15:22:01	2.4412	20
3308	12/5/2019	15:23:01	2.4412	20.1
3309	12/5/2019	15:24:01	2.440839	20.1
3310	12/5/2019	15:25:01	2.441562	20
3311	12/5/2019	15:26:01	2.440477	19.9
3312	12/5/2019	15:27:01	2.440839	19.8
3313	12/5/2019	15:28:01	2.440839	19.8
3314	12/5/2019	15:29:01	2.4412	19.8
3315	12/5/2019	15:30:01	2.440115	19.9
3316	12/5/2019	15:31:01	2.4412	19.9
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3318	12/5/2019	15:33:01	2.440477	20.1
3319	12/5/2019	15:34:01	2.440477	20.1
3320	12/5/2019	15:35:01	2.440839	20
3321	12/5/2019	15:36:01	2.440115	19.9
3322	12/5/2019	15:37:01	2.440115	19.8
3323	12/5/2019	15:38:01	2.440115	19.8
3324	12/5/2019	15:39:01	2.440115	19.8
3325	12/5/2019	15:40:01	2.440839	19.9
3326	12/5/2019	15:41:01	2.4412	19.9
3327	12/5/2019	15:42:01	2.440477	20.1
3328	12/5/2019	15:43:01	2.440477	20.1
3329	12/5/2019	15:44:01	2.440477	20.1
3330	12/5/2019	15:45:01	2.440839	20
3331	12/5/2019	15:46:01	2.440115	19.9
3332	12/5/2019	15:47:01	2.440839	19.8
3333	12/5/2019	15:48:01	2.440477	19.8
3334	12/5/2019	15:49:01	2.440115	19.8
3335	12/5/2019	15:50:01	2.440115	19.9
3336	12/5/2019	15:51:01	2.440115	20

3337	12/5/2019	15:52:01	2.440839	20.1	
3338	12/5/2019	15:53:01	2.440115	20.1	
3339	12/5/2019	15:54:01	2.440115	20.1	
3340	12/5/2019	15:55:01	2.439754	20	
3341	12/5/2019	15:56:01	2.440115	19.9	
3342	12/5/2019	15:57:01	2.440115	19.8	
3343	12/5/2019	15:58:01	2.440115	19.8	
3344	12/5/2019	15:59:01	2.440115	19.8	
3345	12/5/2019	16:00:01	2.439754	19.9	
3346	12/5/2019	16:01:01	2.440115	20	
3347	12/5/2019	16:02:01	2.440115	20.1	
3348	12/5/2019	16:03:01	2.440115	20.1	
3349	12/5/2019	16:04:01	2.440115	20.1	
3350	12/5/2019	16:05:01	2.440115	19.9	
3351	12/5/2019	16:06:01	2.439754	19.8	
3352	12/5/2019	16:07:01	2.440115	19.8	
3353	12/5/2019	16:08:01	2.440115	19.8	
3354	12/5/2019	16:09:01	2.440115	19.9	
3355	12/5/2019	16:10:01	2.440115	19.9	
3356	12/5/2019	16:11:01	2.440115	20	
3357	12/5/2019	16:12:01	2.440115	20.1	
3358	12/5/2019	16:13:01	2.440115	20.1	
3359	12/5/2019	16:14:01	2.440115	20	
3360	12/5/2019	16:15:01	2.439754	19.9	
3361	12/5/2019	16:16:01	2.439754	19.8	48 horas
3362	12/5/2019	16:17:01	2.440115	19.8	
3363	12/5/2019	16:18:01	2.440115	19.8	
3364	12/5/2019	16:19:01	2.438668	19.9	
3365	12/5/2019	16:20:01	2.439754	20	
3366	12/5/2019	16:21:01	2.439754	20.1	
3367	12/5/2019	16:22:01	2.440115	20.1	
3368	12/5/2019	16:23:01	2.440115	20.1	
3369	12/5/2019	16:24:01	2.440115	20	
3370	12/5/2019	16:25:01	2.439392	19.9	
3371	12/5/2019	16:26:01	2.438668	19.8	
3372	12/5/2019	16:27:01	2.439392	19.8	
3373	12/5/2019	16:28:01	2.439392	19.8	
3374	12/5/2019	16:29:01	2.439392	19.9	
3375	12/5/2019	16:30:01	2.43903	20	
3376	12/5/2019	16:31:01	2.43903	20.1	
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3378	12/5/2019	16:33:01	2.439392	20.1	
3379	12/5/2019	16:34:01	2.43903	20	
3380	12/5/2019	16:35:01	2.438307	19.8	
3381	12/5/2019	16:36:01	2.438307	19.8	
3382	12/5/2019	16:37:01	2.438668	19.8	
3383	12/5/2019	16:38:01	2.43903	19.8	

3384	12/5/2019	16:39:01	2.438307	19.9
3385	12/5/2019	16:40:01	2.438668	20
3386	12/5/2019	16:41:01	2.437945	20.1
3387	12/5/2019	16:42:01	2.43903	20.2
3388	12/5/2019	16:43:01	2.438668	20.1
3389	12/5/2019	16:44:01	2.43903	19.9
3390	12/5/2019	16:45:01	2.437945	19.8
3391	12/5/2019	16:46:01	2.437945	19.7
3392	12/5/2019	16:47:01	2.437945	19.8
3393	12/5/2019	16:48:01	2.438668	19.8
3394	12/5/2019	16:49:01	2.438668	19.9
3395	12/5/2019	16:50:01	2.438307	20
3396	12/5/2019	16:51:01	2.438307	20.1
3397	12/5/2019	16:52:01	2.437583	20.1
3398	12/5/2019	16:53:01	2.438307	20
3399	12/5/2019	16:54:01	2.437583	19.9
3400	12/5/2019	16:55:01	2.437583	19.8
3401	12/5/2019	16:56:01	2.437222	19.8
3402	12/5/2019	16:57:01	2.437583	19.8
3403	12/5/2019	16:58:01	2.437945	19.9
3404	12/5/2019	16:59:01	2.437222	19.9
3405	12/5/2019	17:00:01	2.437945	20
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3407	12/5/2019	17:02:01	2.437945	20.1
3408	12/5/2019	17:03:01	2.437222	20
3409	12/5/2019	17:04:01	2.437583	19.9
3410	12/5/2019	17:05:01	2.437583	19.8
3411	12/5/2019	17:06:01	2.437222	19.8
3412	12/5/2019	17:07:01	2.437222	19.8
3413	12/5/2019	17:08:01	2.437945	19.9
3414	12/5/2019	17:09:01	2.437222	20
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3416	12/5/2019	17:11:01	2.437222	20.2
3417	12/5/2019	17:12:01	2.437583	20.1
3418	12/5/2019	17:13:01	2.437222	20
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3420	12/5/2019	17:15:01	2.437222	19.8
3421	12/5/2019	17:16:01	2.437222	19.8
3422	12/5/2019	17:17:01	2.437222	19.8
3423	12/5/2019	17:18:01	2.437222	19.9
3424	12/5/2019	17:19:01	2.43686	20
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3427	12/5/2019	17:22:01	2.437222	20.1
3428	12/5/2019	17:23:01	2.437222	20
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3433	12/5/2019	17:28:01	2.437222	19.9
3434	12/5/2019	17:29:01	2.43686	20
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3438	12/5/2019	17:33:01	2.437222	19.9
3439	12/5/2019	17:34:01	2.437222	19.8
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3441	12/5/2019	17:36:01	2.437222	19.8
3442	12/5/2019	17:37:01	2.437222	19.8
3443	12/5/2019	17:38:01	2.437222	19.9
3444	12/5/2019	17:39:01	2.437222	20
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3449	12/5/2019	17:44:01	2.43686	19.8
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3454	12/5/2019	17:49:01	2.437222	20
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3460	12/5/2019	17:55:01	2.43686	19.8
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3463	12/5/2019	17:58:01	2.436136	19.9
3464	12/5/2019	17:59:01	2.435775	20
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3466	12/5/2019	18:01:01	2.435775	20.1
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3469	12/5/2019	18:04:01	2.435413	19.8
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3472	12/5/2019	18:07:01	2.436136	19.9
3473	12/5/2019	18:08:01	2.435413	19.9
3474	12/5/2019	18:09:01	2.43469	20
3475	12/5/2019	18:10:01	2.435775	20.1
3476	12/5/2019	18:11:01	2.435775	20.1
3477	12/5/2019	18:12:01	2.435775	20

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3487	12/5/2019	18:22:01	2.435051	20
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3490	12/5/2019	18:25:01	2.43469	19.8
3491	12/5/2019	18:26:01	2.435051	19.8
3492	12/5/2019	18:27:01	2.435051	19.8
3493	12/5/2019	18:28:01	2.434328	19.9
3494	12/5/2019	18:29:01	2.434328	20
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3499	12/5/2019	18:34:01	2.434328	19.8
3500	12/5/2019	18:35:01	2.434328	19.7
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3507	12/5/2019	18:42:01	2.434328	20
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3509	12/5/2019	18:44:01	2.434328	19.8
3510	12/5/2019	18:45:01	2.434328	19.8
3511	12/5/2019	18:46:01	2.43469	19.8
3512	12/5/2019	18:47:01	2.434328	19.8
3513	12/5/2019	18:48:01	2.434328	19.9
3514	12/5/2019	18:49:01	2.434328	20.1
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3517	12/5/2019	18:52:01	2.434328	20
3518	12/5/2019	18:53:01	2.434328	19.9
3519	12/5/2019	18:54:01	2.434328	19.8
3520	12/5/2019	18:55:01	2.434328	19.7
3521	12/5/2019	18:56:01	2.433604	19.8
3522	12/5/2019	18:57:01	2.434328	19.9
3523	12/5/2019	18:58:01	2.434328	19.9
3524	12/5/2019	18:59:01	2.434328	20

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3527	12/5/2019	19:02:01	2.43469	20
3528	12/5/2019	19:03:01	2.434328	19.9
3529	12/5/2019	19:04:01	2.434328	19.8
3530	12/5/2019	19:05:01	2.433966	19.7
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3533	12/5/2019	19:08:01	2.433604	19.9
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3543	12/5/2019	19:18:01	2.433604	19.9
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3564	12/5/2019	19:39:01	2.432519	20
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3566	12/5/2019	19:41:01	2.432519	20.1
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3570	12/5/2019	19:45:01	2.431434	19.7
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3611	12/5/2019	20:26:01	2.431434	19.7
3612	12/5/2019	20:27:01	2.431434	19.7
3613	12/5/2019	20:28:01	2.431072	19.8
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3615	12/5/2019	20:30:01	2.430711	19.9
3616	12/5/2019	20:31:01	2.431434	20
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3622	12/5/2019	20:37:01	2.431434	19.7
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3624	12/5/2019	20:39:01	2.430711	19.8
3625	12/5/2019	20:40:01	2.431434	19.9
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3627	12/5/2019	20:42:01	2.431434	20
3628	12/5/2019	20:43:01	2.431434	20.1
3629	12/5/2019	20:44:01	2.431434	20.1
3630	12/5/2019	20:45:01	2.431072	20
3631	12/5/2019	20:46:01	2.431434	19.8
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3640	12/5/2019	20:55:01	2.430349	20
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3643	12/5/2019	20:58:01	2.430349	19.7
3644	12/5/2019	20:59:01	2.429987	19.7
3645	12/5/2019	21:00:01	2.430711	19.8
3646	12/5/2019	21:01:01	2.429987	19.9
3647	12/5/2019	21:02:01	2.429987	19.9
3648	12/5/2019	21:03:01	2.430349	20
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3650	12/5/2019	21:05:01	2.429987	20.1
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3657	12/5/2019	21:12:01	2.429626	19.9
3658	12/5/2019	21:13:01	2.429626	20
3659	12/5/2019	21:14:01	2.429264	20.1
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3662	12/5/2019	21:17:01	2.429626	19.9
3663	12/5/2019	21:18:01	2.429626	19.8
3664	12/5/2019	21:19:01	2.428902	19.7
3665	12/5/2019	21:20:01	2.42854	19.7

3666	12/5/2019	21:21:01	2.428902	19.8
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3668	12/5/2019	21:23:01	2.428902	19.9
3669	12/5/2019	21:24:01	2.428902	20
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3678	12/5/2019	21:33:01	2.42854	19.9
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3680	12/5/2019	21:35:01	2.42854	20
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3685	12/5/2019	21:40:01	2.428902	19.7
3686	12/5/2019	21:41:01	2.42854	19.7
3687	12/5/2019	21:42:01	2.42854	19.7
3688	12/5/2019	21:43:01	2.42854	19.8
3689	12/5/2019	21:44:01	2.42854	19.9
3690	12/5/2019	21:45:01	2.42854	20
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3692	12/5/2019	21:47:01	2.42854	20.1
3693	12/5/2019	21:48:01	2.42854	20.1
3694	12/5/2019	21:49:01	2.42854	19.9
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3698	12/5/2019	21:53:01	2.42854	19.7
3699	12/5/2019	21:54:01	2.42854	19.8
3700	12/5/2019	21:55:01	2.42854	19.9
3701	12/5/2019	21:56:01	2.42854	20
3702	12/5/2019	21:57:01	2.42854	20.1
3703	12/5/2019	21:58:01	2.42854	20.1
3704	12/5/2019	21:59:01	2.42854	20.1
3705	12/5/2019	22:00:01	2.42854	19.9
3706	12/5/2019	22:01:01	2.42854	19.8
3707	12/5/2019	22:02:01	2.42854	19.7
3708	12/5/2019	22:03:01	2.42854	19.7
3709	12/5/2019	22:04:01	2.42854	19.8
3710	12/5/2019	22:05:01	2.42854	19.8
3711	12/5/2019	22:06:01	2.428179	19.9
3712	12/5/2019	22:07:01	2.42854	20

3713	12/5/2019	22:08:01	2.428179	20.1
3714	12/5/2019	22:09:01	2.42854	20.1
3715	12/5/2019	22:10:01	2.42854	20
3716	12/5/2019	22:11:01	2.42854	19.9
3717	12/5/2019	22:12:01	2.427817	19.8
3718	12/5/2019	22:13:01	2.427817	19.7
3719	12/5/2019	22:14:01	2.428179	19.7
3720	12/5/2019	22:15:01	2.427817	19.8
3721	12/5/2019	22:16:01	2.427817	19.8
3722	12/5/2019	22:17:01	2.428179	19.9
3723	12/5/2019	22:18:01	2.427817	20
3724	12/5/2019	22:19:01	2.427455	20.1
3725	12/5/2019	22:20:01	2.42854	20.1
3726	12/5/2019	22:21:01	2.428179	20.1
3727	12/5/2019	22:22:01	2.427455	19.9
3728	12/5/2019	22:23:01	2.427094	19.8
3729	12/5/2019	22:24:01	2.427817	19.7
3730	12/5/2019	22:25:01	2.42854	19.7
3731	12/5/2019	22:26:01	2.42854	19.8
3732	12/5/2019	22:27:01	2.427817	19.8
3733	12/5/2019	22:28:01	2.426732	19.9
3734	12/5/2019	22:29:01	2.427094	20
3735	12/5/2019	22:30:01	2.427094	20.1
3736	12/5/2019	22:31:01	2.428179	20.1
3737	12/5/2019	22:32:01	2.427455	20
3738	12/5/2019	22:33:01	2.427455	19.9
3739	12/5/2019	22:34:01	2.426732	19.8
3740	12/5/2019	22:35:01	2.427455	19.7
3741	12/5/2019	22:36:01	2.427094	19.7
3742	12/5/2019	22:37:01	2.426732	19.8
3743	12/5/2019	22:38:01	2.42637	19.8
3744	12/5/2019	22:39:01	2.427455	19.9
3745	12/5/2019	22:40:01	2.426732	20
3746	12/5/2019	22:41:01	2.427094	20.1
3747	12/5/2019	22:42:01	2.42637	20.1
3748	12/5/2019	22:43:01	2.426732	20
3749	12/5/2019	22:44:01	2.427094	19.9
3750	12/5/2019	22:45:01	2.426732	19.8
3751	12/5/2019	22:46:01	2.426732	19.7
3752	12/5/2019	22:47:01	2.426732	19.7
3753	12/5/2019	22:48:01	2.426732	19.8
3754	12/5/2019	22:49:01	2.426008	19.9
3755	12/5/2019	22:50:01	2.42637	19.9
3756	12/5/2019	22:51:01	2.426008	20
3757	12/5/2019	22:52:01	2.42637	20.1
3758	12/5/2019	22:53:01	2.425647	20.1
3759	12/5/2019	22:54:01	2.426732	20

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3761	12/5/2019	22:56:01	2.425647	19.7
3762	12/5/2019	22:57:01	2.426732	19.7
3763	12/5/2019	22:58:01	2.426008	19.7
3764	12/5/2019	22:59:01	2.426008	19.8
3765	12/5/2019	23:00:01	2.426008	19.8
3766	12/5/2019	23:01:01	2.42637	19.9
3767	12/5/2019	23:02:01	2.425647	20
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3769	12/5/2019	23:04:01	2.426008	20.1
3770	12/5/2019	23:05:01	2.425647	20
3771	12/5/2019	23:06:01	2.425647	19.9
3772	12/5/2019	23:07:01	2.425647	19.8
3773	12/5/2019	23:08:01	2.425647	19.7
3774	12/5/2019	23:09:01	2.425647	19.7
3775	12/5/2019	23:10:01	2.425647	19.8
3776	12/5/2019	23:11:01	2.425647	19.8
3777	12/5/2019	23:12:01	2.425647	19.9
3778	12/5/2019	23:13:01	2.425647	20
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3780	12/5/2019	23:15:01	2.426008	20.1
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3782	12/5/2019	23:17:01	2.425647	19.9
3783	12/5/2019	23:18:01	2.425647	19.8
3784	12/5/2019	23:19:01	2.425647	19.7
3785	12/5/2019	23:20:01	2.425647	19.7
3786	12/5/2019	23:21:01	2.425647	19.7
3787	12/5/2019	23:22:01	2.425647	19.8
3788	12/5/2019	23:23:01	2.425647	19.9
3789	12/5/2019	23:24:01	2.425647	19.9
3790	12/5/2019	23:25:01	2.425647	20
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3793	12/5/2019	23:28:01	2.425647	19.9
3794	12/5/2019	23:29:01	2.425647	19.8
3795	12/5/2019	23:30:01	2.425647	19.7
3796	12/5/2019	23:31:01	2.424923	19.7
3797	12/5/2019	23:32:01	2.425647	19.7
3798	12/5/2019	23:33:01	2.425647	19.8
3799	12/5/2019	23:34:01	2.425285	19.9
3800	12/5/2019	23:35:01	2.424923	19.9
3801	12/5/2019	23:36:01	2.425647	20
3802	12/5/2019	23:37:01	2.425647	20.1
3803	12/5/2019	23:38:01	2.425647	20.1
3804	12/5/2019	23:39:01	2.425285	20
3805	12/5/2019	23:40:01	2.425647	19.9
3806	12/5/2019	23:41:01	2.424923	19.8

3807	12/5/2019	23:42:01	2.424923	19.7
3808	12/5/2019	23:43:01	2.425647	19.7
3809	12/5/2019	23:44:01	2.425647	19.8
3810	12/5/2019	23:45:01	2.425285	19.8
3811	12/5/2019	23:46:01	2.424562	19.9
3812	12/5/2019	23:47:01	2.425647	20
3813	12/5/2019	23:48:01	2.425647	20
3814	12/5/2019	23:49:01	2.425285	20.1
3815	12/5/2019	23:50:01	2.425285	20.1
3816	12/5/2019	23:51:01	2.425285	19.9
3817	12/5/2019	23:52:01	2.425285	19.8
3818	12/5/2019	23:53:01	2.424923	19.7
3819	12/5/2019	23:54:01	2.425285	19.7
3820	12/5/2019	23:55:01	2.424923	19.7
3821	12/5/2019	23:56:01	2.4242	19.8
3822	12/5/2019	23:57:01	2.4242	19.9
3823	12/5/2019	23:58:01	2.424562	19.9
3824	12/5/2019	23:59:01	2.423476	20
3825	5/13/2019	0:00:01	2.425285	20.1
3826	5/13/2019	0:01:01	2.423838	20.1
3827	5/13/2019	0:02:01	2.424562	20
3828	5/13/2019	0:03:01	2.424562	19.8
3829	5/13/2019	0:04:01	2.4242	19.7
3830	5/13/2019	0:05:01	2.4242	19.7
3831	5/13/2019	0:06:01	2.423476	19.7
3832	5/13/2019	0:07:01	2.423838	19.8
3833	5/13/2019	0:08:01	2.4242	19.8
3834	5/13/2019	0:09:01	2.425285	19.9
3835	5/13/2019	0:10:01	2.424562	20
3836	5/13/2019	0:11:01	2.424923	20.1
3837	5/13/2019	0:12:01	2.4242	20.1
3838	5/13/2019	0:13:01	2.4242	20
3839	5/13/2019	0:14:01	2.424923	19.9
3840	5/13/2019	0:15:01	2.423838	19.8
3841	5/13/2019	0:16:01	2.423476	19.7
3842	5/13/2019	0:17:01	2.422753	19.7
3843	5/13/2019	0:18:01	2.4242	19.7
3844	5/13/2019	0:19:01	2.423476	19.8
3845	5/13/2019	0:20:01	2.423115	19.9
3846	5/13/2019	0:21:01	2.423476	19.9
3847	5/13/2019	0:22:01	2.423476	20
3848	5/13/2019	0:23:01	2.423115	20.1
3849	5/13/2019	0:24:01	2.423476	20.1
3850	5/13/2019	0:25:01	2.422753	20
3851	5/13/2019	0:26:01	2.423115	19.9
3852	5/13/2019	0:27:01	2.422753	19.7
3853	5/13/2019	0:28:01	2.423115	19.7

3854	5/13/2019	0:29:01	2.423476	19.7
3855	5/13/2019	0:30:01	2.422753	19.8
3856	5/13/2019	0:31:01	2.423476	19.8
3857	5/13/2019	0:32:01	2.423476	19.9
3858	5/13/2019	0:33:01	2.423115	20
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3861	5/13/2019	0:36:01	2.423115	20
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3863	5/13/2019	0:38:01	2.422753	19.8
3864	5/13/2019	0:39:01	2.422753	19.7
3865	5/13/2019	0:40:01	2.422753	19.7
3866	5/13/2019	0:41:01	2.422753	19.7
3867	5/13/2019	0:42:01	2.422753	19.8
3868	5/13/2019	0:43:01	2.423115	19.8
3869	5/13/2019	0:44:01	2.422753	19.9
3870	5/13/2019	0:45:01	2.422753	20
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3872	5/13/2019	0:47:01	2.422753	20.1
3873	5/13/2019	0:48:01	2.422753	20
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3875	5/13/2019	0:50:01	2.422753	19.7
3876	5/13/2019	0:51:01	2.422753	19.7
3877	5/13/2019	0:52:01	2.422391	19.7
3878	5/13/2019	0:53:01	2.422391	19.8
3879	5/13/2019	0:54:01	2.422753	19.8
3880	5/13/2019	0:55:01	2.422753	19.9
3881	5/13/2019	0:56:01	2.422753	19.9
3882	5/13/2019	0:57:01	2.422753	20
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3885	5/13/2019	1:00:01	2.422753	19.9
3886	5/13/2019	1:01:01	2.422753	19.8
3887	5/13/2019	1:02:01	2.422753	19.7
3888	5/13/2019	1:03:01	2.422753	19.7
3889	5/13/2019	1:04:01	2.422753	19.7
3890	5/13/2019	1:05:01	2.422753	19.8
3891	5/13/2019	1:06:01	2.422753	19.8
3892	5/13/2019	1:07:01	2.422753	19.9
3893	5/13/2019	1:08:01	2.42203	20
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3895	5/13/2019	1:10:01	2.422391	20.1
3896	5/13/2019	1:11:01	2.422753	20
3897	5/13/2019	1:12:01	2.422753	19.9
3898	5/13/2019	1:13:01	2.422391	19.8
3899	5/13/2019	1:14:01	2.42203	19.7
3900	5/13/2019	1:15:01	2.422753	19.7

3901	5/13/2019	1:16:01	2.422753	19.7
3902	5/13/2019	1:17:01	2.42203	19.8
3903	5/13/2019	1:18:01	2.422753	19.8
3904	5/13/2019	1:19:01	2.422391	19.9
3905	5/13/2019	1:20:01	2.42203	20
3906	5/13/2019	1:21:01	2.422391	20
3907	5/13/2019	1:22:01	2.42203	20.1
3908	5/13/2019	1:23:01	2.42203	20.1
3909	5/13/2019	1:24:01	2.422391	19.9
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3912	5/13/2019	1:27:01	2.421668	19.7
3913	5/13/2019	1:28:01	2.421668	19.7
3914	5/13/2019	1:29:01	2.421668	19.8
3915	5/13/2019	1:30:01	2.422753	19.8
3916	5/13/2019	1:31:01	2.421668	19.9
3917	5/13/2019	1:32:01	2.421306	20
3918	5/13/2019	1:33:01	2.42203	20
3919	5/13/2019	1:34:01	2.42203	20.1
3920	5/13/2019	1:35:01	2.422391	20
3921	5/13/2019	1:36:01	2.42203	19.9
3922	5/13/2019	1:37:01	2.420583	19.8
3923	5/13/2019	1:38:01	2.42203	19.7
3924	5/13/2019	1:39:01	2.422391	19.7
3925	5/13/2019	1:40:01	2.420945	19.7
3926	5/13/2019	1:41:01	2.421306	19.8
3927	5/13/2019	1:42:01	2.421668	19.8
3928	5/13/2019	1:43:01	2.420945	19.9
3929	5/13/2019	1:44:01	2.421306	20
3930	5/13/2019	1:45:01	2.420945	20
3931	5/13/2019	1:46:01	2.420945	20.1
3932	5/13/2019	1:47:01	2.421668	20
3933	5/13/2019	1:48:01	2.421668	19.9
3934	5/13/2019	1:49:01	2.420945	19.8
3935	5/13/2019	1:50:01	2.421306	19.7
3936	5/13/2019	1:51:01	2.420945	19.7
3937	5/13/2019	1:52:01	2.420583	19.7
3938	5/13/2019	1:53:01	2.420221	19.8
3939	5/13/2019	1:54:01	2.420583	19.8
3940	5/13/2019	1:55:01	2.421668	19.9
3941	5/13/2019	1:56:01	2.421306	20
3942	5/13/2019	1:57:01	2.420945	20
3943	5/13/2019	1:58:01	2.420945	20.1
3944	5/13/2019	1:59:01	2.421306	20.1
3945	5/13/2019	2:00:01	2.420583	19.9
3946	5/13/2019	2:01:01	2.420221	19.8
3947	5/13/2019	2:02:01	2.420221	19.7

3948	5/13/2019	2:03:01	2.419859	19.7
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3950	5/13/2019	2:05:01	2.420583	19.7
3951	5/13/2019	2:06:01	2.420583	19.8
3952	5/13/2019	2:07:01	2.420583	19.9
3953	5/13/2019	2:08:01	2.420221	19.9
3954	5/13/2019	2:09:01	2.420221	20
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3986	5/13/2019	2:41:01	2.419859	19.7
3987	5/13/2019	2:42:01	2.419859	19.8
3988	5/13/2019	2:43:01	2.420221	19.8
3989	5/13/2019	2:44:01	2.419859	19.9
3990	5/13/2019	2:45:01	2.419859	20
3991	5/13/2019	2:46:01	2.419498	20
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3993	5/13/2019	2:48:01	2.419498	20
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3996	5/13/2019	2:51:01	2.419498	19.7
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4013	5/13/2019	3:08:01	2.418774	19.9
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4015	5/13/2019	3:10:01	2.419136	20
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4030	5/13/2019	3:25:01	2.418412	20.1
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4033	5/13/2019	3:28:01	2.418774	19.7
4034	5/13/2019	3:29:01	2.417689	19.7
4035	5/13/2019	3:30:01	2.418412	19.7
4036	5/13/2019	3:31:01	2.418051	19.7
4037	5/13/2019	3:32:01	2.417689	19.8
4038	5/13/2019	3:33:01	2.418412	19.8
4039	5/13/2019	3:34:01	2.418051	19.9
4040	5/13/2019	3:35:01	2.417689	20
4041	5/13/2019	3:36:01	2.418412	20

4042	5/13/2019	3:37:01	2.418412	20.1
4043	5/13/2019	3:38:01	2.417327	20
4044	5/13/2019	3:39:01	2.417327	19.9
4045	5/13/2019	3:40:01	2.416966	19.8
4046	5/13/2019	3:41:01	2.417689	19.7
4047	5/13/2019	3:42:01	2.416966	19.7
4048	5/13/2019	3:43:01	2.417327	19.7
4049	5/13/2019	3:44:01	2.416966	19.7
4050	5/13/2019	3:45:01	2.416966	19.8
4051	5/13/2019	3:46:01	2.416966	19.8
4052	5/13/2019	3:47:01	2.417689	19.9
4053	5/13/2019	3:48:01	2.416966	19.9
4054	5/13/2019	3:49:01	2.416966	20
4055	5/13/2019	3:50:01	2.418051	20.1
4056	5/13/2019	3:51:01	2.417327	20.1
4057	5/13/2019	3:52:01	2.417689	19.9
4058	5/13/2019	3:53:01	2.416966	19.8
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4067	5/13/2019	4:02:01	2.417327	20
4068	5/13/2019	4:03:01	2.416966	20.1
4069	5/13/2019	4:04:01	2.416966	20.1
4070	5/13/2019	4:05:01	2.416966	20
4071	5/13/2019	4:06:01	2.417327	19.8
4072	5/13/2019	4:07:01	2.416966	19.7
4073	5/13/2019	4:08:01	2.416604	19.7
4074	5/13/2019	4:09:01	2.416966	19.7
4075	5/13/2019	4:10:01	2.416966	19.7
4076	5/13/2019	4:11:01	2.416966	19.8
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4088	5/13/2019	4:23:01	2.416604	19.7

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4093	5/13/2019	4:28:01	2.416966	19.9
4094	5/13/2019	4:29:01	2.416966	20
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4103	5/13/2019	4:38:01	2.416966	19.7
4104	5/13/2019	4:39:01	2.416604	19.8
4105	5/13/2019	4:40:01	2.416604	19.8
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4114	5/13/2019	4:49:01	2.416604	19.7
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4117	5/13/2019	4:52:01	2.415519	19.7
4118	5/13/2019	4:53:01	2.416242	19.8
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4127	5/13/2019	5:02:01	2.414795	19.8
4128	5/13/2019	5:03:01	2.415519	19.7
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4130	5/13/2019	5:05:01	2.415519	19.7
4131	5/13/2019	5:06:01	2.41588	19.7
4132	5/13/2019	5:07:01	2.41588	19.8
4133	5/13/2019	5:08:01	2.41588	19.8
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4135	5/13/2019	5:10:01	2.414795	19.9

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4145	5/13/2019	5:20:01	2.414795	19.7
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4149	5/13/2019	5:24:01	2.414434	19.9
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4155	5/13/2019	5:30:01	2.414434	19.8
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4165	5/13/2019	5:40:01	2.414072	20
4166	5/13/2019	5:41:01	2.414072	20.1
4167	5/13/2019	5:42:01	2.414072	20.1
4168	5/13/2019	5:43:01	2.414072	19.9
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4174	5/13/2019	5:49:01	2.41371	19.7
4175	5/13/2019	5:50:01	2.414072	19.8
4176	5/13/2019	5:51:01	2.414072	19.8
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4179	5/13/2019	5:54:01	2.414072	20
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4186	5/13/2019	6:01:01	2.414072	19.6
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4189	5/13/2019	6:04:01	2.41371	19.7
4190	5/13/2019	6:05:01	2.41371	19.8
4191	5/13/2019	6:06:01	2.414072	19.8
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4194	5/13/2019	6:09:01	2.41371	20
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4203	5/13/2019	6:18:01	2.41371	19.7
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4211	5/13/2019	6:26:01	2.413349	20.1
4212	5/13/2019	6:27:01	2.414072	20
4213	5/13/2019	6:28:01	2.41371	19.8
4214	5/13/2019	6:29:01	2.414072	19.7
4215	5/13/2019	6:30:01	2.41371	19.7
4216	5/13/2019	6:31:01	2.413349	19.6
4217	5/13/2019	6:32:01	2.413349	19.7
4218	5/13/2019	6:33:01	2.41371	19.7
4219	5/13/2019	6:34:01	2.41371	19.8
4220	5/13/2019	6:35:01	2.412987	19.8
4221	5/13/2019	6:36:01	2.41371	19.9
4222	5/13/2019	6:37:01	2.412625	19.9
4223	5/13/2019	6:38:01	2.412987	20
4224	5/13/2019	6:39:01	2.413349	20
4225	5/13/2019	6:40:01	2.411902	20.1
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4227	5/13/2019	6:42:01	2.412987	19.9
4228	5/13/2019	6:43:01	2.412987	19.8
4229	5/13/2019	6:44:01	2.413349	19.7

4230	5/13/2019	6:45:01	2.412263	19.7
4231	5/13/2019	6:46:01	2.41154	19.7
4232	5/13/2019	6:47:01	2.412263	19.7
4233	5/13/2019	6:48:01	2.411902	19.7
4234	5/13/2019	6:49:01	2.412987	19.8
4235	5/13/2019	6:50:01	2.412263	19.9
4236	5/13/2019	6:51:01	2.411902	19.9
4237	5/13/2019	6:52:01	2.412263	20
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4239	5/13/2019	6:54:01	2.411902	20.1
4240	5/13/2019	6:55:01	2.412263	20.1
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4242	5/13/2019	6:57:01	2.412263	19.8
4243	5/13/2019	6:58:01	2.412263	19.7
4244	5/13/2019	6:59:01	2.411902	19.6
4245	5/13/2019	7:00:01	2.411902	19.7
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4251	5/13/2019	7:06:01	2.412263	19.9
4252	5/13/2019	7:07:01	2.41154	20
4253	5/13/2019	7:08:01	2.41154	20.1
4254	5/13/2019	7:09:01	2.412263	20.1
4255	5/13/2019	7:10:01	2.411902	19.9
4256	5/13/2019	7:11:01	2.411178	19.8
4257	5/13/2019	7:12:01	2.411902	19.7
4258	5/13/2019	7:13:01	2.41154	19.7
4259	5/13/2019	7:14:01	2.411178	19.7
4260	5/13/2019	7:15:01	2.411902	19.7
4261	5/13/2019	7:16:01	2.41154	19.7
4262	5/13/2019	7:17:01	2.412263	19.8
4263	5/13/2019	7:18:01	2.411178	19.9
4264	5/13/2019	7:19:01	2.411178	19.9
4265	5/13/2019	7:20:01	2.41154	20
4266	5/13/2019	7:21:01	2.411178	20
4267	5/13/2019	7:22:01	2.41154	20.1
4268	5/13/2019	7:23:01	2.412263	20.1
4269	5/13/2019	7:24:01	2.411178	19.9
4270	5/13/2019	7:25:01	2.411178	19.8
4271	5/13/2019	7:26:01	2.411178	19.7
4272	5/13/2019	7:27:01	2.41154	19.7
4273	5/13/2019	7:28:01	2.411178	19.7
4274	5/13/2019	7:29:01	2.411178	19.7
4275	5/13/2019	7:30:01	2.411178	19.8
4276	5/13/2019	7:31:01	2.411178	19.8

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4279	5/13/2019	7:34:01	2.41154	20
4280	5/13/2019	7:35:01	2.411178	20.1
4281	5/13/2019	7:36:01	2.411178	20.1
4282	5/13/2019	7:37:01	2.411178	20
4283	5/13/2019	7:38:01	2.411178	19.8
4284	5/13/2019	7:39:01	2.411178	19.7
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4287	5/13/2019	7:42:01	2.411178	19.7
4288	5/13/2019	7:43:01	2.410817	19.7
4289	5/13/2019	7:44:01	2.411178	19.8
4290	5/13/2019	7:45:01	2.410455	19.9
4291	5/13/2019	7:46:01	2.411178	19.9
4292	5/13/2019	7:47:01	2.411178	20
4293	5/13/2019	7:48:01	2.411178	20
4294	5/13/2019	7:49:01	2.411178	20.1
4295	5/13/2019	7:50:01	2.411178	20
4296	5/13/2019	7:51:01	2.411178	19.9
4297	5/13/2019	7:52:01	2.411178	19.7
4298	5/13/2019	7:53:01	2.411178	19.7
4299	5/13/2019	7:54:01	2.410455	19.7
4300	5/13/2019	7:55:01	2.410817	19.7
4301	5/13/2019	7:56:01	2.410817	19.8
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4304	5/13/2019	7:59:01	2.410817	19.9
4305	5/13/2019	8:00:01	2.411178	20
4306	5/13/2019	8:01:01	2.410093	20.1
4307	5/13/2019	8:02:01	2.410817	20.1
4308	5/13/2019	8:03:01	2.411178	20
4309	5/13/2019	8:04:01	2.410817	19.8
4310	5/13/2019	8:05:01	2.410817	19.7
4311	5/13/2019	8:06:01	2.410817	19.7
4312	5/13/2019	8:07:01	2.410817	19.7
4313	5/13/2019	8:08:01	2.411178	19.7
4314	5/13/2019	8:09:01	2.410455	19.8
4315	5/13/2019	8:10:01	2.410455	19.9
4316	5/13/2019	8:11:01	2.411178	19.9
4317	5/13/2019	8:12:01	2.410455	20
4318	5/13/2019	8:13:01	2.410455	20
4319	5/13/2019	8:14:01	2.409731	20.1
4320	5/13/2019	8:15:01	2.410455	20
4321	5/13/2019	8:16:01	2.410455	19.9
4322	5/13/2019	8:17:01	2.411178	19.8
4323	5/13/2019	8:18:01	2.410455	19.7

4324	5/13/2019	8:19:01	2.410455	19.7
4325	5/13/2019	8:20:01	2.410817	19.7
4326	5/13/2019	8:21:01	2.410455	19.7
4327	5/13/2019	8:22:01	2.410455	19.8
4328	5/13/2019	8:23:01	2.410093	19.9
4329	5/13/2019	8:24:01	2.410817	19.9
4330	5/13/2019	8:25:01	2.410093	20
4331	5/13/2019	8:26:01	2.410093	20.1
4332	5/13/2019	8:27:01	2.40937	20.1
4333	5/13/2019	8:28:01	2.409731	20
4334	5/13/2019	8:29:01	2.40937	19.8
4335	5/13/2019	8:30:01	2.409731	19.7
4336	5/13/2019	8:31:01	2.40937	19.7
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4338	5/13/2019	8:33:01	2.410093	19.7
4339	5/13/2019	8:34:01	2.408646	19.8
4340	5/13/2019	8:35:01	2.40937	19.8
4341	5/13/2019	8:36:01	2.409731	19.9
4342	5/13/2019	8:37:01	2.409731	20
4343	5/13/2019	8:38:01	2.409731	20.1
4344	5/13/2019	8:39:01	2.409731	20.1
4345	5/13/2019	8:40:01	2.409731	20
4346	5/13/2019	8:41:01	2.409731	19.9
4347	5/13/2019	8:42:01	2.409731	19.7
4348	5/13/2019	8:43:01	2.409731	19.7
4349	5/13/2019	8:44:01	2.409008	19.7
4350	5/13/2019	8:45:01	2.409008	19.7
4351	5/13/2019	8:46:01	2.409008	19.8
4352	5/13/2019	8:47:01	2.409008	19.8
4353	5/13/2019	8:48:01	2.409008	19.9
4354	5/13/2019	8:49:01	2.409008	20
4355	5/13/2019	8:50:01	2.408646	20.1
4356	5/13/2019	8:51:01	2.408646	20.1
4357	5/13/2019	8:52:01	2.408285	20
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4359	5/13/2019	8:54:01	2.409008	19.8
4360	5/13/2019	8:55:01	2.408285	19.7
4361	5/13/2019	8:56:01	2.408285	19.7
4362	5/13/2019	8:57:01	2.409008	19.7
4363	5/13/2019	8:58:01	2.408646	19.8
4364	5/13/2019	8:59:01	2.408285	19.9
4365	5/13/2019	9:00:01	2.408285	19.9
4366	5/13/2019	9:01:01	2.409008	20
4367	5/13/2019	9:02:01	2.408285	20.1
4368	5/13/2019	9:03:01	2.408646	20.1
4369	5/13/2019	9:04:01	2.408285	20
4370	5/13/2019	9:05:01	2.408285	19.8

4371	5/13/2019	9:06:01	2.408285	19.7
4372	5/13/2019	9:07:01	2.408285	19.7
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4374	5/13/2019	9:09:01	2.408285	19.7
4375	5/13/2019	9:10:01	2.408646	19.8
4376	5/13/2019	9:11:01	2.408646	19.9
4377	5/13/2019	9:12:01	2.408646	20
4378	5/13/2019	9:13:01	2.408646	20
4379	5/13/2019	9:14:01	2.408285	20.1
4380	5/13/2019	9:15:01	2.408646	20
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4383	5/13/2019	9:18:01	2.408646	19.7
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4385	5/13/2019	9:20:01	2.408285	19.7
4386	5/13/2019	9:21:01	2.408285	19.8
4387	5/13/2019	9:22:01	2.408285	19.9
4388	5/13/2019	9:23:01	2.408285	19.9
4389	5/13/2019	9:24:01	2.408285	20
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4391	5/13/2019	9:26:01	2.408285	20.1
4392	5/13/2019	9:27:01	2.408285	20
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4394	5/13/2019	9:29:01	2.408285	19.7
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4398	5/13/2019	9:33:01	2.408646	19.9
4399	5/13/2019	9:34:01	2.408646	20
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4401	5/13/2019	9:36:01	2.407923	20.1
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4403	5/13/2019	9:38:01	2.408285	19.9
4404	5/13/2019	9:39:01	2.408285	19.8
4405	5/13/2019	9:40:01	2.408285	19.7
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4409	5/13/2019	9:44:01	2.408285	19.9
4410	5/13/2019	9:45:01	2.407561	20
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4412	5/13/2019	9:47:01	2.408285	20.1
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4414	5/13/2019	9:49:01	2.408285	19.9
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4416	5/13/2019	9:51:01	2.407923	19.7
4417	5/13/2019	9:52:01	2.407561	19.7

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4419	5/13/2019	9:54:01	2.407923	19.8
4420	5/13/2019	9:55:01	2.407923	19.9
4421	5/13/2019	9:56:01	2.406838	20
4422	5/13/2019	9:57:01	2.407199	20.1
4423	5/13/2019	9:58:01	2.407923	20.1
4424	5/13/2019	9:59:01	2.407923	20
4425	5/13/2019	10:00:01	2.407923	19.9
4426	5/13/2019	10:01:01	2.407923	19.8
4427	5/13/2019	10:02:01	2.407923	19.7
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4430	5/13/2019	10:05:01	2.407923	19.9
4431	5/13/2019	10:06:01	2.408285	20
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4433	5/13/2019	10:08:01	2.407561	20.1
4434	5/13/2019	10:09:01	2.407923	20.1
4435	5/13/2019	10:10:01	2.407923	20
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4437	5/13/2019	10:12:01	2.407923	19.7
4438	5/13/2019	10:13:01	2.407561	19.7
4439	5/13/2019	10:14:01	2.407199	19.8
4440	5/13/2019	10:15:01	2.407561	19.8
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4447	5/13/2019	10:22:01	2.406476	19.8
4448	5/13/2019	10:23:01	2.406476	19.7
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4454	5/13/2019	10:29:01	2.406838	20.1
4455	5/13/2019	10:30:01	2.406114	20.1
4456	5/13/2019	10:31:01	2.406114	19.9
4457	5/13/2019	10:32:01	2.406838	19.8
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4459	5/13/2019	10:34:01	2.406838	19.7
4460	5/13/2019	10:35:01	2.406476	19.8
4461	5/13/2019	10:36:01	2.406838	19.9
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4469	5/13/2019	10:44:01	2.405752	19.7
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4488	5/13/2019	11:03:01	2.405391	19.8
4489	5/13/2019	11:04:01	2.405391	19.7
4490	5/13/2019	11:05:01	2.405391	19.8
4491	5/13/2019	11:06:01	2.405391	19.8
4492	5/13/2019	11:07:01	2.405391	19.9
4493	5/13/2019	11:08:01	2.405391	20
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4508	5/13/2019	11:23:01	2.405391	19.8
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4518	5/13/2019	11:33:01	2.403944	19.8
4519	5/13/2019	11:34:01	2.405391	19.8
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4521	5/13/2019	11:36:01	2.405029	19.9
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4525	5/13/2019	11:40:01	2.405029	20.1
4526	5/13/2019	11:41:01	2.405391	20
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4528	5/13/2019	11:43:01	2.404667	19.8
4529	5/13/2019	11:44:01	2.404667	19.8
4530	5/13/2019	11:45:01	2.405391	19.8
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4541	5/13/2019	11:56:01	2.405391	19.9
4542	5/13/2019	11:57:01	2.404667	20
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4548	5/13/2019	12:03:01	2.404667	19.8
4549	5/13/2019	12:04:01	2.403944	19.8
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4551	5/13/2019	12:06:01	2.404667	19.9
4552	5/13/2019	12:07:01	2.403221	20
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4555	5/13/2019	12:10:01	2.403221	20.1
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4561	5/13/2019	12:16:01	2.403944	19.9
4562	5/13/2019	12:17:01	2.403221	20
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4565	5/13/2019	12:20:01	2.403221	20.1
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4568	5/13/2019	12:23:01	2.402497	19.8
4569	5/13/2019	12:24:01	2.403221	19.8
4570	5/13/2019	12:25:01	2.403221	19.8
4571	5/13/2019	12:26:01	2.403221	19.9
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4588	5/13/2019	12:43:01	2.402859	19.8
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4592	5/13/2019	12:47:01	2.403221	20
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4611	5/13/2019	13:06:01	2.402497	19.9
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4614	5/13/2019	13:09:01	2.402497	20.1
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4632	5/13/2019	13:27:01	2.402497	20
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4634	5/13/2019	13:29:01	2.402497	20.2
4635	5/13/2019	13:30:01	2.402497	20.1
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4640	5/13/2019	13:35:01	2.402497	19.8
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4644	5/13/2019	13:39:01	2.402497	20.2
4645	5/13/2019	13:40:01	2.402497	20.1
4646	5/13/2019	13:41:01	2.402497	20
4647	5/13/2019	13:42:01	2.402497	19.8
4648	5/13/2019	13:43:01	2.402497	19.7
4649	5/13/2019	13:44:01	2.402497	19.8
4650	5/13/2019	13:45:01	2.402497	19.8
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4662	5/13/2019	13:57:01	2.402497	20
4663	5/13/2019	13:58:01	2.402136	20.1
4664	5/13/2019	13:59:01	2.402497	20.2
4665	5/13/2019	14:00:01	2.402497	20.1
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4667	5/13/2019	14:02:01	2.402497	19.8
4668	5/13/2019	14:03:01	2.402497	19.8
4669	5/13/2019	14:04:01	2.402497	19.8
4670	5/13/2019	14:05:01	2.401774	19.8
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4672	5/13/2019	14:07:01	2.402497	20
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4674	5/13/2019	14:09:01	2.402497	20.1
4675	5/13/2019	14:10:01	2.402497	20.1
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4682	5/13/2019	14:17:01	2.40105	20
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4684	5/13/2019	14:19:01	2.402136	20.1
4685	5/13/2019	14:20:01	2.401774	20.1
4686	5/13/2019	14:21:01	2.402136	19.9
4687	5/13/2019	14:22:01	2.401774	19.8
4688	5/13/2019	14:23:01	2.401412	19.7
4689	5/13/2019	14:24:01	2.401774	19.8
4690	5/13/2019	14:25:01	2.402136	19.8
4691	5/13/2019	14:26:01	2.402136	19.9
4692	5/13/2019	14:27:01	2.400689	20.1
4693	5/13/2019	14:28:01	2.401774	20.1
4694	5/13/2019	14:29:01	2.401412	20.1
4695	5/13/2019	14:30:01	2.402497	20
4696	5/13/2019	14:31:01	2.401412	19.9
4697	5/13/2019	14:32:01	2.401412	19.8
4698	5/13/2019	14:33:01	2.401774	19.8
4699	5/13/2019	14:34:01	2.401774	19.8

4700	5/13/2019	14:35:01	2.401774	19.9
4701	5/13/2019	14:36:01	2.400689	20
4702	5/13/2019	14:37:01	2.40105	20.1
4703	5/13/2019	14:38:01	2.40105	20.2
4704	5/13/2019	14:39:01	2.40105	20.1
4705	5/13/2019	14:40:01	2.401774	20
4706	5/13/2019	14:41:01	2.40105	19.9
4707	5/13/2019	14:42:01	2.40105	19.8
4708	5/13/2019	14:43:01	2.399604	19.8
4709	5/13/2019	14:44:01	2.401412	19.8
4710	5/13/2019	14:45:01	2.400327	19.9
4711	5/13/2019	14:46:01	2.40105	20
4712	5/13/2019	14:47:01	2.40105	20.1
4713	5/13/2019	14:48:01	2.400327	20.1
4714	5/13/2019	14:49:01	2.401774	20.1
4715	5/13/2019	14:50:01	2.400327	20
4716	5/13/2019	14:51:01	2.400327	19.8
4717	5/13/2019	14:52:01	2.400689	19.8
4718	5/13/2019	14:53:01	2.40105	19.8
4719	5/13/2019	14:54:01	2.400327	19.8
4720	5/13/2019	14:55:01	2.400327	19.9
4721	5/13/2019	14:56:01	2.400689	20
4722	5/13/2019	14:57:01	2.400327	20.1
4723	5/13/2019	14:58:01	2.400689	20.2
4724	5/13/2019	14:59:01	2.399965	20.1
4725	5/13/2019	15:00:01	2.399965	20
4726	5/13/2019	15:01:01	2.400327	19.8
4727	5/13/2019	15:02:01	2.400327	19.7
4728	5/13/2019	15:03:01	2.400689	19.8
4729	5/13/2019	15:04:01	2.399965	19.8
4730	5/13/2019	15:05:01	2.400327	19.9
4731	5/13/2019	15:06:01	2.399604	20
4732	5/13/2019	15:07:01	2.400689	20.1
4733	5/13/2019	15:08:01	2.399965	20.2
4734	5/13/2019	15:09:01	2.399604	20.1
4735	5/13/2019	15:10:01	2.400327	20
4736	5/13/2019	15:11:01	2.399965	19.8
4737	5/13/2019	15:12:01	2.399965	19.8
4738	5/13/2019	15:13:01	2.400327	19.8
4739	5/13/2019	15:14:01	2.399965	19.8
4740	5/13/2019	15:15:01	2.399604	19.9
4741	5/13/2019	15:16:01	2.399965	20
4742	5/13/2019	15:17:01	2.399604	20.1
4743	5/13/2019	15:18:01	2.400327	20.1
4744	5/13/2019	15:19:01	2.400327	20.1
4745	5/13/2019	15:20:01	2.399965	19.9
4746	5/13/2019	15:21:01	2.399965	19.8

4747	5/13/2019	15:22:01	2.399604	19.8
4748	5/13/2019	15:23:01	2.399965	19.8
4749	5/13/2019	15:24:01	2.399604	19.8
4750	5/13/2019	15:25:01	2.399604	19.9
4751	5/13/2019	15:26:01	2.399604	20
4752	5/13/2019	15:27:01	2.399604	20.1
4753	5/13/2019	15:28:01	2.399604	20.1
4754	5/13/2019	15:29:01	2.399965	20
4755	5/13/2019	15:30:01	2.399604	19.9
4756	5/13/2019	15:31:01	2.399604	19.8
4757	5/13/2019	15:32:01	2.399604	19.8
4758	5/13/2019	15:33:01	2.399604	19.8
4759	5/13/2019	15:34:01	2.399242	19.9
4760	5/13/2019	15:35:01	2.399604	19.9
4761	5/13/2019	15:36:01	2.399604	20.1
4762	5/13/2019	15:37:01	2.399604	20.2
4763	5/13/2019	15:38:01	2.399604	20.1
4764	5/13/2019	15:39:01	2.399604	20
4765	5/13/2019	15:40:01	2.399242	19.9
4766	5/13/2019	15:41:01	2.399604	19.8
4767	5/13/2019	15:42:01	2.399604	19.8
4768	5/13/2019	15:43:01	2.399604	19.8
4769	5/13/2019	15:44:01	2.399604	19.9
4770	5/13/2019	15:45:01	2.399604	20
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4772	5/13/2019	15:47:01	2.399604	20.2
4773	5/13/2019	15:48:01	2.399604	20.1
4774	5/13/2019	15:49:01	2.399604	20
4775	5/13/2019	15:50:01	2.399242	19.9
4776	5/13/2019	15:51:01	2.399604	19.8
4777	5/13/2019	15:52:01	2.399604	19.8
4778	5/13/2019	15:53:01	2.399604	19.8
4779	5/13/2019	15:54:01	2.399242	19.9
4780	5/13/2019	15:55:01	2.399242	20
4781	5/13/2019	15:56:01	2.399604	20.1
4782	5/13/2019	15:57:01	2.39888	20.2
4783	5/13/2019	15:58:01	2.399242	20.1
4784	5/13/2019	15:59:01	2.399242	20
4785	5/13/2019	16:00:01	2.399242	19.9
4786	5/13/2019	16:01:01	2.399604	19.8
4787	5/13/2019	16:02:01	2.39888	19.8
4788	5/13/2019	16:03:01	2.399242	19.8
4789	5/13/2019	16:04:01	2.399604	19.9
4790	5/13/2019	16:05:01	2.399242	20
4791	5/13/2019	16:06:01	2.399242	20.1
4792	5/13/2019	16:07:01	2.39888	20.2
4793	5/13/2019	16:08:01	2.399242	20.1

4794	5/13/2019	16:09:01	2.399604	20	
4795	5/13/2019	16:10:01	2.39888	19.8	
4796	5/13/2019	16:11:01	2.399242	19.8	
4797	5/13/2019	16:12:01	2.399604	19.8	
4798	5/13/2019	16:13:01	2.399242	19.8	
4799	5/13/2019	16:14:01	2.399242	19.9	
4800	5/13/2019	16:15:01	2.399604	20	
4801	5/13/2019	16:16:01	2.399242	20.1	72 horas
4802	5/13/2019	16:17:01	2.399604	20.1	
4803	5/13/2019	16:18:01	2.399242	20.1	
4804	5/13/2019	16:19:01	2.399242	19.9	
4805	5/13/2019	16:20:01	2.398157	19.8	
4806	5/13/2019	16:21:01	2.398518	19.8	
4807	5/13/2019	16:22:01	2.39888	19.8	
4808	5/13/2019	16:23:01	2.398157	19.9	
4809	5/13/2019	16:24:01	2.398157	20	
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4813	5/13/2019	16:28:01	2.399242	20	
4814	5/13/2019	16:29:01	2.39888	19.9	
4815	5/13/2019	16:30:01	2.397795	19.8	
4816	5/13/2019	16:31:01	2.398518	19.8	
4817	5/13/2019	16:32:01	2.398157	19.8	
4818	5/13/2019	16:33:01	2.398157	19.9	
4819	5/13/2019	16:34:01	2.397795	20	
4820	5/13/2019	16:35:01	2.398518	20.1	
4821	5/13/2019	16:36:01	2.397795	20.2	
4822	5/13/2019	16:37:01	2.39888	20.1	
4823	5/13/2019	16:38:01	2.397795	20	
4824	5/13/2019	16:39:01	2.398518	19.8	
4825	5/13/2019	16:40:01	2.39888	19.8	
4826	5/13/2019	16:41:01	2.397795	19.8	
4827	5/13/2019	16:42:01	2.397071	19.9	
4828	5/13/2019	16:43:01	2.398157	20	
4829	5/13/2019	16:44:01	2.398518	20.1	
4830	5/13/2019	16:45:01	2.397795	20.2	
4831	5/13/2019	16:46:01	2.397795	20.2	
4832	5/13/2019	16:47:01	2.397795	20.1	
4833	5/13/2019	16:48:01	2.397795	19.9	
4834	5/13/2019	16:49:01	2.39888	19.8	
4835	5/13/2019	16:50:01	2.397433	19.8	
4836	5/13/2019	16:51:01	2.398157	19.8	
4837	5/13/2019	16:52:01	2.397433	19.9	
4838	5/13/2019	16:53:01	2.397071	20	
4839	5/13/2019	16:54:01	2.397433	20.1	
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4841	5/13/2019	16:56:01	2.397433	20.1
4842	5/13/2019	16:57:01	2.397433	20
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4844	5/13/2019	16:59:01	2.397795	19.8
4845	5/13/2019	17:00:01	2.397433	19.8
4846	5/13/2019	17:01:01	2.397071	19.9
4847	5/13/2019	17:02:01	2.39671	19.9
4848	5/13/2019	17:03:01	2.397433	20
4849	5/13/2019	17:04:01	2.39671	20.2
4850	5/13/2019	17:05:01	2.39671	20.2
4851	5/13/2019	17:06:01	2.39671	20.1
4852	5/13/2019	17:07:01	2.39671	20
4853	5/13/2019	17:08:01	2.39671	19.9
4854	5/13/2019	17:09:01	2.397433	19.8
4855	5/13/2019	17:10:01	2.39671	19.8
4856	5/13/2019	17:11:01	2.39671	19.9
4857	5/13/2019	17:12:01	2.39671	20
4858	5/13/2019	17:13:01	2.39671	20.1
4859	5/13/2019	17:14:01	2.397071	20.2
4860	5/13/2019	17:15:01	2.39671	20.2
4861	5/13/2019	17:16:01	2.39671	20.1
4862	5/13/2019	17:17:01	2.39671	19.9
4863	5/13/2019	17:18:01	2.39671	19.8
4864	5/13/2019	17:19:01	2.39671	19.8
4865	5/13/2019	17:20:01	2.39671	19.9
4866	5/13/2019	17:21:01	2.39671	19.9
4867	5/13/2019	17:22:01	2.39671	20.1
4868	5/13/2019	17:23:01	2.397071	20.2
4869	5/13/2019	17:24:01	2.39671	20.2
4870	5/13/2019	17:25:01	2.39671	20.1
4871	5/13/2019	17:26:01	2.396348	20
4872	5/13/2019	17:27:01	2.397071	19.9
4873	5/13/2019	17:28:01	2.39671	19.8
4874	5/13/2019	17:29:01	2.39671	19.8
4875	5/13/2019	17:30:01	2.39671	19.9
4876	5/13/2019	17:31:01	2.39671	20
4877	5/13/2019	17:32:01	2.39671	20.1
4878	5/13/2019	17:33:01	2.39671	20.2
4879	5/13/2019	17:34:01	2.39671	20.2
4880	5/13/2019	17:35:01	2.39671	20.1
4881	5/13/2019	17:36:01	2.39671	19.9
4882	5/13/2019	17:37:01	2.39671	19.8
4883	5/13/2019	17:38:01	2.39671	19.8
4884	5/13/2019	17:39:01	2.39671	19.8
4885	5/13/2019	17:40:01	2.395986	19.9
4886	5/13/2019	17:41:01	2.39671	20
4887	5/13/2019	17:42:01	2.395986	20.2

4888	5/13/2019	17:43:01	2.39671	20.2
4889	5/13/2019	17:44:01	2.39671	20.1
4890	5/13/2019	17:45:01	2.39671	20
4891	5/13/2019	17:46:01	2.39671	19.9
4892	5/13/2019	17:47:01	2.39671	19.8
4893	5/13/2019	17:48:01	2.39671	19.8
4894	5/13/2019	17:49:01	2.39671	19.9
4895	5/13/2019	17:50:01	2.39671	20
4896	5/13/2019	17:51:01	2.39671	20.1
4897	5/13/2019	17:52:01	2.39671	20.2
4898	5/13/2019	17:53:01	2.396348	20.2
4899	5/13/2019	17:54:01	2.39671	20.1
4900	5/13/2019	17:55:01	2.39671	20
4901	5/13/2019	17:56:01	2.396348	19.9
4902	5/13/2019	17:57:01	2.39671	19.8
4903	5/13/2019	17:58:01	2.39671	19.8
4904	5/13/2019	17:59:01	2.39671	19.9
4905	5/13/2019	18:00:01	2.396348	20
4906	5/13/2019	18:01:01	2.39671	20.2
4907	5/13/2019	18:02:01	2.39671	20.2
4908	5/13/2019	18:03:01	2.395986	20.1
4909	5/13/2019	18:04:01	2.396348	20
4910	5/13/2019	18:05:01	2.396348	19.9
4911	5/13/2019	18:06:01	2.396348	19.8
4912	5/13/2019	18:07:01	2.395625	19.8
4913	5/13/2019	18:08:01	2.395986	19.9
4914	5/13/2019	18:09:01	2.39671	20
4915	5/13/2019	18:10:01	2.39671	20.1
4916	5/13/2019	18:11:01	2.39671	20.2
4917	5/13/2019	18:12:01	2.39671	20.2
4918	5/13/2019	18:13:01	2.39671	20.1
4919	5/13/2019	18:14:01	2.395986	19.9
4920	5/13/2019	18:15:01	2.395986	19.8
4921	5/13/2019	18:16:01	2.396348	19.8
4922	5/13/2019	18:17:01	2.394901	19.9
4923	5/13/2019	18:18:01	2.395986	19.9
4924	5/13/2019	18:19:01	2.395263	20.1
4925	5/13/2019	18:20:01	2.39671	20.2
4926	5/13/2019	18:21:01	2.395986	20.2
4927	5/13/2019	18:22:01	2.396348	20.1
4928	5/13/2019	18:23:01	2.395625	20
4929	5/13/2019	18:24:01	2.395263	19.9
4930	5/13/2019	18:25:01	2.396348	19.8
4931	5/13/2019	18:26:01	2.395986	19.8
4932	5/13/2019	18:27:01	2.395625	19.9
4933	5/13/2019	18:28:01	2.395986	20
4934	5/13/2019	18:29:01	2.394901	20.1

4935	5/13/2019	18:30:01	2.395263	20.2
4936	5/13/2019	18:31:01	2.395263	20.2
4937	5/13/2019	18:32:01	2.395263	20.1
4938	5/13/2019	18:33:01	2.396348	19.9
4939	5/13/2019	18:34:01	2.394901	19.8
4940	5/13/2019	18:35:01	2.394901	19.8
4941	5/13/2019	18:36:01	2.395263	19.9
4942	5/13/2019	18:37:01	2.395263	20
4943	5/13/2019	18:38:01	2.395263	20.1
4944	5/13/2019	18:39:01	2.395263	20.2
4945	5/13/2019	18:40:01	2.395263	20.2
4946	5/13/2019	18:41:01	2.395986	20.1
4947	5/13/2019	18:42:01	2.395625	20
4948	5/13/2019	18:43:01	2.395263	19.9
4949	5/13/2019	18:44:01	2.394901	19.8
4950	5/13/2019	18:45:01	2.39454	19.8
4951	5/13/2019	18:46:01	2.39454	19.9
4952	5/13/2019	18:47:01	2.394901	20
4953	5/13/2019	18:48:01	2.394178	20.2
4954	5/13/2019	18:49:01	2.394901	20.2
4955	5/13/2019	18:50:01	2.39454	20.1
4956	5/13/2019	18:51:01	2.394901	20
4957	5/13/2019	18:52:01	2.39454	19.9
4958	5/13/2019	18:53:01	2.39454	19.8
4959	5/13/2019	18:54:01	2.394901	19.8
4960	5/13/2019	18:55:01	2.39454	19.9
4961	5/13/2019	18:56:01	2.39454	20
4962	5/13/2019	18:57:01	2.394901	20.1
4963	5/13/2019	18:58:01	2.395263	20.2
4964	5/13/2019	18:59:01	2.39454	20.2
4965	5/13/2019	19:00:01	2.393816	20.1
4966	5/13/2019	19:01:01	2.394901	19.9
4967	5/13/2019	19:02:01	2.394178	19.8
4968	5/13/2019	19:03:01	2.39454	19.8
4969	5/13/2019	19:04:01	2.394901	19.8
4970	5/13/2019	19:05:01	2.394178	19.9
4971	5/13/2019	19:06:01	2.394178	20
4972	5/13/2019	19:07:01	2.39454	20.2
4973	5/13/2019	19:08:01	2.393816	20.2
4974	5/13/2019	19:09:01	2.393816	20.1
4975	5/13/2019	19:10:01	2.394901	20
4976	5/13/2019	19:11:01	2.393816	19.9
4977	5/13/2019	19:12:01	2.393816	19.8
4978	5/13/2019	19:13:01	2.39454	19.8
4979	5/13/2019	19:14:01	2.393816	19.8
4980	5/13/2019	19:15:01	2.394178	19.9
4981	5/13/2019	19:16:01	2.393816	20.1

4982	5/13/2019	19:17:01	2.39454	20.2
4983	5/13/2019	19:18:01	2.393816	20.2
4984	5/13/2019	19:19:01	2.394178	20.1
4985	5/13/2019	19:20:01	2.393816	20
4986	5/13/2019	19:21:01	2.393816	19.8
4987	5/13/2019	19:22:01	2.39454	19.8
4988	5/13/2019	19:23:01	2.393816	19.8
4989	5/13/2019	19:24:01	2.393816	19.9
4990	5/13/2019	19:25:01	2.393816	20
4991	5/13/2019	19:26:01	2.393816	20.1
4992	5/13/2019	19:27:01	2.393816	20.2
4993	5/13/2019	19:28:01	2.393816	20.1
4994	5/13/2019	19:29:01	2.393816	20
4995	5/13/2019	19:30:01	2.393816	19.9
4996	5/13/2019	19:31:01	2.393816	19.8
4997	5/13/2019	19:32:01	2.393816	19.8
4998	5/13/2019	19:33:01	2.393816	19.8
4999	5/13/2019	19:34:01	2.393816	19.9
5000	5/13/2019	19:35:01	2.393816	20
5001	5/13/2019	19:36:01	2.393816	20.1
5002	5/13/2019	19:37:01	2.393816	20.2
5003	5/13/2019	19:38:01	2.393816	20.1
5004	5/13/2019	19:39:01	2.393816	20
5005	5/13/2019	19:40:01	2.393816	19.9
5006	5/13/2019	19:41:01	2.394178	19.8
5007	5/13/2019	19:42:01	2.393816	19.8
5008	5/13/2019	19:43:01	2.393816	19.8
5009	5/13/2019	19:44:01	2.393816	19.9
5010	5/13/2019	19:45:01	2.393454	20
5011	5/13/2019	19:46:01	2.393816	20.1
5012	5/13/2019	19:47:01	2.393816	20.2
5013	5/13/2019	19:48:01	2.393816	20.1
5014	5/13/2019	19:49:01	2.393454	20
5015	5/13/2019	19:50:01	2.393816	19.9
5016	5/13/2019	19:51:01	2.393816	19.8
5017	5/13/2019	19:52:01	2.393454	19.8
5018	5/13/2019	19:53:01	2.393454	19.8
5019	5/13/2019	19:54:01	2.393816	19.9
5020	5/13/2019	19:55:01	2.393093	20
5021	5/13/2019	19:56:01	2.393454	20.1
5022	5/13/2019	19:57:01	2.393816	20.2
5023	5/13/2019	19:58:01	2.393816	20.1
5024	5/13/2019	19:59:01	2.393816	19.9
5025	5/13/2019	20:00:01	2.393454	19.8
5026	5/13/2019	20:01:01	2.393454	19.8
5027	5/13/2019	20:02:01	2.393454	19.8
5028	5/13/2019	20:03:01	2.393816	19.9

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5032	5/13/2019	20:07:01	2.393816	20.1
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5034	5/13/2019	20:09:01	2.393093	19.9
5035	5/13/2019	20:10:01	2.392369	19.8
5036	5/13/2019	20:11:01	2.393454	19.8
5037	5/13/2019	20:12:01	2.393093	19.8
5038	5/13/2019	20:13:01	2.393093	19.9
5039	5/13/2019	20:14:01	2.393454	20
5040	5/13/2019	20:15:01	2.393093	20.1
5041	5/13/2019	20:16:01	2.393454	20.2
5042	5/13/2019	20:17:01	2.393454	20.1
5043	5/13/2019	20:18:01	2.393454	20
5044	5/13/2019	20:19:01	2.393093	19.9
5045	5/13/2019	20:20:01	2.393816	19.8
5046	5/13/2019	20:21:01	2.392369	19.8
5047	5/13/2019	20:22:01	2.392731	19.8
5048	5/13/2019	20:23:01	2.392369	19.9
5049	5/13/2019	20:24:01	2.392008	20
5050	5/13/2019	20:25:01	2.393454	20.1
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5052	5/13/2019	20:27:01	2.393454	20.1
5053	5/13/2019	20:28:01	2.392731	20
5054	5/13/2019	20:29:01	2.393454	19.8
5055	5/13/2019	20:30:01	2.393093	19.8
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5073	5/13/2019	20:48:01	2.391284	19.9
5074	5/13/2019	20:49:01	2.392008	19.8
5075	5/13/2019	20:50:01	2.391646	19.7

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5086	5/13/2019	21:01:01	2.390922	19.8
5087	5/13/2019	21:02:01	2.390922	19.9
5088	5/13/2019	21:03:01	2.391646	19.9
5089	5/13/2019	21:04:01	2.390922	20
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5112	5/13/2019	21:27:01	2.390922	20
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5118	5/13/2019	21:33:01	2.390561	19.9
5119	5/13/2019	21:34:01	2.390922	20
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5126	5/13/2019	21:41:01	2.390922	19.8
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5128	5/13/2019	21:43:01	2.390922	19.9
5129	5/13/2019	21:44:01	2.390922	20
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5147	5/13/2019	22:02:01	2.390561	19.8
5148	5/13/2019	22:03:01	2.390922	19.9
5149	5/13/2019	22:04:01	2.390561	20
5150	5/13/2019	22:05:01	2.390922	20.1
5151	5/13/2019	22:06:01	2.390922	20.1
5152	5/13/2019	22:07:01	2.390561	20.1
5153	5/13/2019	22:08:01	2.390199	20
5154	5/13/2019	22:09:01	2.390922	19.8
5155	5/13/2019	22:10:01	2.390199	19.7
5156	5/13/2019	22:11:01	2.390922	19.7
5157	5/13/2019	22:12:01	2.390199	19.8
5158	5/13/2019	22:13:01	2.390922	19.9
5159	5/13/2019	22:14:01	2.390561	19.9
5160	5/13/2019	22:15:01	2.389476	20
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5162	5/13/2019	22:17:01	2.390922	20.1
5163	5/13/2019	22:18:01	2.390199	20
5164	5/13/2019	22:19:01	2.390922	19.9
5165	5/13/2019	22:20:01	2.390199	19.8
5166	5/13/2019	22:21:01	2.389837	19.7
5167	5/13/2019	22:22:01	2.390922	19.8
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5169	5/13/2019	22:24:01	2.389476	19.9

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5172	5/13/2019	22:27:01	2.389837	20.1
5173	5/13/2019	22:28:01	2.389837	20
5174	5/13/2019	22:29:01	2.389837	19.9
5175	5/13/2019	22:30:01	2.390199	19.8
5176	5/13/2019	22:31:01	2.390561	19.7
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5180	5/13/2019	22:35:01	2.389476	20
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5182	5/13/2019	22:37:01	2.389114	20.1
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5185	5/13/2019	22:40:01	2.389476	19.8
5186	5/13/2019	22:41:01	2.389837	19.7
5187	5/13/2019	22:42:01	2.389476	19.7
5188	5/13/2019	22:43:01	2.389476	19.8
5189	5/13/2019	22:44:01	2.389114	19.9
5190	5/13/2019	22:45:01	2.389837	19.9
5191	5/13/2019	22:46:01	2.389114	20
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5193	5/13/2019	22:48:01	2.389114	20.1
5194	5/13/2019	22:49:01	2.38839	20
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5196	5/13/2019	22:51:01	2.388752	19.7
5197	5/13/2019	22:52:01	2.389114	19.7
5198	5/13/2019	22:53:01	2.388752	19.8
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5200	5/13/2019	22:55:01	2.38839	19.9
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5203	5/13/2019	22:58:01	2.388029	20.1
5204	5/13/2019	22:59:01	2.389837	20
5205	5/13/2019	23:00:01	2.388752	19.9
5206	5/13/2019	23:01:01	2.388752	19.8
5207	5/13/2019	23:02:01	2.38839	19.7
5208	5/13/2019	23:03:01	2.38839	19.7
5209	5/13/2019	23:04:01	2.388752	19.8
5210	5/13/2019	23:05:01	2.388029	19.9
5211	5/13/2019	23:06:01	2.38839	19.9
5212	5/13/2019	23:07:01	2.388752	20
5213	5/13/2019	23:08:01	2.38839	20.1
5214	5/13/2019	23:09:01	2.38839	20.1
5215	5/13/2019	23:10:01	2.388752	20
5216	5/13/2019	23:11:01	2.38839	19.9

5217	5/13/2019	23:12:01	2.388752	19.8
5218	5/13/2019	23:13:01	2.388029	19.7
5219	5/13/2019	23:14:01	2.38839	19.7
5220	5/13/2019	23:15:01	2.388029	19.8
5221	5/13/2019	23:16:01	2.38839	19.9
5222	5/13/2019	23:17:01	2.38839	19.9
5223	5/13/2019	23:18:01	2.388029	20
5224	5/13/2019	23:19:01	2.388029	20.1
5225	5/13/2019	23:20:01	2.388752	20.1
5226	5/13/2019	23:21:01	2.388752	20
5227	5/13/2019	23:22:01	2.388029	19.8
5228	5/13/2019	23:23:01	2.388029	19.7
5229	5/13/2019	23:24:01	2.388029	19.7
5230	5/13/2019	23:25:01	2.38839	19.7
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5232	5/13/2019	23:27:01	2.388029	19.9
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5241	5/13/2019	23:36:01	2.388029	19.8
5242	5/13/2019	23:37:01	2.388029	19.8
5243	5/13/2019	23:38:01	2.388029	19.9
5244	5/13/2019	23:39:01	2.388029	20
5245	5/13/2019	23:40:01	2.387305	20.1
5246	5/13/2019	23:41:01	2.388029	20.1
5247	5/13/2019	23:42:01	2.388029	20.1
5248	5/13/2019	23:43:01	2.388029	19.9
5249	5/13/2019	23:44:01	2.388029	19.8
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5251	5/13/2019	23:46:01	2.387667	19.7
5252	5/13/2019	23:47:01	2.388029	19.8
5253	5/13/2019	23:48:01	2.388029	19.8
5254	5/13/2019	23:49:01	2.387667	19.9
5255	5/13/2019	23:50:01	2.388029	20
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5257	5/13/2019	23:52:01	2.388029	20.1
5258	5/13/2019	23:53:01	2.388029	20
5259	5/13/2019	23:54:01	2.388029	19.9
5260	5/13/2019	23:55:01	2.388029	19.8
5261	5/13/2019	23:56:01	2.386944	19.7
5262	5/13/2019	23:57:01	2.387667	19.7
5263	5/13/2019	23:58:01	2.388029	19.7

5264	5/13/2019	23:59:01	2.387667	19.8
5265	5/14/2019	0:00:01	2.388029	19.9
5266	5/14/2019	0:01:01	2.387667	19.9
5267	5/14/2019	0:02:01	2.388029	20
5268	5/14/2019	0:03:01	2.387667	20.1
5269	5/14/2019	0:04:01	2.387667	20.1
5270	5/14/2019	0:05:01	2.387667	19.9
5271	5/14/2019	0:06:01	2.387667	19.8
5272	5/14/2019	0:07:01	2.387667	19.7
5273	5/14/2019	0:08:01	2.387667	19.7
5274	5/14/2019	0:09:01	2.387667	19.7
5275	5/14/2019	0:10:01	2.388029	19.8
5276	5/14/2019	0:11:01	2.387667	19.9
5277	5/14/2019	0:12:01	2.387305	19.9
5278	5/14/2019	0:13:01	2.387305	20
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5280	5/14/2019	0:15:01	2.387305	20.1
5281	5/14/2019	0:16:01	2.387305	20
5282	5/14/2019	0:17:01	2.388029	19.8
5283	5/14/2019	0:18:01	2.387305	19.7
5284	5/14/2019	0:19:01	2.387667	19.7
5285	5/14/2019	0:20:01	2.388029	19.7
5286	5/14/2019	0:21:01	2.387305	19.8
5287	5/14/2019	0:22:01	2.387305	19.8
5288	5/14/2019	0:23:01	2.387667	19.9
5289	5/14/2019	0:24:01	2.386944	20
5290	5/14/2019	0:25:01	2.387667	20.1
5291	5/14/2019	0:26:01	2.386944	20.1
5292	5/14/2019	0:27:01	2.387305	20
5293	5/14/2019	0:28:01	2.387305	19.9
5294	5/14/2019	0:29:01	2.387305	19.8
5295	5/14/2019	0:30:01	2.386944	19.7
5296	5/14/2019	0:31:01	2.386582	19.7
5297	5/14/2019	0:32:01	2.386944	19.7
5298	5/14/2019	0:33:01	2.385858	19.8
5299	5/14/2019	0:34:01	2.38622	19.9
5300	5/14/2019	0:35:01	2.386582	19.9
5301	5/14/2019	0:36:01	2.38622	20
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5303	5/14/2019	0:38:01	2.385858	20.1
5304	5/14/2019	0:39:01	2.386582	20
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5306	5/14/2019	0:41:01	2.38622	19.7
5307	5/14/2019	0:42:01	2.386944	19.7
5308	5/14/2019	0:43:01	2.38622	19.7
5309	5/14/2019	0:44:01	2.38622	19.8
5310	5/14/2019	0:45:01	2.386582	19.8

5311	5/14/2019	0:46:01	2.386944	19.9
5312	5/14/2019	0:47:01	2.386582	20
5313	5/14/2019	0:48:01	2.386582	20.1
5314	5/14/2019	0:49:01	2.386582	20.1
5315	5/14/2019	0:50:01	2.386944	20
5316	5/14/2019	0:51:01	2.385497	19.9
5317	5/14/2019	0:52:01	2.387305	19.8
5318	5/14/2019	0:53:01	2.38622	19.7
5319	5/14/2019	0:54:01	2.385858	19.7
5320	5/14/2019	0:55:01	2.38622	19.7
5321	5/14/2019	0:56:01	2.385135	19.8
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5323	5/14/2019	0:58:01	2.385858	19.9
5324	5/14/2019	0:59:01	2.385858	20
5325	5/14/2019	1:00:01	2.385497	20
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5327	5/14/2019	1:02:01	2.385858	20
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5329	5/14/2019	1:04:01	2.385858	19.8
5330	5/14/2019	1:05:01	2.385858	19.7
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5332	5/14/2019	1:07:01	2.385135	19.7
5333	5/14/2019	1:08:01	2.385135	19.8
5334	5/14/2019	1:09:01	2.385135	19.8
5335	5/14/2019	1:10:01	2.385497	19.9
5336	5/14/2019	1:11:01	2.385858	20
5337	5/14/2019	1:12:01	2.385135	20
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5339	5/14/2019	1:14:01	2.385497	20
5340	5/14/2019	1:15:01	2.385497	19.9
5341	5/14/2019	1:16:01	2.385858	19.8
5342	5/14/2019	1:17:01	2.385497	19.7
5343	5/14/2019	1:18:01	2.385135	19.7
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5345	5/14/2019	1:20:01	2.385135	19.8
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5347	5/14/2019	1:22:01	2.385497	19.9
5348	5/14/2019	1:23:01	2.385135	20
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5360	5/14/2019	1:35:01	2.385135	19.9
5361	5/14/2019	1:36:01	2.385497	20
5362	5/14/2019	1:37:01	2.385497	20.1
5363	5/14/2019	1:38:01	2.385135	20.1
5364	5/14/2019	1:39:01	2.385135	20
5365	5/14/2019	1:40:01	2.385135	19.8
5366	5/14/2019	1:41:01	2.385135	19.7
5367	5/14/2019	1:42:01	2.385135	19.7
5368	5/14/2019	1:43:01	2.384773	19.7
5369	5/14/2019	1:44:01	2.385135	19.7
5370	5/14/2019	1:45:01	2.385135	19.8
5371	5/14/2019	1:46:01	2.385135	19.9
5372	5/14/2019	1:47:01	2.385135	19.9
5373	5/14/2019	1:48:01	2.385135	20
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5378	5/14/2019	1:53:01	2.385135	19.7
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5380	5/14/2019	1:55:01	2.385135	19.7
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5392	5/14/2019	2:07:01	2.385135	19.7
5393	5/14/2019	2:08:01	2.384773	19.6
5394	5/14/2019	2:09:01	2.385135	19.7
5395	5/14/2019	2:10:01	2.385135	19.7
5396	5/14/2019	2:11:01	2.385135	19.8
5397	5/14/2019	2:12:01	2.384773	19.8
5398	5/14/2019	2:13:01	2.38405	19.9
5399	5/14/2019	2:14:01	2.384773	19.9
5400	5/14/2019	2:15:01	2.384412	20
5401	5/14/2019	2:16:01	2.385135	20.1
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5403	5/14/2019	2:18:01	2.384412	20
5404	5/14/2019	2:19:01	2.384773	19.8

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5407	5/14/2019	2:22:01	2.38405	19.7
5408	5/14/2019	2:23:01	2.384773	19.7
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5410	5/14/2019	2:25:01	2.384412	19.8
5411	5/14/2019	2:26:01	2.38405	19.9
5412	5/14/2019	2:27:01	2.384773	19.9
5413	5/14/2019	2:28:01	2.38405	20
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5416	5/14/2019	2:31:01	2.38405	20.1
5417	5/14/2019	2:32:01	2.384412	19.9
5418	5/14/2019	2:33:01	2.383327	19.8
5419	5/14/2019	2:34:01	2.384412	19.7
5420	5/14/2019	2:35:01	2.384773	19.7
5421	5/14/2019	2:36:01	2.38405	19.6
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5423	5/14/2019	2:38:01	2.384412	19.7
5424	5/14/2019	2:39:01	2.384412	19.8
5425	5/14/2019	2:40:01	2.383688	19.8
5426	5/14/2019	2:41:01	2.38405	19.9
5427	5/14/2019	2:42:01	2.384412	19.9
5428	5/14/2019	2:43:01	2.383688	20
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5430	5/14/2019	2:45:01	2.38405	20.1
5431	5/14/2019	2:46:01	2.383327	20
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5433	5/14/2019	2:48:01	2.383327	19.7
5434	5/14/2019	2:49:01	2.383688	19.7
5435	5/14/2019	2:50:01	2.38405	19.7
5436	5/14/2019	2:51:01	2.383688	19.7
5437	5/14/2019	2:52:01	2.382965	19.7
5438	5/14/2019	2:53:01	2.38405	19.8
5439	5/14/2019	2:54:01	2.382965	19.8
5440	5/14/2019	2:55:01	2.382965	19.9
5441	5/14/2019	2:56:01	2.382603	19.9
5442	5/14/2019	2:57:01	2.383327	20
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5445	5/14/2019	3:00:01	2.383327	20
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5447	5/14/2019	3:02:01	2.382603	19.7
5448	5/14/2019	3:03:01	2.383688	19.7
5449	5/14/2019	3:04:01	2.383327	19.6
5450	5/14/2019	3:05:01	2.382965	19.6
5451	5/14/2019	3:06:01	2.383327	19.7

5452	5/14/2019	3:07:01	2.382965	19.7
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5454	5/14/2019	3:09:01	2.382965	19.8
5455	5/14/2019	3:10:01	2.382603	19.9
5456	5/14/2019	3:11:01	2.383327	19.9
5457	5/14/2019	3:12:01	2.382965	20
5458	5/14/2019	3:13:01	2.382603	20
5459	5/14/2019	3:14:01	2.382603	20.1
5460	5/14/2019	3:15:01	2.382965	20
5461	5/14/2019	3:16:01	2.383327	19.9
5462	5/14/2019	3:17:01	2.382965	19.8
5463	5/14/2019	3:18:01	2.382965	19.7
5464	5/14/2019	3:19:01	2.382241	19.6
5465	5/14/2019	3:20:01	2.382603	19.6
5466	5/14/2019	3:21:01	2.382241	19.7
5467	5/14/2019	3:22:01	2.382603	19.7
5468	5/14/2019	3:23:01	2.382965	19.8
5469	5/14/2019	3:24:01	2.382241	19.8
5470	5/14/2019	3:25:01	2.382603	19.9
5471	5/14/2019	3:26:01	2.383327	19.9
5472	5/14/2019	3:27:01	2.382603	19.9
5473	5/14/2019	3:28:01	2.382603	20
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5476	5/14/2019	3:31:01	2.382603	20
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5479	5/14/2019	3:34:01	2.382241	19.7
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5484	5/14/2019	3:39:01	2.382241	19.8
5485	5/14/2019	3:40:01	2.382965	19.8
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5487	5/14/2019	3:42:01	2.382241	19.9
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5498	5/14/2019	3:53:01	2.382241	19.6

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5508	5/14/2019	4:03:01	2.382603	20
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5512	5/14/2019	4:07:01	2.382241	19.7
5513	5/14/2019	4:08:01	2.382241	19.6
5514	5/14/2019	4:09:01	2.382241	19.6
5515	5/14/2019	4:10:01	2.382241	19.7
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5519	5/14/2019	4:14:01	2.382241	19.8
5520	5/14/2019	4:15:01	2.382241	19.8
5521	5/14/2019	4:16:01	2.38188	19.9
5522	5/14/2019	4:17:01	2.38188	19.9
5523	5/14/2019	4:18:01	2.382241	19.9
5524	5/14/2019	4:19:01	2.382241	20
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5529	5/14/2019	4:24:01	2.382241	19.8
5530	5/14/2019	4:25:01	2.382241	19.7
5531	5/14/2019	4:26:01	2.381518	19.6
5532	5/14/2019	4:27:01	2.382241	19.6
5533	5/14/2019	4:28:01	2.382241	19.6
5534	5/14/2019	4:29:01	2.381518	19.7
5535	5/14/2019	4:30:01	2.382241	19.7
5536	5/14/2019	4:31:01	2.382241	19.7
5537	5/14/2019	4:32:01	2.38188	19.8
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5539	5/14/2019	4:34:01	2.38188	19.8
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5545	5/14/2019	4:40:01	2.381518	20

5546	5/14/2019	4:41:01	2.382241	20
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5549	5/14/2019	4:44:01	2.380071	19.8
5550	5/14/2019	4:45:01	2.381518	19.7
5551	5/14/2019	4:46:01	2.380433	19.6
5552	5/14/2019	4:47:01	2.38188	19.6
5553	5/14/2019	4:48:01	2.381518	19.6
5554	5/14/2019	4:49:01	2.380795	19.6
5555	5/14/2019	4:50:01	2.381518	19.6
5556	5/14/2019	4:51:01	2.381156	19.7
5557	5/14/2019	4:52:01	2.380433	19.7
5558	5/14/2019	4:53:01	2.380433	19.8
5559	5/14/2019	4:54:01	2.381518	19.8
5560	5/14/2019	4:55:01	2.380433	19.8
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5562	5/14/2019	4:57:01	2.381518	19.9
5563	5/14/2019	4:58:01	2.380795	19.9
5564	5/14/2019	4:59:01	2.380795	19.9
5565	5/14/2019	5:00:01	2.381156	20
5566	5/14/2019	5:01:01	2.381518	20
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5572	5/14/2019	5:07:01	2.380433	19.7
5573	5/14/2019	5:08:01	2.381518	19.7
5574	5/14/2019	5:09:01	2.380071	19.6
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5577	5/14/2019	5:12:01	2.380795	19.6
5578	5/14/2019	5:13:01	2.380795	19.7
5579	5/14/2019	5:14:01	2.380795	19.7
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5581	5/14/2019	5:16:01	2.380071	19.8
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5583	5/14/2019	5:18:01	2.380433	19.8
5584	5/14/2019	5:19:01	2.380433	19.9
5585	5/14/2019	5:20:01	2.380071	19.9
5586	5/14/2019	5:21:01	2.380433	19.9
5587	5/14/2019	5:22:01	2.380071	19.9
5588	5/14/2019	5:23:01	2.380433	19.9
5589	5/14/2019	5:24:01	2.379709	20
5590	5/14/2019	5:25:01	2.380433	20
5591	5/14/2019	5:26:01	2.379348	20
5592	5/14/2019	5:27:01	2.380433	20

5593	5/14/2019	5:28:01	2.380795	20
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5595	5/14/2019	5:30:01	2.379709	19.8
5596	5/14/2019	5:31:01	2.379348	19.7
5597	5/14/2019	5:32:01	2.379348	19.6
5598	5/14/2019	5:33:01	2.379348	19.6
5599	5/14/2019	5:34:01	2.379348	19.6
5600	5/14/2019	5:35:01	2.379709	19.6
5601	5/14/2019	5:36:01	2.379348	19.7
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5604	5/14/2019	5:39:01	2.379709	19.7
5605	5/14/2019	5:40:01	2.379348	19.8
5606	5/14/2019	5:41:01	2.380071	19.8
5607	5/14/2019	5:42:01	2.379709	19.8
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5609	5/14/2019	5:44:01	2.379348	19.9
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5611	5/14/2019	5:46:01	2.380071	19.9
5612	5/14/2019	5:47:01	2.379709	19.9
5613	5/14/2019	5:48:01	2.380071	20
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5616	5/14/2019	5:51:01	2.379348	20
5617	5/14/2019	5:52:01	2.379709	20
5618	5/14/2019	5:53:01	2.379348	20
5619	5/14/2019	5:54:01	2.379348	20
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5621	5/14/2019	5:56:01	2.379348	19.7
5622	5/14/2019	5:57:01	2.379348	19.6
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5624	5/14/2019	5:59:01	2.379348	19.6
5625	5/14/2019	6:00:01	2.379348	19.6
5626	5/14/2019	6:01:01	2.379348	19.6
5627	5/14/2019	6:02:01	2.379709	19.7
5628	5/14/2019	6:03:01	2.378986	19.7
5629	5/14/2019	6:04:01	2.379348	19.7
5630	5/14/2019	6:05:01	2.379348	19.8
5631	5/14/2019	6:06:01	2.379348	19.8
5632	5/14/2019	6:07:01	2.379709	19.8
5633	5/14/2019	6:08:01	2.379348	19.9
5634	5/14/2019	6:09:01	2.379348	19.9
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5636	5/14/2019	6:11:01	2.379709	19.9
5637	5/14/2019	6:12:01	2.379348	19.9
5638	5/14/2019	6:13:01	2.379348	20
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5640	5/14/2019	6:15:01	2.379348	20
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5647	5/14/2019	6:22:01	2.378986	19.6
5648	5/14/2019	6:23:01	2.379348	19.6
5649	5/14/2019	6:24:01	2.379348	19.6
5650	5/14/2019	6:25:01	2.378986	19.6
5651	5/14/2019	6:26:01	2.378986	19.7
5652	5/14/2019	6:27:01	2.378986	19.7
5653	5/14/2019	6:28:01	2.379348	19.7
5654	5/14/2019	6:29:01	2.379348	19.8
5655	5/14/2019	6:30:01	2.378624	19.8
5656	5/14/2019	6:31:01	2.379348	19.8
5657	5/14/2019	6:32:01	2.379348	19.8
5658	5/14/2019	6:33:01	2.379348	19.9
5659	5/14/2019	6:34:01	2.379348	19.9
5660	5/14/2019	6:35:01	2.378262	19.9
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5662	5/14/2019	6:37:01	2.378986	19.9
5663	5/14/2019	6:38:01	2.378624	20
5664	5/14/2019	6:39:01	2.379348	20
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5667	5/14/2019	6:42:01	2.379348	20
5668	5/14/2019	6:43:01	2.378624	20
5669	5/14/2019	6:44:01	2.378986	19.8
5670	5/14/2019	6:45:01	2.378986	19.7
5671	5/14/2019	6:46:01	2.378262	19.6
5672	5/14/2019	6:47:01	2.378262	19.6
5673	5/14/2019	6:48:01	2.379348	19.6
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5675	5/14/2019	6:50:01	2.378986	19.6
5676	5/14/2019	6:51:01	2.378624	19.7
5677	5/14/2019	6:52:01	2.378986	19.7
5678	5/14/2019	6:53:01	2.379348	19.7
5679	5/14/2019	6:54:01	2.379348	19.8
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5683	5/14/2019	6:58:01	2.378262	19.9
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5685	5/14/2019	7:00:01	2.379348	19.9
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5690	5/14/2019	7:05:01	2.378624	20
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5693	5/14/2019	7:08:01	2.377901	19.7
5694	5/14/2019	7:09:01	2.378262	19.7
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5700	5/14/2019	7:15:01	2.378624	19.7
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5717	5/14/2019	7:32:01	2.377539	19.6
5718	5/14/2019	7:33:01	2.376816	19.6
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5720	5/14/2019	7:35:01	2.377539	19.7
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5722	5/14/2019	7:37:01	2.377539	19.8
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5726	5/14/2019	7:41:01	2.377539	19.9
5727	5/14/2019	7:42:01	2.377177	19.9
5728	5/14/2019	7:43:01	2.377539	20
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5737	5/14/2019	7:52:01	2.376454	19.6
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5755	5/14/2019	8:10:01	2.376816	19.7
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5809	5/14/2019	9:04:01	2.376454	19.7
5810	5/14/2019	9:05:01	2.375731	19.7
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5813	5/14/2019	9:08:01	2.375369	19.8
5814	5/14/2019	9:09:01	2.375731	19.8
5815	5/14/2019	9:10:01	2.375369	19.9
5816	5/14/2019	9:11:01	2.375369	19.9
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5823	5/14/2019	9:18:01	2.376454	19.7
5824	5/14/2019	9:19:01	2.376092	19.7
5825	5/14/2019	9:20:01	2.375731	19.7
5826	5/14/2019	9:21:01	2.375731	19.8
5827	5/14/2019	9:22:01	2.375731	19.8

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5845	5/14/2019	9:40:01	2.374284	20
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5847	5/14/2019	9:42:01	2.373922	19.7
5848	5/14/2019	9:43:01	2.374284	19.7
5849	5/14/2019	9:44:01	2.375369	19.7
5850	5/14/2019	9:45:01	2.374284	19.7
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5864	5/14/2019	9:59:01	2.374284	19.9
5865	5/14/2019	10:00:01	2.374284	20
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5867	5/14/2019	10:02:01	2.375731	20.1
5868	5/14/2019	10:03:01	2.374645	20
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5870	5/14/2019	10:05:01	2.373922	19.8
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5873	5/14/2019	10:08:01	2.37356	19.8
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5880	5/14/2019	10:15:01	2.373922	19.9
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5882	5/14/2019	10:17:01	2.37356	19.7
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5889	5/14/2019	10:24:01	2.37356	20.1
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5905	5/14/2019	10:40:01	2.37356	19.8
5906	5/14/2019	10:41:01	2.37356	19.8
5907	5/14/2019	10:42:01	2.37356	19.9
5908	5/14/2019	10:43:01	2.37356	20
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5910	5/14/2019	10:45:01	2.37356	20.1
5911	5/14/2019	10:46:01	2.37356	20.1
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5913	5/14/2019	10:48:01	2.37356	19.8
5914	5/14/2019	10:49:01	2.37356	19.7
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5916	5/14/2019	10:51:01	2.37356	19.8
5917	5/14/2019	10:52:01	2.37356	19.8
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5919	5/14/2019	10:54:01	2.37356	20
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5921	5/14/2019	10:56:01	2.37356	20.1

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5924	5/14/2019	10:59:01	2.37356	19.8
5925	5/14/2019	11:00:01	2.372837	19.7
5926	5/14/2019	11:01:01	2.37356	19.7
5927	5/14/2019	11:02:01	2.373199	19.8
5928	5/14/2019	11:03:01	2.37356	19.9
5929	5/14/2019	11:04:01	2.372837	20
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5931	5/14/2019	11:06:01	2.37356	20.1
5932	5/14/2019	11:07:01	2.37356	20.1
5933	5/14/2019	11:08:01	2.37356	19.9
5934	5/14/2019	11:09:01	2.37356	19.8
5935	5/14/2019	11:10:01	2.37356	19.7
5936	5/14/2019	11:11:01	2.372475	19.7
5937	5/14/2019	11:12:01	2.37356	19.8
5938	5/14/2019	11:13:01	2.373199	19.9
5939	5/14/2019	11:14:01	2.373199	19.9
5940	5/14/2019	11:15:01	2.37356	20
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5944	5/14/2019	11:19:01	2.373199	19.8
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5946	5/14/2019	11:21:01	2.372837	19.7
5947	5/14/2019	11:22:01	2.373199	19.8
5948	5/14/2019	11:23:01	2.372837	19.9
5949	5/14/2019	11:24:01	2.37356	19.9
5950	5/14/2019	11:25:01	2.37356	20
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5953	5/14/2019	11:28:01	2.37356	20
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5956	5/14/2019	11:31:01	2.372837	19.7
5957	5/14/2019	11:32:01	2.372113	19.8
5958	5/14/2019	11:33:01	2.373199	19.9
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5960	5/14/2019	11:35:01	2.372837	20
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5966	5/14/2019	11:41:01	2.372475	19.8
5967	5/14/2019	11:42:01	2.372837	19.8
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5973	5/14/2019	11:48:01	2.372113	20
5974	5/14/2019	11:49:01	2.372475	19.9
5975	5/14/2019	11:50:01	2.372475	19.8
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5984	5/14/2019	11:59:01	2.372837	19.9
5985	5/14/2019	12:00:01	2.372837	19.8
5986	5/14/2019	12:01:01	2.37139	19.8
5987	5/14/2019	12:02:01	2.372475	19.8
5988	5/14/2019	12:03:01	2.372113	19.9
5989	5/14/2019	12:04:01	2.371752	20
5990	5/14/2019	12:05:01	2.372113	20.1
5991	5/14/2019	12:06:01	2.37139	20.1
5992	5/14/2019	12:07:01	2.372113	20.1
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5995	5/14/2019	12:10:01	2.37139	19.8
5996	5/14/2019	12:11:01	2.371752	19.8
5997	5/14/2019	12:12:01	2.371752	19.8
5998	5/14/2019	12:13:01	2.372113	19.9
5999	5/14/2019	12:14:01	2.371752	20
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6001	5/14/2019	12:16:01	2.37139	20.2
6002	5/14/2019	12:17:01	2.37139	20.1
6003	5/14/2019	12:18:01	2.37139	20
6004	5/14/2019	12:19:01	2.371752	19.8
6005	5/14/2019	12:20:01	2.371752	19.8
6006	5/14/2019	12:21:01	2.371028	19.8
6007	5/14/2019	12:22:01	2.371752	19.9
6008	5/14/2019	12:23:01	2.37139	19.9
6009	5/14/2019	12:24:01	2.370667	20
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6011	5/14/2019	12:26:01	2.37139	20.2
6012	5/14/2019	12:27:01	2.37139	20.1
6013	5/14/2019	12:28:01	2.371028	19.9
6014	5/14/2019	12:29:01	2.371028	19.8
6015	5/14/2019	12:30:01	2.37139	19.8

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6017	5/14/2019	12:32:01	2.370667	19.9
6018	5/14/2019	12:33:01	2.371752	20
6019	5/14/2019	12:34:01	2.371028	20.1
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6024	5/14/2019	12:39:01	2.370667	19.8
6025	5/14/2019	12:40:01	2.371028	19.8
6026	5/14/2019	12:41:01	2.370667	19.8
6027	5/14/2019	12:42:01	2.370667	19.9
6028	5/14/2019	12:43:01	2.371752	20
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6030	5/14/2019	12:45:01	2.370667	20.2
6031	5/14/2019	12:46:01	2.370667	20.1
6032	5/14/2019	12:47:01	2.370667	20
6033	5/14/2019	12:48:01	2.370667	19.9
6034	5/14/2019	12:49:01	2.370667	19.8
6035	5/14/2019	12:50:01	2.370667	19.8
6036	5/14/2019	12:51:01	2.370667	19.9
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6038	5/14/2019	12:53:01	2.370667	20.1
6039	5/14/2019	12:54:01	2.370667	20.2
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6042	5/14/2019	12:57:01	2.370667	19.9
6043	5/14/2019	12:58:01	2.370667	19.8
6044	5/14/2019	12:59:01	2.370667	19.8
6045	5/14/2019	13:00:01	2.371028	19.8
6046	5/14/2019	13:01:01	2.370667	19.9
6047	5/14/2019	13:02:01	2.370667	19.9
6048	5/14/2019	13:03:01	2.370667	20.1
6049	5/14/2019	13:04:01	2.370667	20.2
6050	5/14/2019	13:05:01	2.370667	20.1
6051	5/14/2019	13:06:01	2.370667	20
6052	5/14/2019	13:07:01	2.370305	19.9
6053	5/14/2019	13:08:01	2.370667	19.8
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6055	5/14/2019	13:10:01	2.370667	19.8
6056	5/14/2019	13:11:01	2.370667	19.9
6057	5/14/2019	13:12:01	2.370667	20
6058	5/14/2019	13:13:01	2.370667	20.1
6059	5/14/2019	13:14:01	2.370667	20.2
6060	5/14/2019	13:15:01	2.370667	20.1
6061	5/14/2019	13:16:01	2.370667	20
6062	5/14/2019	13:17:01	2.370667	19.8

6063	5/14/2019	13:18:01	2.370667	19.8
6064	5/14/2019	13:19:01	2.370667	19.8
6065	5/14/2019	13:20:01	2.370667	19.9
6066	5/14/2019	13:21:01	2.370667	19.9
6067	5/14/2019	13:22:01	2.370667	20.1
6068	5/14/2019	13:23:01	2.370667	20.2
6069	5/14/2019	13:24:01	2.370667	20.1
6070	5/14/2019	13:25:01	2.370305	20
6071	5/14/2019	13:26:01	2.370305	19.9
6072	5/14/2019	13:27:01	2.370667	19.8
6073	5/14/2019	13:28:01	2.370667	19.8
6074	5/14/2019	13:29:01	2.370305	19.8
6075	5/14/2019	13:30:01	2.370667	19.9
6076	5/14/2019	13:31:01	2.370667	20
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6082	5/14/2019	13:37:01	2.370667	19.8
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6085	5/14/2019	13:40:01	2.370667	19.9
6086	5/14/2019	13:41:01	2.370667	20
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6093	5/14/2019	13:48:01	2.370305	19.8
6094	5/14/2019	13:49:01	2.370305	19.9
6095	5/14/2019	13:50:01	2.370667	20
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6101	5/14/2019	13:56:01	2.370305	19.8
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6103	5/14/2019	13:58:01	2.369943	19.9
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6105	5/14/2019	14:00:01	2.369943	20.1
6106	5/14/2019	14:01:01	2.369581	20.2
6107	5/14/2019	14:02:01	2.370305	20.1
6108	5/14/2019	14:03:01	2.369943	20
6109	5/14/2019	14:04:01	2.369943	19.9

6110	5/14/2019	14:05:01	2.369943	19.8
6111	5/14/2019	14:06:01	2.369943	19.8
6112	5/14/2019	14:07:01	2.369581	19.9
6113	5/14/2019	14:08:01	2.369943	19.9
6114	5/14/2019	14:09:01	2.369581	20.1
6115	5/14/2019	14:10:01	2.369581	20.2
6116	5/14/2019	14:11:01	2.369581	20.2
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6118	5/14/2019	14:13:01	2.369581	19.9
6119	5/14/2019	14:14:01	2.369581	19.8
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6122	5/14/2019	14:17:01	2.36922	19.9
6123	5/14/2019	14:18:01	2.36922	20
6124	5/14/2019	14:19:01	2.368496	20.1
6125	5/14/2019	14:20:01	2.369581	20.2
6126	5/14/2019	14:21:01	2.368496	20.2
6127	5/14/2019	14:22:01	2.368858	20
6128	5/14/2019	14:23:01	2.369581	19.9
6129	5/14/2019	14:24:01	2.369581	19.8
6130	5/14/2019	14:25:01	2.368858	19.8
6131	5/14/2019	14:26:01	2.368858	19.8
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6133	5/14/2019	14:28:01	2.368858	20.1
6134	5/14/2019	14:29:01	2.36922	20.2
6135	5/14/2019	14:30:01	2.36922	20.2
6136	5/14/2019	14:31:01	2.368134	20.1
6137	5/14/2019	14:32:01	2.36922	20
6138	5/14/2019	14:33:01	2.368858	19.9
6139	5/14/2019	14:34:01	2.368858	19.8
6140	5/14/2019	14:35:01	2.368496	19.8
6141	5/14/2019	14:36:01	2.368496	19.9
6142	5/14/2019	14:37:01	2.368858	20
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6144	5/14/2019	14:39:01	2.368496	20.2
6145	5/14/2019	14:40:01	2.368496	20.2
6146	5/14/2019	14:41:01	2.368134	20.1
6147	5/14/2019	14:42:01	2.368134	19.9
6148	5/14/2019	14:43:01	2.368134	19.8
6149	5/14/2019	14:44:01	2.368134	19.8
6150	5/14/2019	14:45:01	2.368496	19.8
6151	5/14/2019	14:46:01	2.368134	19.9
6152	5/14/2019	14:47:01	2.368134	20.1
6153	5/14/2019	14:48:01	2.368134	20.2
6154	5/14/2019	14:49:01	2.368496	20.2
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6160	5/14/2019	14:55:01	2.368134	19.9
6161	5/14/2019	14:56:01	2.368134	20
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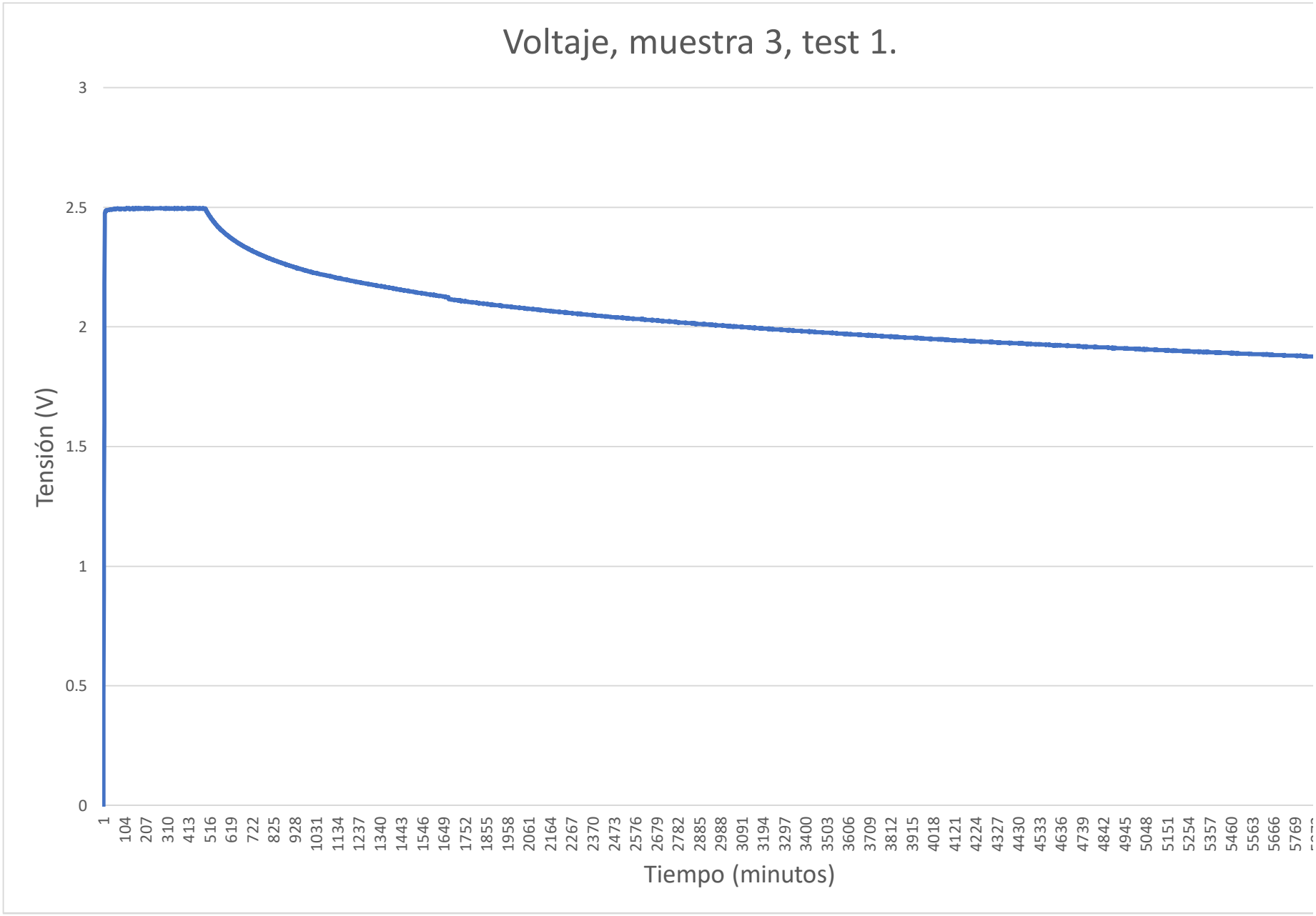
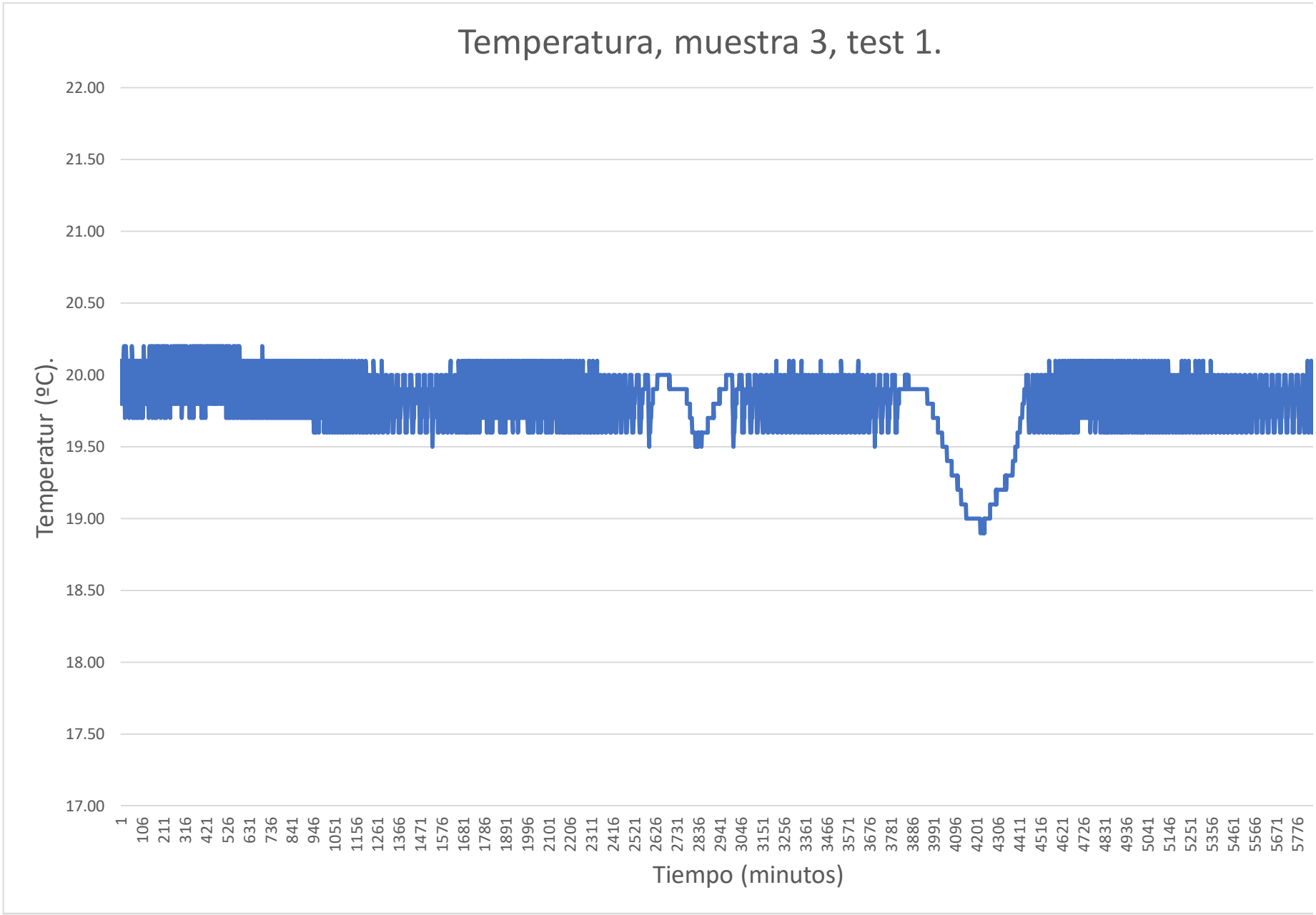
6163	5/14/2019	14:58:01	2.367773	20.2
6164	5/14/2019	14:59:01	2.368496	20.2
6165	5/14/2019	15:00:01	2.368496	20.1
6166	5/14/2019	15:01:01	2.367773	19.9
6167	5/14/2019	15:02:01	2.368496	19.8
6168	5/14/2019	15:03:01	2.368134	19.8
6169	5/14/2019	15:04:01	2.368134	19.9
6170	5/14/2019	15:05:01	2.367773	20
6171	5/14/2019	15:06:01	2.368134	20.1
6172	5/14/2019	15:07:01	2.367773	20.2
6173	5/14/2019	15:08:01	2.367773	20.2
6174	5/14/2019	15:09:01	2.367773	20.1
6175	5/14/2019	15:10:01	2.368134	20
6176	5/14/2019	15:11:01	2.367773	19.9
6177	5/14/2019	15:12:01	2.367773	19.8
6178	5/14/2019	15:13:01	2.367773	19.8
6179	5/14/2019	15:14:01	2.368134	19.9
6180	5/14/2019	15:15:01	2.367773	20.1
6181	5/14/2019	15:16:01	2.367773	20.2
6182	5/14/2019	15:17:01	2.367773	20.2
6183	5/14/2019	15:18:01	2.367773	20.2
6184	5/14/2019	15:19:01	2.367773	20
6185	5/14/2019	15:20:01	2.367773	19.9
6186	5/14/2019	15:21:01	2.367773	19.8
6187	5/14/2019	15:22:01	2.368134	19.8
6188	5/14/2019	15:23:01	2.367773	19.9
6189	5/14/2019	15:24:01	2.367773	20
6190	5/14/2019	15:25:01	2.367773	20.2
6191	5/14/2019	15:26:01	2.367773	20.2
6192	5/14/2019	15:27:01	2.367411	20.2
6193	5/14/2019	15:28:01	2.367773	20.1
6194	5/14/2019	15:29:01	2.367773	20
6195	5/14/2019	15:30:01	2.367773	19.8
6196	5/14/2019	15:31:01	2.367773	19.8
6197	5/14/2019	15:32:01	2.367773	19.9
6198	5/14/2019	15:33:01	2.367773	19.9
6199	5/14/2019	15:34:01	2.367773	20.1
6200	5/14/2019	15:35:01	2.367773	20.2
6201	5/14/2019	15:36:01	2.367773	20.2
6202	5/14/2019	15:37:01	2.367773	20.2
6203	5/14/2019	15:38:01	2.367773	20

6204	5/14/2019	15:39:01	2.367773	19.9	
6205	5/14/2019	15:40:01	2.367773	19.8	
6206	5/14/2019	15:41:01	2.367773	19.8	
6207	5/14/2019	15:42:01	2.367773	19.9	
6208	5/14/2019	15:43:01	2.367773	20	
6209	5/14/2019	15:44:01	2.367411	20.2	
6210	5/14/2019	15:45:01	2.367773	20.2	
6211	5/14/2019	15:46:01	2.367411	20.2	
6212	5/14/2019	15:47:01	2.367773	20.1	
6213	5/14/2019	15:48:01	2.367773	20	
6214	5/14/2019	15:49:01	2.367773	19.9	
6215	5/14/2019	15:50:01	2.367773	19.8	
6216	5/14/2019	15:51:01	2.367773	19.9	
6217	5/14/2019	15:52:01	2.367773	20	
6218	5/14/2019	15:53:01	2.367773	20.1	
6219	5/14/2019	15:54:01	2.367773	20.2	
6220	5/14/2019	15:55:01	2.367773	20.2	
6221	5/14/2019	15:56:01	2.367773	20.1	
6222	5/14/2019	15:57:01	2.367773	20	
6223	5/14/2019	15:58:01	2.367773	19.9	
6224	5/14/2019	15:59:01	2.367049	19.8	
6225	5/14/2019	16:00:01	2.367411	19.9	
6226	5/14/2019	16:01:01	2.367773	19.9	
6227	5/14/2019	16:02:01	2.367773	20.1	
6228	5/14/2019	16:03:01	2.367773	20.2	
6229	5/14/2019	16:04:01	2.367773	20.2	
6230	5/14/2019	16:05:01	2.366688	20.2	
6231	5/14/2019	16:06:01	2.367773	20.1	
6232	5/14/2019	16:07:01	2.367773	20	
6233	5/14/2019	16:08:01	2.367773	19.9	
6234	5/14/2019	16:09:01	2.367773	19.8	
6235	5/14/2019	16:10:01	2.367411	19.9	
6236	5/14/2019	16:11:01	2.367411	20	
6237	5/14/2019	16:12:01	2.367773	20.2	
6238	5/14/2019	16:13:01	2.367049	20.3	
6239	5/14/2019	16:14:01	2.366688	20.2	
6240	5/14/2019	16:15:01	2.366688	20.2	
6241	5/14/2019	16:16:01	2.367049	20	96 horas


Voltaje, muestra 3, test 1.
Tensión (V)
3
2.5
2
1.5
1
0.5
0
1
104
207
310
413
516
619
722
825
928
1031
1134
1237
1340
1443
1546
1649
1752
1855
1958
2061
2164
2267
2370
2473
2576
2679
2782
2885
2988
3091
3194
3297
3400
3503
3606
3709
3812
3915
4018
4121
4224
4327
4430
4533
4636
4739
4842
4945
5048
5151
5254
5357
5460
5563
5666
5769
Tiempo (minutos)


Temperatura, muestra 3, test 1.
Temperatur (ºC).
22.00
21.50
21.00
20.50
20.00
19.50
19.00
18.50
18.00
17.50
17.00
1
106
211
316
421
526
631
736
841
946
1051
1156
1261
1366
1471
1576
1681
1786
1891
1996
2101
2206
2311
2416
2521
2626
2731
2836
2941
3046
3151
3256
3361
3466
3571
3676
3781
3886
3991
4096
4201
4306
4411
4516
4621
4726
4831
4936
5041
5146
5251
5356
5461
5566
5671
5776
Tiempo (minutos)

Numero	Fecha	Hora	Temperatura	Voltaje
1	5/17/2019	6:29:01	20.10	0
2	5/17/2019	6:30:01	20.00	0.000361713
3	5/17/2019	6:31:01	19.80	0.4622691
4	5/17/2019	6:32:01	19.80	0.8966863
5	5/17/2019	6:33:01	19.80	1.267442
6	5/17/2019	6:34:01	19.80	1.594069
7	5/17/2019	6:35:01	19.90	1.896461
8	5/17/2019	6:36:01	20.00	2.179682
9	5/17/2019	6:37:01	20.10	2.430349
10	5/17/2019	6:38:01	20.10	2.475201
11	5/17/2019	6:39:01	20.00	2.480627
12	5/17/2019	6:40:01	19.90	2.483159
13	5/17/2019	6:41:01	19.80	2.483882
14	5/17/2019	6:42:01	19.80	2.485329
15	5/17/2019	6:43:01	19.90	2.484968
16	5/17/2019	6:44:01	19.90	2.485329
17	5/17/2019	6:45:01	20.10	2.486053
18	5/17/2019	6:46:01	20.20	2.486415
19	5/17/2019	6:47:01	20.10	2.4875
20	5/17/2019	6:48:01	20.00	2.487138
21	5/17/2019	6:49:01	19.90	2.4875
22	5/17/2019	6:50:01	19.70	2.488585
23	5/17/2019	6:51:01	19.70	2.488223
24	5/17/2019	6:52:01	19.80	2.488223
25	5/17/2019	6:53:01	19.90	2.488585
26	5/17/2019	6:54:01	20.00	2.488947
27	5/17/2019	6:55:01	20.10	2.488585
28	5/17/2019	6:56:01	20.20	2.488947
29	5/17/2019	6:57:01	20.10	2.490032
30	5/17/2019	6:58:01	20.00	2.489308
31	5/17/2019	6:59:01	19.80	2.490032
32	5/17/2019	7:00:01	19.80	2.489308
33	5/17/2019	7:01:01	19.80	2.48967
34	5/17/2019	7:02:01	19.80	2.489308
35	5/17/2019	7:03:01	19.90	2.490755
36	5/17/2019	7:04:01	20.00	2.490032
37	5/17/2019	7:05:01	20.10	2.490032
38	5/17/2019	7:06:01	20.10	2.491117
39	5/17/2019	7:07:01	20.00	2.491117
40	5/17/2019	7:08:01	19.90	2.491117
41	5/17/2019	7:09:01	19.80	2.491478
42	5/17/2019	7:10:01	19.70	2.490393
43	5/17/2019	7:11:01	19.80	2.490393
44	5/17/2019	7:12:01	19.90	2.491478
45	5/17/2019	7:13:01	19.90	2.492202
46	5/17/2019	7:14:01	20.10	2.491478

Tension mantenida (test 1). Muesta 3	
Uend(72h)	1.916717
Ur(nominal)	2.5
A(%)	76.668680%

30 minutos, tensión minima que alcanzar, 2,375 V.

47	5/17/2019	7:15:01	20.10	2.491478
48	5/17/2019	7:16:01	20.10	2.491117
49	5/17/2019	7:17:01	20.00	2.491478
50	5/17/2019	7:18:01	19.90	2.492202
51	5/17/2019	7:19:01	19.80	2.49184
52	5/17/2019	7:20:01	19.80	2.492564
53	5/17/2019	7:21:01	19.80	2.492925
54	5/17/2019	7:22:01	19.90	2.493287
55	5/17/2019	7:23:01	20.00	2.492925
56	5/17/2019	7:24:01	20.10	2.492202
57	5/17/2019	7:25:01	20.20	2.492202
58	5/17/2019	7:26:01	20.10	2.492925
59	5/17/2019	7:27:01	19.90	2.493287
60	5/17/2019	7:28:01	19.80	2.493287
61	5/17/2019	7:29:01	19.70	2.492925
62	5/17/2019	7:30:01	19.80	2.493287
63	5/17/2019	7:31:01	19.80	2.492564
64	5/17/2019	7:32:01	19.90	2.49401
65	5/17/2019	7:33:01	20.00	2.493287
66	5/17/2019	7:34:01	20.10	2.494372
67	5/17/2019	7:35:01	20.10	2.492925
68	5/17/2019	7:36:01	20.10	2.49401
69	5/17/2019	7:37:01	19.90	2.493649
70	5/17/2019	7:38:01	19.80	2.494372
71	5/17/2019	7:39:01	19.70	2.493649
72	5/17/2019	7:40:01	19.80	2.494734
73	5/17/2019	7:41:01	19.80	2.493649
74	5/17/2019	7:42:01	19.90	2.49401
75	5/17/2019	7:43:01	20.00	2.492925
76	5/17/2019	7:44:01	20.10	2.493649
77	5/17/2019	7:45:01	20.10	2.492925
78	5/17/2019	7:46:01	20.10	2.492925
79	5/17/2019	7:47:01	19.90	2.49401
80	5/17/2019	7:48:01	19.80	2.492564
81	5/17/2019	7:49:01	19.70	2.492564
82	5/17/2019	7:50:01	19.70	2.492925
83	5/17/2019	7:51:01	19.80	2.49401
84	5/17/2019	7:52:01	19.90	2.492564
85	5/17/2019	7:53:01	20.00	2.493287
86	5/17/2019	7:54:01	20.10	2.493649
87	5/17/2019	7:55:01	20.10	2.493649
88	5/17/2019	7:56:01	20.10	2.49401
89	5/17/2019	7:57:01	19.90	2.492564
90	5/17/2019	7:58:01	19.80	2.493649
91	5/17/2019	7:59:01	19.70	2.493649
92	5/17/2019	8:00:01	19.80	2.49401
93	5/17/2019	8:01:01	19.90	2.49401

94	5/17/2019	8:02:01	19.90	2.493287
95	5/17/2019	8:03:01	20.10	2.492925
96	5/17/2019	8:04:01	20.10	2.493287
97	5/17/2019	8:05:01	20.10	2.493649
98	5/17/2019	8:06:01	20.00	2.493649
99	5/17/2019	8:07:01	19.90	2.49401
100	5/17/2019	8:08:01	19.80	2.49401
101	5/17/2019	8:09:01	19.70	2.493287
102	5/17/2019	8:10:01	19.80	2.492925
103	5/17/2019	8:11:01	19.90	2.493649
104	5/17/2019	8:12:01	19.90	2.492564
105	5/17/2019	8:13:01	20.10	2.492925
106	5/17/2019	8:14:01	20.10	2.492564
107	5/17/2019	8:15:01	20.10	2.492564
108	5/17/2019	8:16:01	20.00	2.493287
109	5/17/2019	8:17:01	19.80	2.493649
110	5/17/2019	8:18:01	19.70	2.49401
111	5/17/2019	8:19:01	19.70	2.49401
112	5/17/2019	8:20:01	19.80	2.49401
113	5/17/2019	8:21:01	19.90	2.494734
114	5/17/2019	8:22:01	20.00	2.49401
115	5/17/2019	8:23:01	20.10	2.494734
116	5/17/2019	8:24:01	20.20	2.49401
117	5/17/2019	8:25:01	20.10	2.49401
118	5/17/2019	8:26:01	20.00	2.494734
119	5/17/2019	8:27:01	19.80	2.494734
120	5/17/2019	8:28:01	19.80	2.494372
121	5/17/2019	8:29:01	19.80	2.493287
122	5/17/2019	8:30:01	19.80	2.494372
123	5/17/2019	8:31:01	19.90	2.49401
124	5/17/2019	8:32:01	20.00	2.493287
125	5/17/2019	8:33:01	20.10	2.495096
126	5/17/2019	8:34:01	20.10	2.493649
127	5/17/2019	8:35:01	20.00	2.494372
128	5/17/2019	8:36:01	19.90	2.494734
129	5/17/2019	8:37:01	19.80	2.493649
130	5/17/2019	8:38:01	19.80	2.494372
131	5/17/2019	8:39:01	19.80	2.493287
132	5/17/2019	8:40:01	19.90	2.492564
133	5/17/2019	8:41:01	20.00	2.493649
134	5/17/2019	8:42:01	20.10	2.493287
135	5/17/2019	8:43:01	20.10	2.493287
136	5/17/2019	8:44:01	20.10	2.492925
137	5/17/2019	8:45:01	19.90	2.494372
138	5/17/2019	8:46:01	19.80	2.493287
139	5/17/2019	8:47:01	19.70	2.493649
140	5/17/2019	8:48:01	19.80	2.493287

141	5/17/2019	8:49:01	19.90	2.49401
142	5/17/2019	8:50:01	19.90	2.494734
143	5/17/2019	8:51:01	20.10	2.494734
144	5/17/2019	8:52:01	20.20	2.494372
145	5/17/2019	8:53:01	20.10	2.494372
146	5/17/2019	8:54:01	20.00	2.494734
147	5/17/2019	8:55:01	19.90	2.49401
148	5/17/2019	8:56:01	19.80	2.49401
149	5/17/2019	8:57:01	19.80	2.492564
150	5/17/2019	8:58:01	19.80	2.492925
151	5/17/2019	8:59:01	19.90	2.493649
152	5/17/2019	9:00:01	20.00	2.494372
153	5/17/2019	9:01:01	20.10	2.494372
154	5/17/2019	9:02:01	20.20	2.494734
155	5/17/2019	9:03:01	20.10	2.495096
156	5/17/2019	9:04:01	19.90	2.494372
157	5/17/2019	9:05:01	19.80	2.494734
158	5/17/2019	9:06:01	19.70	2.49401
159	5/17/2019	9:07:01	19.80	2.494734
160	5/17/2019	9:08:01	19.90	2.49401
161	5/17/2019	9:09:01	19.90	2.495096
162	5/17/2019	9:10:01	20.10	2.495457
163	5/17/2019	9:11:01	20.20	2.495096
164	5/17/2019	9:12:01	20.10	2.494734
165	5/17/2019	9:13:01	20.00	2.495096
166	5/17/2019	9:14:01	19.90	2.494372
167	5/17/2019	9:15:01	19.80	2.495096
168	5/17/2019	9:16:01	19.70	2.495096
169	5/17/2019	9:17:01	19.80	2.494734
170	5/17/2019	9:18:01	19.90	2.494372
171	5/17/2019	9:19:01	20.00	2.494372
172	5/17/2019	9:20:01	20.10	2.494372
173	5/17/2019	9:21:01	20.20	2.494734
174	5/17/2019	9:22:01	20.10	2.494734
175	5/17/2019	9:23:01	20.00	2.494372
176	5/17/2019	9:24:01	19.80	2.494734
177	5/17/2019	9:25:01	19.70	2.494734
178	5/17/2019	9:26:01	19.70	2.495457
179	5/17/2019	9:27:01	19.80	2.494734
180	5/17/2019	9:28:01	19.90	2.495457
181	5/17/2019	9:29:01	20.00	2.494372
182	5/17/2019	9:30:01	20.10	2.495096
183	5/17/2019	9:31:01	20.20	2.495096
184	5/17/2019	9:32:01	20.10	2.495096
185	5/17/2019	9:33:01	19.90	2.494372
186	5/17/2019	9:34:01	19.80	2.494372
187	5/17/2019	9:35:01	19.80	2.495096

188	5/17/2019	9:36:01	19.80	2.494734
189	5/17/2019	9:37:01	19.80	2.494372
190	5/17/2019	9:38:01	19.90	2.49401
191	5/17/2019	9:39:01	20.00	2.49401
192	5/17/2019	9:40:01	20.20	2.49401
193	5/17/2019	9:41:01	20.10	2.494734
194	5/17/2019	9:42:01	20.00	2.495457
195	5/17/2019	9:43:01	19.90	2.495096
196	5/17/2019	9:44:01	19.80	2.495457
197	5/17/2019	9:45:01	19.70	2.495457
198	5/17/2019	9:46:01	19.80	2.494734
199	5/17/2019	9:47:01	19.90	2.494734
200	5/17/2019	9:48:01	20.00	2.494372
201	5/17/2019	9:49:01	20.10	2.495096
202	5/17/2019	9:50:01	20.20	2.494372
203	5/17/2019	9:51:01	20.10	2.494734
204	5/17/2019	9:52:01	20.00	2.494734
205	5/17/2019	9:53:01	19.90	2.49401
206	5/17/2019	9:54:01	19.80	2.495096
207	5/17/2019	9:55:01	19.80	2.49401
208	5/17/2019	9:56:01	19.80	2.494734
209	5/17/2019	9:57:01	19.90	2.494734
210	5/17/2019	9:58:01	20.00	2.494734
211	5/17/2019	9:59:01	20.10	2.494372
212	5/17/2019	10:00:01	20.20	2.49401
213	5/17/2019	10:01:01	20.10	2.494734
214	5/17/2019	10:02:01	19.90	2.494734
215	5/17/2019	10:03:01	19.80	2.49401
216	5/17/2019	10:04:01	19.70	2.494372
217	5/17/2019	10:05:01	19.80	2.494734
218	5/17/2019	10:06:01	19.80	2.49401
219	5/17/2019	10:07:01	19.90	2.494734
220	5/17/2019	10:08:01	20.00	2.494734
221	5/17/2019	10:09:01	20.20	2.495819
222	5/17/2019	10:10:01	20.20	2.494734
223	5/17/2019	10:11:01	20.00	2.494372
224	5/17/2019	10:12:01	19.90	2.495096
225	5/17/2019	10:13:01	19.80	2.495096
226	5/17/2019	10:14:01	19.70	2.494372
227	5/17/2019	10:15:01	19.80	2.49401
228	5/17/2019	10:16:01	19.90	2.494734
229	5/17/2019	10:17:01	20.00	2.494734
230	5/17/2019	10:18:01	20.10	2.495457
231	5/17/2019	10:19:01	20.20	2.495096
232	5/17/2019	10:20:01	20.10	2.494734
233	5/17/2019	10:21:01	20.00	2.495457
234	5/17/2019	10:22:01	19.80	2.494734

235	5/17/2019	10:23:01	19.80	2.495096
236	5/17/2019	10:24:01	19.80	2.494734
237	5/17/2019	10:25:01	19.80	2.494734
238	5/17/2019	10:26:01	19.90	2.494734
239	5/17/2019	10:27:01	20.00	2.495096
240	5/17/2019	10:28:01	20.10	2.495096
241	5/17/2019	10:29:01	20.10	2.49401
242	5/17/2019	10:30:01	20.10	2.495096
243	5/17/2019	10:31:01	19.90	2.495457
244	5/17/2019	10:32:01	19.80	2.494734
245	5/17/2019	10:33:01	19.70	2.494734
246	5/17/2019	10:34:01	19.80	2.494734
247	5/17/2019	10:35:01	19.80	2.495457
248	5/17/2019	10:36:01	19.90	2.495457
249	5/17/2019	10:37:01	20.10	2.494734
250	5/17/2019	10:38:01	20.20	2.496181
251	5/17/2019	10:39:01	20.10	2.495096
252	5/17/2019	10:40:01	20.00	2.495096
253	5/17/2019	10:41:01	19.90	2.495457
254	5/17/2019	10:42:01	19.80	2.495819
255	5/17/2019	10:43:01	19.80	2.495819
256	5/17/2019	10:44:01	19.80	2.495096
257	5/17/2019	10:45:01	19.90	2.495096
258	5/17/2019	10:46:01	20.00	2.494734
259	5/17/2019	10:47:01	20.10	2.495096
260	5/17/2019	10:48:01	20.20	2.494734
261	5/17/2019	10:49:01	20.10	2.495457
262	5/17/2019	10:50:01	19.90	2.495096
263	5/17/2019	10:51:01	19.80	2.495819
264	5/17/2019	10:52:01	19.80	2.495819
265	5/17/2019	10:53:01	19.80	2.494734
266	5/17/2019	10:54:01	19.90	2.495096
267	5/17/2019	10:55:01	19.90	2.494734
268	5/17/2019	10:56:01	20.10	2.495096
269	5/17/2019	10:57:01	20.20	2.496181
270	5/17/2019	10:58:01	20.10	2.495096
271	5/17/2019	10:59:01	20.00	2.494734
272	5/17/2019	11:00:01	19.90	2.494734
273	5/17/2019	11:01:01	19.80	2.494734
274	5/17/2019	11:02:01	19.80	2.495096
275	5/17/2019	11:03:01	19.80	2.495096
276	5/17/2019	11:04:01	19.90	2.495096
277	5/17/2019	11:05:01	20.00	2.495819
278	5/17/2019	11:06:01	20.10	2.495096
279	5/17/2019	11:07:01	20.20	2.495457
280	5/17/2019	11:08:01	20.10	2.496904
281	5/17/2019	11:09:01	19.90	2.494734

282	5/17/2019	11:10:01	19.80	2.494734
283	5/17/2019	11:11:01	19.80	2.496181
284	5/17/2019	11:12:01	19.80	2.494734
285	5/17/2019	11:13:01	19.90	2.495457
286	5/17/2019	11:14:01	20.00	2.495457
287	5/17/2019	11:15:01	20.10	2.494734
288	5/17/2019	11:16:01	20.20	2.496181
289	5/17/2019	11:17:01	20.10	2.495819
290	5/17/2019	11:18:01	20.00	2.494734
291	5/17/2019	11:19:01	19.80	2.495096
292	5/17/2019	11:20:01	19.80	2.495457
293	5/17/2019	11:21:01	19.80	2.495096
294	5/17/2019	11:22:01	19.80	2.495457
295	5/17/2019	11:23:01	19.90	2.495819
296	5/17/2019	11:24:01	20.00	2.495096
297	5/17/2019	11:25:01	20.20	2.495096
298	5/17/2019	11:26:01	20.20	2.494372
299	5/17/2019	11:27:01	20.10	2.495096
300	5/17/2019	11:28:01	19.90	2.495096
301	5/17/2019	11:29:01	19.80	2.494734
302	5/17/2019	11:30:01	19.70	2.495096
303	5/17/2019	11:31:01	19.80	2.494734
304	5/17/2019	11:32:01	19.90	2.494372
305	5/17/2019	11:33:01	19.90	2.494734
306	5/17/2019	11:34:01	20.10	2.495096
307	5/17/2019	11:35:01	20.20	2.494372
308	5/17/2019	11:36:01	20.10	2.494734
309	5/17/2019	11:37:01	20.00	2.495096
310	5/17/2019	11:38:01	19.90	2.495096
311	5/17/2019	11:39:01	19.80	2.495819
312	5/17/2019	11:40:01	19.80	2.494734
313	5/17/2019	11:41:01	19.80	2.495096
314	5/17/2019	11:42:01	19.90	2.495096
315	5/17/2019	11:43:01	20.00	2.49401
316	5/17/2019	11:44:01	20.10	2.494734
317	5/17/2019	11:45:01	20.20	2.495096
318	5/17/2019	11:46:01	20.10	2.494734
319	5/17/2019	11:47:01	19.90	2.494734
320	5/17/2019	11:48:01	19.80	2.494734
321	5/17/2019	11:49:01	19.80	2.49401
322	5/17/2019	11:50:01	19.80	2.495457
323	5/17/2019	11:51:01	19.90	2.495096
324	5/17/2019	11:52:01	19.90	2.495096
325	5/17/2019	11:53:01	20.10	2.495457
326	5/17/2019	11:54:01	20.20	2.496181
327	5/17/2019	11:55:01	20.10	2.495457
328	5/17/2019	11:56:01	20.00	2.495819

329	5/17/2019	11:57:01	19.90	2.495457
330	5/17/2019	11:58:01	19.80	2.495457
331	5/17/2019	11:59:01	19.80	2.49401
332	5/17/2019	12:00:01	19.80	2.49401
333	5/17/2019	12:01:01	19.90	2.494372
334	5/17/2019	12:02:01	20.00	2.494734
335	5/17/2019	12:03:01	20.10	2.494734
336	5/17/2019	12:04:01	20.10	2.495096
337	5/17/2019	12:05:01	20.10	2.495457
338	5/17/2019	12:06:01	19.90	2.494734
339	5/17/2019	12:07:01	19.80	2.494734
340	5/17/2019	12:08:01	19.70	2.495457
341	5/17/2019	12:09:01	19.80	2.495096
342	5/17/2019	12:10:01	19.90	2.494734
343	5/17/2019	12:11:01	20.00	2.494734
344	5/17/2019	12:12:01	20.10	2.494734
345	5/17/2019	12:13:01	20.20	2.494372
346	5/17/2019	12:14:01	20.10	2.495096
347	5/17/2019	12:15:01	20.00	2.49401
348	5/17/2019	12:16:01	19.90	2.495096
349	5/17/2019	12:17:01	19.80	2.494372
350	5/17/2019	12:18:01	19.70	2.494734
351	5/17/2019	12:19:01	19.80	2.494734
352	5/17/2019	12:20:01	19.90	2.494734
353	5/17/2019	12:21:01	20.00	2.494734
354	5/17/2019	12:22:01	20.10	2.494734
355	5/17/2019	12:23:01	20.20	2.494734
356	5/17/2019	12:24:01	20.10	2.494372
357	5/17/2019	12:25:01	20.00	2.494372
358	5/17/2019	12:26:01	19.80	2.494734
359	5/17/2019	12:27:01	19.70	2.494734
360	5/17/2019	12:28:01	19.80	2.494734
361	5/17/2019	12:29:01	19.80	2.494372
362	5/17/2019	12:30:01	19.90	2.494372
363	5/17/2019	12:31:01	20.00	2.494734
364	5/17/2019	12:32:01	20.20	2.494734
365	5/17/2019	12:33:01	20.20	2.49401
366	5/17/2019	12:34:01	20.10	2.494372
367	5/17/2019	12:35:01	19.90	2.49401
368	5/17/2019	12:36:01	19.80	2.494372
369	5/17/2019	12:37:01	19.80	2.495096
370	5/17/2019	12:38:01	19.80	2.495096
371	5/17/2019	12:39:01	19.90	2.495819
372	5/17/2019	12:40:01	20.00	2.495457
373	5/17/2019	12:41:01	20.10	2.495819
374	5/17/2019	12:42:01	20.20	2.495457
375	5/17/2019	12:43:01	20.10	2.495096

376	5/17/2019	12:44:01	20.00	2.494734
377	5/17/2019	12:45:01	19.80	2.494734
378	5/17/2019	12:46:01	19.80	2.494734
379	5/17/2019	12:47:01	19.80	2.494734
380	5/17/2019	12:48:01	19.80	2.494734
381	5/17/2019	12:49:01	19.90	2.494372
382	5/17/2019	12:50:01	20.00	2.495096
383	5/17/2019	12:51:01	20.20	2.494372
384	5/17/2019	12:52:01	20.20	2.494734
385	5/17/2019	12:53:01	20.10	2.495819
386	5/17/2019	12:54:01	19.90	2.495096
387	5/17/2019	12:55:01	19.80	2.495819
388	5/17/2019	12:56:01	19.80	2.494734
389	5/17/2019	12:57:01	19.80	2.494372
390	5/17/2019	12:58:01	19.90	2.494372
391	5/17/2019	12:59:01	20.00	2.495819
392	5/17/2019	13:00:01	20.10	2.495096
393	5/17/2019	13:01:01	20.20	2.495457
394	5/17/2019	13:02:01	20.10	2.494734
395	5/17/2019	13:03:01	20.00	2.495096
396	5/17/2019	13:04:01	19.90	2.495457
397	5/17/2019	13:05:01	19.80	2.494734
398	5/17/2019	13:06:01	19.70	2.494734
399	5/17/2019	13:07:01	19.80	2.494734
400	5/17/2019	13:08:01	19.90	2.495819
401	5/17/2019	13:09:01	20.00	2.495096
402	5/17/2019	13:10:01	20.10	2.494734
403	5/17/2019	13:11:01	20.20	2.495457
404	5/17/2019	13:12:01	20.10	2.494734
405	5/17/2019	13:13:01	20.00	2.494734
406	5/17/2019	13:14:01	19.80	2.495457
407	5/17/2019	13:15:01	19.70	2.494734
408	5/17/2019	13:16:01	19.80	2.494372
409	5/17/2019	13:17:01	19.80	2.495096
410	5/17/2019	13:18:01	19.90	2.494372
411	5/17/2019	13:19:01	20.00	2.494734
412	5/17/2019	13:20:01	20.10	2.494372
413	5/17/2019	13:21:01	20.20	2.494372
414	5/17/2019	13:22:01	20.10	2.495096
415	5/17/2019	13:23:01	19.90	2.494734
416	5/17/2019	13:24:01	19.80	2.494734
417	5/17/2019	13:25:01	19.70	2.494372
418	5/17/2019	13:26:01	19.80	2.495096
419	5/17/2019	13:27:01	19.90	2.495096
420	5/17/2019	13:28:01	19.90	2.494372
421	5/17/2019	13:29:01	20.10	2.495096
422	5/17/2019	13:30:01	20.20	2.494734

423	5/17/2019	13:31:01	20.10	2.495819
424	5/17/2019	13:32:01	20.00	2.49401
425	5/17/2019	13:33:01	19.90	2.495096
426	5/17/2019	13:34:01	19.80	2.494734
427	5/17/2019	13:35:01	19.80	2.495096
428	5/17/2019	13:36:01	19.80	2.49401
429	5/17/2019	13:37:01	19.90	2.495096
430	5/17/2019	13:38:01	20.00	2.495096
431	5/17/2019	13:39:01	20.10	2.494734
432	5/17/2019	13:40:01	20.20	2.495096
433	5/17/2019	13:41:01	20.10	2.49401
434	5/17/2019	13:42:01	20.00	2.495096
435	5/17/2019	13:43:01	19.80	2.494734
436	5/17/2019	13:44:01	19.80	2.494372
437	5/17/2019	13:45:01	19.80	2.49401
438	5/17/2019	13:46:01	19.90	2.494734
439	5/17/2019	13:47:01	19.90	2.494372
440	5/17/2019	13:48:01	20.10	2.494734
441	5/17/2019	13:49:01	20.20	2.494734
442	5/17/2019	13:50:01	20.10	2.495096
443	5/17/2019	13:51:01	20.00	2.494734
444	5/17/2019	13:52:01	19.90	2.494734
445	5/17/2019	13:53:01	19.80	2.495096
446	5/17/2019	13:54:01	19.80	2.494734
447	5/17/2019	13:55:01	19.80	2.495096
448	5/17/2019	13:56:01	19.90	2.496181
449	5/17/2019	13:57:01	20.10	2.496181
450	5/17/2019	13:58:01	20.20	2.496181
451	5/17/2019	13:59:01	20.20	2.496904
452	5/17/2019	14:00:01	20.10	2.495819
453	5/17/2019	14:01:01	19.90	2.496542
454	5/17/2019	14:02:01	19.80	2.495457
455	5/17/2019	14:03:01	19.80	2.494734
456	5/17/2019	14:04:01	19.80	2.494734
457	5/17/2019	14:05:01	19.90	2.495457
458	5/17/2019	14:06:01	20.00	2.494734
459	5/17/2019	14:07:01	20.10	2.494734
460	5/17/2019	14:08:01	20.20	2.495096
461	5/17/2019	14:09:01	20.10	2.494734
462	5/17/2019	14:10:01	20.00	2.495096
463	5/17/2019	14:11:01	19.80	2.494372
464	5/17/2019	14:12:01	19.80	2.494734
465	5/17/2019	14:13:01	19.80	2.494734
466	5/17/2019	14:14:01	19.90	2.493649
467	5/17/2019	14:15:01	20.00	2.494372
468	5/17/2019	14:16:01	20.10	2.493649
469	5/17/2019	14:17:01	20.20	2.495096

470	5/17/2019	14:18:01	20.10	2.494734	
471	5/17/2019	14:19:01	20.00	2.49401	
472	5/17/2019	14:20:01	19.90	2.494734	
473	5/17/2019	14:21:01	19.80	2.494734	
474	5/17/2019	14:22:01	19.80	2.494734	
475	5/17/2019	14:23:01	19.90	2.49401	
476	5/17/2019	14:24:01	20.00	2.494372	
477	5/17/2019	14:25:01	20.10	2.494372	
478	5/17/2019	14:26:01	20.20	2.493649	
479	5/17/2019	14:27:01	20.10	2.49401	
480	5/17/2019	14:28:01	20.00	2.494372	
481	5/17/2019	14:29:01	19.90	2.494734	8 horas
482	5/17/2019	14:30:01	19.80	2.494734	
483	5/17/2019	14:31:01	19.90	2.494372	
484	5/17/2019	14:32:01	19.90	2.493649	
485	5/17/2019	14:33:01	20.00	2.494734	
486	5/17/2019	14:34:01	20.10	2.49401	
487	5/17/2019	14:35:01	20.20	2.49401	
488	5/17/2019	14:36:01	20.10	2.495096	
489	5/17/2019	14:37:01	19.90	2.494734	
490	5/17/2019	14:38:01	19.80	2.495457	
491	5/17/2019	14:39:01	19.80	2.494734	
492	5/17/2019	14:40:01	19.80	2.495096	
493	5/17/2019	14:41:01	19.90	2.495096	
494	5/17/2019	14:42:01	20.00	2.495096	
495	5/17/2019	14:43:01	20.10	2.495096	
496	5/17/2019	14:44:01	20.20	2.493649	
497	5/17/2019	14:45:01	20.10	2.49184	
498	5/17/2019	14:46:01	20.00	2.490032	
499	5/17/2019	14:47:01	19.90	2.488947	
500	5/17/2019	14:48:01	19.80	2.486415	
501	5/17/2019	14:49:01	19.80	2.486053	
502	5/17/2019	14:50:01	19.80	2.483882	
503	5/17/2019	14:51:01	19.90	2.482074	
504	5/17/2019	14:52:01	20.00	2.480989	
505	5/17/2019	14:53:01	20.10	2.478819	
506	5/17/2019	14:54:01	20.20	2.477372	
507	5/17/2019	14:55:01	20.10	2.476648	
508	5/17/2019	14:56:01	20.00	2.47484	
509	5/17/2019	14:57:01	19.80	2.472669	
510	5/17/2019	14:58:01	19.80	2.471584	
511	5/17/2019	14:59:01	19.80	2.470499	
512	5/17/2019	15:00:01	19.80	2.469052	
513	5/17/2019	15:01:01	19.90	2.468329	
514	5/17/2019	15:02:01	20.00	2.465797	
515	5/17/2019	15:03:01	20.10	2.465074	
516	5/17/2019	15:04:01	20.20	2.463265	

517	5/17/2019	15:05:01	20.10	2.462542
518	5/17/2019	15:06:01	19.90	2.460733
519	5/17/2019	15:07:01	19.80	2.46001
520	5/17/2019	15:08:01	19.70	2.459286
521	5/17/2019	15:09:01	19.70	2.457116
522	5/17/2019	15:10:01	19.80	2.456392
523	5/17/2019	15:11:01	19.90	2.454584
524	5/17/2019	15:12:01	20.00	2.453499
525	5/17/2019	15:13:01	20.20	2.451329
526	5/17/2019	15:14:01	20.20	2.451329
527	5/17/2019	15:15:01	20.10	2.44952
528	5/17/2019	15:16:01	19.90	2.448435
529	5/17/2019	15:17:01	19.80	2.447711
530	5/17/2019	15:18:01	19.70	2.446988
531	5/17/2019	15:19:01	19.80	2.445903
532	5/17/2019	15:20:01	19.80	2.444456
533	5/17/2019	15:21:01	19.90	2.443009
534	5/17/2019	15:22:01	20.00	2.441924
535	5/17/2019	15:23:01	20.20	2.440839
536	5/17/2019	15:24:01	20.20	2.440115
537	5/17/2019	15:25:01	20.10	2.438668
538	5/17/2019	15:26:01	19.90	2.437583
539	5/17/2019	15:27:01	19.80	2.437222
540	5/17/2019	15:28:01	19.70	2.436136
541	5/17/2019	15:29:01	19.80	2.434328
542	5/17/2019	15:30:01	19.80	2.433604
543	5/17/2019	15:31:01	19.90	2.432158
544	5/17/2019	15:32:01	20.10	2.431434
545	5/17/2019	15:33:01	20.10	2.431072
546	5/17/2019	15:34:01	20.10	2.42854
547	5/17/2019	15:35:01	20.00	2.427817
548	5/17/2019	15:36:01	19.90	2.427817
549	5/17/2019	15:37:01	19.80	2.425647
550	5/17/2019	15:38:01	19.70	2.425647
551	5/17/2019	15:39:01	19.80	2.423838
552	5/17/2019	15:40:01	19.90	2.422753
553	5/17/2019	15:41:01	19.90	2.422753
554	5/17/2019	15:42:01	20.10	2.421668
555	5/17/2019	15:43:01	20.20	2.419859
556	5/17/2019	15:44:01	20.10	2.419859
557	5/17/2019	15:45:01	20.00	2.418051
558	5/17/2019	15:46:01	19.90	2.417327
559	5/17/2019	15:47:01	19.80	2.416966
560	5/17/2019	15:48:01	19.70	2.416604
561	5/17/2019	15:49:01	19.80	2.414795
562	5/17/2019	15:50:01	19.80	2.414072
563	5/17/2019	15:51:01	19.90	2.414072

564	5/17/2019	15:52:01	20.10	2.412263
565	5/17/2019	15:53:01	20.20	2.411178
566	5/17/2019	15:54:01	20.10	2.411178
567	5/17/2019	15:55:01	20.00	2.409008
568	5/17/2019	15:56:01	19.90	2.408285
569	5/17/2019	15:57:01	19.80	2.407923
570	5/17/2019	15:58:01	19.70	2.406114
571	5/17/2019	15:59:01	19.80	2.406114
572	5/17/2019	16:00:01	19.80	2.405391
573	5/17/2019	16:01:01	19.90	2.404667
574	5/17/2019	16:02:01	20.10	2.403582
575	5/17/2019	16:03:01	20.20	2.402497
576	5/17/2019	16:04:01	20.10	2.402497
577	5/17/2019	16:05:01	20.00	2.402136
578	5/17/2019	16:06:01	19.90	2.401774
579	5/17/2019	16:07:01	19.80	2.399965
580	5/17/2019	16:08:01	19.70	2.399604
581	5/17/2019	16:09:01	19.80	2.39888
582	5/17/2019	16:10:01	19.90	2.397795
583	5/17/2019	16:11:01	19.90	2.397071
584	5/17/2019	16:12:01	20.10	2.39671
585	5/17/2019	16:13:01	20.20	2.396348
586	5/17/2019	16:14:01	20.10	2.394178
587	5/17/2019	16:15:01	20.00	2.394178
588	5/17/2019	16:16:01	19.90	2.393454
589	5/17/2019	16:17:01	19.80	2.393093
590	5/17/2019	16:18:01	19.70	2.391646
591	5/17/2019	16:19:01	19.80	2.390922
592	5/17/2019	16:20:01	19.80	2.390922
593	5/17/2019	16:21:01	19.90	2.389476
594	5/17/2019	16:22:01	20.10	2.388752
595	5/17/2019	16:23:01	20.10	2.388029
596	5/17/2019	16:24:01	20.10	2.387667
597	5/17/2019	16:25:01	20.00	2.387305
598	5/17/2019	16:26:01	19.90	2.385858
599	5/17/2019	16:27:01	19.80	2.385497
600	5/17/2019	16:28:01	19.70	2.384773
601	5/17/2019	16:29:01	19.80	2.383688
602	5/17/2019	16:30:01	19.80	2.382603
603	5/17/2019	16:31:01	19.90	2.382241
604	5/17/2019	16:32:01	20.00	2.382241
605	5/17/2019	16:33:01	20.10	2.380795
606	5/17/2019	16:34:01	20.10	2.380433
607	5/17/2019	16:35:01	20.00	2.380071
608	5/17/2019	16:36:01	19.90	2.378986
609	5/17/2019	16:37:01	19.80	2.379348
610	5/17/2019	16:38:01	19.70	2.376816

611	5/17/2019	16:39:01	19.70	2.376816
612	5/17/2019	16:40:01	19.80	2.377177
613	5/17/2019	16:41:01	19.90	2.376092
614	5/17/2019	16:42:01	20.00	2.375007
615	5/17/2019	16:43:01	20.10	2.373922
616	5/17/2019	16:44:01	20.10	2.37356
617	5/17/2019	16:45:01	20.00	2.373199
618	5/17/2019	16:46:01	19.90	2.372837
619	5/17/2019	16:47:01	19.80	2.371752
620	5/17/2019	16:48:01	19.70	2.370667
621	5/17/2019	16:49:01	19.70	2.370667
622	5/17/2019	16:50:01	19.80	2.370667
623	5/17/2019	16:51:01	19.90	2.36922
624	5/17/2019	16:52:01	20.00	2.368134
625	5/17/2019	16:53:01	20.10	2.367773
626	5/17/2019	16:54:01	20.10	2.367049
627	5/17/2019	16:55:01	20.10	2.367411
628	5/17/2019	16:56:01	19.90	2.365602
629	5/17/2019	16:57:01	19.80	2.364879
630	5/17/2019	16:58:01	19.70	2.365241
631	5/17/2019	16:59:01	19.80	2.364517
632	5/17/2019	17:00:01	19.80	2.363432
633	5/17/2019	17:01:01	19.90	2.362709
634	5/17/2019	17:02:01	20.00	2.361985
635	5/17/2019	17:03:01	20.10	2.361985
636	5/17/2019	17:04:01	20.10	2.361624
637	5/17/2019	17:05:01	20.00	2.361262
638	5/17/2019	17:06:01	19.90	2.360538
639	5/17/2019	17:07:01	19.80	2.359453
640	5/17/2019	17:08:01	19.70	2.359092
641	5/17/2019	17:09:01	19.70	2.359092
642	5/17/2019	17:10:01	19.80	2.358006
643	5/17/2019	17:11:01	19.90	2.358368
644	5/17/2019	17:12:01	20.00	2.35656
645	5/17/2019	17:13:01	20.10	2.356198
646	5/17/2019	17:14:01	20.10	2.355474
647	5/17/2019	17:15:01	20.10	2.355113
648	5/17/2019	17:16:01	19.90	2.354389
649	5/17/2019	17:17:01	19.80	2.353666
650	5/17/2019	17:18:01	19.70	2.353304
651	5/17/2019	17:19:01	19.70	2.352942
652	5/17/2019	17:20:01	19.80	2.352219
653	5/17/2019	17:21:01	19.90	2.351134
654	5/17/2019	17:22:01	20.00	2.350772
655	5/17/2019	17:23:01	20.10	2.35041
656	5/17/2019	17:24:01	20.10	2.350049
657	5/17/2019	17:25:01	20.10	2.349687

658	5/17/2019	17:26:01	20.00	2.349325
659	5/17/2019	17:27:01	19.80	2.34824
660	5/17/2019	17:28:01	19.70	2.347878
661	5/17/2019	17:29:01	19.70	2.347517
662	5/17/2019	17:30:01	19.80	2.347155
663	5/17/2019	17:31:01	19.90	2.34607
664	5/17/2019	17:32:01	19.90	2.34607
665	5/17/2019	17:33:01	20.10	2.344623
666	5/17/2019	17:34:01	20.10	2.344623
667	5/17/2019	17:35:01	20.10	2.344623
668	5/17/2019	17:36:01	20.00	2.344261
669	5/17/2019	17:37:01	19.80	2.342815
670	5/17/2019	17:38:01	19.70	2.342815
671	5/17/2019	17:39:01	19.70	2.341729
672	5/17/2019	17:40:01	19.80	2.341729
673	5/17/2019	17:41:01	19.80	2.341368
674	5/17/2019	17:42:01	19.90	2.340644
675	5/17/2019	17:43:01	20.00	2.339921
676	5/17/2019	17:44:01	20.10	2.338836
677	5/17/2019	17:45:01	20.10	2.339197
678	5/17/2019	17:46:01	20.00	2.338836
679	5/17/2019	17:47:01	19.90	2.338112
680	5/17/2019	17:48:01	19.70	2.33775
681	5/17/2019	17:49:01	19.70	2.337389
682	5/17/2019	17:50:01	19.70	2.336665
683	5/17/2019	17:51:01	19.80	2.335942
684	5/17/2019	17:52:01	19.90	2.335942
685	5/17/2019	17:53:01	20.00	2.33558
686	5/17/2019	17:54:01	20.10	2.335219
687	5/17/2019	17:55:01	20.10	2.33341
688	5/17/2019	17:56:01	20.10	2.33341
689	5/17/2019	17:57:01	19.90	2.333048
690	5/17/2019	17:58:01	19.80	2.333048
691	5/17/2019	17:59:01	19.70	2.333048
692	5/17/2019	18:00:01	19.70	2.332325
693	5/17/2019	18:01:01	19.80	2.331601
694	5/17/2019	18:02:01	19.90	2.330516
695	5/17/2019	18:03:01	20.00	2.330155
696	5/17/2019	18:04:01	20.10	2.330155
697	5/17/2019	18:05:01	20.20	2.329431
698	5/17/2019	18:06:01	20.10	2.329431
699	5/17/2019	18:07:01	20.00	2.329069
700	5/17/2019	18:08:01	19.90	2.327261
701	5/17/2019	18:09:01	19.70	2.327261
702	5/17/2019	18:10:01	19.70	2.327261
703	5/17/2019	18:11:01	19.80	2.326899
704	5/17/2019	18:12:01	19.80	2.325814

705	5/17/2019	18:13:01	19.90	2.326537
706	5/17/2019	18:14:01	20.00	2.325091
707	5/17/2019	18:15:01	20.10	2.324729
708	5/17/2019	18:16:01	20.10	2.324367
709	5/17/2019	18:17:01	20.00	2.324367
710	5/17/2019	18:18:01	19.90	2.324006
711	5/17/2019	18:19:01	19.80	2.323282
712	5/17/2019	18:20:01	19.70	2.322197
713	5/17/2019	18:21:01	19.70	2.322197
714	5/17/2019	18:22:01	19.80	2.321474
715	5/17/2019	18:23:01	19.90	2.321474
716	5/17/2019	18:24:01	20.00	2.321474
717	5/17/2019	18:25:01	20.10	2.320388
718	5/17/2019	18:26:01	20.10	2.320027
719	5/17/2019	18:27:01	20.10	2.319303
720	5/17/2019	18:28:01	19.90	2.319303
721	5/17/2019	18:29:01	19.80	2.31858
722	5/17/2019	18:30:01	19.70	2.318941
723	5/17/2019	18:31:01	19.70	2.318218
724	5/17/2019	18:32:01	19.80	2.318218
725	5/17/2019	18:33:01	19.90	2.31641
726	5/17/2019	18:34:01	20.00	2.316048
727	5/17/2019	18:35:01	20.10	2.316048
728	5/17/2019	18:36:01	20.10	2.315686
729	5/17/2019	18:37:01	20.10	2.315686
730	5/17/2019	18:38:01	20.00	2.314601
731	5/17/2019	18:39:01	19.80	2.314239
732	5/17/2019	18:40:01	19.70	2.314963
733	5/17/2019	18:41:01	19.70	2.313154
734	5/17/2019	18:42:01	19.80	2.312792
735	5/17/2019	18:43:01	19.90	2.312792
736	5/17/2019	18:44:01	19.90	2.312792
737	5/17/2019	18:45:01	20.00	2.312069
738	5/17/2019	18:46:01	20.10	2.311346
739	5/17/2019	18:47:01	20.10	2.311707
740	5/17/2019	18:48:01	20.00	2.311346
741	5/17/2019	18:49:01	19.80	2.31026
742	5/17/2019	18:50:01	19.70	2.309899
743	5/17/2019	18:51:01	19.70	2.309899
744	5/17/2019	18:52:01	19.80	2.309899
745	5/17/2019	18:53:01	19.80	2.309175
746	5/17/2019	18:54:01	19.90	2.30809
747	5/17/2019	18:55:01	20.00	2.307728
748	5/17/2019	18:56:01	20.10	2.307005
749	5/17/2019	18:57:01	20.10	2.307005
750	5/17/2019	18:58:01	20.00	2.307005
751	5/17/2019	18:59:01	19.80	2.307005

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753	5/17/2019	19:01:01	19.70	2.305197
754	5/17/2019	19:02:01	19.80	2.304835
755	5/17/2019	19:03:01	19.80	2.305197
756	5/17/2019	19:04:01	19.90	2.304111
757	5/17/2019	19:05:01	20.00	2.304111
758	5/17/2019	19:06:01	20.10	2.303388
759	5/17/2019	19:07:01	20.10	2.303388
760	5/17/2019	19:08:01	20.00	2.30375
761	5/17/2019	19:09:01	19.90	2.302303
762	5/17/2019	19:10:01	19.70	2.301941
763	5/17/2019	19:11:01	19.70	2.301579
764	5/17/2019	19:12:01	19.70	2.301218
765	5/17/2019	19:13:01	19.80	2.301218
766	5/17/2019	19:14:01	19.90	2.301218
767	5/17/2019	19:15:01	19.90	2.300132
768	5/17/2019	19:16:01	20.00	2.300856
769	5/17/2019	19:17:01	20.10	2.299409
770	5/17/2019	19:18:01	20.10	2.298324
771	5/17/2019	19:19:01	20.00	2.298324
772	5/17/2019	19:20:01	19.80	2.298324
773	5/17/2019	19:21:01	19.70	2.298324
774	5/17/2019	19:22:01	19.70	2.298324
775	5/17/2019	19:23:01	19.70	2.297601
776	5/17/2019	19:24:01	19.80	2.297239
777	5/17/2019	19:25:01	19.90	2.296154
778	5/17/2019	19:26:01	20.00	2.296515
779	5/17/2019	19:27:01	20.10	2.295792
780	5/17/2019	19:28:01	20.10	2.29543
781	5/17/2019	19:29:01	20.00	2.294707
782	5/17/2019	19:30:01	19.90	2.29543
783	5/17/2019	19:31:01	19.80	2.295069
784	5/17/2019	19:32:01	19.70	2.295069
785	5/17/2019	19:33:01	19.70	2.293622
786	5/17/2019	19:34:01	19.80	2.292536
787	5/17/2019	19:35:01	19.90	2.292536
788	5/17/2019	19:36:01	19.90	2.292536
789	5/17/2019	19:37:01	20.10	2.292536
790	5/17/2019	19:38:01	20.10	2.292175
791	5/17/2019	19:39:01	20.10	2.291813
792	5/17/2019	19:40:01	20.00	2.290728
793	5/17/2019	19:41:01	19.80	2.290004
794	5/17/2019	19:42:01	19.70	2.290366
795	5/17/2019	19:43:01	19.70	2.289643
796	5/17/2019	19:44:01	19.70	2.289643
797	5/17/2019	19:45:01	19.80	2.289643
798	5/17/2019	19:46:01	19.90	2.289643

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801	5/17/2019	19:49:01	20.10	2.287472
802	5/17/2019	19:50:01	20.00	2.287111
803	5/17/2019	19:51:01	19.90	2.287111
804	5/17/2019	19:52:01	19.70	2.286749
805	5/17/2019	19:53:01	19.70	2.286387
806	5/17/2019	19:54:01	19.70	2.286749
807	5/17/2019	19:55:01	19.80	2.285664
808	5/17/2019	19:56:01	19.80	2.286387
809	5/17/2019	19:57:01	19.90	2.285302
810	5/17/2019	19:58:01	20.00	2.284579
811	5/17/2019	19:59:01	20.10	2.284217
812	5/17/2019	20:00:01	20.10	2.284217
813	5/17/2019	20:01:01	20.00	2.283855
814	5/17/2019	20:02:01	19.80	2.283855
815	5/17/2019	20:03:01	19.70	2.283494
816	5/17/2019	20:04:01	19.70	2.28277
817	5/17/2019	20:05:01	19.70	2.283132
818	5/17/2019	20:06:01	19.80	2.282408
819	5/17/2019	20:07:01	19.90	2.281685
820	5/17/2019	20:08:01	20.00	2.281685
821	5/17/2019	20:09:01	20.10	2.280962
822	5/17/2019	20:10:01	20.10	2.280962
823	5/17/2019	20:11:01	20.10	2.280238
824	5/17/2019	20:12:01	19.90	2.280962
825	5/17/2019	20:13:01	19.80	2.280238
826	5/17/2019	20:14:01	19.70	2.279515
827	5/17/2019	20:15:01	19.70	2.279515
828	5/17/2019	20:16:01	19.70	2.278068
829	5/17/2019	20:17:01	19.80	2.278068
830	5/17/2019	20:18:01	19.90	2.278068
831	5/17/2019	20:19:01	20.00	2.278068
832	5/17/2019	20:20:01	20.10	2.278068
833	5/17/2019	20:21:01	20.10	2.277706
834	5/17/2019	20:22:01	20.00	2.277344
835	5/17/2019	20:23:01	19.90	2.276621
836	5/17/2019	20:24:01	19.80	2.276259
837	5/17/2019	20:25:01	19.70	2.276621
838	5/17/2019	20:26:01	19.70	2.275174
839	5/17/2019	20:27:01	19.80	2.275536
840	5/17/2019	20:28:01	19.90	2.275174
841	5/17/2019	20:29:01	19.90	2.275174
842	5/17/2019	20:30:01	20.00	2.275174
843	5/17/2019	20:31:01	20.10	2.273727
844	5/17/2019	20:32:01	20.10	2.274451
845	5/17/2019	20:33:01	20.00	2.273727

846	5/17/2019	20:34:01	19.80	2.273366
847	5/17/2019	20:35:01	19.70	2.272642
848	5/17/2019	20:36:01	19.70	2.27228
849	5/17/2019	20:37:01	19.70	2.27228
850	5/17/2019	20:38:01	19.80	2.271919
851	5/17/2019	20:39:01	19.90	2.27228
852	5/17/2019	20:40:01	19.90	2.271919
853	5/17/2019	20:41:01	20.00	2.271195
854	5/17/2019	20:42:01	20.10	2.270472
855	5/17/2019	20:43:01	20.10	2.27011
856	5/17/2019	20:44:01	19.90	2.27011
857	5/17/2019	20:45:01	19.80	2.269387
858	5/17/2019	20:46:01	19.70	2.269748
859	5/17/2019	20:47:01	19.70	2.269748
860	5/17/2019	20:48:01	19.70	2.269387
861	5/17/2019	20:49:01	19.80	2.269025
862	5/17/2019	20:50:01	19.90	2.268302
863	5/17/2019	20:51:01	19.90	2.267578
864	5/17/2019	20:52:01	20.00	2.268663
865	5/17/2019	20:53:01	20.10	2.266855
866	5/17/2019	20:54:01	20.10	2.266855
867	5/17/2019	20:55:01	19.90	2.266493
868	5/17/2019	20:56:01	19.80	2.266493
869	5/17/2019	20:57:01	19.70	2.266493
870	5/17/2019	20:58:01	19.70	2.266493
871	5/17/2019	20:59:01	19.70	2.265408
872	5/17/2019	21:00:01	19.80	2.265408
873	5/17/2019	21:01:01	19.90	2.265046
874	5/17/2019	21:02:01	19.90	2.264323
875	5/17/2019	21:03:01	20.00	2.263961
876	5/17/2019	21:04:01	20.10	2.263599
877	5/17/2019	21:05:01	20.10	2.263599
878	5/17/2019	21:06:01	19.90	2.263599
879	5/17/2019	21:07:01	19.80	2.263599
880	5/17/2019	21:08:01	19.70	2.263599
881	5/17/2019	21:09:01	19.70	2.262514
882	5/17/2019	21:10:01	19.70	2.262514
883	5/17/2019	21:11:01	19.80	2.261067
884	5/17/2019	21:12:01	19.90	2.262152
885	5/17/2019	21:13:01	19.90	2.260706
886	5/17/2019	21:14:01	20.00	2.261067
887	5/17/2019	21:15:01	20.10	2.261067
888	5/17/2019	21:16:01	20.10	2.260706
889	5/17/2019	21:17:01	20.00	2.259621
890	5/17/2019	21:18:01	19.80	2.260706
891	5/17/2019	21:19:01	19.70	2.259621
892	5/17/2019	21:20:01	19.70	2.259621

893	5/17/2019	21:21:01	19.70	2.258897
894	5/17/2019	21:22:01	19.80	2.259259
895	5/17/2019	21:23:01	19.80	2.258535
896	5/17/2019	21:24:01	19.90	2.258535
897	5/17/2019	21:25:01	20.00	2.258174
898	5/17/2019	21:26:01	20.10	2.257812
899	5/17/2019	21:27:01	20.10	2.257812
900	5/17/2019	21:28:01	20.00	2.25745
901	5/17/2019	21:29:01	19.80	2.256727
902	5/17/2019	21:30:01	19.70	2.25745
903	5/17/2019	21:31:01	19.70	2.256003
904	5/17/2019	21:32:01	19.70	2.255642
905	5/17/2019	21:33:01	19.70	2.25528
906	5/17/2019	21:34:01	19.80	2.254918
907	5/17/2019	21:35:01	19.90	2.254918
908	5/17/2019	21:36:01	20.00	2.254918
909	5/17/2019	21:37:01	20.10	2.254918
910	5/17/2019	21:38:01	20.10	2.254557
911	5/17/2019	21:39:01	20.00	2.254557
912	5/17/2019	21:40:01	19.90	2.253833
913	5/17/2019	21:41:01	19.80	2.253471
914	5/17/2019	21:42:01	19.70	2.252748
915	5/17/2019	21:43:01	19.70	2.252386
916	5/17/2019	21:44:01	19.70	2.252025
917	5/17/2019	21:45:01	19.80	2.252025
918	5/17/2019	21:46:01	19.80	2.252025
919	5/17/2019	21:47:01	19.90	2.252025
920	5/17/2019	21:48:01	20.00	2.252025
921	5/17/2019	21:49:01	20.10	2.251663
922	5/17/2019	21:50:01	20.10	2.250939
923	5/17/2019	21:51:01	20.00	2.250578
924	5/17/2019	21:52:01	19.80	2.250578
925	5/17/2019	21:53:01	19.70	2.249131
926	5/17/2019	21:54:01	19.70	2.249854
927	5/17/2019	21:55:01	19.70	2.249131
928	5/17/2019	21:56:01	19.70	2.249131
929	5/17/2019	21:57:01	19.80	2.249131
930	5/17/2019	21:58:01	19.90	2.249131
931	5/17/2019	21:59:01	19.90	2.249131
932	5/17/2019	22:00:01	20.00	2.248408
933	5/17/2019	22:01:01	20.10	2.248408
934	5/17/2019	22:02:01	20.10	2.247684
935	5/17/2019	22:03:01	20.00	2.246237
936	5/17/2019	22:04:01	19.80	2.246961
937	5/17/2019	22:05:01	19.70	2.246599
938	5/17/2019	22:06:01	19.70	2.246237
939	5/17/2019	22:07:01	19.70	2.246961

940	5/17/2019	22:08:01	19.70	2.246237
941	5/17/2019	22:09:01	19.80	2.246237
942	5/17/2019	22:10:01	19.90	2.246237
943	5/17/2019	22:11:01	19.90	2.245514
944	5/17/2019	22:12:01	20.00	2.245514
945	5/17/2019	22:13:01	20.10	2.244429
946	5/17/2019	22:14:01	20.10	2.243705
947	5/17/2019	22:15:01	19.90	2.244429
948	5/17/2019	22:16:01	19.80	2.244067
949	5/17/2019	22:17:01	19.70	2.243705
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953	5/17/2019	22:21:01	19.80	2.243343
954	5/17/2019	22:22:01	19.90	2.243705
955	5/17/2019	22:23:01	19.90	2.242982
956	5/17/2019	22:24:01	20.00	2.242258
957	5/17/2019	22:25:01	20.10	2.241897
958	5/17/2019	22:26:01	20.10	2.241897
959	5/17/2019	22:27:01	20.00	2.241535
960	5/17/2019	22:28:01	19.90	2.241173
961	5/17/2019	22:29:01	19.70	2.240812
962	5/17/2019	22:30:01	19.60	2.240812
963	5/17/2019	22:31:01	19.70	2.240812
964	5/17/2019	22:32:01	19.70	2.240812
965	5/17/2019	22:33:01	19.80	2.24045
966	5/17/2019	22:34:01	19.80	2.240088
967	5/17/2019	22:35:01	19.90	2.24045
968	5/17/2019	22:36:01	20.00	2.238641
969	5/17/2019	22:37:01	20.00	2.239726
970	5/17/2019	22:38:01	20.10	2.23828
971	5/17/2019	22:39:01	20.00	2.237918
972	5/17/2019	22:40:01	19.90	2.23828
973	5/17/2019	22:41:01	19.80	2.237918
974	5/17/2019	22:42:01	19.70	2.237556
975	5/17/2019	22:43:01	19.60	2.237918
976	5/17/2019	22:44:01	19.70	2.237918
977	5/17/2019	22:45:01	19.70	2.236471
978	5/17/2019	22:46:01	19.80	2.237195
979	5/17/2019	22:47:01	19.90	2.237556
980	5/17/2019	22:48:01	19.90	2.236109
981	5/17/2019	22:49:01	20.00	2.236471
982	5/17/2019	22:50:01	20.10	2.235024
983	5/17/2019	22:51:01	20.10	2.235024
984	5/17/2019	22:52:01	20.00	2.235024
985	5/17/2019	22:53:01	19.80	2.235024
986	5/17/2019	22:54:01	19.70	2.235024

987	5/17/2019	22:55:01	19.70	2.235024
988	5/17/2019	22:56:01	19.70	2.234301
989	5/17/2019	22:57:01	19.70	2.233939
990	5/17/2019	22:58:01	19.80	2.234662
991	5/17/2019	22:59:01	19.80	2.234301
992	5/17/2019	23:00:01	19.90	2.234301
993	5/17/2019	23:01:01	19.90	2.232854
994	5/17/2019	23:02:01	20.00	2.232854
995	5/17/2019	23:03:01	20.10	2.232492
996	5/17/2019	23:04:01	20.00	2.23213
997	5/17/2019	23:05:01	19.90	2.23213
998	5/17/2019	23:06:01	19.80	2.232492
999	5/17/2019	23:07:01	19.70	2.23213
1000	5/17/2019	23:08:01	19.60	2.23213
1001	5/17/2019	23:09:01	19.70	2.231045
1002	5/17/2019	23:10:01	19.70	2.231769
1003	5/17/2019	23:11:01	19.80	2.230684
1004	5/17/2019	23:12:01	19.90	2.231045
1005	5/17/2019	23:13:01	19.90	2.22996
1006	5/17/2019	23:14:01	20.00	2.229599
1007	5/17/2019	23:15:01	20.00	2.22996
1008	5/17/2019	23:16:01	20.10	2.229237
1009	5/17/2019	23:17:01	20.00	2.229237
1010	5/17/2019	23:18:01	19.90	2.229237
1011	5/17/2019	23:19:01	19.70	2.229237
1012	5/17/2019	23:20:01	19.70	2.229237
1013	5/17/2019	23:21:01	19.60	2.228152
1014	5/17/2019	23:22:01	19.70	2.228875
1015	5/17/2019	23:23:01	19.70	2.228152
1016	5/17/2019	23:24:01	19.80	2.227067
1017	5/17/2019	23:25:01	19.90	2.227428
1018	5/17/2019	23:26:01	19.90	2.227067
1019	5/17/2019	23:27:01	20.00	2.226343
1020	5/17/2019	23:28:01	20.00	2.226343
1021	5/17/2019	23:29:01	20.10	2.226343
1022	5/17/2019	23:30:01	20.00	2.226343
1023	5/17/2019	23:31:01	19.90	2.226343
1024	5/17/2019	23:32:01	19.80	2.226343
1025	5/17/2019	23:33:01	19.70	2.22562
1026	5/17/2019	23:34:01	19.60	2.225981
1027	5/17/2019	23:35:01	19.70	2.226343
1028	5/17/2019	23:36:01	19.70	2.22562
1029	5/17/2019	23:37:01	19.80	2.224535
1030	5/17/2019	23:38:01	19.80	2.224173
1031	5/17/2019	23:39:01	19.90	2.224535
1032	5/17/2019	23:40:01	19.90	2.223811
1033	5/17/2019	23:41:01	20.00	2.224173

1034	5/17/2019	23:42:01	20.10	2.223449
1035	5/17/2019	23:43:01	20.10	2.223449
1036	5/17/2019	23:44:01	20.00	2.223449
1037	5/17/2019	23:45:01	19.80	2.223449
1038	5/17/2019	23:46:01	19.70	2.223088
1039	5/17/2019	23:47:01	19.60	2.223088
1040	5/17/2019	23:48:01	19.60	2.223449
1041	5/17/2019	23:49:01	19.70	2.222726
1042	5/17/2019	23:50:01	19.70	2.221641
1043	5/17/2019	23:51:01	19.80	2.221641
1044	5/17/2019	23:52:01	19.80	2.221641
1045	5/17/2019	23:53:01	19.90	2.221641
1046	5/17/2019	23:54:01	20.00	2.220556
1047	5/17/2019	23:55:01	20.00	2.220917
1048	5/17/2019	23:56:01	20.10	2.220556
1049	5/17/2019	23:57:01	20.00	2.220556
1050	5/17/2019	23:58:01	19.90	2.220556
1051	5/17/2019	23:59:01	19.80	2.220556
1052	5/18/2019	0:00:01	19.70	2.220194
1053	5/18/2019	0:01:01	19.60	2.220556
1054	5/18/2019	0:02:01	19.70	2.219832
1055	5/18/2019	0:03:01	19.70	2.220194
1056	5/18/2019	0:04:01	19.80	2.218747
1057	5/18/2019	0:05:01	19.80	2.219109
1058	5/18/2019	0:06:01	19.90	2.218747
1059	5/18/2019	0:07:01	19.90	2.218024
1060	5/18/2019	0:08:01	20.00	2.218024
1061	5/18/2019	0:09:01	20.00	2.217662
1062	5/18/2019	0:10:01	20.10	2.217662
1063	5/18/2019	0:11:01	20.00	2.217662
1064	5/18/2019	0:12:01	19.90	2.217662
1065	5/18/2019	0:13:01	19.70	2.217662
1066	5/18/2019	0:14:01	19.60	2.217662
1067	5/18/2019	0:15:01	19.60	2.217662
1068	5/18/2019	0:16:01	19.60	2.217662
1069	5/18/2019	0:17:01	19.70	2.217662
1070	5/18/2019	0:18:01	19.80	2.2173
1071	5/18/2019	0:19:01	19.80	2.2173
1072	5/18/2019	0:20:01	19.90	2.2173
1073	5/18/2019	0:21:01	19.90	2.2173
1074	5/18/2019	0:22:01	20.00	2.216577
1075	5/18/2019	0:23:01	20.00	2.216577
1076	5/18/2019	0:24:01	20.10	2.216215
1077	5/18/2019	0:25:01	20.00	2.215853
1078	5/18/2019	0:26:01	19.90	2.216577
1079	5/18/2019	0:27:01	19.70	2.216215
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1081	5/18/2019	0:29:01	19.60	2.214768
1082	5/18/2019	0:30:01	19.70	2.214768
1083	5/18/2019	0:31:01	19.70	2.214768
1084	5/18/2019	0:32:01	19.70	2.214768
1085	5/18/2019	0:33:01	19.80	2.214768
1086	5/18/2019	0:34:01	19.90	2.214768
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1088	5/18/2019	0:36:01	20.00	2.214045
1089	5/18/2019	0:37:01	20.00	2.213321
1090	5/18/2019	0:38:01	20.10	2.213321
1091	5/18/2019	0:39:01	20.00	2.213683
1092	5/18/2019	0:40:01	19.90	2.212598
1093	5/18/2019	0:41:01	19.80	2.212598
1094	5/18/2019	0:42:01	19.70	2.212236
1095	5/18/2019	0:43:01	19.60	2.211874
1096	5/18/2019	0:44:01	19.60	2.211874
1097	5/18/2019	0:45:01	19.60	2.212598
1098	5/18/2019	0:46:01	19.70	2.211874
1099	5/18/2019	0:47:01	19.70	2.211874
1100	5/18/2019	0:48:01	19.80	2.211874
1101	5/18/2019	0:49:01	19.90	2.211151
1102	5/18/2019	0:50:01	19.90	2.211874
1103	5/18/2019	0:51:01	19.90	2.211151
1104	5/18/2019	0:52:01	20.00	2.210789
1105	5/18/2019	0:53:01	20.00	2.210789
1106	5/18/2019	0:54:01	20.10	2.210789
1107	5/18/2019	0:55:01	20.00	2.210428
1108	5/18/2019	0:56:01	19.80	2.210066
1109	5/18/2019	0:57:01	19.70	2.209342
1110	5/18/2019	0:58:01	19.60	2.209342
1111	5/18/2019	0:59:01	19.60	2.208981
1112	5/18/2019	1:00:01	19.60	2.208981
1113	5/18/2019	1:01:01	19.70	2.208981
1114	5/18/2019	1:02:01	19.70	2.208981
1115	5/18/2019	1:03:01	19.80	2.208619
1116	5/18/2019	1:04:01	19.80	2.208619
1117	5/18/2019	1:05:01	19.90	2.208619
1118	5/18/2019	1:06:01	19.90	2.208981
1119	5/18/2019	1:07:01	20.00	2.208619
1120	5/18/2019	1:08:01	20.00	2.207534
1121	5/18/2019	1:09:01	20.10	2.207172
1122	5/18/2019	1:10:01	20.00	2.20681
1123	5/18/2019	1:11:01	19.90	2.206449
1124	5/18/2019	1:12:01	19.80	2.206449
1125	5/18/2019	1:13:01	19.70	2.206087
1126	5/18/2019	1:14:01	19.60	2.20681
1127	5/18/2019	1:15:01	19.60	2.206087

1128	5/18/2019	1:16:01	19.70	2.206087
1129	5/18/2019	1:17:01	19.70	2.206087
1130	5/18/2019	1:18:01	19.70	2.206087
1131	5/18/2019	1:19:01	19.80	2.206087
1132	5/18/2019	1:20:01	19.90	2.206087
1133	5/18/2019	1:21:01	19.90	2.204278
1134	5/18/2019	1:22:01	19.90	2.20464
1135	5/18/2019	1:23:01	20.00	2.205002
1136	5/18/2019	1:24:01	20.00	2.203917
1137	5/18/2019	1:25:01	20.10	2.203917
1138	5/18/2019	1:26:01	20.00	2.204278
1139	5/18/2019	1:27:01	19.90	2.204278
1140	5/18/2019	1:28:01	19.80	2.204278
1141	5/18/2019	1:29:01	19.70	2.203917
1142	5/18/2019	1:30:01	19.60	2.203917
1143	5/18/2019	1:31:01	19.60	2.203193
1144	5/18/2019	1:32:01	19.60	2.203193
1145	5/18/2019	1:33:01	19.70	2.203193
1146	5/18/2019	1:34:01	19.70	2.203193
1147	5/18/2019	1:35:01	19.80	2.203193
1148	5/18/2019	1:36:01	19.80	2.203193
1149	5/18/2019	1:37:01	19.90	2.202832
1150	5/18/2019	1:38:01	19.90	2.201746
1151	5/18/2019	1:39:01	20.00	2.20247
1152	5/18/2019	1:40:01	20.00	2.201746
1153	5/18/2019	1:41:01	20.10	2.201746
1154	5/18/2019	1:42:01	20.00	2.201385
1155	5/18/2019	1:43:01	19.90	2.201023
1156	5/18/2019	1:44:01	19.80	2.200661
1157	5/18/2019	1:45:01	19.70	2.201023
1158	5/18/2019	1:46:01	19.60	2.2003
1159	5/18/2019	1:47:01	19.60	2.2003
1160	5/18/2019	1:48:01	19.60	2.2003
1161	5/18/2019	1:49:01	19.70	2.2003
1162	5/18/2019	1:50:01	19.70	2.2003
1163	5/18/2019	1:51:01	19.80	2.199215
1164	5/18/2019	1:52:01	19.80	2.199938
1165	5/18/2019	1:53:01	19.90	2.2003
1166	5/18/2019	1:54:01	19.90	2.199576
1167	5/18/2019	1:55:01	19.90	2.198853
1168	5/18/2019	1:56:01	20.00	2.198853
1169	5/18/2019	1:57:01	20.00	2.198491
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1171	5/18/2019	1:59:01	20.00	2.198129
1172	5/18/2019	2:00:01	19.90	2.197406
1173	5/18/2019	2:01:01	19.70	2.197406
1174	5/18/2019	2:02:01	19.60	2.197406

1175	5/18/2019	2:03:01	19.60	2.197406
1176	5/18/2019	2:04:01	19.60	2.197406
1177	5/18/2019	2:05:01	19.60	2.197406
1178	5/18/2019	2:06:01	19.70	2.197406
1179	5/18/2019	2:07:01	19.70	2.197406
1180	5/18/2019	2:08:01	19.80	2.197044
1181	5/18/2019	2:09:01	19.80	2.196321
1182	5/18/2019	2:10:01	19.90	2.197044
1183	5/18/2019	2:11:01	19.90	2.196682
1184	5/18/2019	2:12:01	19.90	2.195959
1185	5/18/2019	2:13:01	20.00	2.195959
1186	5/18/2019	2:14:01	20.00	2.195959
1187	5/18/2019	2:15:01	20.10	2.195236
1188	5/18/2019	2:16:01	20.00	2.194874
1189	5/18/2019	2:17:01	19.90	2.194874
1190	5/18/2019	2:18:01	19.70	2.195236
1191	5/18/2019	2:19:01	19.60	2.194874
1192	5/18/2019	2:20:01	19.60	2.194512
1193	5/18/2019	2:21:01	19.60	2.194512
1194	5/18/2019	2:22:01	19.60	2.194512
1195	5/18/2019	2:23:01	19.70	2.194512
1196	5/18/2019	2:24:01	19.70	2.194512
1197	5/18/2019	2:25:01	19.80	2.19415
1198	5/18/2019	2:26:01	19.80	2.193789
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1201	5/18/2019	2:29:01	19.90	2.193065
1202	5/18/2019	2:30:01	20.00	2.19198
1203	5/18/2019	2:31:01	20.00	2.19198
1204	5/18/2019	2:32:01	20.00	2.191619
1205	5/18/2019	2:33:01	20.10	2.191619
1206	5/18/2019	2:34:01	20.00	2.192342
1207	5/18/2019	2:35:01	19.80	2.191619
1208	5/18/2019	2:36:01	19.70	2.191619
1209	5/18/2019	2:37:01	19.60	2.191619
1210	5/18/2019	2:38:01	19.60	2.191619
1211	5/18/2019	2:39:01	19.60	2.191619
1212	5/18/2019	2:40:01	19.60	2.191619
1213	5/18/2019	2:41:01	19.70	2.191257
1214	5/18/2019	2:42:01	19.70	2.191257
1215	5/18/2019	2:43:01	19.80	2.191257
1216	5/18/2019	2:44:01	19.80	2.190895
1217	5/18/2019	2:45:01	19.80	2.190533
1218	5/18/2019	2:46:01	19.90	2.18981
1219	5/18/2019	2:47:01	19.90	2.190172
1220	5/18/2019	2:48:01	19.90	2.18981
1221	5/18/2019	2:49:01	20.00	2.190533

1222	5/18/2019	2:50:01	20.00	2.189448
1223	5/18/2019	2:51:01	20.00	2.188725
1224	5/18/2019	2:52:01	20.00	2.189087
1225	5/18/2019	2:53:01	20.00	2.189087
1226	5/18/2019	2:54:01	19.80	2.188725
1227	5/18/2019	2:55:01	19.70	2.188001
1228	5/18/2019	2:56:01	19.60	2.188001
1229	5/18/2019	2:57:01	19.60	2.188725
1230	5/18/2019	2:58:01	19.60	2.188725
1231	5/18/2019	2:59:01	19.60	2.188725
1232	5/18/2019	3:00:01	19.70	2.188725
1233	5/18/2019	3:01:01	19.70	2.188001
1234	5/18/2019	3:02:01	19.80	2.188363
1235	5/18/2019	3:03:01	19.80	2.187278
1236	5/18/2019	3:04:01	19.80	2.188001
1237	5/18/2019	3:05:01	19.90	2.18764
1238	5/18/2019	3:06:01	19.90	2.186916
1239	5/18/2019	3:07:01	19.90	2.186555
1240	5/18/2019	3:08:01	20.00	2.186555
1241	5/18/2019	3:09:01	20.00	2.186555
1242	5/18/2019	3:10:01	20.00	2.185831
1243	5/18/2019	3:11:01	20.10	2.186193
1244	5/18/2019	3:12:01	20.00	2.186555
1245	5/18/2019	3:13:01	19.90	2.186555
1246	5/18/2019	3:14:01	19.70	2.185831
1247	5/18/2019	3:15:01	19.60	2.185831
1248	5/18/2019	3:16:01	19.60	2.185108
1249	5/18/2019	3:17:01	19.60	2.184746
1250	5/18/2019	3:18:01	19.60	2.185469
1251	5/18/2019	3:19:01	19.70	2.184384
1252	5/18/2019	3:20:01	19.70	2.185108
1253	5/18/2019	3:21:01	19.70	2.185108
1254	5/18/2019	3:22:01	19.80	2.184384
1255	5/18/2019	3:23:01	19.80	2.184022
1256	5/18/2019	3:24:01	19.90	2.184022
1257	5/18/2019	3:25:01	19.90	2.183661
1258	5/18/2019	3:26:01	19.90	2.183299
1259	5/18/2019	3:27:01	20.00	2.182937
1260	5/18/2019	3:28:01	20.00	2.182937
1261	5/18/2019	3:29:01	20.00	2.182937
1262	5/18/2019	3:30:01	20.00	2.182576
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1266	5/18/2019	3:34:01	19.60	2.182214
1267	5/18/2019	3:35:01	19.60	2.182937
1268	5/18/2019	3:36:01	19.60	2.181852

1269	5/18/2019	3:37:01	19.60	2.182214
1270	5/18/2019	3:38:01	19.60	2.181852
1271	5/18/2019	3:39:01	19.70	2.181852
1272	5/18/2019	3:40:01	19.70	2.181491
1273	5/18/2019	3:41:01	19.70	2.181491
1274	5/18/2019	3:42:01	19.80	2.180767
1275	5/18/2019	3:43:01	19.80	2.181129
1276	5/18/2019	3:44:01	19.90	2.181129
1277	5/18/2019	3:45:01	19.90	2.180767
1278	5/18/2019	3:46:01	19.90	2.180044
1279	5/18/2019	3:47:01	19.90	2.180044
1280	5/18/2019	3:48:01	20.00	2.180044
1281	5/18/2019	3:49:01	20.00	2.180044
1282	5/18/2019	3:50:01	20.00	2.179682
1283	5/18/2019	3:51:01	20.10	2.17932
1284	5/18/2019	3:52:01	20.00	2.17932
1285	5/18/2019	3:53:01	19.90	2.180044
1286	5/18/2019	3:54:01	19.80	2.179682
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1288	5/18/2019	3:56:01	19.60	2.178597
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1290	5/18/2019	3:58:01	19.60	2.178597
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1292	5/18/2019	4:00:01	19.70	2.178235
1293	5/18/2019	4:01:01	19.70	2.177873
1294	5/18/2019	4:02:01	19.70	2.177873
1295	5/18/2019	4:03:01	19.80	2.177873
1296	5/18/2019	4:04:01	19.80	2.177873
1297	5/18/2019	4:05:01	19.90	2.177512
1298	5/18/2019	4:06:01	19.90	2.17715
1299	5/18/2019	4:07:01	19.90	2.17715
1300	5/18/2019	4:08:01	19.90	2.17715
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1302	5/18/2019	4:10:01	20.00	2.176788
1303	5/18/2019	4:11:01	20.00	2.176788
1304	5/18/2019	4:12:01	20.00	2.176427
1305	5/18/2019	4:13:01	20.00	2.176427
1306	5/18/2019	4:14:01	20.00	2.176427
1307	5/18/2019	4:15:01	20.00	2.175703
1308	5/18/2019	4:16:01	19.90	2.175703
1309	5/18/2019	4:17:01	19.80	2.175703
1310	5/18/2019	4:18:01	19.70	2.175341
1311	5/18/2019	4:19:01	19.60	2.174618
1312	5/18/2019	4:20:01	19.60	2.175341
1313	5/18/2019	4:21:01	19.60	2.174256
1314	5/18/2019	4:22:01	19.60	2.174256
1315	5/18/2019	4:23:01	19.60	2.173895

1316	5/18/2019	4:24:01	19.70	2.173895
1317	5/18/2019	4:25:01	19.70	2.174256
1318	5/18/2019	4:26:01	19.70	2.174256
1319	5/18/2019	4:27:01	19.80	2.174256
1320	5/18/2019	4:28:01	19.80	2.174256
1321	5/18/2019	4:29:01	19.80	2.174256
1322	5/18/2019	4:30:01	19.90	2.173533
1323	5/18/2019	4:31:01	19.90	2.173895
1324	5/18/2019	4:32:01	19.90	2.173533
1325	5/18/2019	4:33:01	19.90	2.172809
1326	5/18/2019	4:34:01	19.90	2.173171
1327	5/18/2019	4:35:01	19.90	2.172448
1328	5/18/2019	4:36:01	20.00	2.172086
1329	5/18/2019	4:37:01	20.00	2.172809
1330	5/18/2019	4:38:01	20.00	2.171724
1331	5/18/2019	4:39:01	20.00	2.171363
1332	5/18/2019	4:40:01	20.00	2.171363
1333	5/18/2019	4:41:01	20.00	2.171363
1334	5/18/2019	4:42:01	20.00	2.171724
1335	5/18/2019	4:43:01	19.90	2.171724
1336	5/18/2019	4:44:01	19.70	2.171363
1337	5/18/2019	4:45:01	19.60	2.171724
1338	5/18/2019	4:46:01	19.60	2.170639
1339	5/18/2019	4:47:01	19.60	2.171363
1340	5/18/2019	4:48:01	19.60	2.171363
1341	5/18/2019	4:49:01	19.60	2.171001
1342	5/18/2019	4:50:01	19.60	2.170639
1343	5/18/2019	4:51:01	19.70	2.170278
1344	5/18/2019	4:52:01	19.70	2.170278
1345	5/18/2019	4:53:01	19.70	2.169916
1346	5/18/2019	4:54:01	19.80	2.170639
1347	5/18/2019	4:55:01	19.80	2.170639
1348	5/18/2019	4:56:01	19.80	2.168831
1349	5/18/2019	4:57:01	19.90	2.169916
1350	5/18/2019	4:58:01	19.90	2.168469
1351	5/18/2019	4:59:01	19.90	2.168831
1352	5/18/2019	5:00:01	19.90	2.168469
1353	5/18/2019	5:01:01	19.90	2.168469
1354	5/18/2019	5:02:01	19.90	2.168469
1355	5/18/2019	5:03:01	19.90	2.168469
1356	5/18/2019	5:04:01	20.00	2.168107
1357	5/18/2019	5:05:01	20.00	2.168469
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1364	5/18/2019	5:12:01	19.90	2.168107
1365	5/18/2019	5:13:01	19.70	2.167022
1366	5/18/2019	5:14:01	19.60	2.167384
1367	5/18/2019	5:15:01	19.60	2.166299
1368	5/18/2019	5:16:01	19.60	2.16666
1369	5/18/2019	5:17:01	19.60	2.166299
1370	5/18/2019	5:18:01	19.60	2.165575
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1372	5/18/2019	5:20:01	19.60	2.165575
1373	5/18/2019	5:21:01	19.70	2.165575
1374	5/18/2019	5:22:01	19.70	2.165575
1375	5/18/2019	5:23:01	19.70	2.165575
1376	5/18/2019	5:24:01	19.80	2.165213
1377	5/18/2019	5:25:01	19.80	2.165213
1378	5/18/2019	5:26:01	19.80	2.165575
1379	5/18/2019	5:27:01	19.80	2.165213
1380	5/18/2019	5:28:01	19.80	2.165213
1381	5/18/2019	5:29:01	19.90	2.16449
1382	5/18/2019	5:30:01	19.90	2.16449
1383	5/18/2019	5:31:01	19.90	2.16449
1384	5/18/2019	5:32:01	19.90	2.164128
1385	5/18/2019	5:33:01	19.90	2.163405
1386	5/18/2019	5:34:01	19.90	2.164128
1387	5/18/2019	5:35:01	19.90	2.163767
1388	5/18/2019	5:36:01	20.00	2.163405
1389	5/18/2019	5:37:01	20.00	2.163043
1390	5/18/2019	5:38:01	20.00	2.162682
1391	5/18/2019	5:39:01	20.00	2.16232
1392	5/18/2019	5:40:01	20.00	2.162682
1393	5/18/2019	5:41:01	20.00	2.162682
1394	5/18/2019	5:42:01	20.00	2.162682
1395	5/18/2019	5:43:01	20.00	2.162682
1396	5/18/2019	5:44:01	20.00	2.16232
1397	5/18/2019	5:45:01	19.90	2.16232
1398	5/18/2019	5:46:01	19.80	2.162682
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1401	5/18/2019	5:49:01	19.60	2.16232
1402	5/18/2019	5:50:01	19.60	2.161597
1403	5/18/2019	5:51:01	19.60	2.160873
1404	5/18/2019	5:52:01	19.60	2.160873
1405	5/18/2019	5:53:01	19.60	2.160873
1406	5/18/2019	5:54:01	19.70	2.16015
1407	5/18/2019	5:55:01	19.70	2.159788
1408	5/18/2019	5:56:01	19.70	2.160511
1409	5/18/2019	5:57:01	19.70	2.159788

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1412	5/18/2019	6:00:01	19.80	2.16015
1413	5/18/2019	6:01:01	19.80	2.159788
1414	5/18/2019	6:02:01	19.90	2.159788
1415	5/18/2019	6:03:01	19.90	2.159426
1416	5/18/2019	6:04:01	19.90	2.159788
1417	5/18/2019	6:05:01	19.90	2.159426
1418	5/18/2019	6:06:01	19.90	2.159788
1419	5/18/2019	6:07:01	19.90	2.159426
1420	5/18/2019	6:08:01	19.90	2.157979
1421	5/18/2019	6:09:01	19.90	2.159426
1422	5/18/2019	6:10:01	20.00	2.159065
1423	5/18/2019	6:11:01	20.00	2.157979
1424	5/18/2019	6:12:01	20.00	2.156894
1425	5/18/2019	6:13:01	20.00	2.157979
1426	5/18/2019	6:14:01	20.00	2.157256
1427	5/18/2019	6:15:01	20.00	2.156894
1428	5/18/2019	6:16:01	20.00	2.157256
1429	5/18/2019	6:17:01	20.00	2.156894
1430	5/18/2019	6:18:01	19.90	2.156894
1431	5/18/2019	6:19:01	19.70	2.156894
1432	5/18/2019	6:20:01	19.60	2.156894
1433	5/18/2019	6:21:01	19.60	2.156894
1434	5/18/2019	6:22:01	19.60	2.156894
1435	5/18/2019	6:23:01	19.60	2.156171
1436	5/18/2019	6:24:01	19.60	2.156532
1437	5/18/2019	6:25:01	19.60	2.156532
1438	5/18/2019	6:26:01	19.60	2.156894
1439	5/18/2019	6:27:01	19.70	2.156171
1440	5/18/2019	6:28:01	19.70	2.156532
1441	5/18/2019	6:29:01	19.70	2.155086
1442	5/18/2019	6:30:01	19.70	2.155809
1443	5/18/2019	6:31:01	19.80	2.154724
1444	5/18/2019	6:32:01	19.80	2.154724
1445	5/18/2019	6:33:01	19.80	2.154724
1446	5/18/2019	6:34:01	19.80	2.154724
1447	5/18/2019	6:35:01	19.80	2.154
1448	5/18/2019	6:36:01	19.80	2.154
1449	5/18/2019	6:37:01	19.90	2.154
1450	5/18/2019	6:38:01	19.90	2.154362
1451	5/18/2019	6:39:01	19.90	2.154
1452	5/18/2019	6:40:01	19.90	2.154
1453	5/18/2019	6:41:01	19.90	2.153639
1454	5/18/2019	6:42:01	19.90	2.153277
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1456	5/18/2019	6:44:01	19.90	2.152554

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1459	5/18/2019	6:47:01	20.00	2.153277
1460	5/18/2019	6:48:01	20.00	2.152915
1461	5/18/2019	6:49:01	20.00	2.153639
1462	5/18/2019	6:50:01	20.00	2.152192
1463	5/18/2019	6:51:01	20.00	2.152192
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1465	5/18/2019	6:53:01	20.00	2.15183
1466	5/18/2019	6:54:01	20.00	2.151469
1467	5/18/2019	6:55:01	19.90	2.151107
1468	5/18/2019	6:56:01	19.70	2.151107
1469	5/18/2019	6:57:01	19.60	2.151107
1470	5/18/2019	6:58:01	19.60	2.151107
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1472	5/18/2019	7:00:01	19.60	2.151107
1473	5/18/2019	7:01:01	19.60	2.151107
1474	5/18/2019	7:02:01	19.60	2.150745
1475	5/18/2019	7:03:01	19.60	2.150745
1476	5/18/2019	7:04:01	19.70	2.150022
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1479	5/18/2019	7:07:01	19.80	2.150022
1480	5/18/2019	7:08:01	19.80	2.150383
1481	5/18/2019	7:09:01	19.80	2.150022
1482	5/18/2019	7:10:01	19.90	2.14966
1483	5/18/2019	7:11:01	19.90	2.149298
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1485	5/18/2019	7:13:01	19.90	2.148937
1486	5/18/2019	7:14:01	19.90	2.149298
1487	5/18/2019	7:15:01	19.90	2.148575
1488	5/18/2019	7:16:01	19.90	2.148213
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1492	5/18/2019	7:20:01	20.00	2.148213
1493	5/18/2019	7:21:01	20.00	2.148213
1494	5/18/2019	7:22:01	20.00	2.14749
1495	5/18/2019	7:23:01	20.00	2.148213
1496	5/18/2019	7:24:01	19.90	2.14749
1497	5/18/2019	7:25:01	19.80	2.14749
1498	5/18/2019	7:26:01	19.70	2.14749
1499	5/18/2019	7:27:01	19.60	2.14749
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1501	5/18/2019	7:29:01	19.60	2.14749
1502	5/18/2019	7:30:01	19.60	2.146043
1503	5/18/2019	7:31:01	19.60	2.146766

1504	5/18/2019	7:32:01	19.60	2.146043
1505	5/18/2019	7:33:01	19.70	2.145681
1506	5/18/2019	7:34:01	19.70	2.146043
1507	5/18/2019	7:35:01	19.70	2.145319
1508	5/18/2019	7:36:01	19.80	2.145319
1509	5/18/2019	7:37:01	19.80	2.145319
1510	5/18/2019	7:38:01	19.80	2.145319
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1512	5/18/2019	7:40:01	19.90	2.144958
1513	5/18/2019	7:41:01	19.90	2.145319
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1515	5/18/2019	7:43:01	19.90	2.145319
1516	5/18/2019	7:44:01	19.90	2.144958
1517	5/18/2019	7:45:01	19.90	2.144596
1518	5/18/2019	7:46:01	19.90	2.144234
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1521	5/18/2019	7:49:01	20.00	2.143511
1522	5/18/2019	7:50:01	20.00	2.144596
1523	5/18/2019	7:51:01	20.00	2.143872
1524	5/18/2019	7:52:01	20.00	2.143149
1525	5/18/2019	7:53:01	20.00	2.142787
1526	5/18/2019	7:54:01	20.00	2.142787
1527	5/18/2019	7:55:01	20.00	2.142426
1528	5/18/2019	7:56:01	19.80	2.142426
1529	5/18/2019	7:57:01	19.70	2.142426
1530	5/18/2019	7:58:01	19.60	2.142787
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1532	5/18/2019	8:00:01	19.50	2.142426
1533	5/18/2019	8:01:01	19.60	2.142426
1534	5/18/2019	8:02:01	19.60	2.142426
1535	5/18/2019	8:03:01	19.60	2.142426
1536	5/18/2019	8:04:01	19.70	2.142426
1537	5/18/2019	8:05:01	19.70	2.142064
1538	5/18/2019	8:06:01	19.70	2.14134
1539	5/18/2019	8:07:01	19.70	2.14134
1540	5/18/2019	8:08:01	19.80	2.142426
1541	5/18/2019	8:09:01	19.80	2.140617
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1543	5/18/2019	8:11:01	19.90	2.140617
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1546	5/18/2019	8:14:01	19.90	2.140255
1547	5/18/2019	8:15:01	19.90	2.139532
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1549	5/18/2019	8:17:01	19.90	2.139532
1550	5/18/2019	8:18:01	20.00	2.139532

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1553	5/18/2019	8:21:01	20.00	2.139532
1554	5/18/2019	8:22:01	20.00	2.139532
1555	5/18/2019	8:23:01	20.00	2.139532
1556	5/18/2019	8:24:01	20.00	2.139532
1557	5/18/2019	8:25:01	19.80	2.139532
1558	5/18/2019	8:26:01	19.70	2.139532
1559	5/18/2019	8:27:01	19.60	2.138808
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1563	5/18/2019	8:31:01	19.60	2.138447
1564	5/18/2019	8:32:01	19.70	2.137723
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1567	5/18/2019	8:35:01	19.80	2.137362
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1569	5/18/2019	8:37:01	19.80	2.136638
1570	5/18/2019	8:38:01	19.90	2.137
1571	5/18/2019	8:39:01	19.90	2.136638
1572	5/18/2019	8:40:01	19.90	2.136638
1573	5/18/2019	8:41:01	19.90	2.136638
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1575	5/18/2019	8:43:01	20.00	2.136638
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1580	5/18/2019	8:48:01	20.00	2.136638
1581	5/18/2019	8:49:01	19.80	2.136638
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1587	5/18/2019	8:55:01	19.60	2.13483
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1591	5/18/2019	8:59:01	19.80	2.134468
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1595	5/18/2019	9:03:01	19.90	2.133744
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1601	5/18/2019	9:09:01	20.00	2.133744
1602	5/18/2019	9:10:01	19.90	2.133383
1603	5/18/2019	9:11:01	19.80	2.133744
1604	5/18/2019	9:12:01	19.70	2.133383
1605	5/18/2019	9:13:01	19.60	2.132659
1606	5/18/2019	9:14:01	19.60	2.133021
1607	5/18/2019	9:15:01	19.60	2.132659
1608	5/18/2019	9:16:01	19.60	2.132298
1609	5/18/2019	9:17:01	19.70	2.131936
1610	5/18/2019	9:18:01	19.70	2.132298
1611	5/18/2019	9:19:01	19.70	2.131936
1612	5/18/2019	9:20:01	19.80	2.131574
1613	5/18/2019	9:21:01	19.80	2.131936
1614	5/18/2019	9:22:01	19.90	2.131212
1615	5/18/2019	9:23:01	19.90	2.130851
1616	5/18/2019	9:24:01	19.90	2.130851
1617	5/18/2019	9:25:01	20.00	2.130851
1618	5/18/2019	9:26:01	20.00	2.131212
1619	5/18/2019	9:27:01	20.00	2.130851
1620	5/18/2019	9:28:01	20.00	2.130851
1621	5/18/2019	9:29:01	20.10	2.130851
1622	5/18/2019	9:30:01	20.00	2.130851
1623	5/18/2019	9:31:01	19.80	2.130489
1624	5/18/2019	9:32:01	19.70	2.130851
1625	5/18/2019	9:33:01	19.60	2.130851
1626	5/18/2019	9:34:01	19.60	2.130489
1627	5/18/2019	9:35:01	19.60	2.129042
1628	5/18/2019	9:36:01	19.60	2.129766
1629	5/18/2019	9:37:01	19.70	2.130127
1630	5/18/2019	9:38:01	19.70	2.129766
1631	5/18/2019	9:39:01	19.70	2.129766
1632	5/18/2019	9:40:01	19.80	2.128319
1633	5/18/2019	9:41:01	19.90	2.129042
1634	5/18/2019	9:42:01	19.90	2.12868
1635	5/18/2019	10:46:01	19.80	2.128319
1636	5/18/2019	10:47:01	19.80	2.128319
1637	5/18/2019	10:48:01	19.80	2.128319
1638	5/18/2019	10:49:01	19.90	2.127957
1639	5/18/2019	10:50:01	19.90	2.128319
1640	5/18/2019	10:51:01	19.90	2.127957
1641	5/18/2019	10:52:01	19.90	2.127957
1642	5/18/2019	10:53:01	20.00	2.127957
1643	5/18/2019	10:54:01	20.00	2.127957
1644	5/18/2019	10:55:01	20.00	2.127957

1645	5/18/2019	10:56:01	20.00	2.127957
1646	5/18/2019	10:57:01	19.90	2.127595
1647	5/18/2019	10:58:01	19.80	2.127595
1648	5/18/2019	10:59:01	19.70	2.127595
1649	5/18/2019	11:00:01	19.60	2.127595
1650	5/18/2019	11:01:01	19.60	2.127595
1651	5/18/2019	11:02:01	19.60	2.127234
1652	5/18/2019	11:03:01	19.70	2.12651
1653	5/18/2019	11:04:01	19.70	2.12651
1654	5/18/2019	11:05:01	19.80	2.126872
1655	5/18/2019	11:06:01	19.80	2.125787
1656	5/18/2019	11:07:01	19.90	2.126148
1657	5/18/2019	11:08:01	19.90	2.125787
1658	5/18/2019	11:09:01	20.00	2.12651
1659	5/18/2019	11:10:01	20.00	2.125787
1660	5/18/2019	11:11:01	20.10	2.125787
1661	5/18/2019	11:12:01	20.00	2.125425
1662	5/18/2019	11:13:01	19.90	2.125787
1663	5/18/2019	11:14:01	19.70	2.125063
1664	5/18/2019	11:15:01	19.60	2.125063
1665	5/18/2019	11:16:01	19.60	2.125063
1666	5/18/2019	11:17:01	19.60	2.125063
1667	5/18/2019	11:18:01	19.70	2.125063
1668	5/18/2019	11:19:01	19.70	2.125063
1669	5/18/2019	11:20:01	19.80	2.125063
1670	5/18/2019	11:21:01	19.80	2.125063
1671	5/18/2019	11:22:01	19.90	2.124702
1672	5/18/2019	11:23:01	19.90	2.125063
1673	5/18/2019	11:24:01	20.00	2.116382
1674	5/18/2019	11:25:01	20.00	2.116382
1675	5/18/2019	11:26:01	20.10	2.116382
1676	5/18/2019	11:27:01	20.00	2.11602
1677	5/18/2019	11:28:01	19.90	2.114935
1678	5/18/2019	11:29:01	19.70	2.115659
1679	5/18/2019	11:30:01	19.70	2.115659
1680	5/18/2019	11:31:01	19.60	2.114935
1681	5/18/2019	11:32:01	19.60	2.115297
1682	5/18/2019	11:33:01	19.70	2.115297
1683	5/18/2019	11:34:01	19.70	2.115297
1684	5/18/2019	11:35:01	19.80	2.114935
1685	5/18/2019	11:36:01	19.80	2.114574
1686	5/18/2019	11:37:01	19.90	2.114574
1687	5/18/2019	11:38:01	19.90	2.11385
1688	5/18/2019	11:39:01	20.00	2.11385
1689	5/18/2019	11:40:01	20.10	2.113489
1690	5/18/2019	11:41:01	20.10	2.113489
1691	5/18/2019	11:42:01	19.90	2.114212

1692	5/18/2019	11:43:01	19.80	2.113489
1693	5/18/2019	11:44:01	19.70	2.11385
1694	5/18/2019	11:45:01	19.60	2.113489
1695	5/18/2019	11:46:01	19.60	2.113489
1696	5/18/2019	11:47:01	19.70	2.113489
1697	5/18/2019	11:48:01	19.70	2.113489
1698	5/18/2019	11:49:01	19.80	2.113489
1699	5/18/2019	11:50:01	19.80	2.113489
1700	5/18/2019	11:51:01	19.90	2.113489
1701	5/18/2019	11:52:01	19.90	2.113489
1702	5/18/2019	11:53:01	20.00	2.112403
1703	5/18/2019	11:54:01	20.10	2.113489
1704	5/18/2019	11:55:01	20.10	2.112765
1705	5/18/2019	11:56:01	19.90	2.113127
1706	5/18/2019	11:57:01	19.80	2.112765
1707	5/18/2019	11:58:01	19.70	2.112403
1708	5/18/2019	11:59:01	19.60	2.11168
1709	5/18/2019	12:00:01	19.60	2.111318
1710	5/18/2019	12:01:01	19.70	2.111318
1711	5/18/2019	12:02:01	19.70	2.112042
1712	5/18/2019	12:03:01	19.80	2.11168
1713	5/18/2019	12:04:01	19.80	2.111318
1714	5/18/2019	12:05:01	19.90	2.110957
1715	5/18/2019	12:06:01	19.90	2.110595
1716	5/18/2019	12:07:01	20.00	2.110595
1717	5/18/2019	12:08:01	20.10	2.110957
1718	5/18/2019	12:09:01	20.10	2.110595
1719	5/18/2019	12:10:01	19.90	2.110595
1720	5/18/2019	12:11:01	19.80	2.110233
1721	5/18/2019	12:12:01	19.70	2.110595
1722	5/18/2019	12:13:01	19.60	2.110595
1723	5/18/2019	12:14:01	19.60	2.110233
1724	5/18/2019	12:15:01	19.70	2.110595
1725	5/18/2019	12:16:01	19.70	2.110233
1726	5/18/2019	12:17:01	19.80	2.109871
1727	5/18/2019	12:18:01	19.90	2.110595
1728	5/18/2019	12:19:01	19.90	2.109871
1729	5/18/2019	12:20:01	20.00	2.110595
1730	5/18/2019	12:21:01	20.00	2.10951
1731	5/18/2019	12:22:01	20.10	2.110233
1732	5/18/2019	12:23:01	20.00	2.108425
1733	5/18/2019	12:24:01	19.90	2.10951
1734	5/18/2019	12:25:01	19.70	2.108063
1735	5/18/2019	12:26:01	19.60	2.108425
1736	5/18/2019	12:27:01	19.60	2.109148
1737	5/18/2019	12:28:01	19.70	2.108063
1738	5/18/2019	12:29:01	19.70	2.108063

1739	5/18/2019	12:30:01	19.80	2.108063
1740	5/18/2019	12:31:01	19.80	2.108063
1741	5/18/2019	12:32:01	19.90	2.107701
1742	5/18/2019	12:33:01	20.00	2.107701
1743	5/18/2019	12:34:01	20.00	2.107701
1744	5/18/2019	12:35:01	20.10	2.107701
1745	5/18/2019	12:36:01	20.00	2.107701
1746	5/18/2019	12:37:01	19.90	2.107701
1747	5/18/2019	12:38:01	19.80	2.107701
1748	5/18/2019	12:39:01	19.70	2.107339
1749	5/18/2019	12:40:01	19.60	2.106978
1750	5/18/2019	12:41:01	19.60	2.107701
1751	5/18/2019	12:42:01	19.70	2.107701
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1756	5/18/2019	12:47:01	20.00	2.107339
1757	5/18/2019	12:48:01	20.10	2.106616
1758	5/18/2019	12:49:01	20.00	2.106254
1759	5/18/2019	12:50:01	19.90	2.105893
1760	5/18/2019	12:51:01	19.70	2.106254
1761	5/18/2019	12:52:01	19.70	2.106254
1762	5/18/2019	12:53:01	19.60	2.105531
1763	5/18/2019	12:54:01	19.60	2.105169
1764	5/18/2019	12:55:01	19.70	2.105169
1765	5/18/2019	12:56:01	19.80	2.105893
1766	5/18/2019	12:57:01	19.80	2.105531
1767	5/18/2019	12:58:01	19.90	2.105531
1768	5/18/2019	12:59:01	19.90	2.104807
1769	5/18/2019	13:00:01	20.00	2.104807
1770	5/18/2019	13:01:01	20.10	2.104807
1771	5/18/2019	13:02:01	20.10	2.104807
1772	5/18/2019	13:03:01	19.90	2.104807
1773	5/18/2019	13:04:01	19.80	2.104807
1774	5/18/2019	13:05:01	19.70	2.104807
1775	5/18/2019	13:06:01	19.70	2.104807
1776	5/18/2019	13:07:01	19.70	2.104084
1777	5/18/2019	13:08:01	19.70	2.104807
1778	5/18/2019	13:09:01	19.80	2.104446
1779	5/18/2019	13:10:01	19.80	2.104807
1780	5/18/2019	13:11:01	19.90	2.104446
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1782	5/18/2019	13:13:01	20.00	2.104446
1783	5/18/2019	13:14:01	20.10	2.103722
1784	5/18/2019	13:15:01	20.00	2.104446
1785	5/18/2019	13:16:01	19.90	2.102637

1786	5/18/2019	13:17:01	19.80	2.102637
1787	5/18/2019	13:18:01	19.70	2.102276
1788	5/18/2019	13:19:01	19.70	2.103722
1789	5/18/2019	13:20:01	19.70	2.103361
1790	5/18/2019	13:21:01	19.70	2.101914
1791	5/18/2019	13:22:01	19.80	2.102637
1792	5/18/2019	13:23:01	19.80	2.101914
1793	5/18/2019	13:24:01	19.90	2.101914
1794	5/18/2019	13:25:01	20.00	2.101914
1795	5/18/2019	13:26:01	20.00	2.102276
1796	5/18/2019	13:27:01	20.10	2.102276
1797	5/18/2019	13:28:01	20.00	2.101914
1798	5/18/2019	13:29:01	19.90	2.101914
1799	5/18/2019	13:30:01	19.70	2.101914
1800	5/18/2019	13:31:01	19.60	2.101552
1801	5/18/2019	13:32:01	19.60	2.101914
1802	5/18/2019	13:33:01	19.70	2.101914
1803	5/18/2019	13:34:01	19.70	2.101914
1804	5/18/2019	13:35:01	19.80	2.101552
1805	5/18/2019	13:36:01	19.80	2.101914
1806	5/18/2019	13:37:01	19.90	2.101914
1807	5/18/2019	13:38:01	20.00	2.101914
1808	5/18/2019	13:39:01	20.00	2.10119
1809	5/18/2019	13:40:01	20.10	2.100467
1810	5/18/2019	13:41:01	20.00	2.10119
1811	5/18/2019	13:42:01	19.90	2.100105
1812	5/18/2019	13:43:01	19.70	2.100105
1813	5/18/2019	13:44:01	19.70	2.100467
1814	5/18/2019	13:45:01	19.60	2.099743
1815	5/18/2019	13:46:01	19.70	2.100467
1816	5/18/2019	13:47:01	19.70	2.099382
1817	5/18/2019	13:48:01	19.80	2.099382
1818	5/18/2019	13:49:01	19.90	2.099382
1819	5/18/2019	13:50:01	19.90	2.09902
1820	5/18/2019	13:51:01	20.00	2.100105
1821	5/18/2019	13:52:01	20.10	2.09902
1822	5/18/2019	13:53:01	20.10	2.09902
1823	5/18/2019	13:54:01	20.00	2.09902
1824	5/18/2019	13:55:01	19.80	2.09902
1825	5/18/2019	13:56:01	19.70	2.09902
1826	5/18/2019	13:57:01	19.60	2.09902
1827	5/18/2019	13:58:01	19.60	2.09902
1828	5/18/2019	13:59:01	19.70	2.09902
1829	5/18/2019	14:00:01	19.70	2.09902
1830	5/18/2019	14:01:01	19.80	2.09902
1831	5/18/2019	14:02:01	19.90	2.098658
1832	5/18/2019	14:03:01	19.90	2.098297

1833	5/18/2019	14:04:01	20.00	2.098658
1834	5/18/2019	14:05:01	20.10	2.098297
1835	5/18/2019	14:06:01	20.10	2.098658
1836	5/18/2019	14:07:01	19.90	2.097935
1837	5/18/2019	14:08:01	19.80	2.097573
1838	5/18/2019	14:09:01	19.70	2.098297
1839	5/18/2019	14:10:01	19.70	2.097573
1840	5/18/2019	14:11:01	19.70	2.097935
1841	5/18/2019	14:12:01	19.70	2.09685
1842	5/18/2019	14:13:01	19.80	2.098297
1843	5/18/2019	14:14:01	19.80	2.097573
1844	5/18/2019	14:15:01	19.90	2.096488
1845	5/18/2019	14:16:01	20.00	2.096488
1846	5/18/2019	14:17:01	20.00	2.096126
1847	5/18/2019	14:18:01	20.10	2.096126
1848	5/18/2019	14:19:01	20.00	2.09685
1849	5/18/2019	14:20:01	19.90	2.096126
1850	5/18/2019	14:21:01	19.70	2.096126
1851	5/18/2019	14:22:01	19.70	2.095765
1852	5/18/2019	14:23:01	19.70	2.096126
1853	5/18/2019	14:24:01	19.70	2.096488
1854	5/18/2019	14:25:01	19.70	2.096488
1855	5/18/2019	14:26:01	19.80	2.096126
1856	5/18/2019	14:27:01	19.90	2.096126
1857	5/18/2019	14:28:01	19.90	2.095765
1858	5/18/2019	14:29:01	20.00	2.096126
1859	5/18/2019	14:30:01	20.10	2.095403
1860	5/18/2019	14:31:01	20.10	2.096126
1861	5/18/2019	14:32:01	19.90	2.095041
1862	5/18/2019	14:33:01	19.80	2.095403
1863	5/18/2019	14:34:01	19.70	2.095403
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1866	5/18/2019	14:37:01	19.70	2.09468
1867	5/18/2019	14:38:01	19.80	2.093956
1868	5/18/2019	14:39:01	19.80	2.093956
1869	5/18/2019	14:40:01	19.90	2.09468
1870	5/18/2019	14:41:01	20.00	2.095041
1871	5/18/2019	14:42:01	20.00	2.093594
1872	5/18/2019	14:43:01	20.10	2.093956
1873	5/18/2019	14:44:01	20.00	2.093956
1874	5/18/2019	14:45:01	19.90	2.093594
1875	5/18/2019	14:46:01	19.70	2.093594
1876	5/18/2019	14:47:01	19.70	2.093233
1877	5/18/2019	14:48:01	19.60	2.093594
1878	5/18/2019	14:49:01	19.70	2.093233
1879	5/18/2019	14:50:01	19.70	2.093233

1880	5/18/2019	14:51:01	19.80	2.093233	
1881	5/18/2019	14:52:01	19.90	2.093233	
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1884	5/18/2019	14:55:01	20.10	2.093594	
1885	5/18/2019	14:56:01	20.10	2.093233	
1886	5/18/2019	14:57:01	20.00	2.093233	
1887	5/18/2019	14:58:01	19.80	2.093233	
1888	5/18/2019	14:59:01	19.70	2.092871	
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1890	5/18/2019	15:01:01	19.60	2.092509	
1891	5/18/2019	15:02:01	19.70	2.092871	
1892	5/18/2019	15:03:01	19.70	2.092509	
1893	5/18/2019	15:04:01	19.80	2.091786	
1894	5/18/2019	15:05:01	19.90	2.092148	
1895	5/18/2019	15:06:01	19.90	2.092509	
1896	5/18/2019	15:07:01	20.00	2.091424	
1897	5/18/2019	15:08:01	20.10	2.091424	
1898	5/18/2019	15:09:01	20.00	2.091424	
1899	5/18/2019	15:10:01	19.90	2.091062	
1900	5/18/2019	15:11:01	19.70	2.091424	
1901	5/18/2019	15:12:01	19.70	2.091062	
1902	5/18/2019	15:13:01	19.70	2.090701	
1903	5/18/2019	15:14:01	19.70	2.090339	
1904	5/18/2019	15:15:01	19.70	2.090339	
1905	5/18/2019	15:16:01	19.80	2.090339	
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1908	5/18/2019	15:19:01	20.00	2.090339	
1909	5/18/2019	15:20:01	20.10	2.090339	
1910	5/18/2019	15:21:01	20.10	2.090339	
1911	5/18/2019	15:22:01	19.90	2.090339	
1912	5/18/2019	15:23:01	19.80	2.090339	
1913	5/18/2019	15:24:01	19.70	2.089977	
1914	5/18/2019	15:25:01	19.70	2.089977	
1915	5/18/2019	15:26:01	19.70	2.090339	
1916	5/18/2019	15:27:01	19.70	2.089977	
1917	5/18/2019	15:28:01	19.80	2.090339	
1918	5/18/2019	15:29:01	19.90	2.090339	
1919	5/18/2019	15:30:01	19.90	2.089616	
1920	5/18/2019	15:31:01	20.00	2.089254	
1921	5/18/2019	15:32:01	20.10	2.088892	24 horas
1922	5/18/2019	15:33:01	20.10	2.089616	
1923	5/18/2019	15:34:01	20.00	2.088892	
1924	5/18/2019	15:35:01	19.80	2.089616	
1925	5/18/2019	15:36:01	19.70	2.08853	
1926	5/18/2019	15:37:01	19.60	2.08853	

1927	5/18/2019	15:38:01	19.60	2.087807
1928	5/18/2019	15:39:01	19.70	2.088169
1929	5/18/2019	15:40:01	19.80	2.08853
1930	5/18/2019	15:41:01	19.80	2.087445
1931	5/18/2019	15:42:01	19.90	2.088892
1932	5/18/2019	15:43:01	20.00	2.087445
1933	5/18/2019	15:44:01	20.00	2.087445
1934	5/18/2019	15:45:01	20.10	2.087445
1935	5/18/2019	15:46:01	20.00	2.087445
1936	5/18/2019	15:47:01	19.90	2.087445
1937	5/18/2019	15:48:01	19.70	2.087445
1938	5/18/2019	15:49:01	19.70	2.087445
1939	5/18/2019	15:50:01	19.70	2.087445
1940	5/18/2019	15:51:01	19.70	2.087084
1941	5/18/2019	15:52:01	19.80	2.086722
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1945	5/18/2019	15:56:01	20.00	2.087445
1946	5/18/2019	15:57:01	20.10	2.087084
1947	5/18/2019	15:58:01	20.00	2.087445
1948	5/18/2019	15:59:01	19.90	2.086722
1949	5/18/2019	16:00:01	19.80	2.086722
1950	5/18/2019	16:01:01	19.70	2.087084
1951	5/18/2019	16:02:01	19.60	2.085998
1952	5/18/2019	16:03:01	19.60	2.086722
1953	5/18/2019	16:04:01	19.70	2.087084
1954	5/18/2019	16:05:01	19.80	2.08636
1955	5/18/2019	16:06:01	19.90	2.085998
1956	5/18/2019	16:07:01	19.90	2.08636
1957	5/18/2019	16:08:01	20.00	2.08636
1958	5/18/2019	16:09:01	20.10	2.085637
1959	5/18/2019	16:10:01	20.10	2.085275
1960	5/18/2019	16:11:01	20.00	2.085275
1961	5/18/2019	16:12:01	19.80	2.085637
1962	5/18/2019	16:13:01	19.70	2.085275
1963	5/18/2019	16:14:01	19.70	2.084913
1964	5/18/2019	16:15:01	19.70	2.084552
1965	5/18/2019	16:16:01	19.70	2.084913
1966	5/18/2019	16:17:01	19.80	2.084552
1967	5/18/2019	16:18:01	19.80	2.084552
1968	5/18/2019	16:19:01	19.90	2.084552
1969	5/18/2019	16:20:01	20.00	2.084552
1970	5/18/2019	16:21:01	20.00	2.084552
1971	5/18/2019	16:22:01	20.10	2.084552
1972	5/18/2019	16:23:01	20.00	2.084552
1973	5/18/2019	16:24:01	19.90	2.084552

1974	5/18/2019	16:25:01	19.80	2.08419
1975	5/18/2019	16:26:01	19.70	2.083828
1976	5/18/2019	16:27:01	19.70	2.084552
1977	5/18/2019	16:28:01	19.70	2.084552
1978	5/18/2019	16:29:01	19.70	2.083828
1979	5/18/2019	16:30:01	19.80	2.084552
1980	5/18/2019	16:31:01	19.90	2.08419
1981	5/18/2019	16:32:01	19.90	2.083828
1982	5/18/2019	16:33:01	20.00	2.083467
1983	5/18/2019	16:34:01	20.10	2.082381
1984	5/18/2019	16:35:01	20.10	2.083105
1985	5/18/2019	16:36:01	19.90	2.083828
1986	5/18/2019	16:37:01	19.80	2.082743
1987	5/18/2019	16:38:01	19.70	2.083105
1988	5/18/2019	16:39:01	19.70	2.082381
1989	5/18/2019	16:40:01	19.70	2.082381
1990	5/18/2019	16:41:01	19.70	2.082381
1991	5/18/2019	16:42:01	19.80	2.08202
1992	5/18/2019	16:43:01	19.90	2.082381
1993	5/18/2019	16:44:01	19.90	2.082381
1994	5/18/2019	16:45:01	20.00	2.08202
1995	5/18/2019	16:46:01	20.10	2.081658
1996	5/18/2019	16:47:01	20.10	2.081658
1997	5/18/2019	16:48:01	20.00	2.081658
1998	5/18/2019	16:49:01	19.80	2.081658
1999	5/18/2019	16:50:01	19.70	2.081658
2000	5/18/2019	16:51:01	19.60	2.081658
2001	5/18/2019	16:52:01	19.70	2.081658
2002	5/18/2019	16:53:01	19.70	2.081658
2003	5/18/2019	16:54:01	19.80	2.081658
2004	5/18/2019	16:55:01	19.80	2.081658
2005	5/18/2019	16:56:01	19.90	2.081658
2006	5/18/2019	16:57:01	20.00	2.081658
2007	5/18/2019	16:58:01	20.00	2.081296
2008	5/18/2019	16:59:01	20.10	2.081296
2009	5/18/2019	17:00:01	20.00	2.080211
2010	5/18/2019	17:01:01	19.90	2.081658
2011	5/18/2019	17:02:01	19.70	2.080934
2012	5/18/2019	17:03:01	19.60	2.080573
2013	5/18/2019	17:04:01	19.60	2.080211
2014	5/18/2019	17:05:01	19.70	2.080211
2015	5/18/2019	17:06:01	19.70	2.079849
2016	5/18/2019	17:07:01	19.80	2.079849
2017	5/18/2019	17:08:01	19.90	2.080211
2018	5/18/2019	17:09:01	19.90	2.080211
2019	5/18/2019	17:10:01	20.00	2.078764
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2022	5/18/2019	17:13:01	20.00	2.078764
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2024	5/18/2019	17:15:01	19.70	2.079488
2025	5/18/2019	17:16:01	19.60	2.078764
2026	5/18/2019	17:17:01	19.60	2.079488
2027	5/18/2019	17:18:01	19.70	2.078764
2028	5/18/2019	17:19:01	19.70	2.079126
2029	5/18/2019	17:20:01	19.80	2.078764
2030	5/18/2019	17:21:01	19.90	2.078764
2031	5/18/2019	17:22:01	19.90	2.078764
2032	5/18/2019	17:23:01	20.00	2.078764
2033	5/18/2019	17:24:01	20.10	2.078402
2034	5/18/2019	17:25:01	20.10	2.078402
2035	5/18/2019	17:26:01	20.00	2.078764
2036	5/18/2019	17:27:01	19.80	2.078764
2037	5/18/2019	17:28:01	19.70	2.078764
2038	5/18/2019	17:29:01	19.70	2.078764
2039	5/18/2019	17:30:01	19.70	2.078402
2040	5/18/2019	17:31:01	19.70	2.078041
2041	5/18/2019	17:32:01	19.80	2.078402
2042	5/18/2019	17:33:01	19.80	2.077679
2043	5/18/2019	17:34:01	19.90	2.077317
2044	5/18/2019	17:35:01	20.00	2.077317
2045	5/18/2019	17:36:01	20.00	2.077679
2046	5/18/2019	17:37:01	20.10	2.077679
2047	5/18/2019	17:38:01	20.00	2.077317
2048	5/18/2019	17:39:01	19.90	2.077679
2049	5/18/2019	17:40:01	19.70	2.076594
2050	5/18/2019	17:41:01	19.60	2.076956
2051	5/18/2019	17:42:01	19.60	2.077317
2052	5/18/2019	17:43:01	19.70	2.077317
2053	5/18/2019	17:44:01	19.70	2.076594
2054	5/18/2019	17:45:01	19.80	2.075871
2055	5/18/2019	17:46:01	19.90	2.076232
2056	5/18/2019	17:47:01	19.90	2.076232
2057	5/18/2019	17:48:01	20.00	2.076232
2058	5/18/2019	17:49:01	20.00	2.075871
2059	5/18/2019	17:50:01	20.10	2.075871
2060	5/18/2019	17:51:01	20.00	2.075871
2061	5/18/2019	17:52:01	19.90	2.075871
2062	5/18/2019	17:53:01	19.70	2.075871
2063	5/18/2019	17:54:01	19.70	2.075871
2064	5/18/2019	17:55:01	19.60	2.075871
2065	5/18/2019	17:56:01	19.70	2.075871
2066	5/18/2019	17:57:01	19.70	2.075509
2067	5/18/2019	17:58:01	19.80	2.075147

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2069	5/18/2019	18:00:01	19.90	2.075871
2070	5/18/2019	18:01:01	20.00	2.075871
2071	5/18/2019	18:02:01	20.10	2.075871
2072	5/18/2019	18:03:01	20.10	2.075509
2073	5/18/2019	18:04:01	20.00	2.074785
2074	5/18/2019	18:05:01	19.80	2.074785
2075	5/18/2019	18:06:01	19.70	2.075871
2076	5/18/2019	18:07:01	19.70	2.075147
2077	5/18/2019	18:08:01	19.70	2.074785
2078	5/18/2019	18:09:01	19.70	2.074424
2079	5/18/2019	18:10:01	19.70	2.074062
2080	5/18/2019	18:11:01	19.80	2.074062
2081	5/18/2019	18:12:01	19.90	2.074062
2082	5/18/2019	18:13:01	19.90	2.073339
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2084	5/18/2019	18:15:01	20.10	2.074424
2085	5/18/2019	18:16:01	20.10	2.0737
2086	5/18/2019	18:17:01	20.00	2.073339
2087	5/18/2019	18:18:01	19.80	2.0737
2088	5/18/2019	18:19:01	19.70	2.073339
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2093	5/18/2019	18:24:01	19.80	2.072977
2094	5/18/2019	18:25:01	19.90	2.072977
2095	5/18/2019	18:26:01	19.90	2.072977
2096	5/18/2019	18:27:01	20.00	2.072977
2097	5/18/2019	18:28:01	20.00	2.072977
2098	5/18/2019	18:29:01	20.10	2.072977
2099	5/18/2019	18:30:01	20.00	2.072615
2100	5/18/2019	18:31:01	19.90	2.072977
2101	5/18/2019	18:32:01	19.70	2.072977
2102	5/18/2019	18:33:01	19.70	2.072615
2103	5/18/2019	18:34:01	19.60	2.072253
2104	5/18/2019	18:35:01	19.70	2.072615
2105	5/18/2019	18:36:01	19.70	2.072615
2106	5/18/2019	18:37:01	19.80	2.072615
2107	5/18/2019	18:38:01	19.80	2.072615
2108	5/18/2019	18:39:01	19.90	2.072615
2109	5/18/2019	18:40:01	19.90	2.070807
2110	5/18/2019	18:41:01	20.00	2.071892
2111	5/18/2019	18:42:01	20.10	2.071892
2112	5/18/2019	18:43:01	20.00	2.07153
2113	5/18/2019	18:44:01	19.90	2.071168
2114	5/18/2019	18:45:01	19.80	2.07153

2115	5/18/2019	18:46:01	19.70	2.07153
2116	5/18/2019	18:47:01	19.60	2.070807
2117	5/18/2019	18:48:01	19.60	2.070445
2118	5/18/2019	18:49:01	19.70	2.070445
2119	5/18/2019	18:50:01	19.80	2.070807
2120	5/18/2019	18:51:01	19.80	2.070445
2121	5/18/2019	18:52:01	19.90	2.070083
2122	5/18/2019	18:53:01	19.90	2.070445
2123	5/18/2019	18:54:01	20.00	2.070083
2124	5/18/2019	18:55:01	20.10	2.070083
2125	5/18/2019	18:56:01	20.10	2.070083
2126	5/18/2019	18:57:01	20.00	2.070445
2127	5/18/2019	18:58:01	19.80	2.070083
2128	5/18/2019	18:59:01	19.70	2.070083
2129	5/18/2019	19:00:01	19.70	2.070083
2130	5/18/2019	19:01:01	19.70	2.069721
2131	5/18/2019	19:02:01	19.70	2.070083
2132	5/18/2019	19:03:01	19.70	2.069721
2133	5/18/2019	19:04:01	19.80	2.069721
2134	5/18/2019	19:05:01	19.90	2.06936
2135	5/18/2019	19:06:01	19.90	2.068998
2136	5/18/2019	19:07:01	20.00	2.06936
2137	5/18/2019	19:08:01	20.00	2.069721
2138	5/18/2019	19:09:01	20.10	2.069721
2139	5/18/2019	19:10:01	20.00	2.06936
2140	5/18/2019	19:11:01	19.80	2.068998
2141	5/18/2019	19:12:01	19.70	2.068636
2142	5/18/2019	19:13:01	19.60	2.068636
2143	5/18/2019	19:14:01	19.60	2.068998
2144	5/18/2019	19:15:01	19.70	2.068636
2145	5/18/2019	19:16:01	19.70	2.067913
2146	5/18/2019	19:17:01	19.80	2.067551
2147	5/18/2019	19:18:01	19.80	2.067913
2148	5/18/2019	19:19:01	19.90	2.068274
2149	5/18/2019	19:20:01	19.90	2.068274
2150	5/18/2019	19:21:01	20.00	2.067913
2151	5/18/2019	19:22:01	20.10	2.067551
2152	5/18/2019	19:23:01	20.10	2.067189
2153	5/18/2019	19:24:01	19.90	2.067189
2154	5/18/2019	19:25:01	19.80	2.067189
2155	5/18/2019	19:26:01	19.70	2.067189
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2159	5/18/2019	19:30:01	19.70	2.067189
2160	5/18/2019	19:31:01	19.80	2.067189
2161	5/18/2019	19:32:01	19.80	2.067189

2162	5/18/2019	19:33:01	19.90	2.066828
2163	5/18/2019	19:34:01	19.90	2.067189
2164	5/18/2019	19:35:01	20.00	2.066466
2165	5/18/2019	19:36:01	20.10	2.067189
2166	5/18/2019	19:37:01	20.10	2.066828
2167	5/18/2019	19:38:01	19.90	2.067189
2168	5/18/2019	19:39:01	19.80	2.067189
2169	5/18/2019	19:40:01	19.70	2.066466
2170	5/18/2019	19:41:01	19.60	2.066104
2171	5/18/2019	19:42:01	19.60	2.065742
2172	5/18/2019	19:43:01	19.70	2.066466
2173	5/18/2019	19:44:01	19.70	2.066104
2174	5/18/2019	19:45:01	19.80	2.065742
2175	5/18/2019	19:46:01	19.80	2.065742
2176	5/18/2019	19:47:01	19.90	2.066104
2177	5/18/2019	19:48:01	19.90	2.065381
2178	5/18/2019	19:49:01	20.00	2.065742
2179	5/18/2019	19:50:01	20.00	2.065019
2180	5/18/2019	19:51:01	20.10	2.064657
2181	5/18/2019	19:52:01	20.00	2.065019
2182	5/18/2019	19:53:01	19.80	2.065019
2183	5/18/2019	19:54:01	19.70	2.065019
2184	5/18/2019	19:55:01	19.60	2.065019
2185	5/18/2019	19:56:01	19.60	2.064657
2186	5/18/2019	19:57:01	19.60	2.064296
2187	5/18/2019	19:58:01	19.70	2.064296
2188	5/18/2019	19:59:01	19.80	2.064657
2189	5/18/2019	20:00:01	19.80	2.064296
2190	5/18/2019	20:01:01	19.90	2.064296
2191	5/18/2019	20:02:01	19.90	2.064296
2192	5/18/2019	20:03:01	20.00	2.064296
2193	5/18/2019	20:04:01	20.00	2.064296
2194	5/18/2019	20:05:01	20.10	2.063934
2195	5/18/2019	20:06:01	20.00	2.063934
2196	5/18/2019	20:07:01	19.90	2.064296
2197	5/18/2019	20:08:01	19.70	2.063934
2198	5/18/2019	20:09:01	19.70	2.063572
2199	5/18/2019	20:10:01	19.60	2.063934
2200	5/18/2019	20:11:01	19.60	2.06321
2201	5/18/2019	20:12:01	19.70	2.064296
2202	5/18/2019	20:13:01	19.70	2.06321
2203	5/18/2019	20:14:01	19.80	2.063572
2204	5/18/2019	20:15:01	19.90	2.06321
2205	5/18/2019	20:16:01	19.90	2.062849
2206	5/18/2019	20:17:01	19.90	2.062125
2207	5/18/2019	20:18:01	20.00	2.062125
2208	5/18/2019	20:19:01	20.10	2.062487

2209	5/18/2019	20:20:01	20.10	2.061764
2210	5/18/2019	20:21:01	20.00	2.06321
2211	5/18/2019	20:22:01	19.80	2.062849
2212	5/18/2019	20:23:01	19.70	2.062125
2213	5/18/2019	20:24:01	19.60	2.062487
2214	5/18/2019	20:25:01	19.60	2.062487
2215	5/18/2019	20:26:01	19.60	2.062125
2216	5/18/2019	20:27:01	19.70	2.061764
2217	5/18/2019	20:28:01	19.80	2.061402
2218	5/18/2019	20:29:01	19.80	2.061764
2219	5/18/2019	20:30:01	19.90	2.061764
2220	5/18/2019	20:31:01	19.90	2.061402
2221	5/18/2019	20:32:01	20.00	2.061402
2222	5/18/2019	20:33:01	20.00	2.061402
2223	5/18/2019	20:34:01	20.10	2.061402
2224	5/18/2019	20:35:01	20.00	2.061764
2225	5/18/2019	20:36:01	19.90	2.061402
2226	5/18/2019	20:37:01	19.80	2.061402
2227	5/18/2019	20:38:01	19.70	2.061402
2228	5/18/2019	20:39:01	19.60	2.06104
2229	5/18/2019	20:40:01	19.60	2.06104
2230	5/18/2019	20:41:01	19.60	2.061402
2231	5/18/2019	20:42:01	19.70	2.061402
2232	5/18/2019	20:43:01	19.70	2.06104
2233	5/18/2019	20:44:01	19.80	2.060678
2234	5/18/2019	20:45:01	19.90	2.06104
2235	5/18/2019	20:46:01	19.90	2.060678
2236	5/18/2019	20:47:01	19.90	2.060678
2237	5/18/2019	20:48:01	20.00	2.06104
2238	5/18/2019	20:49:01	20.00	2.060678
2239	5/18/2019	20:50:01	20.10	2.060317
2240	5/18/2019	20:51:01	20.00	2.060317
2241	5/18/2019	20:52:01	19.80	2.059593
2242	5/18/2019	20:53:01	19.70	2.06104
2243	5/18/2019	20:54:01	19.60	2.060317
2244	5/18/2019	20:55:01	19.60	2.059955
2245	5/18/2019	20:56:01	19.60	2.059232
2246	5/18/2019	20:57:01	19.70	2.05887
2247	5/18/2019	20:58:01	19.70	2.05887
2248	5/18/2019	20:59:01	19.80	2.05887
2249	5/18/2019	21:00:01	19.80	2.058508
2250	5/18/2019	21:01:01	19.90	2.05887
2251	5/18/2019	21:02:01	19.90	2.059232
2252	5/18/2019	21:03:01	20.00	2.059232
2253	5/18/2019	21:04:01	20.00	2.058508
2254	5/18/2019	21:05:01	20.10	2.058508
2255	5/18/2019	21:06:01	20.00	2.05887

2256	5/18/2019	21:07:01	19.90	2.058508
2257	5/18/2019	21:08:01	19.70	2.058508
2258	5/18/2019	21:09:01	19.60	2.058508
2259	5/18/2019	21:10:01	19.60	2.058508
2260	5/18/2019	21:11:01	19.60	2.05887
2261	5/18/2019	21:12:01	19.70	2.058508
2262	5/18/2019	21:13:01	19.70	2.058508
2263	5/18/2019	21:14:01	19.80	2.058508
2264	5/18/2019	21:15:01	19.80	2.057785
2265	5/18/2019	21:16:01	19.90	2.057785
2266	5/18/2019	21:17:01	19.90	2.058146
2267	5/18/2019	21:18:01	19.90	2.057785
2268	5/18/2019	21:19:01	20.00	2.058146
2269	5/18/2019	21:20:01	20.00	2.057785
2270	5/18/2019	21:21:01	20.10	2.058146
2271	5/18/2019	21:22:01	20.00	2.057061
2272	5/18/2019	21:23:01	19.90	2.057061
2273	5/18/2019	21:24:01	19.70	2.058146
2274	5/18/2019	21:25:01	19.60	2.057061
2275	5/18/2019	21:26:01	19.60	2.057061
2276	5/18/2019	21:27:01	19.60	2.057061
2277	5/18/2019	21:28:01	19.60	2.055976
2278	5/18/2019	21:29:01	19.70	2.0567
2279	5/18/2019	21:30:01	19.70	2.0567
2280	5/18/2019	21:31:01	19.80	2.056338
2281	5/18/2019	21:32:01	19.80	2.055976
2282	5/18/2019	21:33:01	19.90	2.055976
2283	5/18/2019	21:34:01	19.90	2.055976
2284	5/18/2019	21:35:01	20.00	2.055976
2285	5/18/2019	21:36:01	20.00	2.056338
2286	5/18/2019	21:37:01	20.00	2.055976
2287	5/18/2019	21:38:01	20.00	2.055614
2288	5/18/2019	21:39:01	19.90	2.055614
2289	5/18/2019	21:40:01	19.80	2.055614
2290	5/18/2019	21:41:01	19.70	2.055614
2291	5/18/2019	21:42:01	19.60	2.055614
2292	5/18/2019	21:43:01	19.60	2.055614
2293	5/18/2019	21:44:01	19.60	2.055614
2294	5/18/2019	21:45:01	19.70	2.055614
2295	5/18/2019	21:46:01	19.70	2.055614
2296	5/18/2019	21:47:01	19.80	2.054891
2297	5/18/2019	21:48:01	19.80	2.055253
2298	5/18/2019	21:49:01	19.90	2.054891
2299	5/18/2019	21:50:01	19.90	2.055614
2300	5/18/2019	21:51:01	19.90	2.054529
2301	5/18/2019	21:52:01	20.00	2.054891
2302	5/18/2019	21:53:01	20.00	2.055253

2303	5/18/2019	21:54:01	20.10	2.055253
2304	5/18/2019	21:55:01	20.00	2.054891
2305	5/18/2019	21:56:01	19.90	2.054529
2306	5/18/2019	21:57:01	19.70	2.054891
2307	5/18/2019	21:58:01	19.60	2.054168
2308	5/18/2019	21:59:01	19.60	2.053806
2309	5/18/2019	22:00:01	19.60	2.054529
2310	5/18/2019	22:01:01	19.60	2.055253
2311	5/18/2019	22:02:01	19.70	2.053444
2312	5/18/2019	22:03:01	19.70	2.053806
2313	5/18/2019	22:04:01	19.80	2.053082
2314	5/18/2019	22:05:01	19.80	2.053444
2315	5/18/2019	22:06:01	19.90	2.053806
2316	5/18/2019	22:07:01	19.90	2.053082
2317	5/18/2019	22:08:01	19.90	2.052721
2318	5/18/2019	22:09:01	20.00	2.053444
2319	5/18/2019	22:10:01	20.00	2.052721
2320	5/18/2019	22:11:01	20.00	2.052721
2321	5/18/2019	22:12:01	20.10	2.052721
2322	5/18/2019	22:13:01	20.00	2.052721
2323	5/18/2019	22:14:01	19.80	2.052721
2324	5/18/2019	22:15:01	19.70	2.052721
2325	5/18/2019	22:16:01	19.60	2.053082
2326	5/18/2019	22:17:01	19.60	2.052721
2327	5/18/2019	22:18:01	19.60	2.052721
2328	5/18/2019	22:19:01	19.60	2.052721
2329	5/18/2019	22:20:01	19.70	2.052721
2330	5/18/2019	22:21:01	19.70	2.052721
2331	5/18/2019	22:22:01	19.80	2.052721
2332	5/18/2019	22:23:01	19.80	2.052721
2333	5/18/2019	22:24:01	19.90	2.052721
2334	5/18/2019	22:25:01	19.90	2.052721
2335	5/18/2019	22:26:01	19.90	2.051997
2336	5/18/2019	22:27:01	20.00	2.052359
2337	5/18/2019	22:28:01	20.00	2.052721
2338	5/18/2019	22:29:01	20.00	2.051636
2339	5/18/2019	22:30:01	20.10	2.051997
2340	5/18/2019	22:31:01	20.00	2.051636
2341	5/18/2019	22:32:01	19.90	2.051636
2342	5/18/2019	22:33:01	19.70	2.051636
2343	5/18/2019	22:34:01	19.60	2.050912
2344	5/18/2019	22:35:01	19.60	2.050912
2345	5/18/2019	22:36:01	19.60	2.051274
2346	5/18/2019	22:37:01	19.60	2.050189
2347	5/18/2019	22:38:01	19.60	2.05055
2348	5/18/2019	22:39:01	19.70	2.050912
2349	5/18/2019	22:40:01	19.70	2.050189

2350	5/18/2019	22:41:01	19.80	2.049827
2351	5/18/2019	22:42:01	19.80	2.05055
2352	5/18/2019	22:43:01	19.90	2.050189
2353	5/18/2019	22:44:01	19.90	2.05055
2354	5/18/2019	22:45:01	19.90	2.049827
2355	5/18/2019	22:46:01	20.00	2.049827
2356	5/18/2019	22:47:01	20.00	2.049827
2357	5/18/2019	22:48:01	20.00	2.049827
2358	5/18/2019	22:49:01	20.00	2.049827
2359	5/18/2019	22:50:01	20.00	2.049827
2360	5/18/2019	22:51:01	19.80	2.049827
2361	5/18/2019	22:52:01	19.70	2.049827
2362	5/18/2019	22:53:01	19.60	2.049827
2363	5/18/2019	22:54:01	19.60	2.049827
2364	5/18/2019	22:55:01	19.60	2.049465
2365	5/18/2019	22:56:01	19.60	2.049827
2366	5/18/2019	22:57:01	19.70	2.049465
2367	5/18/2019	22:58:01	19.70	2.049827
2368	5/18/2019	22:59:01	19.70	2.049465
2369	5/18/2019	23:00:01	19.80	2.049827
2370	5/18/2019	23:01:01	19.80	2.048742
2371	5/18/2019	23:02:01	19.90	2.049103
2372	5/18/2019	23:03:01	19.90	2.049465
2373	5/18/2019	23:04:01	19.90	2.048742
2374	5/18/2019	23:05:01	20.00	2.049103
2375	5/18/2019	23:06:01	20.00	2.048742
2376	5/18/2019	23:07:01	20.00	2.048742
2377	5/18/2019	23:08:01	20.00	2.048742
2378	5/18/2019	23:09:01	20.00	2.049103
2379	5/18/2019	23:10:01	20.00	2.04838
2380	5/18/2019	23:11:01	19.80	2.048018
2381	5/18/2019	23:12:01	19.70	2.048018
2382	5/18/2019	23:13:01	19.60	2.047657
2383	5/18/2019	23:14:01	19.60	2.047295
2384	5/18/2019	23:15:01	19.60	2.047657
2385	5/18/2019	23:16:01	19.60	2.047295
2386	5/18/2019	23:17:01	19.70	2.046933
2387	5/18/2019	23:18:01	19.70	2.047295
2388	5/18/2019	23:19:01	19.70	2.047295
2389	5/18/2019	23:20:01	19.80	2.047295
2390	5/18/2019	23:21:01	19.80	2.046933
2391	5/18/2019	23:22:01	19.80	2.046933
2392	5/18/2019	23:23:01	19.90	2.046933
2393	5/18/2019	23:24:01	19.90	2.046933
2394	5/18/2019	23:25:01	19.90	2.046933
2395	5/18/2019	23:26:01	19.90	2.046933
2396	5/18/2019	23:27:01	20.00	2.046933

2397	5/18/2019	23:28:01	20.00	2.046933
2398	5/18/2019	23:29:01	20.00	2.046933
2399	5/18/2019	23:30:01	20.00	2.046933
2400	5/18/2019	23:31:01	20.00	2.046933
2401	5/18/2019	23:32:01	20.00	2.046572
2402	5/18/2019	23:33:01	19.90	2.046933
2403	5/18/2019	23:34:01	19.80	2.046933
2404	5/18/2019	23:35:01	19.70	2.046933
2405	5/18/2019	23:36:01	19.60	2.046572
2406	5/18/2019	23:37:01	19.60	2.046933
2407	5/18/2019	23:38:01	19.60	2.04621
2408	5/18/2019	23:39:01	19.60	2.045848
2409	5/18/2019	23:40:01	19.60	2.046572
2410	5/18/2019	23:41:01	19.70	2.046572
2411	5/18/2019	23:42:01	19.70	2.04621
2412	5/18/2019	23:43:01	19.70	2.045848
2413	5/18/2019	23:44:01	19.80	2.045848
2414	5/18/2019	23:45:01	19.80	2.045125
2415	5/18/2019	23:46:01	19.80	2.045487
2416	5/18/2019	23:47:01	19.90	2.045125
2417	5/18/2019	23:48:01	19.90	2.045487
2418	5/18/2019	23:49:01	19.90	2.045487
2419	5/18/2019	23:50:01	19.90	2.044763
2420	5/18/2019	23:51:01	19.90	2.044401
2421	5/18/2019	23:52:01	20.00	2.044401
2422	5/18/2019	23:53:01	20.00	2.044763
2423	5/18/2019	23:54:01	20.00	2.044763
2424	5/18/2019	23:55:01	20.00	2.04404
2425	5/18/2019	23:56:01	20.00	2.044763
2426	5/18/2019	23:57:01	20.00	2.044401
2427	5/18/2019	23:58:01	20.00	2.044763
2428	5/18/2019	23:59:01	19.80	2.044401
2429	5/19/2019	0:00:01	19.70	2.04404
2430	5/19/2019	0:01:01	19.60	2.04404
2431	5/19/2019	0:02:01	19.60	2.04404
2432	5/19/2019	0:03:01	19.60	2.04404
2433	5/19/2019	0:04:01	19.60	2.043678
2434	5/19/2019	0:05:01	19.60	2.04404
2435	5/19/2019	0:06:01	19.70	2.04404
2436	5/19/2019	0:07:01	19.70	2.04404
2437	5/19/2019	0:08:01	19.70	2.04404
2438	5/19/2019	0:09:01	19.80	2.04404
2439	5/19/2019	0:10:01	19.80	2.04404
2440	5/19/2019	0:11:01	19.80	2.04404
2441	5/19/2019	0:12:01	19.90	2.04404
2442	5/19/2019	0:13:01	19.90	2.043316
2443	5/19/2019	0:14:01	19.90	2.043678

2444	5/19/2019	0:15:01	19.90	2.043678
2445	5/19/2019	0:16:01	19.90	2.042954
2446	5/19/2019	0:17:01	19.90	2.042954
2447	5/19/2019	0:18:01	20.00	2.043678
2448	5/19/2019	0:19:01	20.00	2.042954
2449	5/19/2019	0:20:01	20.00	2.043316
2450	5/19/2019	0:21:01	20.00	2.043316
2451	5/19/2019	0:22:01	20.00	2.043316
2452	5/19/2019	0:23:01	20.00	2.041869
2453	5/19/2019	0:24:01	19.90	2.042231
2454	5/19/2019	0:25:01	19.80	2.042954
2455	5/19/2019	0:26:01	19.70	2.042231
2456	5/19/2019	0:27:01	19.60	2.042231
2457	5/19/2019	0:28:01	19.60	2.042231
2458	5/19/2019	0:29:01	19.60	2.041508
2459	5/19/2019	0:30:01	19.60	2.041146
2460	5/19/2019	0:31:01	19.60	2.041508
2461	5/19/2019	0:32:01	19.70	2.041508
2462	5/19/2019	0:33:01	19.70	2.041146
2463	5/19/2019	0:34:01	19.70	2.041146
2464	5/19/2019	0:35:01	19.80	2.041146
2465	5/19/2019	0:36:01	19.80	2.041146
2466	5/19/2019	0:37:01	19.80	2.041146
2467	5/19/2019	0:38:01	19.90	2.041146
2468	5/19/2019	0:39:01	19.90	2.041146
2469	5/19/2019	0:40:01	19.90	2.041146
2470	5/19/2019	0:41:01	19.90	2.041146
2471	5/19/2019	0:42:01	19.90	2.041146
2472	5/19/2019	0:43:01	19.90	2.041146
2473	5/19/2019	0:44:01	20.00	2.041508
2474	5/19/2019	0:45:01	20.00	2.040784
2475	5/19/2019	0:46:01	20.00	2.040784
2476	5/19/2019	0:47:01	20.00	2.041146
2477	5/19/2019	0:48:01	20.00	2.041146
2478	5/19/2019	0:49:01	20.00	2.040422
2479	5/19/2019	0:50:01	20.00	2.041146
2480	5/19/2019	0:51:01	19.90	2.040422
2481	5/19/2019	0:52:01	19.70	2.041146
2482	5/19/2019	0:53:01	19.60	2.041508
2483	5/19/2019	0:54:01	19.60	2.039699
2484	5/19/2019	0:55:01	19.60	2.040784
2485	5/19/2019	0:56:01	19.60	2.040061
2486	5/19/2019	0:57:01	19.60	2.040061
2487	5/19/2019	0:58:01	19.60	2.040784
2488	5/19/2019	0:59:01	19.70	2.040061
2489	5/19/2019	1:00:01	19.70	2.040061
2490	5/19/2019	1:01:01	19.70	2.040061

2491	5/19/2019	1:02:01	19.80	2.039699
2492	5/19/2019	1:03:01	19.80	2.039337
2493	5/19/2019	1:04:01	19.80	2.039699
2494	5/19/2019	1:05:01	19.80	2.039699
2495	5/19/2019	1:06:01	19.90	2.039699
2496	5/19/2019	1:07:01	19.90	2.039699
2497	5/19/2019	1:08:01	19.90	2.039337
2498	5/19/2019	1:09:01	19.90	2.039337
2499	5/19/2019	1:10:01	19.90	2.039337
2500	5/19/2019	1:11:01	19.90	2.038614
2501	5/19/2019	1:12:01	20.00	2.038614
2502	5/19/2019	1:13:01	20.00	2.038976
2503	5/19/2019	1:14:01	20.00	2.038614
2504	5/19/2019	1:15:01	20.00	2.038614
2505	5/19/2019	1:16:01	20.00	2.038614
2506	5/19/2019	1:17:01	20.00	2.038614
2507	5/19/2019	1:18:01	20.00	2.038614
2508	5/19/2019	1:19:01	20.00	2.038976
2509	5/19/2019	1:20:01	20.00	2.038614
2510	5/19/2019	1:21:01	19.90	2.038614
2511	5/19/2019	1:22:01	19.70	2.038614
2512	5/19/2019	1:23:01	19.60	2.037891
2513	5/19/2019	1:24:01	19.60	2.038614
2514	5/19/2019	1:25:01	19.60	2.038252
2515	5/19/2019	1:26:01	19.60	2.038614
2516	5/19/2019	1:27:01	19.60	2.037891
2517	5/19/2019	1:28:01	19.60	2.038252
2518	5/19/2019	1:29:01	19.60	2.037891
2519	5/19/2019	1:30:01	19.70	2.037891
2520	5/19/2019	1:31:01	19.70	2.038252
2521	5/19/2019	1:32:01	19.70	2.038252
2522	5/19/2019	1:33:01	19.80	2.038614
2523	5/19/2019	1:34:01	19.80	2.037891
2524	5/19/2019	1:35:01	19.80	2.037529
2525	5/19/2019	1:36:01	19.80	2.037167
2526	5/19/2019	1:37:01	19.90	2.037529
2527	5/19/2019	1:38:01	19.90	2.036805
2528	5/19/2019	1:39:01	19.90	2.036082
2529	5/19/2019	1:40:01	19.90	2.036444
2530	5/19/2019	1:41:01	19.90	2.036444
2531	5/19/2019	1:42:01	19.90	2.037167
2532	5/19/2019	1:43:01	19.90	2.036082
2533	5/19/2019	1:44:01	19.90	2.036082
2534	5/19/2019	1:45:01	19.90	2.036082
2535	5/19/2019	1:46:01	20.00	2.03572
2536	5/19/2019	1:47:01	20.00	2.036082
2537	5/19/2019	1:48:01	20.00	2.03572

2538	5/19/2019	1:49:01	20.00	2.036082
2539	5/19/2019	1:50:01	20.00	2.03572
2540	5/19/2019	1:51:01	20.00	2.03572
2541	5/19/2019	1:52:01	20.00	2.036082
2542	5/19/2019	1:53:01	20.00	2.03572
2543	5/19/2019	1:54:01	20.00	2.03572
2544	5/19/2019	1:55:01	20.00	2.03572
2545	5/19/2019	1:56:01	20.00	2.03572
2546	5/19/2019	1:57:01	19.80	2.036082
2547	5/19/2019	1:58:01	19.70	2.03572
2548	5/19/2019	1:59:01	19.60	2.035359
2549	5/19/2019	2:00:01	19.60	2.03572
2550	5/19/2019	2:01:01	19.60	2.035359
2551	5/19/2019	2:02:01	19.60	2.03572
2552	5/19/2019	2:03:01	19.60	2.03572
2553	5/19/2019	2:04:01	19.60	2.03572
2554	5/19/2019	2:05:01	19.60	2.035359
2555	5/19/2019	2:06:01	19.70	2.035359
2556	5/19/2019	2:07:01	19.70	2.034997
2557	5/19/2019	2:08:01	19.70	2.03572
2558	5/19/2019	2:09:01	19.70	2.03572
2559	5/19/2019	2:10:01	19.80	2.035359
2560	5/19/2019	2:11:01	19.80	2.034635
2561	5/19/2019	2:12:01	19.80	2.034635
2562	5/19/2019	2:13:01	19.80	2.034635
2563	5/19/2019	2:14:01	19.80	2.034635
2564	5/19/2019	2:15:01	19.90	2.034635
2565	5/19/2019	2:16:01	19.90	2.034635
2566	5/19/2019	2:17:01	19.90	2.03355
2567	5/19/2019	2:18:01	19.90	2.034997
2568	5/19/2019	2:19:01	19.90	2.034635
2569	5/19/2019	2:20:01	19.90	2.033912
2570	5/19/2019	2:21:01	19.90	2.03355
2571	5/19/2019	2:22:01	19.90	2.033912
2572	5/19/2019	2:23:01	19.90	2.033912
2573	5/19/2019	2:24:01	19.90	2.033188
2574	5/19/2019	2:25:01	19.90	2.033188
2575	5/19/2019	2:26:01	19.90	2.03355
2576	5/19/2019	2:27:01	20.00	2.03355
2577	5/19/2019	2:28:01	20.00	2.033188
2578	5/19/2019	2:29:01	20.00	2.032827
2579	5/19/2019	2:30:01	20.00	2.032827
2580	5/19/2019	2:31:01	20.00	2.032827
2581	5/19/2019	2:32:01	20.00	2.032827
2582	5/19/2019	2:33:01	20.00	2.033188
2583	5/19/2019	2:34:01	20.00	2.032827
2584	5/19/2019	2:35:01	20.00	2.032827

2585	5/19/2019	2:36:01	20.00	2.033188
2586	5/19/2019	2:37:01	20.00	2.032827
2587	5/19/2019	2:38:01	20.00	2.032827
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2590	5/19/2019	2:41:01	20.00	2.032827
2591	5/19/2019	2:42:01	19.90	2.032827
2592	5/19/2019	2:43:01	19.80	2.032827
2593	5/19/2019	2:44:01	19.60	2.032827
2594	5/19/2019	2:45:01	19.60	2.032827
2595	5/19/2019	2:46:01	19.50	2.032827
2596	5/19/2019	2:47:01	19.50	2.032827
2597	5/19/2019	2:48:01	19.60	2.032827
2598	5/19/2019	2:49:01	19.60	2.032827
2599	5/19/2019	2:50:01	19.60	2.032827
2600	5/19/2019	2:51:01	19.60	2.032827
2601	5/19/2019	2:52:01	19.60	2.032827
2602	5/19/2019	2:53:01	19.70	2.032827
2603	5/19/2019	2:54:01	19.70	2.032827
2604	5/19/2019	2:55:01	19.70	2.032827
2605	5/19/2019	2:56:01	19.70	2.032827
2606	5/19/2019	2:57:01	19.70	2.032827
2607	5/19/2019	2:58:01	19.80	2.032103
2608	5/19/2019	2:59:01	19.80	2.032827
2609	5/19/2019	3:00:01	19.80	2.032103
2610	5/19/2019	3:01:01	19.80	2.032465
2611	5/19/2019	3:02:01	19.80	2.032465
2612	5/19/2019	3:03:01	19.80	2.032465
2613	5/19/2019	3:04:01	19.80	2.032103
2614	5/19/2019	3:05:01	19.90	2.032827
2615	5/19/2019	3:06:01	19.90	2.032103
2616	5/19/2019	3:07:01	19.90	2.032827
2617	5/19/2019	3:08:01	19.90	2.032103
2618	5/19/2019	3:09:01	19.90	2.031741
2619	5/19/2019	3:10:01	19.90	2.030656
2620	5/19/2019	3:11:01	19.90	2.03138
2621	5/19/2019	3:12:01	19.90	2.03138
2622	5/19/2019	3:13:01	19.90	2.031741
2623	5/19/2019	3:14:01	19.90	2.029933
2624	5/19/2019	3:15:01	19.90	2.031741
2625	5/19/2019	3:16:01	19.90	2.030656
2626	5/19/2019	3:17:01	19.90	2.030656
2627	5/19/2019	3:18:01	19.90	2.030294
2628	5/19/2019	3:19:01	19.90	2.029933
2629	5/19/2019	3:20:01	19.90	2.030294
2630	5/19/2019	3:21:01	19.90	2.030294
2631	5/19/2019	3:22:01	19.90	2.030294

2632	5/19/2019	3:23:01	19.90	2.029933
2633	5/19/2019	3:24:01	19.90	2.029933
2634	5/19/2019	3:25:01	19.90	2.029933
2635	5/19/2019	3:26:01	19.90	2.029933
2636	5/19/2019	3:27:01	20.00	2.029933
2637	5/19/2019	3:28:01	20.00	2.029933
2638	5/19/2019	3:29:01	20.00	2.029933
2639	5/19/2019	3:30:01	20.00	2.029933
2640	5/19/2019	3:31:01	20.00	2.029933
2641	5/19/2019	3:32:01	20.00	2.029933
2642	5/19/2019	3:33:01	20.00	2.029933
2643	5/19/2019	3:34:01	20.00	2.029571
2644	5/19/2019	3:35:01	20.00	2.029933
2645	5/19/2019	3:36:01	20.00	2.029933
2646	5/19/2019	3:37:01	20.00	2.029933
2647	5/19/2019	3:38:01	20.00	2.028848
2648	5/19/2019	3:39:01	20.00	2.029571
2649	5/19/2019	3:40:01	20.00	2.029571
2650	5/19/2019	3:41:01	20.00	2.029571
2651	5/19/2019	3:42:01	20.00	2.029571
2652	5/19/2019	3:43:01	20.00	2.029209
2653	5/19/2019	3:44:01	20.00	2.029209
2654	5/19/2019	3:45:01	20.00	2.029571
2655	5/19/2019	3:46:01	20.00	2.028848
2656	5/19/2019	3:47:01	20.00	2.027763
2657	5/19/2019	3:48:01	20.00	2.028848
2658	5/19/2019	3:49:01	20.00	2.028848
2659	5/19/2019	3:50:01	20.00	2.029209
2660	5/19/2019	3:51:01	20.00	2.027401
2661	5/19/2019	3:52:01	20.00	2.027763
2662	5/19/2019	3:53:01	20.00	2.028848
2663	5/19/2019	3:54:01	20.00	2.027763
2664	5/19/2019	3:55:01	20.00	2.027039
2665	5/19/2019	3:56:01	20.00	2.027401
2666	5/19/2019	3:57:01	20.00	2.027039
2667	5/19/2019	3:58:01	20.00	2.027401
2668	5/19/2019	3:59:01	20.00	2.027763
2669	5/19/2019	4:00:01	20.00	2.027039
2670	5/19/2019	4:01:01	20.00	2.027401
2671	5/19/2019	4:02:01	20.00	2.027039
2672	5/19/2019	4:03:01	20.00	2.027039
2673	5/19/2019	4:04:01	20.00	2.027039
2674	5/19/2019	4:05:01	20.00	2.027039
2675	5/19/2019	4:06:01	20.00	2.027039
2676	5/19/2019	4:07:01	20.00	2.027039
2677	5/19/2019	4:08:01	20.00	2.027039
2678	5/19/2019	4:09:01	20.00	2.027039

2679	5/19/2019	4:10:01	20.00	2.027401
2680	5/19/2019	4:11:01	20.00	2.027039
2681	5/19/2019	4:12:01	20.00	2.027039
2682	5/19/2019	4:13:01	20.00	2.027039
2683	5/19/2019	4:14:01	20.00	2.026316
2684	5/19/2019	4:15:01	20.00	2.027039
2685	5/19/2019	4:16:01	20.00	2.027039
2686	5/19/2019	4:17:01	20.00	2.026316
2687	5/19/2019	4:18:01	20.00	2.027039
2688	5/19/2019	4:19:01	20.00	2.026678
2689	5/19/2019	4:20:01	20.00	2.026316
2690	5/19/2019	4:21:01	20.00	2.026678
2691	5/19/2019	4:22:01	20.00	2.026678
2692	5/19/2019	4:23:01	20.00	2.025592
2693	5/19/2019	4:24:01	20.00	2.026316
2694	5/19/2019	4:25:01	19.90	2.025592
2695	5/19/2019	4:26:01	19.90	2.025954
2696	5/19/2019	4:27:01	20.00	2.025954
2697	5/19/2019	4:28:01	19.90	2.025954
2698	5/19/2019	4:29:01	19.90	2.025954
2699	5/19/2019	4:30:01	19.90	2.025231
2700	5/19/2019	4:31:01	19.90	2.025954
2701	5/19/2019	4:32:01	19.90	2.024869
2702	5/19/2019	4:33:01	19.90	2.024869
2703	5/19/2019	4:34:01	19.90	2.025592
2704	5/19/2019	4:35:01	19.90	2.025592
2705	5/19/2019	4:36:01	19.90	2.024507
2706	5/19/2019	4:37:01	19.90	2.024146
2707	5/19/2019	4:38:01	19.90	2.025231
2708	5/19/2019	4:39:01	19.90	2.024146
2709	5/19/2019	4:40:01	19.90	2.024869
2710	5/19/2019	4:41:01	19.90	2.024507
2711	5/19/2019	4:42:01	19.90	2.024146
2712	5/19/2019	4:43:01	19.90	2.025231
2713	5/19/2019	4:44:01	19.90	2.024507
2714	5/19/2019	4:45:01	19.90	2.023784
2715	5/19/2019	4:46:01	19.90	2.024146
2716	5/19/2019	4:47:01	19.90	2.024146
2717	5/19/2019	4:48:01	19.90	2.024146
2718	5/19/2019	4:49:01	19.90	2.024146
2719	5/19/2019	4:50:01	19.90	2.023784
2720	5/19/2019	4:51:01	19.90	2.024146
2721	5/19/2019	4:52:01	19.90	2.024507
2722	5/19/2019	4:53:01	19.90	2.023784
2723	5/19/2019	4:54:01	19.90	2.024146
2724	5/19/2019	4:55:01	19.90	2.024146
2725	5/19/2019	4:56:01	19.90	2.024146

2726	5/19/2019	4:57:01	19.90	2.024146
2727	5/19/2019	4:58:01	19.90	2.023784
2728	5/19/2019	4:59:01	19.90	2.024146
2729	5/19/2019	5:00:01	19.90	2.024146
2730	5/19/2019	5:01:01	19.90	2.024146
2731	5/19/2019	5:02:01	19.90	2.023422
2732	5/19/2019	5:03:01	19.90	2.023422
2733	5/19/2019	5:04:01	19.90	2.02306
2734	5/19/2019	5:05:01	19.90	2.023422
2735	5/19/2019	5:06:01	19.90	2.024146
2736	5/19/2019	5:07:01	19.90	2.023784
2737	5/19/2019	5:08:01	19.90	2.022699
2738	5/19/2019	5:09:01	19.90	2.021975
2739	5/19/2019	5:10:01	19.90	2.022337
2740	5/19/2019	5:11:01	19.90	2.02306
2741	5/19/2019	5:12:01	19.90	2.02306
2742	5/19/2019	5:13:01	19.90	2.021613
2743	5/19/2019	5:14:01	19.90	2.02306
2744	5/19/2019	5:15:01	19.90	2.022337
2745	5/19/2019	5:16:01	19.90	2.021975
2746	5/19/2019	5:17:01	19.90	2.022337
2747	5/19/2019	5:18:01	19.90	2.022699
2748	5/19/2019	5:19:01	19.90	2.021975
2749	5/19/2019	5:20:01	19.90	2.021613
2750	5/19/2019	5:21:01	19.90	2.021975
2751	5/19/2019	5:22:01	19.90	2.021975
2752	5/19/2019	5:23:01	19.90	2.021252
2753	5/19/2019	5:24:01	19.90	2.021252
2754	5/19/2019	5:25:01	19.90	2.021975
2755	5/19/2019	5:26:01	19.90	2.021252
2756	5/19/2019	5:27:01	19.90	2.021613
2757	5/19/2019	5:28:01	19.90	2.021252
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2761	5/19/2019	5:32:01	19.90	2.021252
2762	5/19/2019	5:33:01	19.90	2.021252
2763	5/19/2019	5:34:01	19.90	2.021252
2764	5/19/2019	5:35:01	19.90	2.021252
2765	5/19/2019	5:36:01	19.90	2.021252
2766	5/19/2019	5:37:01	19.90	2.021252
2767	5/19/2019	5:38:01	19.90	2.021252
2768	5/19/2019	5:39:01	19.90	2.021252
2769	5/19/2019	5:40:01	19.90	2.020528
2770	5/19/2019	5:41:01	19.90	2.021252
2771	5/19/2019	5:42:01	19.90	2.020528
2772	5/19/2019	5:43:01	19.90	2.021252

2773	5/19/2019	5:44:01	19.90	2.020167
2774	5/19/2019	5:45:01	19.90	2.020528
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2776	5/19/2019	5:47:01	19.90	2.019805
2777	5/19/2019	5:48:01	19.90	2.020528
2778	5/19/2019	5:49:01	19.90	2.020528
2779	5/19/2019	5:50:01	19.90	2.019805
2780	5/19/2019	5:51:01	19.90	2.020167
2781	5/19/2019	5:52:01	19.80	2.019805
2782	5/19/2019	5:53:01	19.80	2.019805
2783	5/19/2019	5:54:01	19.80	2.020528
2784	5/19/2019	5:55:01	19.80	2.01872
2785	5/19/2019	5:56:01	19.80	2.019081
2786	5/19/2019	5:57:01	19.80	2.01872
2787	5/19/2019	5:58:01	19.80	2.020528
2788	5/19/2019	5:59:01	19.80	2.019081
2789	5/19/2019	6:00:01	19.80	2.018358
2790	5/19/2019	6:01:01	19.80	2.01872
2791	5/19/2019	6:02:01	19.80	2.018358
2792	5/19/2019	6:03:01	19.80	2.01872
2793	5/19/2019	6:04:01	19.80	2.01872
2794	5/19/2019	6:05:01	19.80	2.018358
2795	5/19/2019	6:06:01	19.80	2.018358
2796	5/19/2019	6:07:01	19.70	2.01872
2797	5/19/2019	6:08:01	19.70	2.018358
2798	5/19/2019	6:09:01	19.70	2.018358
2799	5/19/2019	6:10:01	19.70	2.018358
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2801	5/19/2019	6:12:01	19.70	2.018358
2802	5/19/2019	6:13:01	19.70	2.018358
2803	5/19/2019	6:14:01	19.70	2.018358
2804	5/19/2019	6:15:01	19.70	2.018358
2805	5/19/2019	6:16:01	19.70	2.017996
2806	5/19/2019	6:17:01	19.70	2.018358
2807	5/19/2019	6:18:01	19.60	2.018358
2808	5/19/2019	6:19:01	19.60	2.017635
2809	5/19/2019	6:20:01	19.60	2.018358
2810	5/19/2019	6:21:01	19.60	2.017996
2811	5/19/2019	6:22:01	19.60	2.018358
2812	5/19/2019	6:23:01	19.60	2.018358
2813	5/19/2019	6:24:01	19.60	2.017996
2814	5/19/2019	6:25:01	19.60	2.017273
2815	5/19/2019	6:26:01	19.60	2.017273
2816	5/19/2019	6:27:01	19.60	2.017996
2817	5/19/2019	6:28:01	19.60	2.017996
2818	5/19/2019	6:29:01	19.60	2.017635
2819	5/19/2019	6:30:01	19.60	2.017273

2820	5/19/2019	6:31:01	19.60	2.016911
2821	5/19/2019	6:32:01	19.60	2.017273
2822	5/19/2019	6:33:01	19.50	2.016911
2823	5/19/2019	6:34:01	19.50	2.016911
2824	5/19/2019	6:35:01	19.50	2.016911
2825	5/19/2019	6:36:01	19.50	2.01655
2826	5/19/2019	6:37:01	19.50	2.01655
2827	5/19/2019	6:38:01	19.50	2.016188
2828	5/19/2019	6:39:01	19.50	2.016188
2829	5/19/2019	6:40:01	19.50	2.01655
2830	5/19/2019	6:41:01	19.50	2.015826
2831	5/19/2019	6:42:01	19.50	2.01655
2832	5/19/2019	6:43:01	19.50	2.015826
2833	5/19/2019	6:44:01	19.50	2.015464
2834	5/19/2019	6:45:01	19.60	2.016188
2835	5/19/2019	6:46:01	19.50	2.01655
2836	5/19/2019	6:47:01	19.60	2.015464
2837	5/19/2019	6:48:01	19.60	2.015826
2838	5/19/2019	6:49:01	19.60	2.015464
2839	5/19/2019	6:50:01	19.60	2.015464
2840	5/19/2019	6:51:01	19.60	2.015464
2841	5/19/2019	6:52:01	19.60	2.015826
2842	5/19/2019	6:53:01	19.60	2.015464
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2845	5/19/2019	6:56:01	19.60	2.015464
2846	5/19/2019	6:57:01	19.60	2.015464
2847	5/19/2019	6:58:01	19.60	2.015464
2848	5/19/2019	6:59:01	19.60	2.015464
2849	5/19/2019	7:00:01	19.60	2.015103
2850	5/19/2019	7:01:01	19.60	2.014741
2851	5/19/2019	7:02:01	19.60	2.015464
2852	5/19/2019	7:03:01	19.60	2.015464
2853	5/19/2019	7:04:01	19.50	2.015103
2854	5/19/2019	7:05:01	19.60	2.014741
2855	5/19/2019	7:06:01	19.60	2.015103
2856	5/19/2019	7:07:01	19.60	2.014741
2857	5/19/2019	7:08:01	19.60	2.015464
2858	5/19/2019	7:09:01	19.60	2.014379
2859	5/19/2019	7:10:01	19.60	2.014379
2860	5/19/2019	7:11:01	19.60	2.014379
2861	5/19/2019	7:12:01	19.60	2.015103
2862	5/19/2019	7:13:01	19.60	2.013656
2863	5/19/2019	7:14:01	19.60	2.014379
2864	5/19/2019	7:15:01	19.60	2.014018
2865	5/19/2019	7:16:01	19.60	2.014018
2866	5/19/2019	7:17:01	19.60	2.014018

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2868	5/19/2019	7:19:01	19.60	2.014018
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2872	5/19/2019	7:23:01	19.60	2.012932
2873	5/19/2019	7:24:01	19.60	2.012571
2874	5/19/2019	7:25:01	19.60	2.013294
2875	5/19/2019	7:26:01	19.60	2.013294
2876	5/19/2019	7:27:01	19.60	2.012571
2877	5/19/2019	7:28:01	19.60	2.012571
2878	5/19/2019	7:29:01	19.60	2.012571
2879	5/19/2019	7:30:01	19.60	2.012571
2880	5/19/2019	7:31:01	19.60	2.012571
2881	5/19/2019	7:32:01	19.60	2.012571
2882	5/19/2019	7:33:01	19.60	2.012571
2883	5/19/2019	7:34:01	19.60	2.012571
2884	5/19/2019	7:35:01	19.70	2.012571
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2887	5/19/2019	7:38:01	19.70	2.012571
2888	5/19/2019	7:39:01	19.70	2.012571
2889	5/19/2019	7:40:01	19.70	2.012571
2890	5/19/2019	7:41:01	19.70	2.012571
2891	5/19/2019	7:42:01	19.70	2.012571
2892	5/19/2019	7:43:01	19.70	2.012571
2893	5/19/2019	7:44:01	19.70	2.012571
2894	5/19/2019	7:45:01	19.70	2.012571
2895	5/19/2019	7:46:01	19.70	2.012209
2896	5/19/2019	7:47:01	19.70	2.011847
2897	5/19/2019	7:48:01	19.70	2.012571
2898	5/19/2019	7:49:01	19.70	2.012209
2899	5/19/2019	7:50:01	19.70	2.011847
2900	5/19/2019	7:51:01	19.70	2.012571
2901	5/19/2019	7:52:01	19.70	2.012571
2902	5/19/2019	7:53:01	19.70	2.011847
2903	5/19/2019	7:54:01	19.70	2.012209
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2905	5/19/2019	7:56:01	19.70	2.010762
2906	5/19/2019	7:57:01	19.70	2.0104
2907	5/19/2019	7:58:01	19.70	2.011486
2908	5/19/2019	7:59:01	19.70	2.012209
2909	5/19/2019	8:00:01	19.70	2.011124
2910	5/19/2019	8:01:01	19.70	2.011486
2911	5/19/2019	8:02:01	19.80	2.010762
2912	5/19/2019	8:03:01	19.70	2.010762
2913	5/19/2019	8:04:01	19.80	2.0104

2914	5/19/2019	8:05:01	19.80	2.011486
2915	5/19/2019	8:06:01	19.80	2.0104
2916	5/19/2019	8:07:01	19.80	2.0104
2917	5/19/2019	8:08:01	19.80	2.011124
2918	5/19/2019	8:09:01	19.80	2.010039
2919	5/19/2019	8:10:01	19.80	2.010762
2920	5/19/2019	8:11:01	19.80	2.009677
2921	5/19/2019	8:12:01	19.80	2.010039
2922	5/19/2019	8:13:01	19.80	2.0104
2923	5/19/2019	8:14:01	19.80	2.009677
2924	5/19/2019	8:15:01	19.80	2.010039
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2927	5/19/2019	8:18:01	19.80	2.010039
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2934	5/19/2019	8:25:01	19.80	2.009677
2935	5/19/2019	8:26:01	19.80	2.009315
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2947	5/19/2019	8:38:01	19.90	2.009315
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3037	5/19/2019	10:08:01	19.90	2.003166
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3090	5/19/2019	11:01:01	19.80	1.999911
3091	5/19/2019	11:02:01	19.70	2.000272
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3177	5/19/2019	12:28:01	19.70	1.994485
3178	5/19/2019	12:29:01	19.60	1.995209
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3209	5/19/2019	13:00:01	19.80	1.992315
3210	5/19/2019	13:01:01	19.80	1.992315
3211	5/19/2019	13:02:01	19.80	1.992315
3212	5/19/2019	13:03:01	19.90	1.992315
3213	5/19/2019	13:04:01	19.90	1.992315
3214	5/19/2019	13:05:01	19.90	1.992315
3215	5/19/2019	13:06:01	19.90	1.992315
3216	5/19/2019	13:07:01	20.00	1.992315
3217	5/19/2019	13:08:01	20.00	1.992315
3218	5/19/2019	13:09:01	20.00	1.992315
3219	5/19/2019	13:10:01	20.00	1.991953
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3221	5/19/2019	13:12:01	20.00	1.991953
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3223	5/19/2019	13:14:01	19.70	1.991953
3224	5/19/2019	13:15:01	19.60	1.992315
3225	5/19/2019	13:16:01	19.60	1.99123
3226	5/19/2019	13:17:01	19.60	1.992315
3227	5/19/2019	13:18:01	19.60	1.991591
3228	5/19/2019	13:19:01	19.60	1.992315
3229	5/19/2019	13:20:01	19.70	1.992315
3230	5/19/2019	13:21:01	19.70	1.991591
3231	5/19/2019	13:22:01	19.80	1.991953
3232	5/19/2019	13:23:01	19.80	1.991953
3233	5/19/2019	13:24:01	19.80	1.99123
3234	5/19/2019	13:25:01	19.90	1.990868
3235	5/19/2019	13:26:01	19.90	1.990506
3236	5/19/2019	13:27:01	19.90	1.991953
3237	5/19/2019	13:28:01	19.90	1.991591
3238	5/19/2019	13:29:01	20.00	1.990868
3239	5/19/2019	13:30:01	20.00	1.99123
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3241	5/19/2019	13:32:01	20.00	1.990506
3242	5/19/2019	13:33:01	20.00	1.990868

3243	5/19/2019	13:34:01	19.90	1.990144
3244	5/19/2019	13:35:01	19.80	1.990868
3245	5/19/2019	13:36:01	19.70	1.990144
3246	5/19/2019	13:37:01	19.60	1.989783
3247	5/19/2019	13:38:01	19.60	1.989421
3248	5/19/2019	13:39:01	19.60	1.990144
3249	5/19/2019	13:40:01	19.60	1.989421
3250	5/19/2019	13:41:01	19.70	1.989421
3251	5/19/2019	13:42:01	19.70	1.989421
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3255	5/19/2019	13:46:01	19.90	1.989783
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3257	5/19/2019	13:48:01	19.90	1.989421
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3259	5/19/2019	13:50:01	20.00	1.989421
3260	5/19/2019	13:51:01	20.00	1.989421
3261	5/19/2019	13:52:01	20.00	1.989421
3262	5/19/2019	13:53:01	20.00	1.989783
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3266	5/19/2019	13:57:01	19.70	1.989421
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3268	5/19/2019	13:59:01	19.60	1.989421
3269	5/19/2019	14:00:01	19.60	1.989421
3270	5/19/2019	14:01:01	19.60	1.989421
3271	5/19/2019	14:02:01	19.70	1.989059
3272	5/19/2019	14:03:01	19.70	1.989783
3273	5/19/2019	14:04:01	19.70	1.989059
3274	5/19/2019	14:05:01	19.80	1.989059
3275	5/19/2019	14:06:01	19.80	1.989059
3276	5/19/2019	14:07:01	19.90	1.989059
3277	5/19/2019	14:08:01	19.90	1.989059
3278	5/19/2019	14:09:01	19.90	1.988698
3279	5/19/2019	14:10:01	19.90	1.989421
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3281	5/19/2019	14:12:01	20.00	1.988698
3282	5/19/2019	14:13:01	20.00	1.988698
3283	5/19/2019	14:14:01	20.10	1.988336
3284	5/19/2019	14:15:01	20.00	1.987974
3285	5/19/2019	14:16:01	19.90	1.987612
3286	5/19/2019	14:17:01	19.70	1.987612
3287	5/19/2019	14:18:01	19.60	1.987974
3288	5/19/2019	14:19:01	19.60	1.989059
3289	5/19/2019	14:20:01	19.60	1.987612

3290	5/19/2019	14:21:01	19.60	1.987974
3291	5/19/2019	14:22:01	19.70	1.987612
3292	5/19/2019	14:23:01	19.70	1.987251
3293	5/19/2019	14:24:01	19.70	1.986889
3294	5/19/2019	14:25:01	19.80	1.986889
3295	5/19/2019	14:26:01	19.80	1.987612
3296	5/19/2019	14:27:01	19.90	1.987251
3297	5/19/2019	14:28:01	19.90	1.987612
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3303	5/19/2019	14:34:01	20.10	1.986889
3304	5/19/2019	14:35:01	20.00	1.986527
3305	5/19/2019	14:36:01	19.90	1.986889
3306	5/19/2019	14:37:01	19.70	1.986889
3307	5/19/2019	14:38:01	19.60	1.986889
3308	5/19/2019	14:39:01	19.60	1.986527
3309	5/19/2019	14:40:01	19.60	1.986527
3310	5/19/2019	14:41:01	19.60	1.986889
3311	5/19/2019	14:42:01	19.60	1.986527
3312	5/19/2019	14:43:01	19.70	1.986166
3313	5/19/2019	14:44:01	19.70	1.986527
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3315	5/19/2019	14:46:01	19.80	1.986527
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3317	5/19/2019	14:48:01	19.90	1.986166
3318	5/19/2019	14:49:01	19.90	1.986527
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3320	5/19/2019	14:51:01	20.00	1.986527
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3322	5/19/2019	14:53:01	20.00	1.986166
3323	5/19/2019	14:54:01	20.00	1.986166
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3325	5/19/2019	14:56:01	19.80	1.985804
3326	5/19/2019	14:57:01	19.70	1.986166
3327	5/19/2019	14:58:01	19.60	1.985804
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3329	5/19/2019	15:00:01	19.60	1.985804
3330	5/19/2019	15:01:01	19.60	1.985804
3331	5/19/2019	15:02:01	19.70	1.985442
3332	5/19/2019	15:03:01	19.70	1.985442
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3334	5/19/2019	15:05:01	19.80	1.984719
3335	5/19/2019	15:06:01	19.80	1.984719
3336	5/19/2019	15:07:01	19.90	1.98508

3337	5/19/2019	15:08:01	19.90	1.98508	
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3340	5/19/2019	15:11:01	20.00	1.98508	
3341	5/19/2019	15:12:01	20.00	1.984357	
3342	5/19/2019	15:13:01	20.00	1.98508	
3343	5/19/2019	15:14:01	20.10	1.983995	
3344	5/19/2019	15:15:01	20.00	1.984719	
3345	5/19/2019	15:16:01	19.80	1.983634	
3346	5/19/2019	15:17:01	19.70	1.983634	
3347	5/19/2019	15:18:01	19.60	1.984357	
3348	5/19/2019	15:19:01	19.60	1.983995	
3349	5/19/2019	15:20:01	19.60	1.984357	
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3351	5/19/2019	15:22:01	19.70	1.984357	
3352	5/19/2019	15:23:01	19.70	1.983995	
3353	5/19/2019	15:24:01	19.70	1.983634	
3354	5/19/2019	15:25:01	19.80	1.984357	
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3358	5/19/2019	15:29:01	19.90	1.983995	
3359	5/19/2019	15:30:01	20.00	1.983634	
3360	5/19/2019	15:31:01	20.00	1.983634	
3361	5/19/2019	15:32:01	20.00	1.983272	48 horas
3362	5/19/2019	15:33:01	20.00	1.983634	
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3371	5/19/2019	15:42:01	19.70	1.983272	
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3377	5/19/2019	15:48:01	19.90	1.98291	
3378	5/19/2019	15:49:01	20.00	1.98291	
3379	5/19/2019	15:50:01	20.00	1.983272	
3380	5/19/2019	15:51:01	20.00	1.983272	
3381	5/19/2019	15:52:01	20.00	1.982548	
3382	5/19/2019	15:53:01	20.00	1.982187	
3383	5/19/2019	15:54:01	19.80	1.98291	

3384	5/19/2019	15:55:01	19.70	1.982548
3385	5/19/2019	15:56:01	19.60	1.982187
3386	5/19/2019	15:57:01	19.60	1.982548
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3389	5/19/2019	16:00:01	19.70	1.982187
3390	5/19/2019	16:01:01	19.70	1.982187
3391	5/19/2019	16:02:01	19.80	1.981463
3392	5/19/2019	16:03:01	19.80	1.981102
3393	5/19/2019	16:04:01	19.90	1.982187
3394	5/19/2019	16:05:01	19.90	1.98074
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3397	5/19/2019	16:08:01	20.00	1.98074
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3400	5/19/2019	16:11:01	20.00	1.981102
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3413	5/19/2019	16:24:01	19.90	1.98074
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3415	5/19/2019	16:26:01	19.90	1.98074
3416	5/19/2019	16:27:01	20.00	1.98074
3417	5/19/2019	16:28:01	20.00	1.980378
3418	5/19/2019	16:29:01	20.00	1.98074
3419	5/19/2019	16:30:01	20.00	1.980378
3420	5/19/2019	16:31:01	19.90	1.98074
3421	5/19/2019	16:32:01	19.80	1.98074
3422	5/19/2019	16:33:01	19.70	1.980378
3423	5/19/2019	16:34:01	19.60	1.98074
3424	5/19/2019	16:35:01	19.60	1.980378
3425	5/19/2019	16:36:01	19.60	1.980378
3426	5/19/2019	16:37:01	19.60	1.980378
3427	5/19/2019	16:38:01	19.70	1.980378
3428	5/19/2019	16:39:01	19.70	1.980017
3429	5/19/2019	16:40:01	19.80	1.980017
3430	5/19/2019	16:41:01	19.80	1.980378

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3432	5/19/2019	16:43:01	19.90	1.979293
3433	5/19/2019	16:44:01	19.90	1.980017
3434	5/19/2019	16:45:01	19.90	1.980017
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3436	5/19/2019	16:47:01	20.00	1.979293
3437	5/19/2019	16:48:01	20.00	1.979655
3438	5/19/2019	16:49:01	20.10	1.979293
3439	5/19/2019	16:50:01	20.00	1.979655
3440	5/19/2019	16:51:01	19.90	1.979293
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3443	5/19/2019	16:54:01	19.60	1.978931
3444	5/19/2019	16:55:01	19.60	1.979293
3445	5/19/2019	16:56:01	19.60	1.97857
3446	5/19/2019	16:57:01	19.70	1.97857
3447	5/19/2019	16:58:01	19.70	1.97857
3448	5/19/2019	16:59:01	19.70	1.978931
3449	5/19/2019	17:00:01	19.80	1.97857
3450	5/19/2019	17:01:01	19.80	1.978208
3451	5/19/2019	17:02:01	19.90	1.978208
3452	5/19/2019	17:03:01	19.90	1.978208
3453	5/19/2019	17:04:01	19.90	1.97857
3454	5/19/2019	17:05:01	20.00	1.978208
3455	5/19/2019	17:06:01	20.00	1.977846
3456	5/19/2019	17:07:01	20.00	1.977846
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3458	5/19/2019	17:09:01	20.00	1.977846
3459	5/19/2019	17:10:01	19.90	1.977846
3460	5/19/2019	17:11:01	19.80	1.977846
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3462	5/19/2019	17:13:01	19.60	1.977846
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3465	5/19/2019	17:16:01	19.60	1.977846
3466	5/19/2019	17:17:01	19.70	1.977484
3467	5/19/2019	17:18:01	19.70	1.977846
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3473	5/19/2019	17:24:01	19.90	1.977846
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3486	5/19/2019	17:37:01	19.70	1.977123
3487	5/19/2019	17:38:01	19.70	1.976761
3488	5/19/2019	17:39:01	19.80	1.976399
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3490	5/19/2019	17:41:01	19.80	1.976399
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3492	5/19/2019	17:43:01	19.90	1.976038
3493	5/19/2019	17:44:01	19.90	1.976399
3494	5/19/2019	17:45:01	20.00	1.976399
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3497	5/19/2019	17:48:01	20.00	1.975314
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3502	5/19/2019	17:53:01	19.60	1.975676
3503	5/19/2019	17:54:01	19.60	1.975314
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3505	5/19/2019	17:56:01	19.70	1.974952
3506	5/19/2019	17:57:01	19.70	1.975314
3507	5/19/2019	17:58:01	19.70	1.975314
3508	5/19/2019	17:59:01	19.80	1.975676
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3510	5/19/2019	18:01:01	19.90	1.975314
3511	5/19/2019	18:02:01	19.90	1.974952
3512	5/19/2019	18:03:01	19.90	1.974952
3513	5/19/2019	18:04:01	19.90	1.974952
3514	5/19/2019	18:05:01	20.00	1.974952
3515	5/19/2019	18:06:01	20.00	1.974952
3516	5/19/2019	18:07:01	20.00	1.974952
3517	5/19/2019	18:08:01	20.00	1.974952
3518	5/19/2019	18:09:01	20.00	1.974952
3519	5/19/2019	18:10:01	19.90	1.974952
3520	5/19/2019	18:11:01	19.70	1.974952
3521	5/19/2019	18:12:01	19.60	1.974952
3522	5/19/2019	18:13:01	19.60	1.974952
3523	5/19/2019	18:14:01	19.60	1.974952
3524	5/19/2019	18:15:01	19.60	1.974952

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3526	5/19/2019	18:17:01	19.70	1.974591
3527	5/19/2019	18:18:01	19.70	1.974229
3528	5/19/2019	18:19:01	19.80	1.974229
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3536	5/19/2019	18:27:01	20.00	1.974229
3537	5/19/2019	18:28:01	20.00	1.974229
3538	5/19/2019	18:29:01	20.10	1.974229
3539	5/19/2019	18:30:01	20.00	1.974229
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3541	5/19/2019	18:32:01	19.70	1.974591
3542	5/19/2019	18:33:01	19.60	1.973144
3543	5/19/2019	18:34:01	19.60	1.973506
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3545	5/19/2019	18:36:01	19.60	1.973506
3546	5/19/2019	18:37:01	19.70	1.974229
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3549	5/19/2019	18:40:01	19.80	1.973144
3550	5/19/2019	18:41:01	19.80	1.973144
3551	5/19/2019	18:42:01	19.90	1.972782
3552	5/19/2019	18:43:01	19.90	1.973144
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3554	5/19/2019	18:45:01	19.90	1.972782
3555	5/19/2019	18:46:01	20.00	1.972421
3556	5/19/2019	18:47:01	20.00	1.972782
3557	5/19/2019	18:48:01	20.00	1.972059
3558	5/19/2019	18:49:01	20.00	1.972059
3559	5/19/2019	18:50:01	20.00	1.972782
3560	5/19/2019	18:51:01	19.90	1.972059
3561	5/19/2019	18:52:01	19.80	1.972059
3562	5/19/2019	18:53:01	19.60	1.972421
3563	5/19/2019	18:54:01	19.60	1.972421
3564	5/19/2019	18:55:01	19.60	1.972059
3565	5/19/2019	18:56:01	19.60	1.972421
3566	5/19/2019	18:57:01	19.60	1.972059
3567	5/19/2019	18:58:01	19.70	1.972059
3568	5/19/2019	18:59:01	19.70	1.972059
3569	5/19/2019	19:00:01	19.70	1.972059
3570	5/19/2019	19:01:01	19.80	1.972059
3571	5/19/2019	19:02:01	19.80	1.972059

3572	5/19/2019	19:03:01	19.90	1.972059
3573	5/19/2019	19:04:01	19.90	1.972059
3574	5/19/2019	19:05:01	19.90	1.972059
3575	5/19/2019	19:06:01	19.90	1.972059
3576	5/19/2019	19:07:01	20.00	1.972059
3577	5/19/2019	19:08:01	20.00	1.972059
3578	5/19/2019	19:09:01	20.00	1.972059
3579	5/19/2019	19:10:01	20.00	1.971697
3580	5/19/2019	19:11:01	20.00	1.971697
3581	5/19/2019	19:12:01	19.90	1.971697
3582	5/19/2019	19:13:01	19.80	1.971697
3583	5/19/2019	19:14:01	19.60	1.972059
3584	5/19/2019	19:15:01	19.60	1.972059
3585	5/19/2019	19:16:01	19.60	1.972059
3586	5/19/2019	19:17:01	19.60	1.972059
3587	5/19/2019	19:18:01	19.60	1.970612
3588	5/19/2019	19:19:01	19.70	1.972059
3589	5/19/2019	19:20:01	19.70	1.971697
3590	5/19/2019	19:21:01	19.70	1.971335
3591	5/19/2019	19:22:01	19.80	1.971335
3592	5/19/2019	19:23:01	19.80	1.970974
3593	5/19/2019	19:24:01	19.90	1.971697
3594	5/19/2019	19:25:01	19.90	1.971697
3595	5/19/2019	19:26:01	19.90	1.970612
3596	5/19/2019	19:27:01	19.90	1.97025
3597	5/19/2019	19:28:01	20.00	1.969889
3598	5/19/2019	19:29:01	20.00	1.970974
3599	5/19/2019	19:30:01	20.00	1.97025
3600	5/19/2019	19:31:01	20.00	1.97025
3601	5/19/2019	19:32:01	20.00	1.971335
3602	5/19/2019	19:33:01	19.90	1.970612
3603	5/19/2019	19:34:01	19.80	1.970612
3604	5/19/2019	19:35:01	19.70	1.970974
3605	5/19/2019	19:36:01	19.60	1.969889
3606	5/19/2019	19:37:01	19.60	1.969527
3607	5/19/2019	19:38:01	19.60	1.970974
3608	5/19/2019	19:39:01	19.60	1.969889
3609	5/19/2019	19:40:01	19.70	1.969889
3610	5/19/2019	19:41:01	19.70	1.969527
3611	5/19/2019	19:42:01	19.80	1.969889
3612	5/19/2019	19:43:01	19.80	1.969527
3613	5/19/2019	19:44:01	19.80	1.969527
3614	5/19/2019	19:45:01	19.90	1.969165
3615	5/19/2019	19:46:01	19.90	1.969165
3616	5/19/2019	19:47:01	19.90	1.969165
3617	5/19/2019	19:48:01	19.90	1.969165
3618	5/19/2019	19:49:01	20.00	1.969889

3619	5/19/2019	19:50:01	20.00	1.969527
3620	5/19/2019	19:51:01	20.00	1.969165
3621	5/19/2019	19:52:01	20.00	1.969527
3622	5/19/2019	19:53:01	20.10	1.969165
3623	5/19/2019	19:54:01	20.00	1.969165
3624	5/19/2019	19:55:01	19.80	1.969165
3625	5/19/2019	19:56:01	19.70	1.969165
3626	5/19/2019	19:57:01	19.60	1.969165
3627	5/19/2019	19:58:01	19.60	1.969165
3628	5/19/2019	19:59:01	19.60	1.968803
3629	5/19/2019	20:00:01	19.60	1.969165
3630	5/19/2019	20:01:01	19.60	1.969165
3631	5/19/2019	20:02:01	19.70	1.968803
3632	5/19/2019	20:03:01	19.70	1.969165
3633	5/19/2019	20:04:01	19.80	1.969165
3634	5/19/2019	20:05:01	19.80	1.969165
3635	5/19/2019	20:06:01	19.80	1.96808
3636	5/19/2019	20:07:01	19.90	1.969165
3637	5/19/2019	20:08:01	19.90	1.969165
3638	5/19/2019	20:09:01	19.90	1.969165
3639	5/19/2019	20:10:01	19.90	1.968803
3640	5/19/2019	20:11:01	20.00	1.968803
3641	5/19/2019	20:12:01	20.00	1.969165
3642	5/19/2019	20:13:01	20.00	1.968803
3643	5/19/2019	20:14:01	20.00	1.968803
3644	5/19/2019	20:15:01	20.00	1.968442
3645	5/19/2019	20:16:01	20.00	1.969165
3646	5/19/2019	20:17:01	19.90	1.968803
3647	5/19/2019	20:18:01	19.70	1.968442
3648	5/19/2019	20:19:01	19.60	1.968442
3649	5/19/2019	20:20:01	19.60	1.967718
3650	5/19/2019	20:21:01	19.60	1.967718
3651	5/19/2019	20:22:01	19.60	1.968442
3652	5/19/2019	20:23:01	19.60	1.967718
3653	5/19/2019	20:24:01	19.70	1.967718
3654	5/19/2019	20:25:01	19.70	1.967718
3655	5/19/2019	20:26:01	19.70	1.967357
3656	5/19/2019	20:27:01	19.80	1.967357
3657	5/19/2019	20:28:01	19.80	1.966633
3658	5/19/2019	20:29:01	19.80	1.966271
3659	5/19/2019	20:30:01	19.90	1.967357
3660	5/19/2019	20:31:01	19.90	1.96808
3661	5/19/2019	20:32:01	19.90	1.966995
3662	5/19/2019	20:33:01	19.90	1.966995
3663	5/19/2019	20:34:01	19.90	1.966995
3664	5/19/2019	20:35:01	20.00	1.967357
3665	5/19/2019	20:36:01	20.00	1.966271

3666	5/19/2019	20:37:01	20.00	1.967357
3667	5/19/2019	20:38:01	20.00	1.966633
3668	5/19/2019	20:39:01	20.00	1.966633
3669	5/19/2019	20:40:01	20.00	1.967357
3670	5/19/2019	20:41:01	19.90	1.967357
3671	5/19/2019	20:42:01	19.80	1.966271
3672	5/19/2019	20:43:01	19.60	1.966271
3673	5/19/2019	20:44:01	19.60	1.966633
3674	5/19/2019	20:45:01	19.60	1.966271
3675	5/19/2019	20:46:01	19.60	1.966271
3676	5/19/2019	20:47:01	19.60	1.966633
3677	5/19/2019	20:48:01	19.60	1.966271
3678	5/19/2019	20:49:01	19.70	1.966271
3679	5/19/2019	20:50:01	19.70	1.966271
3680	5/19/2019	20:51:01	19.70	1.966271
3681	5/19/2019	20:52:01	19.80	1.966271
3682	5/19/2019	20:53:01	19.80	1.966271
3683	5/19/2019	20:54:01	19.80	1.966271
3684	5/19/2019	20:55:01	19.80	1.966271
3685	5/19/2019	20:56:01	19.90	1.966633
3686	5/19/2019	20:57:01	19.90	1.966271
3687	5/19/2019	20:58:01	19.90	1.966271
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3689	5/19/2019	21:00:01	19.90	1.966271
3690	5/19/2019	21:01:01	20.00	1.96591
3691	5/19/2019	21:02:01	20.00	1.966271
3692	5/19/2019	21:03:01	20.00	1.96591
3693	5/19/2019	21:04:01	20.00	1.966271
3694	5/19/2019	21:05:01	20.00	1.965186
3695	5/19/2019	21:06:01	20.00	1.964824
3696	5/19/2019	21:07:01	20.00	1.96591
3697	5/19/2019	21:08:01	20.00	1.966271
3698	5/19/2019	21:09:01	20.00	1.96591
3699	5/19/2019	21:10:01	19.80	1.96591
3700	5/19/2019	21:11:01	19.70	1.96591
3701	5/19/2019	21:12:01	19.60	1.96591
3702	5/19/2019	21:13:01	19.60	1.964824
3703	5/19/2019	21:14:01	19.50	1.965548
3704	5/19/2019	21:15:01	19.60	1.964463
3705	5/19/2019	21:16:01	19.60	1.96591
3706	5/19/2019	21:17:01	19.60	1.964463
3707	5/19/2019	21:18:01	19.60	1.965548
3708	5/19/2019	21:19:01	19.70	1.965548
3709	5/19/2019	21:20:01	19.70	1.965186
3710	5/19/2019	21:21:01	19.70	1.964463
3711	5/19/2019	21:22:01	19.80	1.964824
3712	5/19/2019	21:23:01	19.80	1.964463

3713	5/19/2019	21:24:01	19.80	1.964824
3714	5/19/2019	21:25:01	19.80	1.965548
3715	5/19/2019	21:26:01	19.90	1.964824
3716	5/19/2019	21:27:01	19.90	1.963739
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3719	5/19/2019	21:30:01	19.90	1.963739
3720	5/19/2019	21:31:01	19.90	1.963739
3721	5/19/2019	21:32:01	19.90	1.964101
3722	5/19/2019	21:33:01	19.90	1.964101
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3726	5/19/2019	21:37:01	20.00	1.963739
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3728	5/19/2019	21:39:01	20.00	1.963378
3729	5/19/2019	21:40:01	20.00	1.963378
3730	5/19/2019	21:41:01	20.00	1.963739
3731	5/19/2019	21:42:01	19.90	1.963378
3732	5/19/2019	21:43:01	19.80	1.963378
3733	5/19/2019	21:44:01	19.70	1.963378
3734	5/19/2019	21:45:01	19.60	1.963378
3735	5/19/2019	21:46:01	19.60	1.963378
3736	5/19/2019	21:47:01	19.60	1.963378
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3738	5/19/2019	21:49:01	19.60	1.963739
3739	5/19/2019	21:50:01	19.60	1.963739
3740	5/19/2019	21:51:01	19.70	1.963378
3741	5/19/2019	21:52:01	19.70	1.964101
3742	5/19/2019	21:53:01	19.70	1.963016
3743	5/19/2019	21:54:01	19.80	1.963378
3744	5/19/2019	21:55:01	19.80	1.963378
3745	5/19/2019	21:56:01	19.80	1.963378
3746	5/19/2019	21:57:01	19.80	1.963378
3747	5/19/2019	21:58:01	19.90	1.962654
3748	5/19/2019	21:59:01	19.90	1.963378
3749	5/19/2019	22:00:01	19.90	1.963378
3750	5/19/2019	22:01:01	19.90	1.963378
3751	5/19/2019	22:02:01	19.90	1.963378
3752	5/19/2019	22:03:01	19.90	1.963016
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3754	5/19/2019	22:05:01	19.90	1.962293
3755	5/19/2019	22:06:01	20.00	1.963016
3756	5/19/2019	22:07:01	20.00	1.962654
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3762	5/19/2019	22:13:01	20.00	1.962293
3763	5/19/2019	22:14:01	20.00	1.961931
3764	5/19/2019	22:15:01	19.90	1.962654
3765	5/19/2019	22:16:01	19.70	1.961569
3766	5/19/2019	22:17:01	19.60	1.961208
3767	5/19/2019	22:18:01	19.60	1.961208
3768	5/19/2019	22:19:01	19.60	1.961208
3769	5/19/2019	22:20:01	19.60	1.961569
3770	5/19/2019	22:21:01	19.60	1.961569
3771	5/19/2019	22:22:01	19.60	1.960846
3772	5/19/2019	22:23:01	19.70	1.961569
3773	5/19/2019	22:24:01	19.70	1.960846
3774	5/19/2019	22:25:01	19.70	1.961208
3775	5/19/2019	22:26:01	19.70	1.961569
3776	5/19/2019	22:27:01	19.80	1.960846
3777	5/19/2019	22:28:01	19.80	1.960846
3778	5/19/2019	22:29:01	19.80	1.960846
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3780	5/19/2019	22:31:01	19.80	1.960846
3781	5/19/2019	22:32:01	19.90	1.960484
3782	5/19/2019	22:33:01	19.90	1.960846
3783	5/19/2019	22:34:01	19.90	1.960484
3784	5/19/2019	22:35:01	19.90	1.960484
3785	5/19/2019	22:36:01	19.90	1.960484
3786	5/19/2019	22:37:01	19.90	1.960484
3787	5/19/2019	22:38:01	19.90	1.960484
3788	5/19/2019	22:39:01	19.90	1.960484
3789	5/19/2019	22:40:01	20.00	1.960484
3790	5/19/2019	22:41:01	20.00	1.960846
3791	5/19/2019	22:42:01	20.00	1.960484
3792	5/19/2019	22:43:01	20.00	1.960484
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3799	5/19/2019	22:50:01	20.00	1.960484
3800	5/19/2019	22:51:01	20.00	1.960122
3801	5/19/2019	22:52:01	20.00	1.960484
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3803	5/19/2019	22:54:01	19.70	1.960122
3804	5/19/2019	22:55:01	19.60	1.960122
3805	5/19/2019	22:56:01	19.60	1.960484
3806	5/19/2019	22:57:01	19.60	1.960484

3807	5/19/2019	22:58:01	19.60	1.960484
3808	5/19/2019	22:59:01	19.60	1.959761
3809	5/19/2019	23:00:01	19.60	1.959399
3810	5/19/2019	23:01:01	19.60	1.960846
3811	5/19/2019	23:02:01	19.70	1.960484
3812	5/19/2019	23:03:01	19.70	1.960484
3813	5/19/2019	23:04:01	19.70	1.959399
3814	5/19/2019	23:05:01	19.70	1.959761
3815	5/19/2019	23:06:01	19.80	1.959761
3816	5/19/2019	23:07:01	19.80	1.959037
3817	5/19/2019	23:08:01	19.80	1.959399
3818	5/19/2019	23:09:01	19.80	1.959037
3819	5/19/2019	23:10:01	19.80	1.959761
3820	5/19/2019	23:11:01	19.80	1.958676
3821	5/19/2019	23:12:01	19.80	1.958676
3822	5/19/2019	23:13:01	19.90	1.958676
3823	5/19/2019	23:14:01	19.90	1.958676
3824	5/19/2019	23:15:01	19.90	1.958676
3825	5/19/2019	23:16:01	19.90	1.957952
3826	5/19/2019	23:17:01	19.90	1.959037
3827	5/19/2019	23:18:01	19.90	1.959399
3828	5/19/2019	23:19:01	19.90	1.958314
3829	5/19/2019	23:20:01	19.90	1.958314
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3831	5/19/2019	23:22:01	19.90	1.957952
3832	5/19/2019	23:23:01	19.90	1.958676
3833	5/19/2019	23:24:01	19.90	1.95759
3834	5/19/2019	23:25:01	19.90	1.957952
3835	5/19/2019	23:26:01	19.90	1.959037
3836	5/19/2019	23:27:01	19.90	1.95759
3837	5/19/2019	23:28:01	19.90	1.957952
3838	5/19/2019	23:29:01	19.90	1.957952
3839	5/19/2019	23:30:01	19.90	1.95759
3840	5/19/2019	23:31:01	19.90	1.95759
3841	5/19/2019	23:32:01	19.90	1.958314
3842	5/19/2019	23:33:01	19.90	1.95759
3843	5/19/2019	23:34:01	19.90	1.95759
3844	5/19/2019	23:35:01	19.90	1.95759
3845	5/19/2019	23:36:01	19.90	1.95759
3846	5/19/2019	23:37:01	19.90	1.957952
3847	5/19/2019	23:38:01	19.90	1.95759
3848	5/19/2019	23:39:01	19.90	1.95759
3849	5/19/2019	23:40:01	19.90	1.95759
3850	5/19/2019	23:41:01	19.90	1.957952
3851	5/19/2019	23:42:01	19.90	1.957952
3852	5/19/2019	23:43:01	20.00	1.95759
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3858	5/19/2019	23:49:01	20.00	1.95759
3859	5/19/2019	23:50:01	20.00	1.956867
3860	5/19/2019	23:51:01	20.00	1.957229
3861	5/19/2019	23:52:01	20.00	1.957229
3862	5/19/2019	23:53:01	20.00	1.957229
3863	5/19/2019	23:54:01	19.90	1.957229
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3865	5/19/2019	23:56:01	20.00	1.957229
3866	5/19/2019	23:57:01	19.90	1.957229
3867	5/19/2019	23:58:01	19.90	1.956867
3868	5/19/2019	23:59:01	20.00	1.956867
3869	5/20/2019	0:00:01	19.90	1.957229
3870	5/20/2019	0:01:01	19.90	1.956867
3871	5/20/2019	0:02:01	19.90	1.956867
3872	5/20/2019	0:03:01	19.90	1.95759
3873	5/20/2019	0:04:01	19.90	1.956867
3874	5/20/2019	0:05:01	19.90	1.957229
3875	5/20/2019	0:06:01	19.90	1.957229
3876	5/20/2019	0:07:01	19.90	1.956867
3877	5/20/2019	0:08:01	19.90	1.956143
3878	5/20/2019	0:09:01	19.90	1.956143
3879	5/20/2019	0:10:01	19.90	1.956867
3880	5/20/2019	0:11:01	19.90	1.95542
3881	5/20/2019	0:12:01	19.90	1.956143
3882	5/20/2019	0:13:01	19.90	1.956143
3883	5/20/2019	0:14:01	19.90	1.956505
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3885	5/20/2019	0:16:01	19.90	1.955782
3886	5/20/2019	0:17:01	19.90	1.955782
3887	5/20/2019	0:18:01	19.90	1.955782
3888	5/20/2019	0:19:01	19.90	1.954697
3889	5/20/2019	0:20:01	19.90	1.955058
3890	5/20/2019	0:21:01	19.90	1.95542
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3895	5/20/2019	0:26:01	19.90	1.955782
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3898	5/20/2019	0:29:01	19.90	1.955058
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3925	5/20/2019	0:56:01	19.90	1.954697
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4194	5/20/2019	5:25:01	19.00	1.94059
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4205	5/20/2019	5:36:01	19.00	1.939866
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4217	5/20/2019	5:48:01	19.00	1.940228
4218	5/20/2019	5:49:01	19.00	1.940228
4219	5/20/2019	5:50:01	19.00	1.94059
4220	5/20/2019	5:51:01	19.00	1.939866
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4259	5/20/2019	6:30:01	19.00	1.937334
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4310	5/20/2019	7:21:01	19.20	1.936249
4311	5/20/2019	7:22:01	19.20	1.936249
4312	5/20/2019	7:23:01	19.20	1.935888
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4317	5/20/2019	7:28:01	19.20	1.934802
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4325	5/20/2019	7:36:01	19.20	1.935164
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4370	5/20/2019	8:21:01	19.30	1.934441

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4413	5/20/2019	9:04:01	19.60	1.931547
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4431	5/20/2019	9:22:01	19.80	1.931547
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4433	5/20/2019	9:24:01	19.80	1.931185
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4445	5/20/2019	9:36:01	19.90	1.931185
4446	5/20/2019	9:37:01	19.90	1.930823
4447	5/20/2019	9:38:01	20.00	1.9301
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4475	5/20/2019	10:06:01	19.90	1.929015
4476	5/20/2019	10:07:01	19.90	1.929738
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4478	5/20/2019	10:09:01	20.00	1.929377
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4481	5/20/2019	10:12:01	20.00	1.929015
4482	5/20/2019	10:13:01	20.00	1.928653
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4487	5/20/2019	10:18:01	19.60	1.928653
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4489	5/20/2019	10:20:01	19.60	1.929015
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4491	5/20/2019	10:22:01	19.70	1.929377
4492	5/20/2019	10:23:01	19.80	1.929015
4493	5/20/2019	10:24:01	19.80	1.929015
4494	5/20/2019	10:25:01	19.80	1.929015
4495	5/20/2019	10:26:01	19.90	1.928653
4496	5/20/2019	10:27:01	19.90	1.928653
4497	5/20/2019	10:28:01	19.90	1.928292
4498	5/20/2019	10:29:01	19.90	1.928653
4499	5/20/2019	10:30:01	20.00	1.928653
4500	5/20/2019	10:31:01	20.00	1.928653
4501	5/20/2019	10:32:01	20.00	1.928653
4502	5/20/2019	10:33:01	20.00	1.928653
4503	5/20/2019	10:34:01	20.00	1.928653
4504	5/20/2019	10:35:01	19.90	1.928653
4505	5/20/2019	10:36:01	19.70	1.928653
4506	5/20/2019	10:37:01	19.60	1.928653
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4508	5/20/2019	10:39:01	19.60	1.928653
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4510	5/20/2019	10:41:01	19.60	1.92793
4511	5/20/2019	10:42:01	19.70	1.92793

4512	5/20/2019	10:43:01	19.70	1.928653
4513	5/20/2019	10:44:01	19.80	1.927568
4514	5/20/2019	10:45:01	19.80	1.928653
4515	5/20/2019	10:46:01	19.80	1.928653
4516	5/20/2019	10:47:01	19.90	1.926845
4517	5/20/2019	10:48:01	19.90	1.92793
4518	5/20/2019	10:49:01	19.90	1.928653
4519	5/20/2019	10:50:01	20.00	1.92793
4520	5/20/2019	10:51:01	20.00	1.928292
4521	5/20/2019	10:52:01	20.00	1.928292
4522	5/20/2019	10:53:01	20.00	1.928653
4523	5/20/2019	10:54:01	20.00	1.927207
4524	5/20/2019	10:55:01	19.90	1.928292
4525	5/20/2019	10:56:01	19.80	1.92793
4526	5/20/2019	10:57:01	19.70	1.927568
4527	5/20/2019	10:58:01	19.60	1.927207
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4529	5/20/2019	11:00:01	19.60	1.927568
4530	5/20/2019	11:01:01	19.60	1.927568
4531	5/20/2019	11:02:01	19.70	1.927207
4532	5/20/2019	11:03:01	19.70	1.926483
4533	5/20/2019	11:04:01	19.80	1.927568
4534	5/20/2019	11:05:01	19.80	1.927568
4535	5/20/2019	11:06:01	19.80	1.927207
4536	5/20/2019	11:07:01	19.90	1.927207
4537	5/20/2019	11:08:01	19.90	1.927207
4538	5/20/2019	11:09:01	19.90	1.927207
4539	5/20/2019	11:10:01	20.00	1.926121
4540	5/20/2019	11:11:01	20.00	1.926483
4541	5/20/2019	11:12:01	20.00	1.926845
4542	5/20/2019	11:13:01	20.00	1.926121
4543	5/20/2019	11:14:01	19.90	1.926121
4544	5/20/2019	11:15:01	19.80	1.926483
4545	5/20/2019	11:16:01	19.70	1.92576
4546	5/20/2019	11:17:01	19.60	1.92576
4547	5/20/2019	11:18:01	19.60	1.926121
4548	5/20/2019	11:19:01	19.60	1.926483
4549	5/20/2019	11:20:01	19.70	1.926483
4550	5/20/2019	11:21:01	19.70	1.92576
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4552	5/20/2019	11:23:01	19.80	1.926121
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4554	5/20/2019	11:25:01	19.90	1.92576
4555	5/20/2019	11:26:01	19.90	1.926121
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4557	5/20/2019	11:28:01	20.00	1.92576
4558	5/20/2019	11:29:01	20.00	1.92576

4559	5/20/2019	11:30:01	20.10	1.92576
4560	5/20/2019	11:31:01	20.00	1.926121
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4562	5/20/2019	11:33:01	19.70	1.92576
4563	5/20/2019	11:34:01	19.60	1.92576
4564	5/20/2019	11:35:01	19.60	1.92576
4565	5/20/2019	11:36:01	19.60	1.92576
4566	5/20/2019	11:37:01	19.60	1.925036
4567	5/20/2019	11:38:01	19.70	1.92576
4568	5/20/2019	11:39:01	19.70	1.92576
4569	5/20/2019	11:40:01	19.80	1.92576
4570	5/20/2019	11:41:01	19.80	1.92576
4571	5/20/2019	11:42:01	19.90	1.92576
4572	5/20/2019	11:43:01	19.90	1.92576
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4574	5/20/2019	11:45:01	20.00	1.92576
4575	5/20/2019	11:46:01	20.00	1.925398
4576	5/20/2019	11:47:01	20.00	1.92576
4577	5/20/2019	11:48:01	19.90	1.92576
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4580	5/20/2019	11:51:01	19.60	1.92576
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4583	5/20/2019	11:54:01	19.70	1.92576
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4585	5/20/2019	11:56:01	19.80	1.925036
4586	5/20/2019	11:57:01	19.80	1.925036
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4588	5/20/2019	11:59:01	19.90	1.924674
4589	5/20/2019	12:00:01	20.00	1.925036
4590	5/20/2019	12:01:01	20.00	1.924674
4591	5/20/2019	12:02:01	20.10	1.925036
4592	5/20/2019	12:03:01	20.00	1.923951
4593	5/20/2019	12:04:01	19.90	1.924674
4594	5/20/2019	12:05:01	19.80	1.924313
4595	5/20/2019	12:06:01	19.70	1.924674
4596	5/20/2019	12:07:01	19.60	1.925036
4597	5/20/2019	12:08:01	19.60	1.924313
4598	5/20/2019	12:09:01	19.70	1.924313
4599	5/20/2019	12:10:01	19.70	1.923228
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4602	5/20/2019	12:13:01	19.90	1.924313
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4607	5/20/2019	12:18:01	20.10	1.923589
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4610	5/20/2019	12:21:01	19.70	1.923228
4611	5/20/2019	12:22:01	19.60	1.923589
4612	5/20/2019	12:23:01	19.60	1.923228
4613	5/20/2019	12:24:01	19.60	1.922866
4614	5/20/2019	12:25:01	19.60	1.922866
4615	5/20/2019	12:26:01	19.70	1.922866
4616	5/20/2019	12:27:01	19.80	1.922866
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4619	5/20/2019	12:30:01	19.90	1.922866
4620	5/20/2019	12:31:01	20.00	1.923589
4621	5/20/2019	12:32:01	20.00	1.922866
4622	5/20/2019	12:33:01	20.00	1.922866
4623	5/20/2019	12:34:01	20.10	1.923228
4624	5/20/2019	12:35:01	19.90	1.922866
4625	5/20/2019	12:36:01	19.80	1.922866
4626	5/20/2019	12:37:01	19.70	1.923228
4627	5/20/2019	12:38:01	19.60	1.922866
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4630	5/20/2019	12:41:01	19.70	1.922866
4631	5/20/2019	12:42:01	19.70	1.922866
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4633	5/20/2019	12:44:01	19.90	1.922504
4634	5/20/2019	12:45:01	19.90	1.923589
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4637	5/20/2019	12:48:01	20.10	1.922866
4638	5/20/2019	12:49:01	20.10	1.922866
4639	5/20/2019	12:50:01	19.90	1.922866
4640	5/20/2019	12:51:01	19.80	1.922504
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4645	5/20/2019	12:56:01	19.70	1.922504
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4664	5/20/2019	13:15:01	19.90	1.921419
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4666	5/20/2019	13:17:01	20.10	1.921419
4667	5/20/2019	13:18:01	20.10	1.921419
4668	5/20/2019	13:19:01	20.00	1.921781
4669	5/20/2019	13:20:01	19.80	1.921419
4670	5/20/2019	13:21:01	19.70	1.921057
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4673	5/20/2019	13:24:01	19.70	1.921419
4674	5/20/2019	13:25:01	19.70	1.921419
4675	5/20/2019	13:26:01	19.80	1.920696
4676	5/20/2019	13:27:01	19.80	1.920334
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4679	5/20/2019	13:30:01	20.00	1.921057
4680	5/20/2019	13:31:01	20.10	1.920696
4681	5/20/2019	13:32:01	20.10	1.920696
4682	5/20/2019	13:33:01	20.00	1.920334
4683	5/20/2019	13:34:01	19.80	1.919972
4684	5/20/2019	13:35:01	19.70	1.919972
4685	5/20/2019	13:36:01	19.60	1.919972
4686	5/20/2019	13:37:01	19.60	1.920334
4687	5/20/2019	13:38:01	19.70	1.919972
4688	5/20/2019	13:39:01	19.70	1.920334
4689	5/20/2019	13:40:01	19.80	1.920334
4690	5/20/2019	13:41:01	19.80	1.919972
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4693	5/20/2019	13:44:01	20.00	1.919972
4694	5/20/2019	13:45:01	20.10	1.920334
4695	5/20/2019	13:46:01	20.00	1.919972
4696	5/20/2019	13:47:01	19.90	1.919972
4697	5/20/2019	13:48:01	19.80	1.919972
4698	5/20/2019	13:49:01	19.70	1.919972
4699	5/20/2019	13:50:01	19.60	1.919972

4700	5/20/2019	13:51:01	19.70	1.919972
4701	5/20/2019	13:52:01	19.70	1.919972
4702	5/20/2019	13:53:01	19.80	1.919972
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4704	5/20/2019	13:55:01	19.90	1.919611
4705	5/20/2019	13:56:01	19.90	1.919972
4706	5/20/2019	13:57:01	20.00	1.919972
4707	5/20/2019	13:58:01	20.10	1.919972
4708	5/20/2019	13:59:01	20.00	1.919972
4709	5/20/2019	14:00:01	19.90	1.919972
4710	5/20/2019	14:01:01	19.80	1.919972
4711	5/20/2019	14:02:01	19.70	1.919611
4712	5/20/2019	14:03:01	19.70	1.919972
4713	5/20/2019	14:04:01	19.70	1.919611
4714	5/20/2019	14:05:01	19.70	1.919611
4715	5/20/2019	14:06:01	19.80	1.919972
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4717	5/20/2019	14:08:01	19.90	1.919611
4718	5/20/2019	14:09:01	20.00	1.919972
4719	5/20/2019	14:10:01	20.10	1.919249
4720	5/20/2019	14:11:01	20.10	1.919972
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4724	5/20/2019	14:15:01	19.70	1.919611
4725	5/20/2019	14:16:01	19.70	1.919249
4726	5/20/2019	14:17:01	19.70	1.919611
4727	5/20/2019	14:18:01	19.80	1.919611
4728	5/20/2019	14:19:01	19.80	1.919972
4729	5/20/2019	14:20:01	19.90	1.918887
4730	5/20/2019	14:21:01	20.00	1.919249
4731	5/20/2019	14:22:01	20.00	1.919249
4732	5/20/2019	14:23:01	20.10	1.918887
4733	5/20/2019	14:24:01	20.00	1.919249
4734	5/20/2019	14:25:01	19.90	1.917802
4735	5/20/2019	14:26:01	19.80	1.918887
4736	5/20/2019	14:27:01	19.70	1.918164
4737	5/20/2019	14:28:01	19.70	1.917802
4738	5/20/2019	14:29:01	19.70	1.918164
4739	5/20/2019	14:30:01	19.70	1.917802
4740	5/20/2019	14:31:01	19.80	1.918525
4741	5/20/2019	14:32:01	19.90	1.918887
4742	5/20/2019	14:33:01	19.90	1.917802
4743	5/20/2019	14:34:01	20.00	1.918164
4744	5/20/2019	14:35:01	20.10	1.91744
4745	5/20/2019	14:36:01	20.10	1.919249
4746	5/20/2019	14:37:01	19.90	1.917802

4747	5/20/2019	14:38:01	19.80	1.91744
4748	5/20/2019	14:39:01	19.70	1.917802
4749	5/20/2019	14:40:01	19.70	1.918525
4750	5/20/2019	14:41:01	19.70	1.917078
4751	5/20/2019	14:42:01	19.70	1.91744
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4755	5/20/2019	14:46:01	20.00	1.91744
4756	5/20/2019	14:47:01	20.10	1.917078
4757	5/20/2019	14:48:01	20.10	1.917802
4758	5/20/2019	14:49:01	20.00	1.91744
4759	5/20/2019	14:50:01	19.80	1.91744
4760	5/20/2019	14:51:01	19.70	1.917802
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4763	5/20/2019	14:54:01	19.70	1.917078
4764	5/20/2019	14:55:01	19.80	1.917078
4765	5/20/2019	14:56:01	19.80	1.917078
4766	5/20/2019	14:57:01	19.90	1.917078
4767	5/20/2019	14:58:01	20.00	1.917078
4768	5/20/2019	14:59:01	20.10	1.917078
4769	5/20/2019	15:00:01	20.10	1.917078
4770	5/20/2019	15:01:01	20.00	1.917078
4771	5/20/2019	15:02:01	19.90	1.917078
4772	5/20/2019	15:03:01	19.70	1.917078
4773	5/20/2019	15:04:01	19.70	1.917078
4774	5/20/2019	15:05:01	19.70	1.917078
4775	5/20/2019	15:06:01	19.70	1.917078
4776	5/20/2019	15:07:01	19.80	1.917078
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4779	5/20/2019	15:10:01	20.00	1.917078
4780	5/20/2019	15:11:01	20.00	1.917078
4781	5/20/2019	15:12:01	20.10	1.917078
4782	5/20/2019	15:13:01	20.00	1.916717
4783	5/20/2019	15:14:01	19.90	1.917078
4784	5/20/2019	15:15:01	19.80	1.917078
4785	5/20/2019	15:16:01	19.70	1.917078
4786	5/20/2019	15:17:01	19.60	1.916355
4787	5/20/2019	15:18:01	19.70	1.916717
4788	5/20/2019	15:19:01	19.70	1.916717
4789	5/20/2019	15:20:01	19.80	1.916717
4790	5/20/2019	15:21:01	19.90	1.917078
4791	5/20/2019	15:22:01	19.90	1.916717
4792	5/20/2019	15:23:01	20.00	1.916355
4793	5/20/2019	15:24:01	20.00	1.916355

4794	5/20/2019	15:25:01	20.10	1.916717	
4795	5/20/2019	15:26:01	20.00	1.915993	
4796	5/20/2019	15:27:01	19.90	1.916717	
4797	5/20/2019	15:28:01	19.70	1.917078	
4798	5/20/2019	15:29:01	19.70	1.916717	
4799	5/20/2019	15:30:01	19.70	1.916355	
4800	5/20/2019	15:31:01	19.70	1.915632	
4801	5/20/2019	15:32:01	19.70	1.916717	72 horas
4802	5/20/2019	15:33:01	19.80	1.915632	
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4804	5/20/2019	15:35:01	19.90	1.915993	
4805	5/20/2019	15:36:01	20.00	1.91527	
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4807	5/20/2019	15:38:01	20.10	1.914908	
4808	5/20/2019	15:39:01	20.00	1.914546	
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4810	5/20/2019	15:41:01	19.70	1.915993	
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4812	5/20/2019	15:43:01	19.60	1.915632	
4813	5/20/2019	15:44:01	19.70	1.914908	
4814	5/20/2019	15:45:01	19.70	1.914546	
4815	5/20/2019	15:46:01	19.80	1.914185	
4816	5/20/2019	15:47:01	19.90	1.914908	
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4819	5/20/2019	15:50:01	20.00	1.914908	
4820	5/20/2019	15:51:01	20.10	1.91527	
4821	5/20/2019	15:52:01	20.00	1.914908	
4822	5/20/2019	15:53:01	19.90	1.914908	
4823	5/20/2019	15:54:01	19.70	1.914908	
4824	5/20/2019	15:55:01	19.70	1.914546	
4825	5/20/2019	15:56:01	19.60	1.914185	
4826	5/20/2019	15:57:01	19.70	1.914185	
4827	5/20/2019	15:58:01	19.70	1.914908	
4828	5/20/2019	15:59:01	19.80	1.914185	
4829	5/20/2019	16:00:01	19.80	1.914185	
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4832	5/20/2019	16:03:01	20.00	1.914908	
4833	5/20/2019	16:04:01	20.10	1.914185	
4834	5/20/2019	16:05:01	20.10	1.914185	
4835	5/20/2019	16:06:01	19.90	1.914185	
4836	5/20/2019	16:07:01	19.80	1.914185	
4837	5/20/2019	16:08:01	19.70	1.914185	
4838	5/20/2019	16:09:01	19.60	1.913823	
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4840	5/20/2019	16:11:01	19.70	1.914185	

4841	5/20/2019	16:12:01	19.70	1.914185
4842	5/20/2019	16:13:01	19.80	1.914185
4843	5/20/2019	16:14:01	19.90	1.914185
4844	5/20/2019	16:15:01	19.90	1.914185
4845	5/20/2019	16:16:01	20.00	1.914185
4846	5/20/2019	16:17:01	20.10	1.914185
4847	5/20/2019	16:18:01	20.10	1.914185
4848	5/20/2019	16:19:01	20.00	1.914546
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4863	5/20/2019	16:34:01	19.80	1.914185
4864	5/20/2019	16:35:01	19.70	1.913823
4865	5/20/2019	16:36:01	19.60	1.913823
4866	5/20/2019	16:37:01	19.60	1.9131
4867	5/20/2019	16:38:01	19.70	1.913823
4868	5/20/2019	16:39:01	19.70	1.913461
4869	5/20/2019	16:40:01	19.80	1.913461
4870	5/20/2019	16:41:01	19.90	1.912376
4871	5/20/2019	16:42:01	19.90	1.9131
4872	5/20/2019	16:43:01	20.00	1.913461
4873	5/20/2019	16:44:01	20.00	1.912738
4874	5/20/2019	16:45:01	20.10	1.912738
4875	5/20/2019	16:46:01	20.00	1.9131
4876	5/20/2019	16:47:01	19.90	1.9131
4877	5/20/2019	16:48:01	19.70	1.913461
4878	5/20/2019	16:49:01	19.70	1.912738
4879	5/20/2019	16:50:01	19.60	1.912014
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4881	5/20/2019	16:52:01	19.70	1.912376
4882	5/20/2019	16:53:01	19.70	1.912738
4883	5/20/2019	16:54:01	19.80	1.912376
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4892	5/20/2019	17:03:01	19.70	1.911653
4893	5/20/2019	17:04:01	19.60	1.911653
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4895	5/20/2019	17:06:01	19.70	1.911653
4896	5/20/2019	17:07:01	19.70	1.912014
4897	5/20/2019	17:08:01	19.80	1.911653
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4904	5/20/2019	17:15:01	19.90	1.911291
4905	5/20/2019	17:16:01	19.80	1.911653
4906	5/20/2019	17:17:01	19.70	1.911291
4907	5/20/2019	17:18:01	19.60	1.911291
4908	5/20/2019	17:19:01	19.60	1.911291
4909	5/20/2019	17:20:01	19.70	1.911291
4910	5/20/2019	17:21:01	19.70	1.910929
4911	5/20/2019	17:22:01	19.80	1.911291
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4913	5/20/2019	17:24:01	19.90	1.911291
4914	5/20/2019	17:25:01	20.00	1.911291
4915	5/20/2019	17:26:01	20.00	1.911291
4916	5/20/2019	17:27:01	20.10	1.911653
4917	5/20/2019	17:28:01	20.00	1.911291
4918	5/20/2019	17:29:01	19.90	1.911653
4919	5/20/2019	17:30:01	19.80	1.911291
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4921	5/20/2019	17:32:01	19.60	1.911291
4922	5/20/2019	17:33:01	19.60	1.911291
4923	5/20/2019	17:34:01	19.70	1.911291
4924	5/20/2019	17:35:01	19.70	1.911291
4925	5/20/2019	17:36:01	19.80	1.910568
4926	5/20/2019	17:37:01	19.80	1.911291
4927	5/20/2019	17:38:01	19.90	1.910929
4928	5/20/2019	17:39:01	20.00	1.910568
4929	5/20/2019	17:40:01	20.00	1.910929
4930	5/20/2019	17:41:01	20.10	1.910568
4931	5/20/2019	17:42:01	20.00	1.911291
4932	5/20/2019	17:43:01	19.90	1.910568
4933	5/20/2019	17:44:01	19.80	1.910568
4934	5/20/2019	17:45:01	19.70	1.910568

4935	5/20/2019	17:46:01	19.60	1.910568
4936	5/20/2019	17:47:01	19.60	1.910206
4937	5/20/2019	17:48:01	19.70	1.910929
4938	5/20/2019	17:49:01	19.70	1.910568
4939	5/20/2019	17:50:01	19.80	1.911291
4940	5/20/2019	17:51:01	19.80	1.911291
4941	5/20/2019	17:52:01	19.90	1.910929
4942	5/20/2019	17:53:01	19.90	1.910929
4943	5/20/2019	17:54:01	20.00	1.910206
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4946	5/20/2019	17:57:01	20.00	1.909844
4947	5/20/2019	17:58:01	19.80	1.909482
4948	5/20/2019	17:59:01	19.70	1.909844
4949	5/20/2019	18:00:01	19.60	1.910206
4950	5/20/2019	18:01:01	19.60	1.910206
4951	5/20/2019	18:02:01	19.70	1.910568
4952	5/20/2019	18:03:01	19.70	1.910206
4953	5/20/2019	18:04:01	19.80	1.909482
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4956	5/20/2019	18:07:01	19.90	1.909482
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4965	5/20/2019	18:16:01	19.60	1.909121
4966	5/20/2019	18:17:01	19.70	1.909121
4967	5/20/2019	18:18:01	19.70	1.908759
4968	5/20/2019	18:19:01	19.80	1.908397
4969	5/20/2019	18:20:01	19.90	1.908759
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4972	5/20/2019	18:23:01	20.00	1.908759
4973	5/20/2019	18:24:01	20.10	1.909121
4974	5/20/2019	18:25:01	20.10	1.908759
4975	5/20/2019	18:26:01	19.90	1.908397
4976	5/20/2019	18:27:01	19.80	1.908397
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4978	5/20/2019	18:29:01	19.60	1.908397
4979	5/20/2019	18:30:01	19.60	1.908397
4980	5/20/2019	18:31:01	19.70	1.908397
4981	5/20/2019	18:32:01	19.70	1.908397

4982	5/20/2019	18:33:01	19.80	1.908759
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4985	5/20/2019	18:36:01	19.90	1.908759
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4987	5/20/2019	18:38:01	20.00	1.908397
4988	5/20/2019	18:39:01	20.10	1.908759
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4991	5/20/2019	18:42:01	19.70	1.908036
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4994	5/20/2019	18:45:01	19.60	1.908036
4995	5/20/2019	18:46:01	19.70	1.908397
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4997	5/20/2019	18:48:01	19.80	1.907674
4998	5/20/2019	18:49:01	19.80	1.908397
4999	5/20/2019	18:50:01	19.90	1.908397
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5001	5/20/2019	18:52:01	20.00	1.908397
5002	5/20/2019	18:53:01	20.00	1.907674
5003	5/20/2019	18:54:01	20.10	1.907674
5004	5/20/2019	18:55:01	20.00	1.908036
5005	5/20/2019	18:56:01	19.80	1.908397
5006	5/20/2019	18:57:01	19.70	1.908397
5007	5/20/2019	18:58:01	19.60	1.908397
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5009	5/20/2019	19:00:01	19.60	1.908397
5010	5/20/2019	19:01:01	19.70	1.907674
5011	5/20/2019	19:02:01	19.70	1.907674
5012	5/20/2019	19:03:01	19.80	1.907312
5013	5/20/2019	19:04:01	19.80	1.90695
5014	5/20/2019	19:05:01	19.90	1.907674
5015	5/20/2019	19:06:01	19.90	1.907312
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5017	5/20/2019	19:08:01	20.00	1.908036
5018	5/20/2019	19:09:01	20.10	1.907312
5019	5/20/2019	19:10:01	20.00	1.908036
5020	5/20/2019	19:11:01	19.90	1.90695
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5026	5/20/2019	19:17:01	19.70	1.906227
5027	5/20/2019	19:18:01	19.80	1.90695
5028	5/20/2019	19:19:01	19.80	1.906227

5029	5/20/2019	19:20:01	19.90	1.906589
5030	5/20/2019	19:21:01	19.90	1.906227
5031	5/20/2019	19:22:01	20.00	1.906589
5032	5/20/2019	19:23:01	20.00	1.906589
5033	5/20/2019	19:24:01	20.10	1.905865
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5035	5/20/2019	19:26:01	19.90	1.906227
5036	5/20/2019	19:27:01	19.80	1.905865
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5038	5/20/2019	19:29:01	19.60	1.905865
5039	5/20/2019	19:30:01	19.60	1.906227
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5041	5/20/2019	19:32:01	19.70	1.905865
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5043	5/20/2019	19:34:01	19.80	1.905504
5044	5/20/2019	19:35:01	19.90	1.906227
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5048	5/20/2019	19:39:01	20.00	1.906227
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5055	5/20/2019	19:46:01	19.60	1.905865
5056	5/20/2019	19:47:01	19.70	1.905504
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5060	5/20/2019	19:51:01	19.90	1.905504
5061	5/20/2019	19:52:01	19.90	1.905504
5062	5/20/2019	19:53:01	20.00	1.905504
5063	5/20/2019	19:54:01	20.00	1.905865
5064	5/20/2019	19:55:01	20.10	1.905504
5065	5/20/2019	19:56:01	20.00	1.905504
5066	5/20/2019	19:57:01	19.90	1.905504
5067	5/20/2019	19:58:01	19.70	1.905504
5068	5/20/2019	19:59:01	19.60	1.905504
5069	5/20/2019	20:00:01	19.60	1.905142
5070	5/20/2019	20:01:01	19.60	1.905504
5071	5/20/2019	20:02:01	19.70	1.905504
5072	5/20/2019	20:03:01	19.70	1.905142
5073	5/20/2019	20:04:01	19.70	1.90478
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5075	5/20/2019	20:06:01	19.90	1.905504

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5077	5/20/2019	20:08:01	19.90	1.905142
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5082	5/20/2019	20:13:01	19.80	1.905504
5083	5/20/2019	20:14:01	19.70	1.905142
5084	5/20/2019	20:15:01	19.60	1.905504
5085	5/20/2019	20:16:01	19.60	1.904419
5086	5/20/2019	20:17:01	19.60	1.90478
5087	5/20/2019	20:18:01	19.70	1.905142
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5089	5/20/2019	20:20:01	19.80	1.905142
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5091	5/20/2019	20:22:01	19.90	1.904057
5092	5/20/2019	20:23:01	19.90	1.904057
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5103	5/20/2019	20:34:01	19.70	1.903695
5104	5/20/2019	20:35:01	19.70	1.904419
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5106	5/20/2019	20:37:01	19.90	1.903333
5107	5/20/2019	20:38:01	19.90	1.902972
5108	5/20/2019	20:39:01	19.90	1.903333
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5110	5/20/2019	20:41:01	20.00	1.903695
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5112	5/20/2019	20:43:01	20.00	1.903333
5113	5/20/2019	20:44:01	19.90	1.903333
5114	5/20/2019	20:45:01	19.70	1.902972
5115	5/20/2019	20:46:01	19.60	1.90261
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5117	5/20/2019	20:48:01	19.60	1.902972
5118	5/20/2019	20:49:01	19.70	1.90261
5119	5/20/2019	20:50:01	19.70	1.902972
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5124	5/20/2019	20:55:01	19.90	1.90261
5125	5/20/2019	20:56:01	20.00	1.903333
5126	5/20/2019	20:57:01	20.00	1.90261
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5128	5/20/2019	20:59:01	20.00	1.90261
5129	5/20/2019	21:00:01	19.90	1.90261
5130	5/20/2019	21:01:01	19.70	1.90261
5131	5/20/2019	21:02:01	19.60	1.902972
5132	5/20/2019	21:03:01	19.60	1.90261
5133	5/20/2019	21:04:01	19.60	1.90261
5134	5/20/2019	21:05:01	19.60	1.90261
5135	5/20/2019	21:06:01	19.70	1.90261
5136	5/20/2019	21:07:01	19.70	1.90261
5137	5/20/2019	21:08:01	19.80	1.90261
5138	5/20/2019	21:09:01	19.90	1.90261
5139	5/20/2019	21:10:01	19.90	1.90261
5140	5/20/2019	21:11:01	19.90	1.90261
5141	5/20/2019	21:12:01	20.00	1.90261
5142	5/20/2019	21:13:01	20.00	1.902248
5143	5/20/2019	21:14:01	20.10	1.90261
5144	5/20/2019	21:15:01	20.00	1.90261
5145	5/20/2019	21:16:01	19.90	1.901887
5146	5/20/2019	21:17:01	19.70	1.902248
5147	5/20/2019	21:18:01	19.60	1.902248
5148	5/20/2019	21:19:01	19.60	1.901887
5149	5/20/2019	21:20:01	19.60	1.90261
5150	5/20/2019	21:21:01	19.60	1.90261
5151	5/20/2019	21:22:01	19.70	1.90261
5152	5/20/2019	21:23:01	19.70	1.902248
5153	5/20/2019	21:24:01	19.80	1.901887
5154	5/20/2019	21:25:01	19.80	1.90261
5155	5/20/2019	21:26:01	19.90	1.90261
5156	5/20/2019	21:27:01	19.90	1.902248
5157	5/20/2019	21:28:01	20.00	1.902248
5158	5/20/2019	21:29:01	20.00	1.90261
5159	5/20/2019	21:30:01	20.00	1.901887
5160	5/20/2019	21:31:01	20.00	1.901525
5161	5/20/2019	21:32:01	19.90	1.901887
5162	5/20/2019	21:33:01	19.80	1.902248
5163	5/20/2019	21:34:01	19.70	1.901163
5164	5/20/2019	21:35:01	19.60	1.902248
5165	5/20/2019	21:36:01	19.60	1.901163
5166	5/20/2019	21:37:01	19.60	1.901887
5167	5/20/2019	21:38:01	19.70	1.901163
5168	5/20/2019	21:39:01	19.70	1.901163
5169	5/20/2019	21:40:01	19.80	1.901163

5170	5/20/2019	21:41:01	19.80	1.90044
5171	5/20/2019	21:42:01	19.90	1.901525
5172	5/20/2019	21:43:01	19.90	1.901525
5173	5/20/2019	21:44:01	19.90	1.901163
5174	5/20/2019	21:45:01	20.00	1.900078
5175	5/20/2019	21:46:01	20.00	1.901887
5176	5/20/2019	21:47:01	20.00	1.901163
5177	5/20/2019	21:48:01	20.00	1.901163
5178	5/20/2019	21:49:01	19.90	1.90044
5179	5/20/2019	21:50:01	19.70	1.900078
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5185	5/20/2019	21:56:01	19.80	1.900078
5186	5/20/2019	21:57:01	19.80	1.899716
5187	5/20/2019	21:58:01	19.90	1.900078
5188	5/20/2019	21:59:01	19.90	1.901163
5189	5/20/2019	22:00:01	19.90	1.899716
5190	5/20/2019	22:01:01	20.00	1.899716
5191	5/20/2019	22:02:01	20.00	1.899716
5192	5/20/2019	22:03:01	20.00	1.90044
5193	5/20/2019	22:04:01	20.00	1.90044
5194	5/20/2019	22:05:01	19.90	1.899716
5195	5/20/2019	22:06:01	19.80	1.899716
5196	5/20/2019	22:07:01	19.60	1.899716
5197	5/20/2019	22:08:01	19.60	1.90044
5198	5/20/2019	22:09:01	19.60	1.900078
5199	5/20/2019	22:10:01	19.60	1.900078
5200	5/20/2019	22:11:01	19.70	1.900078
5201	5/20/2019	22:12:01	19.70	1.899716
5202	5/20/2019	22:13:01	19.80	1.899716
5203	5/20/2019	22:14:01	19.80	1.899716
5204	5/20/2019	22:15:01	19.90	1.899716
5205	5/20/2019	22:16:01	19.90	1.899716
5206	5/20/2019	22:17:01	19.90	1.899716
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5210	5/20/2019	22:21:01	20.00	1.899716
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5212	5/20/2019	22:23:01	19.70	1.899716
5213	5/20/2019	22:24:01	19.60	1.899716
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5215	5/20/2019	22:26:01	19.60	1.899716
5216	5/20/2019	22:27:01	19.60	1.899716

5217	5/20/2019	22:28:01	19.70	1.899716
5218	5/20/2019	22:29:01	19.70	1.899716
5219	5/20/2019	22:30:01	19.80	1.898993
5220	5/20/2019	22:31:01	19.80	1.899716
5221	5/20/2019	22:32:01	19.90	1.899354
5222	5/20/2019	22:33:01	19.90	1.899716
5223	5/20/2019	22:34:01	19.90	1.899716
5224	5/20/2019	22:35:01	20.00	1.899716
5225	5/20/2019	22:36:01	20.00	1.898993
5226	5/20/2019	22:37:01	20.10	1.899716
5227	5/20/2019	22:38:01	20.00	1.899354
5228	5/20/2019	22:39:01	19.90	1.899716
5229	5/20/2019	22:40:01	19.70	1.899716
5230	5/20/2019	22:41:01	19.60	1.898269
5231	5/20/2019	22:42:01	19.60	1.898993
5232	5/20/2019	22:43:01	19.60	1.898993
5233	5/20/2019	22:44:01	19.60	1.899716
5234	5/20/2019	22:45:01	19.70	1.899354
5235	5/20/2019	22:46:01	19.70	1.898993
5236	5/20/2019	22:47:01	19.80	1.899354
5237	5/20/2019	22:48:01	19.80	1.899716
5238	5/20/2019	22:49:01	19.90	1.898269
5239	5/20/2019	22:50:01	19.90	1.898631
5240	5/20/2019	22:51:01	19.90	1.898993
5241	5/20/2019	22:52:01	20.00	1.898269
5242	5/20/2019	22:53:01	20.00	1.898993
5243	5/20/2019	22:54:01	20.10	1.898631
5244	5/20/2019	22:55:01	20.00	1.898631
5245	5/20/2019	22:56:01	19.90	1.898269
5246	5/20/2019	22:57:01	19.70	1.898269
5247	5/20/2019	22:58:01	19.60	1.898993
5248	5/20/2019	22:59:01	19.60	1.898993
5249	5/20/2019	23:00:01	19.60	1.898993
5250	5/20/2019	23:01:01	19.60	1.898269
5251	5/20/2019	23:02:01	19.70	1.898269
5252	5/20/2019	23:03:01	19.70	1.898631
5253	5/20/2019	23:04:01	19.80	1.898269
5254	5/20/2019	23:05:01	19.80	1.897908
5255	5/20/2019	23:06:01	19.90	1.898269
5256	5/20/2019	23:07:01	19.90	1.897184
5257	5/20/2019	23:08:01	19.90	1.897546
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5259	5/20/2019	23:10:01	20.00	1.896822
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5262	5/20/2019	23:13:01	19.90	1.897184
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5265	5/20/2019	23:16:01	19.60	1.897908
5266	5/20/2019	23:17:01	19.60	1.897184
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5268	5/20/2019	23:19:01	19.70	1.897184
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5279	5/20/2019	23:30:01	20.00	1.896822
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5286	5/20/2019	23:37:01	19.70	1.896822
5287	5/20/2019	23:38:01	19.70	1.896461
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5294	5/20/2019	23:45:01	20.00	1.896822
5295	5/20/2019	23:46:01	20.00	1.896822
5296	5/20/2019	23:47:01	20.10	1.896822
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5299	5/20/2019	23:50:01	19.80	1.896822
5300	5/20/2019	23:51:01	19.60	1.896822
5301	5/20/2019	23:52:01	19.60	1.896822
5302	5/20/2019	23:53:01	19.60	1.896461
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5304	5/20/2019	23:55:01	19.70	1.896461
5305	5/20/2019	23:56:01	19.70	1.896822
5306	5/20/2019	23:57:01	19.70	1.896461
5307	5/20/2019	23:58:01	19.80	1.896822
5308	5/20/2019	23:59:01	19.80	1.896099
5309	5/21/2019	0:00:01	19.90	1.896461
5310	5/21/2019	0:01:01	19.90	1.895737

5311	5/21/2019	0:02:01	19.90	1.895376
5312	5/21/2019	0:03:01	20.00	1.896822
5313	5/21/2019	0:04:01	20.00	1.896461
5314	5/21/2019	0:05:01	20.10	1.896099
5315	5/21/2019	0:06:01	20.10	1.895376
5316	5/21/2019	0:07:01	19.90	1.895737
5317	5/21/2019	0:08:01	19.80	1.896099
5318	5/21/2019	0:09:01	19.70	1.895737
5319	5/21/2019	0:10:01	19.60	1.896461
5320	5/21/2019	0:11:01	19.60	1.896099
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5322	5/21/2019	0:13:01	19.60	1.895376
5323	5/21/2019	0:14:01	19.70	1.896099
5324	5/21/2019	0:15:01	19.70	1.895376
5325	5/21/2019	0:16:01	19.80	1.896099
5326	5/21/2019	0:17:01	19.80	1.894291
5327	5/21/2019	0:18:01	19.90	1.895376
5328	5/21/2019	0:19:01	19.90	1.896099
5329	5/21/2019	0:20:01	19.90	1.895376
5330	5/21/2019	0:21:01	20.00	1.895376
5331	5/21/2019	0:22:01	20.00	1.894291
5332	5/21/2019	0:23:01	20.00	1.895014
5333	5/21/2019	0:24:01	20.00	1.895014
5334	5/21/2019	0:25:01	20.00	1.895014
5335	5/21/2019	0:26:01	19.90	1.895376
5336	5/21/2019	0:27:01	19.70	1.895376
5337	5/21/2019	0:28:01	19.70	1.895376
5338	5/21/2019	0:29:01	19.60	1.894291
5339	5/21/2019	0:30:01	19.60	1.894652
5340	5/21/2019	0:31:01	19.60	1.894652
5341	5/21/2019	0:32:01	19.70	1.894652
5342	5/21/2019	0:33:01	19.70	1.893929
5343	5/21/2019	0:34:01	19.80	1.894652
5344	5/21/2019	0:35:01	19.80	1.893929
5345	5/21/2019	0:36:01	19.90	1.895014
5346	5/21/2019	0:37:01	19.90	1.894291
5347	5/21/2019	0:38:01	19.90	1.893929
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5349	5/21/2019	0:40:01	20.00	1.894291
5350	5/21/2019	0:41:01	20.00	1.894652
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5357	5/21/2019	0:48:01	19.60	1.893929

5358	5/21/2019	0:49:01	19.60	1.893567
5359	5/21/2019	0:50:01	19.60	1.893929
5360	5/21/2019	0:51:01	19.70	1.893929
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5365	5/21/2019	0:56:01	19.90	1.893929
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5368	5/21/2019	0:59:01	20.00	1.893929
5369	5/21/2019	1:00:01	20.00	1.893567
5370	5/21/2019	1:01:01	20.00	1.893929
5371	5/21/2019	1:02:01	20.00	1.893929
5372	5/21/2019	1:03:01	20.00	1.893929
5373	5/21/2019	1:04:01	19.80	1.893929
5374	5/21/2019	1:05:01	19.70	1.893567
5375	5/21/2019	1:06:01	19.60	1.893567
5376	5/21/2019	1:07:01	19.60	1.893205
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5386	5/21/2019	1:17:01	19.90	1.89212
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5391	5/21/2019	1:22:01	20.00	1.893205
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5393	5/21/2019	1:24:01	19.80	1.893567
5394	5/21/2019	1:25:01	19.70	1.893205
5395	5/21/2019	1:26:01	19.60	1.893205
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5397	5/21/2019	1:28:01	19.60	1.891759
5398	5/21/2019	1:29:01	19.60	1.891759
5399	5/21/2019	1:30:01	19.70	1.893205
5400	5/21/2019	1:31:01	19.70	1.892844
5401	5/21/2019	1:32:01	19.80	1.891759
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5404	5/21/2019	1:35:01	19.90	1.892844

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5408	5/21/2019	1:39:01	20.00	1.892482
5409	5/21/2019	1:40:01	20.00	1.892482
5410	5/21/2019	1:41:01	20.00	1.891397
5411	5/21/2019	1:42:01	20.00	1.892844
5412	5/21/2019	1:43:01	19.90	1.892482
5413	5/21/2019	1:44:01	19.80	1.892482
5414	5/21/2019	1:45:01	19.70	1.891759
5415	5/21/2019	1:46:01	19.60	1.891035
5416	5/21/2019	1:47:01	19.60	1.891035
5417	5/21/2019	1:48:01	19.60	1.891759
5418	5/21/2019	1:49:01	19.60	1.891759
5419	5/21/2019	1:50:01	19.70	1.892482
5420	5/21/2019	1:51:01	19.70	1.891035
5421	5/21/2019	1:52:01	19.70	1.891397
5422	5/21/2019	1:53:01	19.80	1.891035
5423	5/21/2019	1:54:01	19.80	1.891759
5424	5/21/2019	1:55:01	19.90	1.891035
5425	5/21/2019	1:56:01	19.90	1.891759
5426	5/21/2019	1:57:01	19.90	1.891397
5427	5/21/2019	1:58:01	19.90	1.891035
5428	5/21/2019	1:59:01	20.00	1.891035
5429	5/21/2019	2:00:01	20.00	1.891035
5430	5/21/2019	2:01:01	20.00	1.891397
5431	5/21/2019	2:02:01	20.00	1.891397
5432	5/21/2019	2:03:01	20.00	1.891035
5433	5/21/2019	2:04:01	19.90	1.891035
5434	5/21/2019	2:05:01	19.80	1.891035
5435	5/21/2019	2:06:01	19.60	1.891035
5436	5/21/2019	2:07:01	19.60	1.891397
5437	5/21/2019	2:08:01	19.60	1.891035
5438	5/21/2019	2:09:01	19.60	1.891035
5439	5/21/2019	2:10:01	19.60	1.891035
5440	5/21/2019	2:11:01	19.70	1.891397
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5442	5/21/2019	2:13:01	19.80	1.891035
5443	5/21/2019	2:14:01	19.80	1.891035
5444	5/21/2019	2:15:01	19.80	1.891035
5445	5/21/2019	2:16:01	19.90	1.891035
5446	5/21/2019	2:17:01	19.90	1.891035
5447	5/21/2019	2:18:01	19.90	1.891035
5448	5/21/2019	2:19:01	19.90	1.891035
5449	5/21/2019	2:20:01	20.00	1.891035
5450	5/21/2019	2:21:01	20.00	1.891035
5451	5/21/2019	2:22:01	20.00	1.891035

5452	5/21/2019	2:23:01	20.00	1.891035
5453	5/21/2019	2:24:01	20.00	1.890673
5454	5/21/2019	2:25:01	20.00	1.890673
5455	5/21/2019	2:26:01	19.80	1.890673
5456	5/21/2019	2:27:01	19.70	1.890673
5457	5/21/2019	2:28:01	19.60	1.890673
5458	5/21/2019	2:29:01	19.60	1.891035
5459	5/21/2019	2:30:01	19.60	1.891035
5460	5/21/2019	2:31:01	19.60	1.890673
5461	5/21/2019	2:32:01	19.60	1.891035
5462	5/21/2019	2:33:01	19.70	1.891035
5463	5/21/2019	2:34:01	19.70	1.891035
5464	5/21/2019	2:35:01	19.80	1.890312
5465	5/21/2019	2:36:01	19.80	1.891035
5466	5/21/2019	2:37:01	19.80	1.890312
5467	5/21/2019	2:38:01	19.90	1.889227
5468	5/21/2019	2:39:01	19.90	1.890673
5469	5/21/2019	2:40:01	19.90	1.891035
5470	5/21/2019	2:41:01	19.90	1.890673
5471	5/21/2019	2:42:01	20.00	1.890312
5472	5/21/2019	2:43:01	20.00	1.891035
5473	5/21/2019	2:44:01	20.00	1.890312
5474	5/21/2019	2:45:01	20.00	1.88995
5475	5/21/2019	2:46:01	20.00	1.890312
5476	5/21/2019	2:47:01	20.00	1.890312
5477	5/21/2019	2:48:01	19.80	1.890312
5478	5/21/2019	2:49:01	19.70	1.890312
5479	5/21/2019	2:50:01	19.60	1.890312
5480	5/21/2019	2:51:01	19.60	1.890312
5481	5/21/2019	2:52:01	19.60	1.890312
5482	5/21/2019	2:53:01	19.60	1.889588
5483	5/21/2019	2:54:01	19.60	1.889227
5484	5/21/2019	2:55:01	19.70	1.889588
5485	5/21/2019	2:56:01	19.70	1.889588
5486	5/21/2019	2:57:01	19.80	1.888865
5487	5/21/2019	2:58:01	19.80	1.88995
5488	5/21/2019	2:59:01	19.80	1.889588
5489	5/21/2019	3:00:01	19.90	1.889588
5490	5/21/2019	3:01:01	19.90	1.888503
5491	5/21/2019	3:02:01	19.90	1.88995
5492	5/21/2019	3:03:01	19.90	1.889227
5493	5/21/2019	3:04:01	19.90	1.888865
5494	5/21/2019	3:05:01	20.00	1.888865
5495	5/21/2019	3:06:01	20.00	1.889588
5496	5/21/2019	3:07:01	20.00	1.888865
5497	5/21/2019	3:08:01	20.00	1.888865
5498	5/21/2019	3:09:01	20.00	1.889227

5499	5/21/2019	3:10:01	19.90	1.889588
5500	5/21/2019	3:11:01	19.70	1.888503
5501	5/21/2019	3:12:01	19.60	1.888503
5502	5/21/2019	3:13:01	19.60	1.888503
5503	5/21/2019	3:14:01	19.60	1.888503
5504	5/21/2019	3:15:01	19.60	1.888141
5505	5/21/2019	3:16:01	19.60	1.888865
5506	5/21/2019	3:17:01	19.60	1.888141
5507	5/21/2019	3:18:01	19.70	1.888865
5508	5/21/2019	3:19:01	19.70	1.888141
5509	5/21/2019	3:20:01	19.80	1.888141
5510	5/21/2019	3:21:01	19.80	1.888141
5511	5/21/2019	3:22:01	19.80	1.888141
5512	5/21/2019	3:23:01	19.90	1.888141
5513	5/21/2019	3:24:01	19.90	1.888865
5514	5/21/2019	3:25:01	19.90	1.888141
5515	5/21/2019	3:26:01	19.90	1.888141
5516	5/21/2019	3:27:01	19.90	1.888503
5517	5/21/2019	3:28:01	20.00	1.888141
5518	5/21/2019	3:29:01	20.00	1.888503
5519	5/21/2019	3:30:01	20.00	1.888503
5520	5/21/2019	3:31:01	20.00	1.888141
5521	5/21/2019	3:32:01	20.00	1.888141
5522	5/21/2019	3:33:01	20.00	1.888141
5523	5/21/2019	3:34:01	19.80	1.888141
5524	5/21/2019	3:35:01	19.70	1.88778
5525	5/21/2019	3:36:01	19.60	1.888141
5526	5/21/2019	3:37:01	19.60	1.888141
5527	5/21/2019	3:38:01	19.60	1.888141
5528	5/21/2019	3:39:01	19.60	1.888141
5529	5/21/2019	3:40:01	19.60	1.888141
5530	5/21/2019	3:41:01	19.70	1.88778
5531	5/21/2019	3:42:01	19.70	1.888141
5532	5/21/2019	3:43:01	19.80	1.888141
5533	5/21/2019	3:44:01	19.80	1.887418
5534	5/21/2019	3:45:01	19.80	1.88778
5535	5/21/2019	3:46:01	19.90	1.888141
5536	5/21/2019	3:47:01	19.90	1.888141
5537	5/21/2019	3:48:01	19.90	1.88778
5538	5/21/2019	3:49:01	19.90	1.88778
5539	5/21/2019	3:50:01	19.90	1.888141
5540	5/21/2019	3:51:01	19.90	1.887418
5541	5/21/2019	3:52:01	20.00	1.888141
5542	5/21/2019	3:53:01	20.00	1.88778
5543	5/21/2019	3:54:01	20.00	1.887056
5544	5/21/2019	3:55:01	20.00	1.887418
5545	5/21/2019	3:56:01	20.00	1.887056

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5547	5/21/2019	3:58:01	19.90	1.88778
5548	5/21/2019	3:59:01	19.70	1.887418
5549	5/21/2019	4:00:01	19.60	1.886695
5550	5/21/2019	4:01:01	19.60	1.888141
5551	5/21/2019	4:02:01	19.60	1.887056
5552	5/21/2019	4:03:01	19.60	1.88778
5553	5/21/2019	4:04:01	19.60	1.887056
5554	5/21/2019	4:05:01	19.60	1.88778
5555	5/21/2019	4:06:01	19.70	1.88778
5556	5/21/2019	4:07:01	19.70	1.887056
5557	5/21/2019	4:08:01	19.80	1.88778
5558	5/21/2019	4:09:01	19.80	1.88778
5559	5/21/2019	4:10:01	19.80	1.887056
5560	5/21/2019	4:11:01	19.80	1.886695
5561	5/21/2019	4:12:01	19.90	1.886333
5562	5/21/2019	4:13:01	19.90	1.886333
5563	5/21/2019	4:14:01	19.90	1.886333
5564	5/21/2019	4:15:01	19.90	1.886333
5565	5/21/2019	4:16:01	19.90	1.886695
5566	5/21/2019	4:17:01	20.00	1.886333
5567	5/21/2019	4:18:01	20.00	1.886695
5568	5/21/2019	4:19:01	20.00	1.885971
5569	5/21/2019	4:20:01	20.00	1.885248
5570	5/21/2019	4:21:01	20.00	1.885971
5571	5/21/2019	4:22:01	20.00	1.886333
5572	5/21/2019	4:23:01	20.00	1.885971
5573	5/21/2019	4:24:01	19.90	1.886333
5574	5/21/2019	4:25:01	19.80	1.885248
5575	5/21/2019	4:26:01	19.70	1.885971
5576	5/21/2019	4:27:01	19.60	1.885971
5577	5/21/2019	4:28:01	19.60	1.885971
5578	5/21/2019	4:29:01	19.60	1.885971
5579	5/21/2019	4:30:01	19.60	1.886333
5580	5/21/2019	4:31:01	19.60	1.885609
5581	5/21/2019	4:32:01	19.70	1.885248
5582	5/21/2019	4:33:01	19.70	1.885609
5583	5/21/2019	4:34:01	19.70	1.885971
5584	5/21/2019	4:35:01	19.80	1.885248
5585	5/21/2019	4:36:01	19.80	1.885248
5586	5/21/2019	4:37:01	19.80	1.885248
5587	5/21/2019	4:38:01	19.90	1.885248
5588	5/21/2019	4:39:01	19.90	1.885248
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5590	5/21/2019	4:41:01	19.90	1.885248
5591	5/21/2019	4:42:01	19.90	1.885609
5592	5/21/2019	4:43:01	19.90	1.885248

5593	5/21/2019	4:44:01	20.00	1.885248
5594	5/21/2019	4:45:01	20.00	1.885248
5595	5/21/2019	4:46:01	20.00	1.885609
5596	5/21/2019	4:47:01	20.00	1.885248
5597	5/21/2019	4:48:01	20.00	1.885248
5598	5/21/2019	4:49:01	20.00	1.885609
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5600	5/21/2019	4:51:01	20.00	1.885248
5601	5/21/2019	4:52:01	19.80	1.885248
5602	5/21/2019	4:53:01	19.70	1.885248
5603	5/21/2019	4:54:01	19.60	1.885248
5604	5/21/2019	4:55:01	19.60	1.885248
5605	5/21/2019	4:56:01	19.60	1.885609
5606	5/21/2019	4:57:01	19.60	1.885248
5607	5/21/2019	4:58:01	19.60	1.885248
5608	5/21/2019	4:59:01	19.60	1.885248
5609	5/21/2019	5:00:01	19.70	1.885248
5610	5/21/2019	5:01:01	19.70	1.885248
5611	5/21/2019	5:02:01	19.70	1.885248
5612	5/21/2019	5:03:01	19.80	1.885248
5613	5/21/2019	5:04:01	19.80	1.885248
5614	5/21/2019	5:05:01	19.80	1.885248
5615	5/21/2019	5:06:01	19.90	1.884886
5616	5/21/2019	5:07:01	19.90	1.885248
5617	5/21/2019	5:08:01	19.90	1.885248
5618	5/21/2019	5:09:01	19.90	1.885248
5619	5/21/2019	5:10:01	19.90	1.885248
5620	5/21/2019	5:11:01	19.90	1.884524
5621	5/21/2019	5:12:01	20.00	1.885248
5622	5/21/2019	5:13:01	20.00	1.885248
5623	5/21/2019	5:14:01	20.00	1.885248
5624	5/21/2019	5:15:01	20.00	1.884524
5625	5/21/2019	5:16:01	20.00	1.884886
5626	5/21/2019	5:17:01	20.00	1.884524
5627	5/21/2019	5:18:01	20.00	1.884524
5628	5/21/2019	5:19:01	19.90	1.885248
5629	5/21/2019	5:20:01	19.80	1.884163
5630	5/21/2019	5:21:01	19.70	1.884886
5631	5/21/2019	5:22:01	19.60	1.884524
5632	5/21/2019	5:23:01	19.60	1.885248
5633	5/21/2019	5:24:01	19.60	1.883801
5634	5/21/2019	5:25:01	19.60	1.884524
5635	5/21/2019	5:26:01	19.60	1.884524
5636	5/21/2019	5:27:01	19.60	1.885248
5637	5/21/2019	5:28:01	19.70	1.883801
5638	5/21/2019	5:29:01	19.70	1.884886
5639	5/21/2019	5:30:01	19.80	1.884524

5640	5/21/2019	5:31:01	19.80	1.883801
5641	5/21/2019	5:32:01	19.80	1.884886
5642	5/21/2019	5:33:01	19.80	1.883439
5643	5/21/2019	5:34:01	19.90	1.884163
5644	5/21/2019	5:35:01	19.90	1.883439
5645	5/21/2019	5:36:01	19.90	1.884524
5646	5/21/2019	5:37:01	19.90	1.883439
5647	5/21/2019	5:38:01	19.90	1.883801
5648	5/21/2019	5:39:01	19.90	1.884163
5649	5/21/2019	5:40:01	19.90	1.882716
5650	5/21/2019	5:41:01	20.00	1.884163
5651	5/21/2019	5:42:01	20.00	1.883801
5652	5/21/2019	5:43:01	20.00	1.883801
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5654	5/21/2019	5:45:01	20.00	1.884163
5655	5/21/2019	5:46:01	20.00	1.882716
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5657	5/21/2019	5:48:01	20.00	1.882716
5658	5/21/2019	5:49:01	19.90	1.883439
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5660	5/21/2019	5:51:01	19.60	1.882716
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5662	5/21/2019	5:53:01	19.60	1.882716
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5664	5/21/2019	5:55:01	19.60	1.882354
5665	5/21/2019	5:56:01	19.60	1.882354
5666	5/21/2019	5:57:01	19.60	1.883078
5667	5/21/2019	5:58:01	19.70	1.882716
5668	5/21/2019	5:59:01	19.70	1.882354
5669	5/21/2019	6:00:01	19.70	1.883078
5670	5/21/2019	6:01:01	19.80	1.883078
5671	5/21/2019	6:02:01	19.80	1.882354
5672	5/21/2019	6:03:01	19.80	1.882716
5673	5/21/2019	6:04:01	19.80	1.882716
5674	5/21/2019	6:05:01	19.90	1.882716
5675	5/21/2019	6:06:01	19.90	1.882354
5676	5/21/2019	6:07:01	19.90	1.882354
5677	5/21/2019	6:08:01	19.90	1.882354
5678	5/21/2019	6:09:01	19.90	1.882354
5679	5/21/2019	6:10:01	19.90	1.882716
5680	5/21/2019	6:11:01	20.00	1.882716
5681	5/21/2019	6:12:01	20.00	1.882354
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5683	5/21/2019	6:14:01	20.00	1.882354
5684	5/21/2019	6:15:01	20.00	1.882354
5685	5/21/2019	6:16:01	20.00	1.882354
5686	5/21/2019	6:17:01	20.00	1.882354

5687	5/21/2019	6:18:01	20.00	1.882354
5688	5/21/2019	6:19:01	20.00	1.882354
5689	5/21/2019	6:20:01	19.90	1.882354
5690	5/21/2019	6:21:01	19.80	1.882354
5691	5/21/2019	6:22:01	19.70	1.881992
5692	5/21/2019	6:23:01	19.60	1.882354
5693	5/21/2019	6:24:01	19.60	1.882354
5694	5/21/2019	6:25:01	19.60	1.882354
5695	5/21/2019	6:26:01	19.60	1.881631
5696	5/21/2019	6:27:01	19.60	1.881631
5697	5/21/2019	6:28:01	19.70	1.881992
5698	5/21/2019	6:29:01	19.70	1.882354
5699	5/21/2019	6:30:01	19.70	1.881631
5700	5/21/2019	6:31:01	19.70	1.881992
5701	5/21/2019	6:32:01	19.80	1.882354
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5703	5/21/2019	6:34:01	19.80	1.882354
5704	5/21/2019	6:35:01	19.80	1.881631
5705	5/21/2019	6:36:01	19.90	1.882354
5706	5/21/2019	6:37:01	19.90	1.881992
5707	5/21/2019	6:38:01	19.90	1.881631
5708	5/21/2019	6:39:01	19.90	1.882354
5709	5/21/2019	6:40:01	19.90	1.881631
5710	5/21/2019	6:41:01	19.90	1.881992
5711	5/21/2019	6:42:01	19.90	1.882354
5712	5/21/2019	6:43:01	20.00	1.881992
5713	5/21/2019	6:44:01	20.00	1.881992
5714	5/21/2019	6:45:01	20.00	1.880907
5715	5/21/2019	6:46:01	20.00	1.881631
5716	5/21/2019	6:47:01	20.00	1.881631
5717	5/21/2019	6:48:01	20.00	1.881269
5718	5/21/2019	6:49:01	20.00	1.882354
5719	5/21/2019	6:50:01	20.00	1.881269
5720	5/21/2019	6:51:01	20.00	1.881631
5721	5/21/2019	6:52:01	19.90	1.881631
5722	5/21/2019	6:53:01	19.70	1.880907
5723	5/21/2019	6:54:01	19.60	1.881269
5724	5/21/2019	6:55:01	19.60	1.880545
5725	5/21/2019	6:56:01	19.60	1.880545
5726	5/21/2019	6:57:01	19.60	1.880545
5727	5/21/2019	6:58:01	19.60	1.880184
5728	5/21/2019	6:59:01	19.60	1.880907
5729	5/21/2019	7:00:01	19.70	1.87946
5730	5/21/2019	7:01:01	19.70	1.881269
5731	5/21/2019	7:02:01	19.70	1.880907
5732	5/21/2019	7:03:01	19.80	1.880907
5733	5/21/2019	7:04:01	19.80	1.879822

5734	5/21/2019	7:05:01	19.80	1.880545
5735	5/21/2019	7:06:01	19.80	1.880545
5736	5/21/2019	7:07:01	19.90	1.880545
5737	5/21/2019	7:08:01	19.90	1.881269
5738	5/21/2019	7:09:01	19.90	1.880545
5739	5/21/2019	7:10:01	19.90	1.880907
5740	5/21/2019	7:11:01	19.90	1.881269
5741	5/21/2019	7:12:01	19.90	1.880907
5742	5/21/2019	7:13:01	19.90	1.880907
5743	5/21/2019	7:14:01	20.00	1.880184
5744	5/21/2019	7:15:01	20.00	1.880184
5745	5/21/2019	7:16:01	20.00	1.880184
5746	5/21/2019	7:17:01	20.00	1.879822
5747	5/21/2019	7:18:01	20.00	1.879822
5748	5/21/2019	7:19:01	20.00	1.880184
5749	5/21/2019	7:20:01	20.00	1.87946
5750	5/21/2019	7:21:01	20.00	1.879822
5751	5/21/2019	7:22:01	20.00	1.879822
5752	5/21/2019	7:23:01	19.90	1.87946
5753	5/21/2019	7:24:01	19.70	1.87946
5754	5/21/2019	7:25:01	19.60	1.879822
5755	5/21/2019	7:26:01	19.60	1.879822
5756	5/21/2019	7:27:01	19.60	1.879822
5757	5/21/2019	7:28:01	19.60	1.87946
5758	5/21/2019	7:29:01	19.60	1.87946
5759	5/21/2019	7:30:01	19.60	1.87946
5760	5/21/2019	7:31:01	19.70	1.87946
5761	5/21/2019	7:32:01	19.70	1.87946
5762	5/21/2019	7:33:01	19.70	1.87946
5763	5/21/2019	7:34:01	19.80	1.87946
5764	5/21/2019	7:35:01	19.80	1.87946
5765	5/21/2019	7:36:01	19.80	1.87946
5766	5/21/2019	7:37:01	19.80	1.87946
5767	5/21/2019	7:38:01	19.90	1.87946
5768	5/21/2019	7:39:01	19.90	1.87946
5769	5/21/2019	7:40:01	19.90	1.87946
5770	5/21/2019	7:41:01	19.90	1.879822
5771	5/21/2019	7:42:01	19.90	1.87946
5772	5/21/2019	7:43:01	19.90	1.87946
5773	5/21/2019	7:44:01	19.90	1.87946
5774	5/21/2019	7:45:01	20.00	1.87946
5775	5/21/2019	7:46:01	20.00	1.87946
5776	5/21/2019	7:47:01	20.00	1.87946
5777	5/21/2019	7:48:01	20.00	1.87946
5778	5/21/2019	7:49:01	20.00	1.879099
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5780	5/21/2019	7:51:01	20.00	1.87946

5781	5/21/2019	7:52:01	20.00	1.87946
5782	5/21/2019	7:53:01	19.90	1.878737
5783	5/21/2019	7:54:01	19.80	1.878737
5784	5/21/2019	7:55:01	19.70	1.87946
5785	5/21/2019	7:56:01	19.60	1.87946
5786	5/21/2019	7:57:01	19.60	1.879099
5787	5/21/2019	7:58:01	19.60	1.879099
5788	5/21/2019	7:59:01	19.60	1.879099
5789	5/21/2019	8:00:01	19.60	1.879099
5790	5/21/2019	8:01:01	19.60	1.879099
5791	5/21/2019	8:02:01	19.70	1.879099
5792	5/21/2019	8:03:01	19.70	1.878737
5793	5/21/2019	8:04:01	19.70	1.878737
5794	5/21/2019	8:05:01	19.80	1.879099
5795	5/21/2019	8:06:01	19.80	1.878737
5796	5/21/2019	8:07:01	19.80	1.87946
5797	5/21/2019	8:08:01	19.90	1.878375
5798	5/21/2019	8:09:01	19.90	1.878375
5799	5/21/2019	8:10:01	19.90	1.87946
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5801	5/21/2019	8:12:01	19.90	1.877652
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5806	5/21/2019	8:17:01	20.00	1.878013
5807	5/21/2019	8:18:01	20.00	1.879099
5808	5/21/2019	8:19:01	20.00	1.878737
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5811	5/21/2019	8:22:01	19.60	1.878375
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5813	5/21/2019	8:24:01	19.60	1.878737
5814	5/21/2019	8:25:01	19.60	1.87729
5815	5/21/2019	8:26:01	19.70	1.87729
5816	5/21/2019	8:27:01	19.70	1.876928
5817	5/21/2019	8:28:01	19.70	1.878013
5818	5/21/2019	8:29:01	19.80	1.879099
5819	5/21/2019	8:30:01	19.80	1.878013
5820	5/21/2019	8:31:01	19.90	1.87729
5821	5/21/2019	8:32:01	19.90	1.878013
5822	5/21/2019	8:33:01	19.90	1.876567
5823	5/21/2019	8:34:01	19.90	1.876928
5824	5/21/2019	8:35:01	20.00	1.87729
5825	5/21/2019	8:36:01	20.00	1.87729
5826	5/21/2019	8:37:01	20.00	1.87729
5827	5/21/2019	8:38:01	20.00	1.876567

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5830	5/21/2019	8:41:01	19.80	1.87729
5831	5/21/2019	8:42:01	19.70	1.876928
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5834	5/21/2019	8:45:01	19.60	1.87729
5835	5/21/2019	8:46:01	19.60	1.87729
5836	5/21/2019	8:47:01	19.70	1.87729
5837	5/21/2019	8:48:01	19.70	1.87729
5838	5/21/2019	8:49:01	19.80	1.876567
5839	5/21/2019	8:50:01	19.80	1.876567
5840	5/21/2019	8:51:01	19.90	1.876567
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5843	5/21/2019	8:54:01	20.00	1.876928
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5845	5/21/2019	8:56:01	20.00	1.87729
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5847	5/21/2019	8:58:01	20.00	1.876567
5848	5/21/2019	8:59:01	19.80	1.876928
5849	5/21/2019	9:00:01	19.70	1.876567
5850	5/21/2019	9:01:01	19.60	1.876567
5851	5/21/2019	9:02:01	19.60	1.876567
5852	5/21/2019	9:03:01	19.60	1.876567
5853	5/21/2019	9:04:01	19.70	1.876567
5854	5/21/2019	9:05:01	19.70	1.876567
5855	5/21/2019	9:06:01	19.80	1.876205
5856	5/21/2019	9:07:01	19.80	1.876567
5857	5/21/2019	9:08:01	19.90	1.876567
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5859	5/21/2019	9:10:01	19.90	1.876567
5860	5/21/2019	9:11:01	20.00	1.876928
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5862	5/21/2019	9:13:01	20.10	1.876567
5863	5/21/2019	9:14:01	20.00	1.876567
5864	5/21/2019	9:15:01	19.80	1.876567
5865	5/21/2019	9:16:01	19.70	1.875843
5866	5/21/2019	9:17:01	19.60	1.876567
5867	5/21/2019	9:18:01	19.60	1.876567
5868	5/21/2019	9:19:01	19.70	1.876205
5869	5/21/2019	9:20:01	19.70	1.876567
5870	5/21/2019	9:21:01	19.80	1.876567
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5873	5/21/2019	9:24:01	20.00	1.876567
5874	5/21/2019	9:25:01	20.00	1.876205

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5876	5/21/2019	9:27:01	20.00	1.875481
5877	5/21/2019	9:28:01	19.90	1.876205
5878	5/21/2019	9:29:01	19.70	1.876567
5879	5/21/2019	9:30:01	19.70	1.876205
5880	5/21/2019	9:31:01	19.70	1.876567
5881	5/21/2019	9:32:01	19.70	1.875843
5882	5/21/2019	9:33:01	19.70	1.875843
5883	5/21/2019	9:34:01	19.80	1.876205
5884	5/21/2019	9:35:01	19.90	1.876567
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5886	5/21/2019	9:37:01	20.00	1.875481
5887	5/21/2019	9:38:01	20.10	1.875843
5888	5/21/2019	9:39:01	20.10	1.875843
5889	5/21/2019	9:40:01	19.90	1.875843
5890	5/21/2019	9:41:01	19.80	1.875481
5891	5/21/2019	9:42:01	19.70	1.876205
5892	5/21/2019	9:57:01	19.90	1.874396
5893	5/21/2019	9:58:01	20.00	1.875843
5894	5/21/2019	9:59:01	20.10	1.875481
5895	5/21/2019	10:00:01	20.00	1.87512
5896	5/21/2019	10:01:01	19.90	1.875481
5897	5/21/2019	10:02:01	19.80	1.875843
5898	5/21/2019	10:03:01	19.70	1.874758
5899	5/21/2019	10:04:01	19.70	1.875843
5900	5/21/2019	10:05:01	19.70	1.874758
5901	5/21/2019	10:06:01	19.70	1.874758
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5903	5/21/2019	10:08:01	19.90	1.87512
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5905	5/21/2019	10:10:01	20.00	1.874035
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5907	5/21/2019	10:12:01	20.00	1.874396
5908	5/21/2019	10:13:01	19.90	1.87512
5909	5/21/2019	10:14:01	19.80	1.874396
5910	5/21/2019	10:15:01	19.70	1.874758
5911	5/21/2019	10:16:01	19.70	1.874758
5912	5/21/2019	10:17:01	19.70	1.873673
5913	5/21/2019	10:18:01	19.80	1.874758
5914	5/21/2019	10:19:01	19.90	1.874758
5915	5/21/2019	10:20:01	19.90	1.874035
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5920	5/21/2019	10:25:01	19.80	1.873673
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5922	5/21/2019	10:27:01	19.70	1.873673
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5927	5/21/2019	10:32:01	20.00	1.874035
5928	5/21/2019	10:33:01	20.10	1.873673
5929	5/21/2019	10:34:01	20.10	1.874035
5930	5/21/2019	10:35:01	20.00	1.874396
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5932	5/21/2019	10:37:01	19.70	1.874035
5933	5/21/2019	10:38:01	19.70	1.873673
5934	5/21/2019	10:39:01	19.70	1.873673
5935	5/21/2019	10:40:01	19.70	1.873673
5936	5/21/2019	10:41:01	19.80	1.873673
5937	5/21/2019	10:42:01	19.90	1.873673
5938	5/21/2019	10:43:01	20.00	1.873673
5939	5/21/2019	10:44:01	20.00	1.873673
5940	5/21/2019	10:45:01	20.10	1.874035
5941	5/21/2019	10:46:01	20.10	1.873673
5942	5/21/2019	10:47:01	19.90	1.873673
5943	5/21/2019	10:48:01	19.80	1.874035
5944	5/21/2019	10:49:01	19.70	1.873673
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5955	5/21/2019	11:00:01	19.70	1.873673
5956	5/21/2019	11:01:01	19.70	1.873311
5957	5/21/2019	11:02:01	19.70	1.873673
5958	5/21/2019	11:03:01	19.80	1.873673
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5962	5/21/2019	11:07:01	20.10	1.872588
5963	5/21/2019	11:08:01	20.10	1.872949
5964	5/21/2019	11:09:01	20.00	1.872588
5965	5/21/2019	11:10:01	19.80	1.872949
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5968	5/21/2019	11:13:01	19.70	1.872588

5969	5/21/2019	11:14:01	19.80	1.872226
5970	5/21/2019	11:15:01	19.90	1.872226
5971	5/21/2019	11:16:01	19.90	1.872588
5972	5/21/2019	11:17:01	20.00	1.871503
5973	5/21/2019	11:18:01	20.10	1.872226
5974	5/21/2019	11:19:01	20.10	1.872226
5975	5/21/2019	11:20:01	20.00	1.871864
5976	5/21/2019	11:21:01	19.80	1.872226
5977	5/21/2019	11:22:01	19.70	1.871864
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5979	5/21/2019	11:24:01	19.80	1.871864
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5982	5/21/2019	11:27:01	20.00	1.871503
5983	5/21/2019	11:28:01	20.10	1.871141
5984	5/21/2019	11:29:01	20.10	1.871141
5985	5/21/2019	11:30:01	20.00	1.871141
5986	5/21/2019	11:31:01	19.90	1.871141
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5988	5/21/2019	11:33:01	19.70	1.871141
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5991	5/21/2019	11:36:01	19.80	1.870779
5992	5/21/2019	11:37:01	19.90	1.870779
5993	5/21/2019	11:38:01	20.00	1.871503
5994	5/21/2019	11:39:01	20.10	1.870779
5995	5/21/2019	11:40:01	20.10	1.871141
5996	5/21/2019	11:41:01	20.00	1.871503
5997	5/21/2019	11:42:01	19.90	1.871503
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6001	5/21/2019	11:46:01	19.80	1.870779
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6005	5/21/2019	11:50:01	20.10	1.870779
6006	5/21/2019	11:51:01	20.10	1.870779
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6012	5/21/2019	11:57:01	19.80	1.870779
6013	5/21/2019	11:58:01	19.90	1.870779
6014	5/21/2019	11:59:01	20.00	1.870417
6015	5/21/2019	12:00:01	20.10	1.870779

6016	5/21/2019	12:01:01	20.10	1.870779
6017	5/21/2019	12:02:01	20.10	1.870779
6018	5/21/2019	12:03:01	19.90	1.870779
6019	5/21/2019	12:04:01	19.80	1.870779
6020	5/21/2019	12:05:01	19.70	1.870779
6021	5/21/2019	12:06:01	19.70	1.870779
6022	5/21/2019	12:07:01	19.80	1.870779
6023	5/21/2019	12:08:01	19.90	1.870779
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6025	5/21/2019	12:10:01	20.00	1.870417
6026	5/21/2019	12:11:01	20.10	1.870779
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6028	5/21/2019	12:13:01	20.00	1.870779
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6030	5/21/2019	12:15:01	19.70	1.870779
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6032	5/21/2019	12:17:01	19.70	1.870056
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6035	5/21/2019	12:20:01	20.00	1.870417
6036	5/21/2019	12:21:01	20.10	1.869694
6037	5/21/2019	12:22:01	20.10	1.870417
6038	5/21/2019	12:23:01	20.00	1.870056
6039	5/21/2019	12:24:01	19.90	1.870056
6040	5/21/2019	12:25:01	19.80	1.870417
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6043	5/21/2019	12:28:01	19.80	1.870779
6044	5/21/2019	12:29:01	19.90	1.870056
6045	5/21/2019	12:30:01	19.90	1.870056
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6049	5/21/2019	12:34:01	20.00	1.870417
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6051	5/21/2019	12:36:01	19.70	1.870417
6052	5/21/2019	12:37:01	19.70	1.869332
6053	5/21/2019	12:38:01	19.80	1.869332
6054	5/21/2019	12:39:01	19.80	1.869694
6055	5/21/2019	12:40:01	19.90	1.869332
6056	5/21/2019	12:41:01	20.00	1.869332
6057	5/21/2019	12:42:01	20.10	1.870056
6058	5/21/2019	12:43:01	20.10	1.869694
6059	5/21/2019	12:44:01	20.00	1.870056
6060	5/21/2019	12:45:01	19.90	1.869332
6061	5/21/2019	12:46:01	19.80	1.869332
6062	5/21/2019	12:47:01	19.70	1.869332

6063	5/21/2019	12:48:01	19.80	1.868609
6064	5/21/2019	12:49:01	19.80	1.869332
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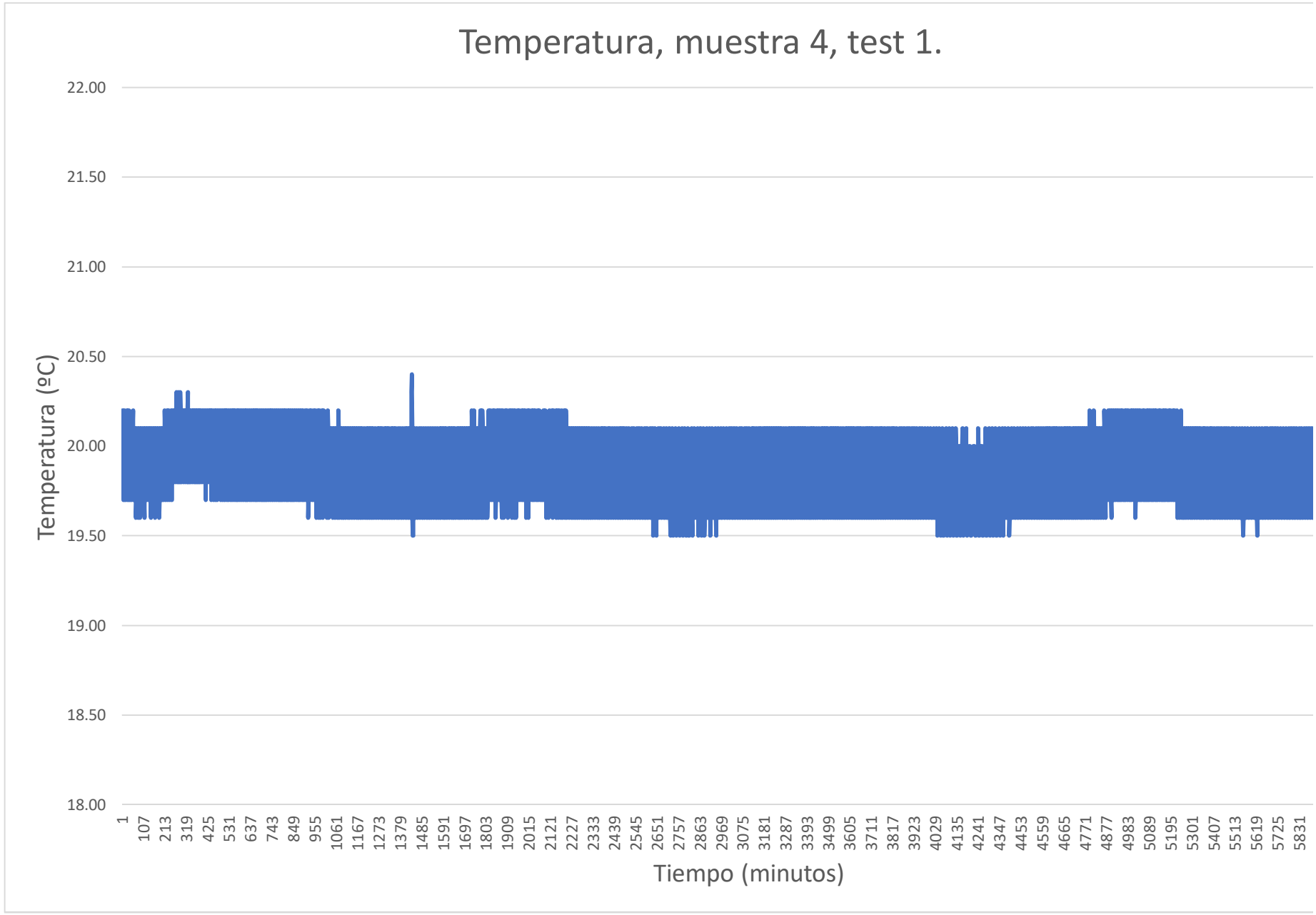
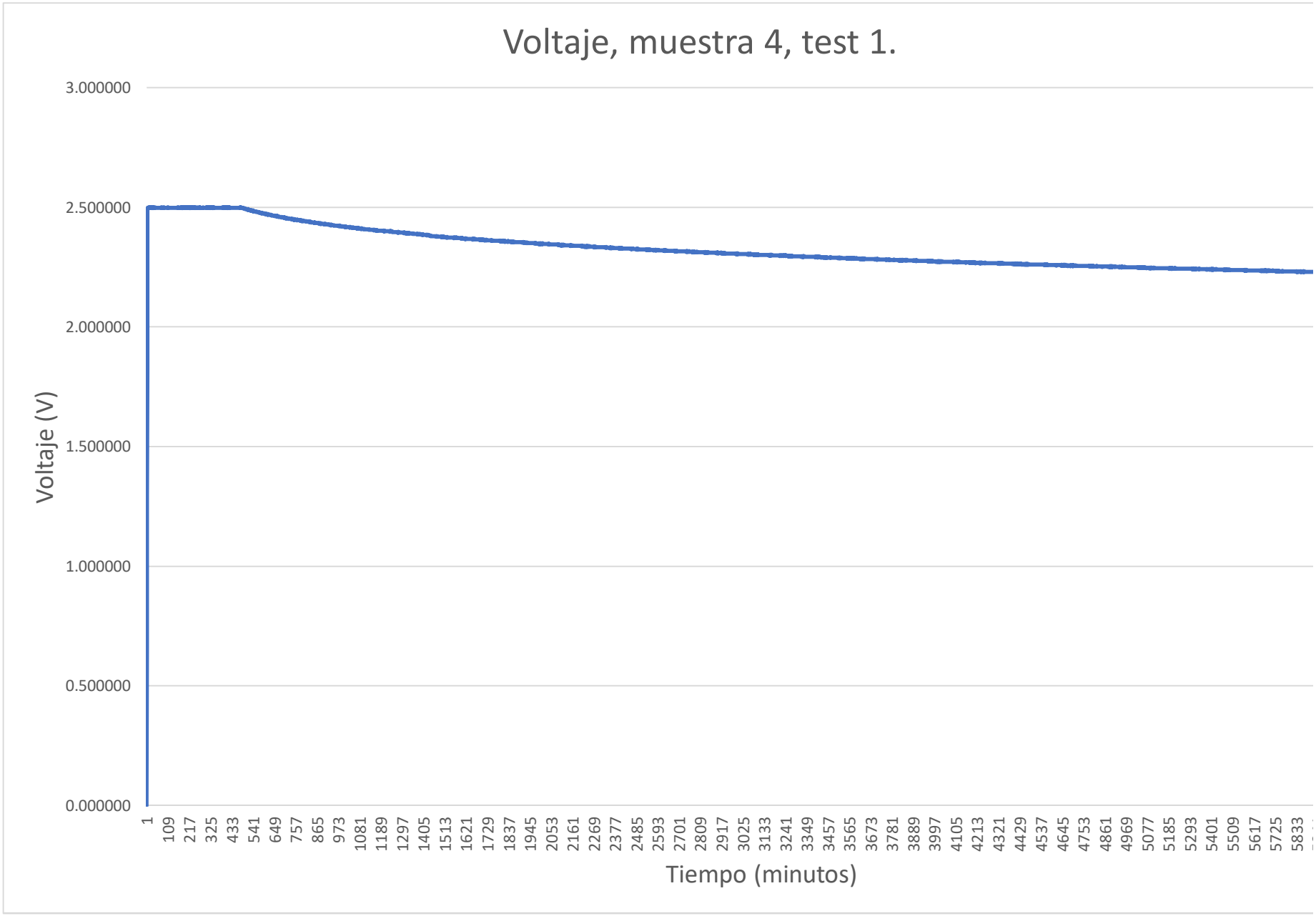
6067	5/21/2019	12:52:01	20.10	1.867885
6068	5/21/2019	12:53:01	20.10	1.869332
6069	5/21/2019	12:54:01	20.00	1.868971
6070	5/21/2019	12:55:01	19.90	1.868247
6071	5/21/2019	12:56:01	19.80	1.868971
6072	5/21/2019	12:57:01	19.70	1.868609
6073	5/21/2019	12:58:01	19.70	1.868247
6074	5/21/2019	12:59:01	19.80	1.868247
6075	5/21/2019	13:00:01	19.90	1.869332
6076	5/21/2019	13:01:01	20.00	1.868247
6077	5/21/2019	13:02:01	20.10	1.868247
6078	5/21/2019	13:03:01	20.10	1.868609
6079	5/21/2019	13:04:01	20.10	1.869332
6080	5/21/2019	13:05:01	19.90	1.868247
6081	5/21/2019	13:06:01	19.80	1.867885
6082	5/21/2019	13:07:01	19.70	1.867885
6083	5/21/2019	13:08:01	19.70	1.868247
6084	5/21/2019	13:09:01	19.80	1.868247
6085	5/21/2019	13:10:01	19.90	1.867885
6086	5/21/2019	13:11:01	19.90	1.868609
6087	5/21/2019	13:12:01	20.00	1.868609
6088	5/21/2019	13:13:01	20.10	1.867885
6089	5/21/2019	13:14:01	20.10	1.867885
6090	5/21/2019	13:15:01	20.00	1.868247
6091	5/21/2019	13:16:01	19.90	1.867885
6092	5/21/2019	13:17:01	19.70	1.868247
6093	5/21/2019	13:18:01	19.70	1.867885
6094	5/21/2019	13:19:01	19.70	1.867885
6095	5/21/2019	13:20:01	19.80	1.867885
6096	5/21/2019	13:21:01	19.90	1.867885
6097	5/21/2019	13:22:01	20.00	1.867885
6098	5/21/2019	13:23:01	20.10	1.867885
6099	5/21/2019	13:24:01	20.10	1.868609
6100	5/21/2019	13:25:01	20.00	1.867885
6101	5/21/2019	13:26:01	19.90	1.867885
6102	5/21/2019	13:27:01	19.80	1.867885
6103	5/21/2019	13:28:01	19.70	1.867524
6104	5/21/2019	13:29:01	19.70	1.867885
6105	5/21/2019	13:30:01	19.80	1.867885
6106	5/21/2019	13:31:01	19.90	1.867885
6107	5/21/2019	13:32:01	19.90	1.867885
6108	5/21/2019	13:33:01	20.10	1.867885
6109	5/21/2019	13:34:01	20.10	1.867885

6110	5/21/2019	13:35:01	20.10	1.867885
6111	5/21/2019	13:36:01	20.00	1.867885
6112	5/21/2019	13:37:01	19.80	1.867885
6113	5/21/2019	13:38:01	19.70	1.867524
6114	5/21/2019	13:39:01	19.70	1.867885
6115	5/21/2019	13:40:01	19.70	1.867885
6116	5/21/2019	13:41:01	19.80	1.867885
6117	5/21/2019	13:42:01	19.90	1.867885
6118	5/21/2019	13:43:01	20.00	1.867162
6119	5/21/2019	13:44:01	20.10	1.867885
6120	5/21/2019	13:45:01	20.10	1.867885
6121	5/21/2019	13:46:01	20.00	1.867524
6122	5/21/2019	13:47:01	19.90	1.867885
6123	5/21/2019	13:48:01	19.80	1.867524
6124	5/21/2019	13:49:01	19.70	1.867885
6125	5/21/2019	13:50:01	19.70	1.867885
6126	5/21/2019	13:51:01	19.80	1.867885
6127	5/21/2019	13:52:01	19.90	1.867885
6128	5/21/2019	13:53:01	20.00	1.867885
6129	5/21/2019	13:54:01	20.10	1.867885
6130	5/21/2019	13:55:01	20.10	1.867885
6131	5/21/2019	13:56:01	20.10	1.867162
6132	5/21/2019	13:57:01	19.90	1.867524
6133	5/21/2019	13:58:01	19.80	1.867524
6134	5/21/2019	13:59:01	19.70	1.867162
6135	5/21/2019	14:00:01	19.70	1.867524
6136	5/21/2019	14:01:01	19.80	1.867524
6137	5/21/2019	14:02:01	19.90	1.867885
6138	5/21/2019	14:03:01	20.00	1.866439
6139	5/21/2019	14:04:01	20.10	1.8668
6140	5/21/2019	14:05:01	20.10	1.866439
6141	5/21/2019	14:06:01	20.10	1.867524
6142	5/21/2019	14:07:01	20.00	1.8668
6143	5/21/2019	14:08:01	19.80	1.866439
6144	5/21/2019	14:09:01	19.70	1.866077
6145	5/21/2019	14:10:01	19.70	1.867524
6146	5/21/2019	14:11:01	19.80	1.866439
6147	5/21/2019	14:12:01	19.90	1.866077
6148	5/21/2019	14:13:01	20.00	1.866439
6149	5/21/2019	14:14:01	20.10	1.865715
6150	5/21/2019	14:15:01	20.10	1.866077
6151	5/21/2019	14:16:01	20.10	1.866439
6152	5/21/2019	14:17:01	20.00	1.865715
6153	5/21/2019	14:18:01	19.80	1.865715
6154	5/21/2019	14:19:01	19.70	1.866439
6155	5/21/2019	14:20:01	19.70	1.866439
6156	5/21/2019	14:21:01	19.80	1.8668

6157	5/21/2019	14:22:01	19.90	1.866439
6158	5/21/2019	14:23:01	19.90	1.865715
6159	5/21/2019	14:24:01	20.10	1.865715
6160	5/21/2019	14:25:01	20.20	1.865715
6161	5/21/2019	14:26:01	20.10	1.865353
6162	5/21/2019	14:27:01	20.00	1.865353
6163	5/21/2019	14:28:01	19.90	1.865353
6164	5/21/2019	14:29:01	19.80	1.865353
6165	5/21/2019	14:30:01	19.70	1.865715
6166	5/21/2019	14:31:01	19.80	1.866077
6167	5/21/2019	14:32:01	19.90	1.865353
6168	5/21/2019	14:33:01	20.10	1.865353
6169	5/21/2019	14:34:01	20.20	1.864992
6170	5/21/2019	14:35:01	20.10	1.864992
6171	5/21/2019	14:36:01	20.00	1.864992
6172	5/21/2019	14:37:01	19.90	1.864992
6173	5/21/2019	14:38:01	20.10	1.865715
6174	5/21/2019	14:39:01	20.20	1.864992
6175	5/21/2019	14:40:01	20.10	1.865715
6176	5/21/2019	14:41:01	20.00	1.864992
6177	5/21/2019	14:42:01	19.90	1.866439
6178	5/21/2019	14:43:01	20.10	1.865353
6179	5/21/2019	14:44:01	20.20	1.864992
6180	5/21/2019	14:45:01	20.10	1.864992
6181	5/21/2019	14:46:01	20.00	1.864992
6182	5/21/2019	14:47:01	19.90	1.864992
6183	5/21/2019	14:48:01	20.10	1.864992
6184	5/21/2019	14:49:01	20.20	1.864992
6185	5/21/2019	14:50:01	20.10	1.864992
6186	5/21/2019	14:51:01	20.00	1.864992
6187	5/21/2019	14:52:01	19.90	1.864992
6188	5/21/2019	14:53:01	20.10	1.864992
6189	5/21/2019	14:54:01	20.20	1.864992
6190	5/21/2019	14:55:01	20.10	1.864992
6191	5/21/2019	14:56:01	20.00	1.86463
6192	5/21/2019	14:57:01	19.90	1.864992
6193	5/21/2019	14:58:01	20.10	1.864992
6194	5/21/2019	14:59:01	20.20	1.86463
6195	5/21/2019	15:00:01	20.10	1.864992
6196	5/21/2019	15:01:01	20.00	1.864992
6197	5/21/2019	15:02:01	19.90	1.864992
6198	5/21/2019	15:03:01	20.10	1.864992
6199	5/21/2019	15:04:01	20.20	1.86463
6200	5/21/2019	15:05:01	20.10	1.864268
6201	5/21/2019	15:06:01	20.00	1.864992
6202	5/21/2019	15:07:01	19.90	1.864992
6203	5/21/2019	15:08:01	20.10	1.864268

6204	5/21/2019	15:09:01	20.20	1.86463	
6205	5/21/2019	15:10:01	20.10	1.864992	
6206	5/21/2019	15:11:01	20.00	1.864992	
6207	5/21/2019	15:12:01	19.90	1.864268	
6208	5/21/2019	15:13:01	20.10	1.86463	
6209	5/21/2019	15:14:01	20.20	1.86463	
6210	5/21/2019	15:15:01	20.10	1.864992	
6211	5/21/2019	15:16:01	20.00	1.864268	
6212	5/21/2019	15:17:01	19.90	1.86463	
6213	5/21/2019	15:18:01	20.10	1.86463	
6214	5/21/2019	15:19:01	20.20	1.864268	
6215	5/21/2019	15:20:01	20.10	1.864268	
6216	5/21/2019	15:21:01	20.00	1.863907	
6217	5/21/2019	15:22:01	19.90	1.864268	
6218	5/21/2019	15:23:01	20.10	1.864268	
6219	5/21/2019	15:24:01	20.20	1.864268	
6220	5/21/2019	15:25:01	20.10	1.86463	
6221	5/21/2019	15:26:01	20.00	1.864268	
6222	5/21/2019	15:27:01	19.90	1.863545	
6223	5/21/2019	15:28:01	20.10	1.86463	
6224	5/21/2019	15:29:01	20.20	1.864268	
6225	5/21/2019	15:30:01	20.10	1.863907	
6226	5/21/2019	15:31:01	20.00	1.863545	
6227	5/21/2019	15:32:01	19.90	1.864268	
6228	5/21/2019	15:33:01	20.10	1.86463	
6229	5/21/2019	15:34:01	20.20	1.863907	
6230	5/21/2019	15:35:01	20.10	1.864268	
6231	5/21/2019	15:36:01	20.00	1.863183	
6232	5/21/2019	15:37:01	19.90	1.863545	
6233	5/21/2019	15:38:01	20.10	1.863183	
6234	5/21/2019	15:39:01	20.20	1.863907	
6235	5/21/2019	15:40:01	20.10	1.863545	
6236	5/21/2019	15:41:01	20.00	1.863545	
6237	5/21/2019	15:42:01	19.90	1.862821	
6238	5/21/2019	15:43:01	20.10	1.863907	
6239	5/21/2019	15:44:01	20.20	1.862821	
6240	5/21/2019	15:45:01	20.10	1.862821	
6241	5/21/2019	15:46:01	20.00	1.862821	96 horas


Temperatura, muestra 4, test 1.
Temperatura (ºC)
22.00
21.50
21.00
20.50
20.00
19.50
19.00
18.50
18.00
1
107
213
319
425
531
637
743
849
955
1061
1167
1273
1379
1485
1591
1697
1803
1909
2015
2121
2227
2333
2439
2545
2651
2757
2863
2969
3075
3181
3287
3393
3499
3605
3711
3817
3923
4029
4135
4241
4347
4453
4559
4665
4771
4877
4983
5089
5195
5301
5407
5513
5619
5725
5831
Tiempo (minutos)


Voltaje, muestra 4, test 1.
3.000000
2.500000
2.000000
1.500000
1.000000
0.500000
0.000000
Voltaje (V)
1
109
217
325
433
541
649
757
865
973
1081
1189
1297
1405
1513
1621
1729
1837
1945
2053
2161
2269
2377
2485
2593
2701
2809
2917
3025
3133
3241
3349
3457
3565
3673
3781
3889
3997
4105
4213
4321
4429
4537
4645
4753
4861
4969
5077
5185
5293
5401
5509
5617
5725
5833
Tiempo (minutos)

Numero	Fecha	Hora	Temperatura	Voltaje
1	5/24/2019	6:31:01	19.80	0.000000
2	5/24/2019	6:32:01	19.90	0.663743
3	5/24/2019	6:33:01	20.00	1.292762
4	5/24/2019	6:34:01	20.10	1.821586
5	5/24/2019	6:35:01	20.20	2.287472
6	5/24/2019	6:36:01	20.10	2.491840
7	5/24/2019	6:37:01	20.00	2.497628
8	5/24/2019	6:38:01	19.80	2.498351
9	5/24/2019	6:39:01	19.70	2.497628
10	5/24/2019	6:40:01	19.70	2.498351
11	5/24/2019	6:41:01	19.70	2.497989
12	5/24/2019	6:42:01	19.80	2.497628
13	5/24/2019	6:43:01	19.90	2.499436
14	5/24/2019	6:44:01	20.10	2.498713
15	5/24/2019	6:45:01	20.20	2.497628
16	5/24/2019	6:46:01	20.10	2.499075
17	5/24/2019	6:47:01	20.00	2.499798
18	5/24/2019	6:48:01	19.80	2.499075
19	5/24/2019	6:49:01	19.70	2.498351
20	5/24/2019	6:50:01	19.70	2.497989
21	5/24/2019	6:51:01	19.70	2.498351
22	5/24/2019	6:52:01	19.80	2.499436
23	5/24/2019	6:53:01	19.90	2.500160
24	5/24/2019	6:54:01	20.10	2.498713
25	5/24/2019	6:55:01	20.20	2.497628
26	5/24/2019	6:56:01	20.10	2.497628
27	5/24/2019	6:57:01	20.00	2.499075
28	5/24/2019	6:58:01	19.80	2.497989
29	5/24/2019	6:59:01	19.70	2.498713
30	5/24/2019	7:00:01	19.70	2.498351
31	5/24/2019	7:01:01	19.70	2.498713
32	5/24/2019	7:02:01	19.80	2.497989
33	5/24/2019	7:03:01	19.90	2.499436
34	5/24/2019	7:04:01	20.00	2.498713
35	5/24/2019	7:05:01	20.20	2.497628
36	5/24/2019	7:06:01	20.20	2.498713
37	5/24/2019	7:07:01	20.00	2.497628
38	5/24/2019	7:08:01	19.90	2.498351
39	5/24/2019	7:09:01	19.70	2.497628
40	5/24/2019	7:10:01	19.70	2.498351
41	5/24/2019	7:11:01	19.70	2.497989
42	5/24/2019	7:12:01	19.80	2.499436
43	5/24/2019	7:13:01	19.90	2.499075
44	5/24/2019	7:14:01	20.00	2.499436
45	5/24/2019	7:15:01	20.10	2.497628
46	5/24/2019	7:16:01	20.10	2.497989

Tension mantenida (test 1). Muesta 4	
Uend(72h)	2.254195
Ur(nominal)	2.5
A(%)	90.167800%

30 minutos, tensión minima que alcanzar, 2,375 V.

47	5/24/2019	7:17:01	20.00	2.497989
48	5/24/2019	7:18:01	19.90	2.498351
49	5/24/2019	7:19:01	19.70	2.498351
50	5/24/2019	7:20:01	19.70	2.497628
51	5/24/2019	7:21:01	19.70	2.497628
52	5/24/2019	7:22:01	19.80	2.497628
53	5/24/2019	7:23:01	19.90	2.497628
54	5/24/2019	7:24:01	20.00	2.497989
55	5/24/2019	7:25:01	20.10	2.497989
56	5/24/2019	7:26:01	20.20	2.497989
57	5/24/2019	7:27:01	20.10	2.497628
58	5/24/2019	7:28:01	19.90	2.496904
59	5/24/2019	7:29:01	19.70	2.497989
60	5/24/2019	7:30:01	19.70	2.497628
61	5/24/2019	7:31:01	19.70	2.497628
62	5/24/2019	7:32:01	19.70	2.497628
63	5/24/2019	7:33:01	19.80	2.497989
64	5/24/2019	7:34:01	19.90	2.497628
65	5/24/2019	7:35:01	20.00	2.497628
66	5/24/2019	7:36:01	20.10	2.497989
67	5/24/2019	7:37:01	20.10	2.497628
68	5/24/2019	7:38:01	20.00	2.497628
69	5/24/2019	7:39:01	19.80	2.497989
70	5/24/2019	7:40:01	19.70	2.497989
71	5/24/2019	7:41:01	19.60	2.497989
72	5/24/2019	7:42:01	19.70	2.497628
73	5/24/2019	7:43:01	19.80	2.496904
74	5/24/2019	7:44:01	19.90	2.497989
75	5/24/2019	7:45:01	20.00	2.497628
76	5/24/2019	7:46:01	20.10	2.498713
77	5/24/2019	7:47:01	20.10	2.497266
78	5/24/2019	7:48:01	20.10	2.498351
79	5/24/2019	7:49:01	19.90	2.497989
80	5/24/2019	7:50:01	19.70	2.498351
81	5/24/2019	7:51:01	19.60	2.497628
82	5/24/2019	7:52:01	19.70	2.497266
83	5/24/2019	7:53:01	19.70	2.497628
84	5/24/2019	7:54:01	19.80	2.497989
85	5/24/2019	7:55:01	19.90	2.497628
86	5/24/2019	7:56:01	20.00	2.497628
87	5/24/2019	7:57:01	20.10	2.497989
88	5/24/2019	7:58:01	20.10	2.498713
89	5/24/2019	7:59:01	20.00	2.497989
90	5/24/2019	8:00:01	19.80	2.497628
91	5/24/2019	8:01:01	19.70	2.497628
92	5/24/2019	8:02:01	19.60	2.497266
93	5/24/2019	8:03:01	19.70	2.497266

94	5/24/2019	8:04:01	19.70	2.497989
95	5/24/2019	8:05:01	19.90	2.498351
96	5/24/2019	8:06:01	19.90	2.497628
97	5/24/2019	8:07:01	20.00	2.498351
98	5/24/2019	8:08:01	20.10	2.497628
99	5/24/2019	8:09:01	20.10	2.497628
100	5/24/2019	8:10:01	19.90	2.497628
101	5/24/2019	8:11:01	19.80	2.497989
102	5/24/2019	8:12:01	19.70	2.497628
103	5/24/2019	8:13:01	19.70	2.497628
104	5/24/2019	8:14:01	19.70	2.497628
105	5/24/2019	8:15:01	19.80	2.497628
106	5/24/2019	8:16:01	19.90	2.497989
107	5/24/2019	8:17:01	20.00	2.497989
108	5/24/2019	8:18:01	20.10	2.497989
109	5/24/2019	8:19:01	20.10	2.498713
110	5/24/2019	8:20:01	20.00	2.497989
111	5/24/2019	8:21:01	19.90	2.497989
112	5/24/2019	8:22:01	19.70	2.497628
113	5/24/2019	8:23:01	19.60	2.497628
114	5/24/2019	8:24:01	19.70	2.497989
115	5/24/2019	8:25:01	19.70	2.497628
116	5/24/2019	8:26:01	19.80	2.497628
117	5/24/2019	8:27:01	19.90	2.497628
118	5/24/2019	8:28:01	20.00	2.497628
119	5/24/2019	8:29:01	20.10	2.497989
120	5/24/2019	8:30:01	20.10	2.497628
121	5/24/2019	8:31:01	20.00	2.498351
122	5/24/2019	8:32:01	19.80	2.497628
123	5/24/2019	8:33:01	19.70	2.497989
124	5/24/2019	8:34:01	19.70	2.497628
125	5/24/2019	8:35:01	19.70	2.497628
126	5/24/2019	8:36:01	19.80	2.497628
127	5/24/2019	8:37:01	19.90	2.497989
128	5/24/2019	8:38:01	20.00	2.498351
129	5/24/2019	8:39:01	20.10	2.497628
130	5/24/2019	8:40:01	20.10	2.498351
131	5/24/2019	8:41:01	20.10	2.497628
132	5/24/2019	8:42:01	19.90	2.497266
133	5/24/2019	8:43:01	19.70	2.497628
134	5/24/2019	8:44:01	19.70	2.497628
135	5/24/2019	8:45:01	19.70	2.497628
136	5/24/2019	8:46:01	19.70	2.497628
137	5/24/2019	8:47:01	19.80	2.497989
138	5/24/2019	8:48:01	19.90	2.497628
139	5/24/2019	8:49:01	20.00	2.497628
140	5/24/2019	8:50:01	20.10	2.498351

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143	5/24/2019	8:53:01	19.80	2.497628
144	5/24/2019	8:54:01	19.70	2.497266
145	5/24/2019	8:55:01	19.60	2.497628
146	5/24/2019	8:56:01	19.70	2.497989
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152	5/24/2019	9:02:01	20.10	2.497628
153	5/24/2019	9:03:01	19.90	2.497266
154	5/24/2019	9:04:01	19.80	2.497266
155	5/24/2019	9:05:01	19.70	2.497989
156	5/24/2019	9:06:01	19.70	2.497628
157	5/24/2019	9:07:01	19.70	2.497989
158	5/24/2019	9:08:01	19.80	2.497989
159	5/24/2019	9:09:01	19.90	2.497989
160	5/24/2019	9:10:01	20.00	2.498713
161	5/24/2019	9:11:01	20.10	2.499075
162	5/24/2019	9:12:01	20.10	2.497628
163	5/24/2019	9:13:01	20.00	2.498351
164	5/24/2019	9:14:01	19.80	2.497628
165	5/24/2019	9:15:01	19.70	2.497628
166	5/24/2019	9:16:01	19.60	2.498351
167	5/24/2019	9:17:01	19.70	2.498351
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171	5/24/2019	9:21:01	20.10	2.497989
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185	5/24/2019	9:35:01	19.80	2.499075
186	5/24/2019	9:36:01	19.70	2.498351
187	5/24/2019	9:37:01	19.60	2.498713

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189	5/24/2019	9:39:01	19.80	2.498351
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191	5/24/2019	9:41:01	19.90	2.499075
192	5/24/2019	9:42:01	20.00	2.499075
193	5/24/2019	9:43:01	20.10	2.498351
194	5/24/2019	9:44:01	20.10	2.499075
195	5/24/2019	9:45:01	20.00	2.499436
196	5/24/2019	9:46:01	19.80	2.499436
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204	5/24/2019	9:54:01	20.10	2.497989
205	5/24/2019	9:55:01	20.10	2.497628
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213	5/24/2019	10:03:01	20.10	2.499436
214	5/24/2019	10:04:01	20.20	2.499436
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223	5/24/2019	10:13:01	20.10	2.498713
224	5/24/2019	10:14:01	20.20	2.497628
225	5/24/2019	10:15:01	20.10	2.498713
226	5/24/2019	10:16:01	20.00	2.499436
227	5/24/2019	10:17:01	19.80	2.499075
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232	5/24/2019	10:22:01	19.90	2.498713
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234	5/24/2019	10:24:01	20.20	2.498351

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249	5/24/2019	10:39:01	19.70	2.497989
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254	5/24/2019	10:44:01	20.20	2.498351
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366	5/24/2019	12:36:01	20.20	2.498351
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374	5/24/2019	12:44:01	20.20	2.497266
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394	5/24/2019	13:04:01	20.20	2.499075
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405	5/24/2019	13:15:01	20.10	2.498351
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413	5/24/2019	13:23:01	20.20	2.499075
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434	5/24/2019	13:44:01	19.90	2.497989
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436	5/24/2019	13:46:01	19.80	2.497989
437	5/24/2019	13:47:01	19.80	2.497628
438	5/24/2019	13:48:01	19.90	2.497989
439	5/24/2019	13:49:01	20.10	2.497628
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445	5/24/2019	13:55:01	19.70	2.497628
446	5/24/2019	13:56:01	19.80	2.497989
447	5/24/2019	13:57:01	19.90	2.497628
448	5/24/2019	13:58:01	20.00	2.497989
449	5/24/2019	13:59:01	20.20	2.497266
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451	5/24/2019	14:01:01	20.20	2.497628
452	5/24/2019	14:02:01	20.00	2.498351
453	5/24/2019	14:03:01	19.90	2.497628
454	5/24/2019	14:04:01	19.80	2.497628
455	5/24/2019	14:05:01	19.70	2.497628
456	5/24/2019	14:06:01	19.80	2.497628
457	5/24/2019	14:07:01	19.90	2.497628
458	5/24/2019	14:08:01	20.10	2.497628
459	5/24/2019	14:09:01	20.20	2.497989
460	5/24/2019	14:10:01	20.20	2.497989
461	5/24/2019	14:11:01	20.10	2.497628
462	5/24/2019	14:12:01	20.00	2.497628
463	5/24/2019	14:13:01	19.80	2.497628
464	5/24/2019	14:14:01	19.70	2.497628
465	5/24/2019	14:15:01	19.80	2.497628
466	5/24/2019	14:16:01	19.90	2.497628
467	5/24/2019	14:17:01	20.00	2.497989
468	5/24/2019	14:18:01	20.10	2.497628
469	5/24/2019	14:19:01	20.20	2.498351

470	5/24/2019	14:20:01	20.20	2.497989	
471	5/24/2019	14:21:01	20.00	2.497628	
472	5/24/2019	14:22:01	19.90	2.497628	
473	5/24/2019	14:23:01	19.70	2.497628	
474	5/24/2019	14:24:01	19.70	2.497266	
475	5/24/2019	14:25:01	19.80	2.498713	
476	5/24/2019	14:26:01	19.90	2.497989	
477	5/24/2019	14:27:01	20.10	2.497989	
478	5/24/2019	14:28:01	20.20	2.498351	
479	5/24/2019	14:29:01	20.20	2.498713	
480	5/24/2019	14:30:01	20.10	2.498713	
481	5/24/2019	14:31:01	19.90	2.498351	8 horas
482	5/24/2019	14:32:01	19.80	2.497989	
483	5/24/2019	14:33:01	19.80	2.497628	
484	5/24/2019	14:34:01	19.90	2.497628	
485	5/24/2019	14:35:01	20.00	2.497628	
486	5/24/2019	14:36:01	20.20	2.497989	
487	5/24/2019	14:37:01	20.20	2.497266	
488	5/24/2019	14:38:01	20.20	2.497628	
489	5/24/2019	14:39:01	20.00	2.497266	
490	5/24/2019	14:40:01	19.90	2.497266	
491	5/24/2019	14:41:01	19.70	2.496181	
492	5/24/2019	14:42:01	19.80	2.495457	
493	5/24/2019	14:43:01	19.80	2.495457	
494	5/24/2019	14:44:01	20.00	2.495096	
495	5/24/2019	14:45:01	20.10	2.494734	
496	5/24/2019	14:46:01	20.20	2.494734	
497	5/24/2019	14:47:01	20.20	2.494734	
498	5/24/2019	14:48:01	20.10	2.494734	
499	5/24/2019	14:49:01	19.90	2.494010	
500	5/24/2019	14:50:01	19.70	2.493649	
501	5/24/2019	14:51:01	19.70	2.494010	
502	5/24/2019	14:52:01	19.80	2.493649	
503	5/24/2019	14:53:01	19.90	2.493287	
504	5/24/2019	14:54:01	20.00	2.492564	
505	5/24/2019	14:55:01	20.20	2.491840	
506	5/24/2019	14:56:01	20.20	2.491840	
507	5/24/2019	14:57:01	20.20	2.491840	
508	5/24/2019	14:58:01	20.00	2.492202	
509	5/24/2019	14:59:01	19.80	2.491840	
510	5/24/2019	15:00:01	19.70	2.491117	
511	5/24/2019	15:01:01	19.70	2.491117	
512	5/24/2019	15:02:01	19.80	2.491840	
513	5/24/2019	15:03:01	19.90	2.491840	
514	5/24/2019	15:04:01	20.10	2.489670	
515	5/24/2019	15:05:01	20.20	2.491117	
516	5/24/2019	15:06:01	20.20	2.489670	

517	5/24/2019	15:07:01	20.10	2.489670
518	5/24/2019	15:08:01	19.90	2.488947
519	5/24/2019	15:09:01	19.80	2.489670
520	5/24/2019	15:10:01	19.70	2.488947
521	5/24/2019	15:11:01	19.80	2.488947
522	5/24/2019	15:12:01	19.90	2.488947
523	5/24/2019	15:13:01	20.00	2.488947
524	5/24/2019	15:14:01	20.20	2.488947
525	5/24/2019	15:15:01	20.20	2.488223
526	5/24/2019	15:16:01	20.20	2.488223
527	5/24/2019	15:17:01	20.00	2.488223
528	5/24/2019	15:18:01	19.90	2.488223
529	5/24/2019	15:19:01	19.70	2.486776
530	5/24/2019	15:20:01	19.70	2.487138
531	5/24/2019	15:21:01	19.80	2.486415
532	5/24/2019	15:22:01	19.90	2.486053
533	5/24/2019	15:23:01	20.10	2.486053
534	5/24/2019	15:24:01	20.20	2.486053
535	5/24/2019	15:25:01	20.20	2.486053
536	5/24/2019	15:26:01	20.10	2.485691
537	5/24/2019	15:27:01	20.00	2.485691
538	5/24/2019	15:28:01	19.80	2.485691
539	5/24/2019	15:29:01	19.70	2.484968
540	5/24/2019	15:30:01	19.80	2.485329
541	5/24/2019	15:31:01	19.90	2.484606
542	5/24/2019	15:32:01	20.00	2.484244
543	5/24/2019	15:33:01	20.20	2.484244
544	5/24/2019	15:34:01	20.20	2.483882
545	5/24/2019	15:35:01	20.20	2.483521
546	5/24/2019	15:36:01	20.00	2.483159
547	5/24/2019	15:37:01	19.90	2.483159
548	5/24/2019	15:38:01	19.70	2.483159
549	5/24/2019	15:39:01	19.70	2.483159
550	5/24/2019	15:40:01	19.80	2.482797
551	5/24/2019	15:41:01	19.90	2.483159
552	5/24/2019	15:42:01	20.10	2.482797
553	5/24/2019	15:43:01	20.20	2.482797
554	5/24/2019	15:44:01	20.20	2.482436
555	5/24/2019	15:45:01	20.10	2.482074
556	5/24/2019	15:46:01	19.90	2.482074
557	5/24/2019	15:47:01	19.80	2.481351
558	5/24/2019	15:48:01	19.70	2.480627
559	5/24/2019	15:49:01	19.80	2.480627
560	5/24/2019	15:50:01	19.90	2.480265
561	5/24/2019	15:51:01	20.00	2.480265
562	5/24/2019	15:52:01	20.20	2.480265
563	5/24/2019	15:53:01	20.20	2.479542

564	5/24/2019	15:54:01	20.10	2.480265
565	5/24/2019	15:55:01	20.00	2.480265
566	5/24/2019	15:56:01	19.80	2.479542
567	5/24/2019	15:57:01	19.70	2.479904
568	5/24/2019	15:58:01	19.70	2.479542
569	5/24/2019	15:59:01	19.90	2.479542
570	5/24/2019	16:00:01	20.00	2.478457
571	5/24/2019	16:01:01	20.10	2.478095
572	5/24/2019	16:02:01	20.20	2.478095
573	5/24/2019	16:03:01	20.20	2.478095
574	5/24/2019	16:04:01	20.00	2.477734
575	5/24/2019	16:05:01	19.90	2.477372
576	5/24/2019	16:06:01	19.70	2.477372
577	5/24/2019	16:07:01	19.70	2.477372
578	5/24/2019	16:08:01	19.80	2.477372
579	5/24/2019	16:09:01	19.90	2.477372
580	5/24/2019	16:10:01	20.00	2.476648
581	5/24/2019	16:11:01	20.20	2.477372
582	5/24/2019	16:12:01	20.20	2.477010
583	5/24/2019	16:13:01	20.10	2.476648
584	5/24/2019	16:14:01	20.00	2.475201
585	5/24/2019	16:15:01	19.80	2.475201
586	5/24/2019	16:16:01	19.70	2.476287
587	5/24/2019	16:17:01	19.70	2.474840
588	5/24/2019	16:18:01	19.80	2.474840
589	5/24/2019	16:19:01	20.00	2.474478
590	5/24/2019	16:20:01	20.10	2.474478
591	5/24/2019	16:21:01	20.20	2.474478
592	5/24/2019	16:22:01	20.20	2.474116
593	5/24/2019	16:23:01	20.00	2.474478
594	5/24/2019	16:24:01	19.90	2.474478
595	5/24/2019	16:25:01	19.70	2.474116
596	5/24/2019	16:26:01	19.70	2.474478
597	5/24/2019	16:27:01	19.80	2.474116
598	5/24/2019	16:28:01	19.90	2.473393
599	5/24/2019	16:29:01	20.00	2.473031
600	5/24/2019	16:30:01	20.20	2.473393
601	5/24/2019	16:31:01	20.20	2.473031
602	5/24/2019	16:32:01	20.10	2.472308
603	5/24/2019	16:33:01	19.90	2.472669
604	5/24/2019	16:34:01	19.80	2.471584
605	5/24/2019	16:35:01	19.70	2.471584
606	5/24/2019	16:36:01	19.80	2.471584
607	5/24/2019	16:37:01	19.90	2.471584
608	5/24/2019	16:38:01	20.00	2.471584
609	5/24/2019	16:39:01	20.10	2.471946
610	5/24/2019	16:40:01	20.20	2.471584

611	5/24/2019	16:41:01	20.20	2.471584
612	5/24/2019	16:42:01	20.00	2.471223
613	5/24/2019	16:43:01	19.90	2.471584
614	5/24/2019	16:44:01	19.70	2.470138
615	5/24/2019	16:45:01	19.70	2.470499
616	5/24/2019	16:46:01	19.80	2.469052
617	5/24/2019	16:47:01	19.90	2.470138
618	5/24/2019	16:48:01	20.10	2.469776
619	5/24/2019	16:49:01	20.20	2.469414
620	5/24/2019	16:50:01	20.20	2.469052
621	5/24/2019	16:51:01	20.10	2.468691
622	5/24/2019	16:52:01	20.00	2.469052
623	5/24/2019	16:53:01	19.80	2.468691
624	5/24/2019	16:54:01	19.70	2.468691
625	5/24/2019	16:55:01	19.70	2.468329
626	5/24/2019	16:56:01	19.80	2.468691
627	5/24/2019	16:57:01	19.90	2.468691
628	5/24/2019	16:58:01	20.10	2.468691
629	5/24/2019	16:59:01	20.20	2.468691
630	5/24/2019	17:00:01	20.20	2.467967
631	5/24/2019	17:01:01	20.10	2.467967
632	5/24/2019	17:02:01	19.90	2.467606
633	5/24/2019	17:03:01	19.80	2.466520
634	5/24/2019	17:04:01	19.70	2.467244
635	5/24/2019	17:05:01	19.80	2.466159
636	5/24/2019	17:06:01	19.90	2.466520
637	5/24/2019	17:07:01	20.00	2.465797
638	5/24/2019	17:08:01	20.20	2.465797
639	5/24/2019	17:09:01	20.20	2.465797
640	5/24/2019	17:10:01	20.10	2.465797
641	5/24/2019	17:11:01	20.00	2.464712
642	5/24/2019	17:12:01	19.80	2.465797
643	5/24/2019	17:13:01	19.70	2.465797
644	5/24/2019	17:14:01	19.70	2.465435
645	5/24/2019	17:15:01	19.80	2.465435
646	5/24/2019	17:16:01	19.90	2.465435
647	5/24/2019	17:17:01	20.10	2.464712
648	5/24/2019	17:18:01	20.20	2.465074
649	5/24/2019	17:19:01	20.20	2.465074
650	5/24/2019	17:20:01	20.10	2.464712
651	5/24/2019	17:21:01	19.90	2.463627
652	5/24/2019	17:22:01	19.80	2.463627
653	5/24/2019	17:23:01	19.70	2.462903
654	5/24/2019	17:24:01	19.80	2.463627
655	5/24/2019	17:25:01	19.90	2.463265
656	5/24/2019	17:26:01	20.00	2.462903
657	5/24/2019	17:27:01	20.20	2.462903

658	5/24/2019	17:28:01	20.20	2.462903
659	5/24/2019	17:29:01	20.10	2.462903
660	5/24/2019	17:30:01	20.00	2.462903
661	5/24/2019	17:31:01	19.80	2.462542
662	5/24/2019	17:32:01	19.70	2.462180
663	5/24/2019	17:33:01	19.70	2.462542
664	5/24/2019	17:34:01	19.80	2.462180
665	5/24/2019	17:35:01	19.90	2.462542
666	5/24/2019	17:36:01	20.10	2.461456
667	5/24/2019	17:37:01	20.20	2.461095
668	5/24/2019	17:38:01	20.20	2.461456
669	5/24/2019	17:39:01	20.10	2.460371
670	5/24/2019	17:40:01	19.90	2.460733
671	5/24/2019	17:41:01	19.70	2.460371
672	5/24/2019	17:42:01	19.70	2.460010
673	5/24/2019	17:43:01	19.80	2.460010
674	5/24/2019	17:44:01	19.90	2.460010
675	5/24/2019	17:45:01	20.00	2.459648
676	5/24/2019	17:46:01	20.20	2.460010
677	5/24/2019	17:47:01	20.20	2.460010
678	5/24/2019	17:48:01	20.10	2.460010
679	5/24/2019	17:49:01	20.00	2.459648
680	5/24/2019	17:50:01	19.80	2.460010
681	5/24/2019	17:51:01	19.70	2.458925
682	5/24/2019	17:52:01	19.70	2.459286
683	5/24/2019	17:53:01	19.80	2.459286
684	5/24/2019	17:54:01	19.90	2.459286
685	5/24/2019	17:55:01	20.10	2.458925
686	5/24/2019	17:56:01	20.20	2.458925
687	5/24/2019	17:57:01	20.20	2.457839
688	5/24/2019	17:58:01	20.10	2.457839
689	5/24/2019	17:59:01	19.90	2.457478
690	5/24/2019	18:00:01	19.70	2.457478
691	5/24/2019	18:01:01	19.70	2.457116
692	5/24/2019	18:02:01	19.70	2.457116
693	5/24/2019	18:03:01	19.90	2.457478
694	5/24/2019	18:04:01	20.00	2.457478
695	5/24/2019	18:05:01	20.10	2.457116
696	5/24/2019	18:06:01	20.20	2.457116
697	5/24/2019	18:07:01	20.10	2.457116
698	5/24/2019	18:08:01	20.00	2.457116
699	5/24/2019	18:09:01	19.80	2.456392
700	5/24/2019	18:10:01	19.70	2.456031
701	5/24/2019	18:11:01	19.70	2.457116
702	5/24/2019	18:12:01	19.80	2.455307
703	5/24/2019	18:13:01	19.90	2.456031
704	5/24/2019	18:14:01	20.10	2.455669

705	5/24/2019	18:15:01	20.20	2.456031
706	5/24/2019	18:16:01	20.20	2.455669
707	5/24/2019	18:17:01	20.10	2.454584
708	5/24/2019	18:18:01	19.90	2.454222
709	5/24/2019	18:19:01	19.80	2.454584
710	5/24/2019	18:20:01	19.70	2.454946
711	5/24/2019	18:21:01	19.70	2.454222
712	5/24/2019	18:22:01	19.80	2.454222
713	5/24/2019	18:23:01	20.00	2.454222
714	5/24/2019	18:24:01	20.10	2.454222
715	5/24/2019	18:25:01	20.20	2.454222
716	5/24/2019	18:26:01	20.20	2.453499
717	5/24/2019	18:27:01	20.00	2.454222
718	5/24/2019	18:28:01	19.90	2.453860
719	5/24/2019	18:29:01	19.70	2.453860
720	5/24/2019	18:30:01	19.70	2.453499
721	5/24/2019	18:31:01	19.80	2.453137
722	5/24/2019	18:32:01	19.90	2.452775
723	5/24/2019	18:33:01	20.00	2.451690
724	5/24/2019	18:34:01	20.20	2.451690
725	5/24/2019	18:35:01	20.20	2.452414
726	5/24/2019	18:36:01	20.10	2.452052
727	5/24/2019	18:37:01	19.90	2.451690
728	5/24/2019	18:38:01	19.80	2.451329
729	5/24/2019	18:39:01	19.70	2.452052
730	5/24/2019	18:40:01	19.70	2.451690
731	5/24/2019	18:41:01	19.80	2.451329
732	5/24/2019	18:42:01	20.00	2.451329
733	5/24/2019	18:43:01	20.10	2.451329
734	5/24/2019	18:44:01	20.20	2.452052
735	5/24/2019	18:45:01	20.20	2.451329
736	5/24/2019	18:46:01	20.00	2.451329
737	5/24/2019	18:47:01	19.90	2.450243
738	5/24/2019	18:48:01	19.70	2.450243
739	5/24/2019	18:49:01	19.70	2.451329
740	5/24/2019	18:50:01	19.80	2.450967
741	5/24/2019	18:51:01	19.90	2.449882
742	5/24/2019	18:52:01	20.00	2.450605
743	5/24/2019	18:53:01	20.20	2.450243
744	5/24/2019	18:54:01	20.20	2.449158
745	5/24/2019	18:55:01	20.10	2.449520
746	5/24/2019	18:56:01	20.00	2.449158
747	5/24/2019	18:57:01	19.80	2.448435
748	5/24/2019	18:58:01	19.70	2.449158
749	5/24/2019	18:59:01	19.70	2.448435
750	5/24/2019	19:00:01	19.80	2.448435
751	5/24/2019	19:01:01	19.90	2.449158

752	5/24/2019	19:02:01	20.00	2.448435
753	5/24/2019	19:03:01	20.20	2.448435
754	5/24/2019	19:04:01	20.20	2.448435
755	5/24/2019	19:05:01	20.10	2.448435
756	5/24/2019	19:06:01	19.90	2.448435
757	5/24/2019	19:07:01	19.80	2.447711
758	5/24/2019	19:08:01	19.70	2.447711
759	5/24/2019	19:09:01	19.70	2.447711
760	5/24/2019	19:10:01	19.80	2.447711
761	5/24/2019	19:11:01	19.90	2.448073
762	5/24/2019	19:12:01	20.10	2.447711
763	5/24/2019	19:13:01	20.20	2.447350
764	5/24/2019	19:14:01	20.20	2.446988
765	5/24/2019	19:15:01	20.00	2.446265
766	5/24/2019	19:16:01	19.90	2.446988
767	5/24/2019	19:17:01	19.70	2.446626
768	5/24/2019	19:18:01	19.70	2.446626
769	5/24/2019	19:19:01	19.80	2.446265
770	5/24/2019	19:20:01	19.90	2.446265
771	5/24/2019	19:21:01	20.00	2.445903
772	5/24/2019	19:22:01	20.20	2.445903
773	5/24/2019	19:23:01	20.20	2.445903
774	5/24/2019	19:24:01	20.10	2.445903
775	5/24/2019	19:25:01	20.00	2.445903
776	5/24/2019	19:26:01	19.80	2.445903
777	5/24/2019	19:27:01	19.70	2.445179
778	5/24/2019	19:28:01	19.70	2.445903
779	5/24/2019	19:29:01	19.80	2.445179
780	5/24/2019	19:30:01	19.90	2.444094
781	5/24/2019	19:31:01	20.00	2.445541
782	5/24/2019	19:32:01	20.20	2.444818
783	5/24/2019	19:33:01	20.20	2.445541
784	5/24/2019	19:34:01	20.10	2.445179
785	5/24/2019	19:35:01	19.90	2.444456
786	5/24/2019	19:36:01	19.80	2.444456
787	5/24/2019	19:37:01	19.70	2.443009
788	5/24/2019	19:38:01	19.70	2.443371
789	5/24/2019	19:39:01	19.80	2.443733
790	5/24/2019	19:40:01	19.90	2.443371
791	5/24/2019	19:41:01	20.10	2.443009
792	5/24/2019	19:42:01	20.20	2.443009
793	5/24/2019	19:43:01	20.20	2.443009
794	5/24/2019	19:44:01	20.10	2.443371
795	5/24/2019	19:45:01	19.90	2.443371
796	5/24/2019	19:46:01	19.70	2.443009
797	5/24/2019	19:47:01	19.70	2.442647
798	5/24/2019	19:48:01	19.70	2.442647

799	5/24/2019	19:49:01	19.80	2.443009
800	5/24/2019	19:50:01	20.00	2.442647
801	5/24/2019	19:51:01	20.10	2.441924
802	5/24/2019	19:52:01	20.20	2.442647
803	5/24/2019	19:53:01	20.20	2.442286
804	5/24/2019	19:54:01	20.00	2.442286
805	5/24/2019	19:55:01	19.90	2.441924
806	5/24/2019	19:56:01	19.70	2.441200
807	5/24/2019	19:57:01	19.70	2.441924
808	5/24/2019	19:58:01	19.80	2.441200
809	5/24/2019	19:59:01	19.90	2.441562
810	5/24/2019	20:00:01	20.00	2.441200
811	5/24/2019	20:01:01	20.20	2.440839
812	5/24/2019	20:02:01	20.20	2.440839
813	5/24/2019	20:03:01	20.10	2.440115
814	5/24/2019	20:04:01	19.90	2.440115
815	5/24/2019	20:05:01	19.80	2.440477
816	5/24/2019	20:06:01	19.70	2.440115
817	5/24/2019	20:07:01	19.70	2.440477
818	5/24/2019	20:08:01	19.80	2.440115
819	5/24/2019	20:09:01	19.90	2.440115
820	5/24/2019	20:10:01	20.10	2.440115
821	5/24/2019	20:11:01	20.20	2.440115
822	5/24/2019	20:12:01	20.20	2.439754
823	5/24/2019	20:13:01	20.10	2.439754
824	5/24/2019	20:14:01	19.90	2.439754
825	5/24/2019	20:15:01	19.70	2.439392
826	5/24/2019	20:16:01	19.70	2.438668
827	5/24/2019	20:17:01	19.70	2.439392
828	5/24/2019	20:18:01	19.80	2.439392
829	5/24/2019	20:19:01	19.90	2.439392
830	5/24/2019	20:20:01	20.10	2.439392
831	5/24/2019	20:21:01	20.20	2.437945
832	5/24/2019	20:22:01	20.20	2.437583
833	5/24/2019	20:23:01	20.00	2.437945
834	5/24/2019	20:24:01	19.90	2.437583
835	5/24/2019	20:25:01	19.70	2.437945
836	5/24/2019	20:26:01	19.70	2.437222
837	5/24/2019	20:27:01	19.70	2.437222
838	5/24/2019	20:28:01	19.90	2.437222
839	5/24/2019	20:29:01	20.00	2.436860
840	5/24/2019	20:30:01	20.10	2.437222
841	5/24/2019	20:31:01	20.20	2.437222
842	5/24/2019	20:32:01	20.10	2.436860
843	5/24/2019	20:33:01	20.00	2.436860
844	5/24/2019	20:34:01	19.80	2.437222
845	5/24/2019	20:35:01	19.70	2.437222

846	5/24/2019	20:36:01	19.70	2.437222
847	5/24/2019	20:37:01	19.80	2.436498
848	5/24/2019	20:38:01	19.90	2.436860
849	5/24/2019	20:39:01	20.00	2.436498
850	5/24/2019	20:40:01	20.20	2.436498
851	5/24/2019	20:41:01	20.20	2.436136
852	5/24/2019	20:42:01	20.10	2.436136
853	5/24/2019	20:43:01	19.90	2.435413
854	5/24/2019	20:44:01	19.70	2.434690
855	5/24/2019	20:45:01	19.70	2.435775
856	5/24/2019	20:46:01	19.70	2.434690
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858	5/24/2019	20:48:01	19.90	2.434328
859	5/24/2019	20:49:01	20.00	2.434328
860	5/24/2019	20:50:01	20.10	2.434328
861	5/24/2019	20:51:01	20.20	2.434328
862	5/24/2019	20:52:01	20.10	2.434328
863	5/24/2019	20:53:01	19.90	2.434328
864	5/24/2019	20:54:01	19.80	2.434328
865	5/24/2019	20:55:01	19.70	2.434328
866	5/24/2019	20:56:01	19.70	2.434328
867	5/24/2019	20:57:01	19.80	2.433604
868	5/24/2019	20:58:01	19.90	2.433966
869	5/24/2019	20:59:01	20.00	2.434328
870	5/24/2019	21:00:01	20.20	2.433966
871	5/24/2019	21:01:01	20.20	2.433966
872	5/24/2019	21:02:01	20.10	2.433966
873	5/24/2019	21:03:01	19.90	2.433604
874	5/24/2019	21:04:01	19.70	2.433243
875	5/24/2019	21:05:01	19.70	2.433243
876	5/24/2019	21:06:01	19.70	2.432881
877	5/24/2019	21:07:01	19.80	2.432881
878	5/24/2019	21:08:01	19.90	2.432519
879	5/24/2019	21:09:01	20.00	2.432519
880	5/24/2019	21:10:01	20.20	2.431434
881	5/24/2019	21:11:01	20.20	2.432881
882	5/24/2019	21:12:01	20.00	2.432881
883	5/24/2019	21:13:01	19.90	2.431796
884	5/24/2019	21:14:01	19.70	2.431434
885	5/24/2019	21:15:01	19.70	2.432158
886	5/24/2019	21:16:01	19.70	2.431434
887	5/24/2019	21:17:01	19.80	2.431434
888	5/24/2019	21:18:01	19.90	2.431434
889	5/24/2019	21:19:01	20.10	2.431434
890	5/24/2019	21:20:01	20.20	2.431434
891	5/24/2019	21:21:01	20.10	2.431434
892	5/24/2019	21:22:01	20.00	2.431434

893	5/24/2019	21:23:01	19.80	2.431434
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896	5/24/2019	21:26:01	19.70	2.430711
897	5/24/2019	21:27:01	19.80	2.430349
898	5/24/2019	21:28:01	19.90	2.431072
899	5/24/2019	21:29:01	20.10	2.429987
900	5/24/2019	21:30:01	20.20	2.429987
901	5/24/2019	21:31:01	20.10	2.429264
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903	5/24/2019	21:33:01	19.80	2.429626
904	5/24/2019	21:34:01	19.70	2.429626
905	5/24/2019	21:35:01	19.70	2.428902
906	5/24/2019	21:36:01	19.70	2.429264
907	5/24/2019	21:37:01	19.80	2.430349
908	5/24/2019	21:38:01	19.90	2.429264
909	5/24/2019	21:39:01	20.10	2.429264
910	5/24/2019	21:40:01	20.20	2.428902
911	5/24/2019	21:41:01	20.20	2.428540
912	5/24/2019	21:42:01	20.00	2.428540
913	5/24/2019	21:43:01	19.80	2.428902
914	5/24/2019	21:44:01	19.70	2.428540
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916	5/24/2019	21:46:01	19.70	2.428540
917	5/24/2019	21:47:01	19.80	2.428540
918	5/24/2019	21:48:01	19.90	2.428540
919	5/24/2019	21:49:01	20.10	2.427817
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921	5/24/2019	21:51:01	20.10	2.428540
922	5/24/2019	21:52:01	20.00	2.428179
923	5/24/2019	21:53:01	19.80	2.428179
924	5/24/2019	21:54:01	19.70	2.427455
925	5/24/2019	21:55:01	19.60	2.426732
926	5/24/2019	21:56:01	19.70	2.426370
927	5/24/2019	21:57:01	19.80	2.426008
928	5/24/2019	21:58:01	19.90	2.426370
929	5/24/2019	21:59:01	20.10	2.426732
930	5/24/2019	22:00:01	20.20	2.426732
931	5/24/2019	22:01:01	20.10	2.426370
932	5/24/2019	22:02:01	20.00	2.426008
933	5/24/2019	22:03:01	19.80	2.426008
934	5/24/2019	22:04:01	19.70	2.426370
935	5/24/2019	22:05:01	19.70	2.425647
936	5/24/2019	22:06:01	19.70	2.425647
937	5/24/2019	22:07:01	19.80	2.426008
938	5/24/2019	22:08:01	19.90	2.425285
939	5/24/2019	22:09:01	20.10	2.425647

940	5/24/2019	22:10:01	20.20	2.425647
941	5/24/2019	22:11:01	20.10	2.425647
942	5/24/2019	22:12:01	20.00	2.425647
943	5/24/2019	22:13:01	19.80	2.425647
944	5/24/2019	22:14:01	19.70	2.425285
945	5/24/2019	22:15:01	19.70	2.425285
946	5/24/2019	22:16:01	19.70	2.425285
947	5/24/2019	22:17:01	19.80	2.425285
948	5/24/2019	22:18:01	19.90	2.424923
949	5/24/2019	22:19:01	20.00	2.424923
950	5/24/2019	22:20:01	20.20	2.424923
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952	5/24/2019	22:22:01	20.00	2.423476
953	5/24/2019	22:23:01	19.80	2.423476
954	5/24/2019	22:24:01	19.70	2.423838
955	5/24/2019	22:25:01	19.70	2.423115
956	5/24/2019	22:26:01	19.70	2.423476
957	5/24/2019	22:27:01	19.80	2.423476
958	5/24/2019	22:28:01	19.90	2.422753
959	5/24/2019	22:29:01	20.10	2.423476
960	5/24/2019	22:30:01	20.20	2.422753
961	5/24/2019	22:31:01	20.20	2.422753
962	5/24/2019	22:32:01	20.00	2.422753
963	5/24/2019	22:33:01	19.80	2.422753
964	5/24/2019	22:34:01	19.70	2.423115
965	5/24/2019	22:35:01	19.60	2.422753
966	5/24/2019	22:36:01	19.70	2.422753
967	5/24/2019	22:37:01	19.80	2.422753
968	5/24/2019	22:38:01	19.90	2.422753
969	5/24/2019	22:39:01	20.00	2.422753
970	5/24/2019	22:40:01	20.10	2.422753
971	5/24/2019	22:41:01	20.20	2.422391
972	5/24/2019	22:42:01	20.00	2.422753
973	5/24/2019	22:43:01	19.90	2.422753
974	5/24/2019	22:44:01	19.70	2.422391
975	5/24/2019	22:45:01	19.60	2.422391
976	5/24/2019	22:46:01	19.70	2.421306
977	5/24/2019	22:47:01	19.80	2.421668
978	5/24/2019	22:48:01	19.90	2.421306
979	5/24/2019	22:49:01	20.00	2.422391
980	5/24/2019	22:50:01	20.10	2.420945
981	5/24/2019	22:51:01	20.20	2.420945
982	5/24/2019	22:52:01	20.10	2.421668
983	5/24/2019	22:53:01	19.90	2.420945
984	5/24/2019	22:54:01	19.70	2.421306
985	5/24/2019	22:55:01	19.60	2.420583
986	5/24/2019	22:56:01	19.70	2.420583

987	5/24/2019	22:57:01	19.70	2.420583
988	5/24/2019	22:58:01	19.90	2.420583
989	5/24/2019	22:59:01	20.00	2.420221
990	5/24/2019	23:00:01	20.10	2.420221
991	5/24/2019	23:01:01	20.20	2.420221
992	5/24/2019	23:02:01	20.10	2.419859
993	5/24/2019	23:03:01	19.90	2.419859
994	5/24/2019	23:04:01	19.80	2.419859
995	5/24/2019	23:05:01	19.70	2.419859
996	5/24/2019	23:06:01	19.60	2.419859
997	5/24/2019	23:07:01	19.70	2.419859
998	5/24/2019	23:08:01	19.80	2.419859
999	5/24/2019	23:09:01	19.90	2.419859
1000	5/24/2019	23:10:01	20.10	2.419498
1001	5/24/2019	23:11:01	20.20	2.419859
1002	5/24/2019	23:12:01	20.10	2.419498
1003	5/24/2019	23:13:01	20.00	2.419859
1004	5/24/2019	23:14:01	19.80	2.419498
1005	5/24/2019	23:15:01	19.70	2.418774
1006	5/24/2019	23:16:01	19.70	2.419136
1007	5/24/2019	23:17:01	19.70	2.417689
1008	5/24/2019	23:18:01	19.80	2.419136
1009	5/24/2019	23:19:01	19.90	2.418412
1010	5/24/2019	23:20:01	20.00	2.417689
1011	5/24/2019	23:21:01	20.10	2.417689
1012	5/24/2019	23:22:01	20.10	2.418774
1013	5/24/2019	23:23:01	20.00	2.417689
1014	5/24/2019	23:24:01	19.90	2.418051
1015	5/24/2019	23:25:01	19.70	2.417327
1016	5/24/2019	23:26:01	19.60	2.417327
1017	5/24/2019	23:27:01	19.70	2.417327
1018	5/24/2019	23:28:01	19.80	2.416966
1019	5/24/2019	23:29:01	19.90	2.416966
1020	5/24/2019	23:30:01	20.00	2.416966
1021	5/24/2019	23:31:01	20.10	2.416966
1022	5/24/2019	23:32:01	20.20	2.416966
1023	5/24/2019	23:33:01	20.10	2.416966
1024	5/24/2019	23:34:01	19.90	2.416966
1025	5/24/2019	23:35:01	19.70	2.416966
1026	5/24/2019	23:36:01	19.60	2.416966
1027	5/24/2019	23:37:01	19.70	2.416966
1028	5/24/2019	23:38:01	19.70	2.416966
1029	5/24/2019	23:39:01	19.80	2.416966
1030	5/24/2019	23:40:01	19.90	2.416604
1031	5/24/2019	23:41:01	20.10	2.416242
1032	5/24/2019	23:42:01	20.10	2.416604
1033	5/24/2019	23:43:01	20.10	2.416242

1034	5/24/2019	23:44:01	19.90	2.415519
1035	5/24/2019	23:45:01	19.80	2.415880
1036	5/24/2019	23:46:01	19.70	2.415519
1037	5/24/2019	23:47:01	19.70	2.415157
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1041	5/24/2019	23:51:01	20.00	2.414434
1042	5/24/2019	23:52:01	20.10	2.414434
1043	5/24/2019	23:53:01	20.10	2.414795
1044	5/24/2019	23:54:01	20.00	2.415880
1045	5/24/2019	23:55:01	19.80	2.414072
1046	5/24/2019	23:56:01	19.70	2.414072
1047	5/24/2019	23:57:01	19.60	2.414072
1048	5/24/2019	23:58:01	19.70	2.414072
1049	5/24/2019	23:59:01	19.80	2.414072
1050	5/25/2019	0:00:01	19.90	2.414434
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1052	5/25/2019	0:02:01	20.10	2.414072
1053	5/25/2019	0:03:01	20.10	2.414072
1054	5/25/2019	0:04:01	20.10	2.414072
1055	5/25/2019	0:05:01	19.90	2.414072
1056	5/25/2019	0:06:01	19.70	2.413710
1057	5/25/2019	0:07:01	19.60	2.413710
1058	5/25/2019	0:08:01	19.60	2.413710
1059	5/25/2019	0:09:01	19.70	2.414072
1060	5/25/2019	0:10:01	19.80	2.413349
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1062	5/25/2019	0:12:01	20.00	2.413349
1063	5/25/2019	0:13:01	20.10	2.413349
1064	5/25/2019	0:14:01	20.10	2.413710
1065	5/25/2019	0:15:01	20.00	2.413710
1066	5/25/2019	0:16:01	19.80	2.412987
1067	5/25/2019	0:17:01	19.70	2.411540
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1069	5/25/2019	0:19:01	19.70	2.412625
1070	5/25/2019	0:20:01	19.80	2.411540
1071	5/25/2019	0:21:01	19.90	2.411178
1072	5/25/2019	0:22:01	20.00	2.412625
1073	5/25/2019	0:23:01	20.10	2.411540
1074	5/25/2019	0:24:01	20.20	2.412625
1075	5/25/2019	0:25:01	20.10	2.411178
1076	5/25/2019	0:26:01	19.90	2.411178
1077	5/25/2019	0:27:01	19.70	2.411540
1078	5/25/2019	0:28:01	19.60	2.411540
1079	5/25/2019	0:29:01	19.60	2.411178
1080	5/25/2019	0:30:01	19.70	2.411540

1081	5/25/2019	0:31:01	19.80	2.410817
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1083	5/25/2019	0:33:01	20.00	2.411178
1084	5/25/2019	0:34:01	20.10	2.411178
1085	5/25/2019	0:35:01	20.10	2.411178
1086	5/25/2019	0:36:01	20.00	2.411178
1087	5/25/2019	0:37:01	19.80	2.411178
1088	5/25/2019	0:38:01	19.70	2.410455
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1090	5/25/2019	0:40:01	19.70	2.411178
1091	5/25/2019	0:41:01	19.80	2.410817
1092	5/25/2019	0:42:01	19.90	2.410093
1093	5/25/2019	0:43:01	20.00	2.410093
1094	5/25/2019	0:44:01	20.10	2.410455
1095	5/25/2019	0:45:01	20.10	2.409731
1096	5/25/2019	0:46:01	20.10	2.409008
1097	5/25/2019	0:47:01	19.90	2.410455
1098	5/25/2019	0:48:01	19.70	2.410093
1099	5/25/2019	0:49:01	19.60	2.409370
1100	5/25/2019	0:50:01	19.60	2.409370
1101	5/25/2019	0:51:01	19.70	2.409370
1102	5/25/2019	0:52:01	19.80	2.409008
1103	5/25/2019	0:53:01	19.90	2.409370
1104	5/25/2019	0:54:01	20.00	2.408646
1105	5/25/2019	0:55:01	20.10	2.408646
1106	5/25/2019	0:56:01	20.10	2.408646
1107	5/25/2019	0:57:01	20.00	2.408285
1108	5/25/2019	0:58:01	19.80	2.408285
1109	5/25/2019	0:59:01	19.70	2.408285
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1114	5/25/2019	1:04:01	20.00	2.408285
1115	5/25/2019	1:05:01	20.10	2.408285
1116	5/25/2019	1:06:01	20.10	2.408285
1117	5/25/2019	1:07:01	20.10	2.408285
1118	5/25/2019	1:08:01	19.90	2.407923
1119	5/25/2019	1:09:01	19.70	2.408285
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1122	5/25/2019	1:12:01	19.70	2.407561
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1126	5/25/2019	1:16:01	20.10	2.407923
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1131	5/25/2019	1:21:01	19.60	2.406476
1132	5/25/2019	1:22:01	19.70	2.405752
1133	5/25/2019	1:23:01	19.70	2.406114
1134	5/25/2019	1:24:01	19.80	2.405391
1135	5/25/2019	1:25:01	19.90	2.405752
1136	5/25/2019	1:26:01	20.00	2.406114
1137	5/25/2019	1:27:01	20.10	2.405391
1138	5/25/2019	1:28:01	20.10	2.405752
1139	5/25/2019	1:29:01	20.00	2.405391
1140	5/25/2019	1:30:01	19.80	2.405752
1141	5/25/2019	1:31:01	19.60	2.406114
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1143	5/25/2019	1:33:01	19.70	2.405752
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1145	5/25/2019	1:35:01	19.80	2.405391
1146	5/25/2019	1:36:01	19.90	2.405029
1147	5/25/2019	1:37:01	20.10	2.405391
1148	5/25/2019	1:38:01	20.10	2.405391
1149	5/25/2019	1:39:01	20.10	2.405391
1150	5/25/2019	1:40:01	19.90	2.405391
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1173	5/25/2019	2:03:01	19.70	2.402497
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1194	5/25/2019	2:24:01	19.80	2.402136
1195	5/25/2019	2:25:01	19.70	2.401774
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1203	5/25/2019	2:33:01	20.10	2.402136
1204	5/25/2019	2:34:01	19.90	2.400689
1205	5/25/2019	2:35:01	19.80	2.401050
1206	5/25/2019	2:36:01	19.60	2.399965
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1208	5/25/2019	2:38:01	19.70	2.400689
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1210	5/25/2019	2:40:01	19.90	2.399604
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1228	5/25/2019	2:58:01	19.60	2.399604
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1231	5/25/2019	3:01:01	19.80	2.399242
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1247	5/25/2019	3:17:01	20.00	2.397433
1248	5/25/2019	3:18:01	19.90	2.397795
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1250	5/25/2019	3:20:01	19.60	2.397071
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1255	5/25/2019	3:25:01	20.00	2.397071
1256	5/25/2019	3:26:01	20.10	2.397071
1257	5/25/2019	3:27:01	20.10	2.396710
1258	5/25/2019	3:28:01	20.00	2.396710
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1266	5/25/2019	3:36:01	20.00	2.396348
1267	5/25/2019	3:37:01	20.10	2.396348
1268	5/25/2019	3:38:01	20.10	2.396710

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1271	5/25/2019	3:41:01	19.70	2.395625
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1290	5/25/2019	4:00:01	20.10	2.393816
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1303	5/25/2019	4:13:01	19.90	2.393816
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1319	5/25/2019	4:29:01	19.70	2.391646
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1328	5/25/2019	4:38:01	19.60	2.390922
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1339	5/25/2019	4:49:01	19.60	2.390561
1340	5/25/2019	4:50:01	19.60	2.390922
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1343	5/25/2019	4:53:01	19.80	2.390199
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1347	5/25/2019	4:57:01	20.10	2.389837
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1349	5/25/2019	4:59:01	19.80	2.389837
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1353	5/25/2019	5:03:01	19.70	2.389476
1354	5/25/2019	5:04:01	19.80	2.388752
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1357	5/25/2019	5:07:01	20.10	2.389114
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1406	5/25/2019	5:56:01	20.00	2.385497
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1417	5/25/2019	6:07:01	20.10	2.385135
1418	5/25/2019	6:08:01	19.90	2.384773
1419	5/25/2019	6:09:01	19.70	2.385135
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1422	5/25/2019	6:12:01	19.60	2.383688
1423	5/25/2019	6:13:01	19.70	2.384412
1424	5/25/2019	6:14:01	19.80	2.385135
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1426	5/25/2019	6:16:01	20.00	2.385135
1427	5/25/2019	6:17:01	20.10	2.384412
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1431	5/25/2019	6:21:01	19.70	2.383688
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1433	5/25/2019	6:23:01	19.60	2.383688
1434	5/25/2019	6:24:01	19.60	2.382603
1435	5/25/2019	6:25:01	19.70	2.383327
1436	5/25/2019	7:01:01	20.30	2.382965
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1438	5/25/2019	7:03:01	20.30	2.380071
1439	5/25/2019	7:04:01	20.10	2.380795
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1443	5/25/2019	7:08:01	19.50	2.379709
1444	5/25/2019	7:09:01	19.50	2.379348
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1446	5/25/2019	7:11:01	19.70	2.378986
1447	5/25/2019	7:12:01	19.80	2.379709
1448	5/25/2019	7:13:01	19.90	2.379348
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1454	5/25/2019	7:19:01	19.60	2.379348
1455	5/25/2019	7:20:01	19.60	2.378986
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1497	5/25/2019	8:02:01	20.10	2.375731
1498	5/25/2019	8:03:01	20.00	2.376454
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1618	5/25/2019	10:03:01	20.10	2.368858
1619	5/25/2019	10:04:01	20.10	2.369220
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1625	5/25/2019	10:10:01	19.70	2.367773
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1650	5/25/2019	10:35:01	20.10	2.367411
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1669	5/25/2019	10:54:01	19.90	2.365602
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1673	5/25/2019	10:58:01	20.10	2.365602
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1676	5/25/2019	11:01:01	19.60	2.365241
1677	5/25/2019	11:02:01	19.60	2.364879
1678	5/25/2019	11:03:01	19.70	2.365241
1679	5/25/2019	11:04:01	19.80	2.365241
1680	5/25/2019	11:05:01	19.90	2.365241
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1682	5/25/2019	11:07:01	20.10	2.364879
1683	5/25/2019	11:08:01	20.10	2.364879
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1685	5/25/2019	11:10:01	19.80	2.364879
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1690	5/25/2019	11:15:01	19.80	2.364517
1691	5/25/2019	11:16:01	19.90	2.364879

1692	5/25/2019	11:17:01	20.10	2.364879
1693	5/25/2019	11:18:01	20.10	2.364879
1694	5/25/2019	11:19:01	20.10	2.364879
1695	5/25/2019	11:20:01	19.90	2.364517
1696	5/25/2019	11:21:01	19.80	2.364156
1697	5/25/2019	11:22:01	19.60	2.364879
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1741	5/25/2019	12:06:01	19.70	2.361624
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1745	5/25/2019	12:10:01	20.10	2.361985
1746	5/25/2019	12:11:01	20.20	2.361985
1747	5/25/2019	12:12:01	20.00	2.361985
1748	5/25/2019	12:13:01	19.90	2.361624
1749	5/25/2019	12:14:01	19.70	2.361985
1750	5/25/2019	12:15:01	19.60	2.360900
1751	5/25/2019	12:16:01	19.70	2.361624
1752	5/25/2019	12:17:01	19.70	2.361262
1753	5/25/2019	12:18:01	19.90	2.361624
1754	5/25/2019	12:19:01	19.90	2.361985
1755	5/25/2019	12:20:01	20.10	2.360900
1756	5/25/2019	12:21:01	20.10	2.360538
1757	5/25/2019	12:22:01	20.10	2.360538
1758	5/25/2019	12:23:01	19.90	2.360177
1759	5/25/2019	12:24:01	19.80	2.360900
1760	5/25/2019	12:25:01	19.60	2.360900
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1762	5/25/2019	12:27:01	19.70	2.360538
1763	5/25/2019	12:28:01	19.80	2.360177
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1765	5/25/2019	12:30:01	20.00	2.359453
1766	5/25/2019	12:31:01	20.10	2.359815
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1768	5/25/2019	12:33:01	20.00	2.359453
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1771	5/25/2019	12:36:01	19.60	2.360177
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1773	5/25/2019	12:38:01	19.80	2.359453
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1775	5/25/2019	12:40:01	20.00	2.360177
1776	5/25/2019	12:41:01	20.10	2.359453
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1778	5/25/2019	12:43:01	20.10	2.359815
1779	5/25/2019	12:44:01	19.90	2.359092
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1783	5/25/2019	12:48:01	19.70	2.359092
1784	5/25/2019	12:49:01	19.80	2.359092
1785	5/25/2019	12:50:01	19.90	2.359092

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1787	5/25/2019	12:52:01	20.20	2.359092
1788	5/25/2019	12:53:01	20.10	2.359092
1789	5/25/2019	12:54:01	20.00	2.359092
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1791	5/25/2019	12:56:01	19.70	2.359092
1792	5/25/2019	12:57:01	19.60	2.359092
1793	5/25/2019	12:58:01	19.70	2.359092
1794	5/25/2019	12:59:01	19.80	2.358368
1795	5/25/2019	13:00:01	19.90	2.359092
1796	5/25/2019	13:01:01	20.00	2.358368
1797	5/25/2019	13:02:01	20.10	2.359092
1798	5/25/2019	13:03:01	20.10	2.359092
1799	5/25/2019	13:04:01	20.00	2.359092
1800	5/25/2019	13:05:01	19.80	2.358368
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1806	5/25/2019	13:11:01	20.00	2.358006
1807	5/25/2019	13:12:01	20.10	2.358730
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1809	5/25/2019	13:14:01	20.00	2.358006
1810	5/25/2019	13:15:01	19.90	2.357645
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1817	5/25/2019	13:22:01	20.10	2.357283
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1820	5/25/2019	13:25:01	19.90	2.356921
1821	5/25/2019	13:26:01	19.70	2.356921
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1824	5/25/2019	13:29:01	19.70	2.356921
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1827	5/25/2019	13:32:01	20.10	2.356560
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1829	5/25/2019	13:34:01	20.10	2.356921
1830	5/25/2019	13:35:01	19.90	2.356198
1831	5/25/2019	13:36:01	19.70	2.356198
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1835	5/25/2019	13:40:01	19.90	2.357283
1836	5/25/2019	13:41:01	19.90	2.356198
1837	5/25/2019	13:42:01	20.10	2.356560
1838	5/25/2019	13:43:01	20.20	2.356198
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1846	5/25/2019	13:51:01	20.00	2.355836
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1852	5/25/2019	13:57:01	19.70	2.355836
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1857	5/25/2019	14:02:01	20.10	2.356198
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1860	5/25/2019	14:05:01	20.00	2.355836
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1875	5/25/2019	14:20:01	19.80	2.354028
1876	5/25/2019	14:21:01	19.90	2.355113
1877	5/25/2019	14:22:01	20.00	2.353666
1878	5/25/2019	14:23:01	20.20	2.353666
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1888	5/25/2019	14:33:01	20.10	2.353666	
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1898	5/25/2019	14:43:01	20.10	2.353304	
1899	5/25/2019	14:44:01	20.20	2.353304	
1900	5/25/2019	14:45:01	20.10	2.353304	
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1902	5/25/2019	14:47:01	19.70	2.353304	
1903	5/25/2019	14:48:01	19.70	2.353304	
1904	5/25/2019	14:49:01	19.70	2.353304	
1905	5/25/2019	14:50:01	19.70	2.353304	
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1908	5/25/2019	14:53:01	20.10	2.352581	
1909	5/25/2019	14:54:01	20.20	2.352942	
1910	5/25/2019	14:55:01	20.10	2.352581	
1911	5/25/2019	14:56:01	20.00	2.352219	
1912	5/25/2019	14:57:01	19.80	2.352581	
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1914	5/25/2019	14:59:01	19.60	2.352942	
1915	5/25/2019	15:00:01	19.70	2.352219	
1916	5/25/2019	15:01:01	19.80	2.352581	
1917	5/25/2019	15:02:01	19.90	2.353304	
1918	5/25/2019	15:03:01	20.10	2.352942	
1919	5/25/2019	15:04:01	20.20	2.352219	
1920	5/25/2019	15:05:01	20.10	2.352219	
1921	5/25/2019	15:06:01	20.00	2.351857	24 horas
1922	5/25/2019	15:07:01	19.80	2.351857	
1923	5/25/2019	15:08:01	19.70	2.352219	
1924	5/25/2019	15:09:01	19.70	2.352581	
1925	5/25/2019	15:10:01	19.70	2.351496	
1926	5/25/2019	15:11:01	19.80	2.351857	

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1928	5/25/2019	15:13:01	20.10	2.350772
1929	5/25/2019	15:14:01	20.20	2.351134
1930	5/25/2019	15:15:01	20.10	2.350772
1931	5/25/2019	15:16:01	20.00	2.351134
1932	5/25/2019	15:17:01	19.80	2.352219
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1934	5/25/2019	15:19:01	19.60	2.350772
1935	5/25/2019	15:20:01	19.70	2.350772
1936	5/25/2019	15:21:01	19.80	2.351134
1937	5/25/2019	15:22:01	19.90	2.350772
1938	5/25/2019	15:23:01	20.00	2.350410
1939	5/25/2019	15:24:01	20.20	2.350772
1940	5/25/2019	15:25:01	20.20	2.350410
1941	5/25/2019	15:26:01	20.00	2.350410
1942	5/25/2019	15:27:01	19.90	2.350410
1943	5/25/2019	15:28:01	19.70	2.350410
1944	5/25/2019	15:29:01	19.60	2.350410
1945	5/25/2019	15:30:01	19.70	2.350410
1946	5/25/2019	15:31:01	19.80	2.350772
1947	5/25/2019	15:32:01	19.90	2.350410
1948	5/25/2019	15:33:01	20.00	2.350772
1949	5/25/2019	15:34:01	20.10	2.350410
1950	5/25/2019	15:35:01	20.20	2.350410
1951	5/25/2019	15:36:01	20.10	2.350410
1952	5/25/2019	15:37:01	19.90	2.350049
1953	5/25/2019	15:38:01	19.70	2.350410
1954	5/25/2019	15:39:01	19.60	2.350410
1955	5/25/2019	15:40:01	19.70	2.350410
1956	5/25/2019	15:41:01	19.80	2.350410
1957	5/25/2019	15:42:01	19.90	2.350410
1958	5/25/2019	15:43:01	20.00	2.350410
1959	5/25/2019	15:44:01	20.10	2.350410
1960	5/25/2019	15:45:01	20.20	2.349687
1961	5/25/2019	15:46:01	20.10	2.350410
1962	5/25/2019	15:47:01	19.90	2.349687
1963	5/25/2019	15:48:01	19.70	2.350049
1964	5/25/2019	15:49:01	19.70	2.349687
1965	5/25/2019	15:50:01	19.70	2.350049
1966	5/25/2019	15:51:01	19.80	2.350049
1967	5/25/2019	15:52:01	19.90	2.350410
1968	5/25/2019	15:53:01	20.00	2.349687
1969	5/25/2019	15:54:01	20.10	2.350410
1970	5/25/2019	15:55:01	20.20	2.348964
1971	5/25/2019	15:56:01	20.10	2.349325
1972	5/25/2019	15:57:01	19.90	2.348964
1973	5/25/2019	15:58:01	19.70	2.348602

1974	5/25/2019	15:59:01	19.70	2.350049
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1976	5/25/2019	16:01:01	19.80	2.348602
1977	5/25/2019	16:02:01	19.90	2.349325
1978	5/25/2019	16:03:01	20.00	2.349325
1979	5/25/2019	16:04:01	20.10	2.349325
1980	5/25/2019	16:05:01	20.20	2.348240
1981	5/25/2019	16:06:01	20.10	2.348240
1982	5/25/2019	16:07:01	19.90	2.347878
1983	5/25/2019	16:08:01	19.70	2.348602
1984	5/25/2019	16:09:01	19.70	2.348602
1985	5/25/2019	16:10:01	19.70	2.348240
1986	5/25/2019	16:11:01	19.80	2.348240
1987	5/25/2019	16:12:01	19.90	2.347878
1988	5/25/2019	16:13:01	20.00	2.347878
1989	5/25/2019	16:14:01	20.20	2.347878
1990	5/25/2019	16:15:01	20.20	2.347517
1991	5/25/2019	16:16:01	20.00	2.348240
1992	5/25/2019	16:17:01	19.90	2.347878
1993	5/25/2019	16:18:01	19.70	2.347517
1994	5/25/2019	16:19:01	19.70	2.348240
1995	5/25/2019	16:20:01	19.70	2.348240
1996	5/25/2019	16:21:01	19.80	2.347517
1997	5/25/2019	16:22:01	19.90	2.347517
1998	5/25/2019	16:23:01	20.00	2.347878
1999	5/25/2019	16:24:01	20.20	2.347517
2000	5/25/2019	16:25:01	20.10	2.347878
2001	5/25/2019	16:26:01	20.00	2.347517
2002	5/25/2019	16:27:01	19.90	2.347517
2003	5/25/2019	16:28:01	19.70	2.347517
2004	5/25/2019	16:29:01	19.60	2.347517
2005	5/25/2019	16:30:01	19.70	2.347517
2006	5/25/2019	16:31:01	19.80	2.347517
2007	5/25/2019	16:32:01	19.90	2.347878
2008	5/25/2019	16:33:01	20.00	2.347517
2009	5/25/2019	16:34:01	20.10	2.347878
2010	5/25/2019	16:35:01	20.20	2.347517
2011	5/25/2019	16:36:01	20.00	2.346793
2012	5/25/2019	16:37:01	19.90	2.347517
2013	5/25/2019	16:38:01	19.70	2.347517
2014	5/25/2019	16:39:01	19.60	2.347517
2015	5/25/2019	16:40:01	19.70	2.347517
2016	5/25/2019	16:41:01	19.80	2.347517
2017	5/25/2019	16:42:01	19.90	2.347517
2018	5/25/2019	16:43:01	20.00	2.347517
2019	5/25/2019	16:44:01	20.10	2.347155
2020	5/25/2019	16:45:01	20.20	2.346793

2021	5/25/2019	16:46:01	20.10	2.347517
2022	5/25/2019	16:47:01	19.90	2.346793
2023	5/25/2019	16:48:01	19.70	2.347517
2024	5/25/2019	16:49:01	19.70	2.347155
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2026	5/25/2019	16:51:01	19.80	2.347155
2027	5/25/2019	16:52:01	19.90	2.347517
2028	5/25/2019	16:53:01	20.00	2.347155
2029	5/25/2019	16:54:01	20.10	2.346070
2030	5/25/2019	16:55:01	20.20	2.346070
2031	5/25/2019	16:56:01	20.10	2.346793
2032	5/25/2019	16:57:01	19.90	2.346793
2033	5/25/2019	16:58:01	19.70	2.346070
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2035	5/25/2019	17:00:01	19.70	2.345708
2036	5/25/2019	17:01:01	19.80	2.346070
2037	5/25/2019	17:02:01	19.90	2.346070
2038	5/25/2019	17:03:01	20.00	2.346070
2039	5/25/2019	17:04:01	20.10	2.345708
2040	5/25/2019	17:05:01	20.20	2.345347
2041	5/25/2019	17:06:01	20.00	2.345708
2042	5/25/2019	17:07:01	19.90	2.345347
2043	5/25/2019	17:08:01	19.70	2.345708
2044	5/25/2019	17:09:01	19.70	2.344985
2045	5/25/2019	17:10:01	19.70	2.344985
2046	5/25/2019	17:11:01	19.80	2.344623
2047	5/25/2019	17:12:01	19.90	2.344623
2048	5/25/2019	17:13:01	20.00	2.344623
2049	5/25/2019	17:14:01	20.10	2.344623
2050	5/25/2019	17:15:01	20.20	2.344623
2051	5/25/2019	17:16:01	20.10	2.344985
2052	5/25/2019	17:17:01	19.90	2.344985
2053	5/25/2019	17:18:01	19.70	2.344623
2054	5/25/2019	17:19:01	19.70	2.344623
2055	5/25/2019	17:20:01	19.70	2.345347
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2059	5/25/2019	17:24:01	20.10	2.344623
2060	5/25/2019	17:25:01	20.20	2.345347
2061	5/25/2019	17:26:01	20.00	2.344623
2062	5/25/2019	17:27:01	19.90	2.344623
2063	5/25/2019	17:28:01	19.70	2.344623
2064	5/25/2019	17:29:01	19.70	2.344623
2065	5/25/2019	17:30:01	19.70	2.344623
2066	5/25/2019	17:31:01	19.80	2.344623
2067	5/25/2019	17:32:01	19.90	2.344623

2068	5/25/2019	17:33:01	20.00	2.344623
2069	5/25/2019	17:34:01	20.10	2.344623
2070	5/25/2019	17:35:01	20.20	2.344623
2071	5/25/2019	17:36:01	20.00	2.344623
2072	5/25/2019	17:37:01	19.90	2.344623
2073	5/25/2019	17:38:01	19.70	2.344623
2074	5/25/2019	17:39:01	19.70	2.344261
2075	5/25/2019	17:40:01	19.70	2.343900
2076	5/25/2019	17:41:01	19.80	2.344623
2077	5/25/2019	17:42:01	19.90	2.344261
2078	5/25/2019	17:43:01	20.00	2.344623
2079	5/25/2019	17:44:01	20.10	2.343900
2080	5/25/2019	17:45:01	20.10	2.344261
2081	5/25/2019	17:46:01	20.00	2.344261
2082	5/25/2019	17:47:01	19.80	2.344261
2083	5/25/2019	17:48:01	19.70	2.344261
2084	5/25/2019	17:49:01	19.70	2.344261
2085	5/25/2019	17:50:01	19.70	2.344623
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2087	5/25/2019	17:52:01	19.90	2.344261
2088	5/25/2019	17:53:01	20.00	2.343176
2089	5/25/2019	17:54:01	20.20	2.342815
2090	5/25/2019	17:55:01	20.10	2.342453
2091	5/25/2019	17:56:01	20.00	2.343900
2092	5/25/2019	17:57:01	19.80	2.342815
2093	5/25/2019	17:58:01	19.70	2.342453
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2095	5/25/2019	18:00:01	19.70	2.343176
2096	5/25/2019	18:01:01	19.80	2.343176
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2098	5/25/2019	18:03:01	20.10	2.342453
2099	5/25/2019	18:04:01	20.20	2.341729
2100	5/25/2019	18:05:01	20.10	2.341729
2101	5/25/2019	18:06:01	20.00	2.342815
2102	5/25/2019	18:07:01	19.80	2.342453
2103	5/25/2019	18:08:01	19.70	2.341729
2104	5/25/2019	18:09:01	19.60	2.342815
2105	5/25/2019	18:10:01	19.70	2.342815
2106	5/25/2019	18:11:01	19.80	2.341729
2107	5/25/2019	18:12:01	19.90	2.342453
2108	5/25/2019	18:13:01	20.00	2.342453
2109	5/25/2019	18:14:01	20.10	2.342453
2110	5/25/2019	18:15:01	20.10	2.341729
2111	5/25/2019	18:16:01	20.00	2.342091
2112	5/25/2019	18:17:01	19.80	2.342091
2113	5/25/2019	18:18:01	19.70	2.341729
2114	5/25/2019	18:19:01	19.60	2.341729

2115	5/25/2019	18:20:01	19.70	2.341729
2116	5/25/2019	18:21:01	19.80	2.341729
2117	5/25/2019	18:22:01	19.90	2.342091
2118	5/25/2019	18:23:01	20.00	2.341729
2119	5/25/2019	18:24:01	20.10	2.341729
2120	5/25/2019	18:25:01	20.20	2.341729
2121	5/25/2019	18:26:01	20.00	2.341729
2122	5/25/2019	18:27:01	19.90	2.341006
2123	5/25/2019	18:28:01	19.70	2.341729
2124	5/25/2019	18:29:01	19.70	2.341729
2125	5/25/2019	18:30:01	19.70	2.341729
2126	5/25/2019	18:31:01	19.80	2.341368
2127	5/25/2019	18:32:01	19.90	2.341729
2128	5/25/2019	18:33:01	20.00	2.341368
2129	5/25/2019	18:34:01	20.10	2.341368
2130	5/25/2019	18:35:01	20.20	2.341006
2131	5/25/2019	18:36:01	20.10	2.341729
2132	5/25/2019	18:37:01	19.90	2.341729
2133	5/25/2019	18:38:01	19.70	2.341729
2134	5/25/2019	18:39:01	19.60	2.340282
2135	5/25/2019	18:40:01	19.70	2.341729
2136	5/25/2019	18:41:01	19.80	2.341729
2137	5/25/2019	18:42:01	19.90	2.341368
2138	5/25/2019	18:43:01	20.00	2.341368
2139	5/25/2019	18:44:01	20.10	2.341729
2140	5/25/2019	18:45:01	20.20	2.341006
2141	5/25/2019	18:46:01	20.10	2.340644
2142	5/25/2019	18:47:01	19.90	2.341006
2143	5/25/2019	18:48:01	19.70	2.340644
2144	5/25/2019	18:49:01	19.70	2.341006
2145	5/25/2019	18:50:01	19.70	2.340282
2146	5/25/2019	18:51:01	19.80	2.341006
2147	5/25/2019	18:52:01	19.90	2.341006
2148	5/25/2019	18:53:01	20.00	2.341006
2149	5/25/2019	18:54:01	20.10	2.340644
2150	5/25/2019	18:55:01	20.20	2.340282
2151	5/25/2019	18:56:01	20.10	2.339559
2152	5/25/2019	18:57:01	19.90	2.340282
2153	5/25/2019	18:58:01	19.70	2.339197
2154	5/25/2019	18:59:01	19.60	2.339197
2155	5/25/2019	19:00:01	19.60	2.339197
2156	5/25/2019	19:01:01	19.70	2.340282
2157	5/25/2019	19:02:01	19.80	2.339921
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2159	5/25/2019	19:04:01	20.10	2.340282
2160	5/25/2019	19:05:01	20.20	2.339921
2161	5/25/2019	19:06:01	20.10	2.339197

2162	5/25/2019	19:07:01	20.00	2.339559
2163	5/25/2019	19:08:01	19.80	2.339197
2164	5/25/2019	19:09:01	19.60	2.338836
2165	5/25/2019	19:10:01	19.60	2.339197
2166	5/25/2019	19:11:01	19.70	2.338836
2167	5/25/2019	19:12:01	19.80	2.339197
2168	5/25/2019	19:13:01	19.90	2.339559
2169	5/25/2019	19:14:01	20.00	2.339559
2170	5/25/2019	19:15:01	20.20	2.338836
2171	5/25/2019	19:16:01	20.10	2.339197
2172	5/25/2019	19:17:01	20.00	2.339197
2173	5/25/2019	19:18:01	19.80	2.338836
2174	5/25/2019	19:19:01	19.70	2.338836
2175	5/25/2019	19:20:01	19.60	2.338836
2176	5/25/2019	19:21:01	19.70	2.339197
2177	5/25/2019	19:22:01	19.80	2.339559
2178	5/25/2019	19:23:01	19.90	2.338836
2179	5/25/2019	19:24:01	20.00	2.339197
2180	5/25/2019	19:25:01	20.10	2.338836
2181	5/25/2019	19:26:01	20.20	2.338836
2182	5/25/2019	19:27:01	20.10	2.338836
2183	5/25/2019	19:28:01	19.90	2.338836
2184	5/25/2019	19:29:01	19.70	2.338836
2185	5/25/2019	19:30:01	19.60	2.338474
2186	5/25/2019	19:31:01	19.70	2.338836
2187	5/25/2019	19:32:01	19.80	2.338836
2188	5/25/2019	19:33:01	19.90	2.338836
2189	5/25/2019	19:34:01	20.00	2.338836
2190	5/25/2019	19:35:01	20.10	2.338836
2191	5/25/2019	19:36:01	20.20	2.338474
2192	5/25/2019	19:37:01	20.10	2.338112
2193	5/25/2019	19:38:01	19.90	2.338836
2194	5/25/2019	19:39:01	19.70	2.338836
2195	5/25/2019	19:40:01	19.60	2.338836
2196	5/25/2019	19:41:01	19.60	2.338836
2197	5/25/2019	19:42:01	19.70	2.338836
2198	5/25/2019	19:43:01	19.80	2.338474
2199	5/25/2019	19:44:01	19.90	2.338474
2200	5/25/2019	19:45:01	20.00	2.338112
2201	5/25/2019	19:46:01	20.20	2.338112
2202	5/25/2019	19:47:01	20.10	2.338112
2203	5/25/2019	19:48:01	20.00	2.338112
2204	5/25/2019	19:49:01	19.80	2.338112
2205	5/25/2019	19:50:01	19.70	2.337750
2206	5/25/2019	19:51:01	19.60	2.337750
2207	5/25/2019	19:52:01	19.70	2.337027
2208	5/25/2019	19:53:01	19.80	2.337389

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2210	5/25/2019	19:55:01	20.00	2.338112
2211	5/25/2019	19:56:01	20.10	2.337750
2212	5/25/2019	19:57:01	20.10	2.337027
2213	5/25/2019	19:58:01	20.00	2.337389
2214	5/25/2019	19:59:01	19.90	2.337027
2215	5/25/2019	20:00:01	19.70	2.337750
2216	5/25/2019	20:01:01	19.60	2.337027
2217	5/25/2019	20:02:01	19.70	2.337389
2218	5/25/2019	20:03:01	19.70	2.337750
2219	5/25/2019	20:04:01	19.80	2.337027
2220	5/25/2019	20:05:01	19.90	2.336665
2221	5/25/2019	20:06:01	20.10	2.335942
2222	5/25/2019	20:07:01	20.10	2.336665
2223	5/25/2019	20:08:01	20.10	2.335942
2224	5/25/2019	20:09:01	19.90	2.335942
2225	5/25/2019	20:10:01	19.70	2.336665
2226	5/25/2019	20:11:01	19.70	2.336304
2227	5/25/2019	20:12:01	19.60	2.336304
2228	5/25/2019	20:13:01	19.70	2.335942
2229	5/25/2019	20:14:01	19.80	2.336304
2230	5/25/2019	20:15:01	19.90	2.336304
2231	5/25/2019	20:16:01	20.00	2.335942
2232	5/25/2019	20:17:01	20.10	2.336304
2233	5/25/2019	20:18:01	20.10	2.335942
2234	5/25/2019	20:19:01	20.00	2.336304
2235	5/25/2019	20:20:01	19.80	2.336304
2236	5/25/2019	20:21:01	19.70	2.336304
2237	5/25/2019	20:22:01	19.60	2.335942
2238	5/25/2019	20:23:01	19.70	2.335942
2239	5/25/2019	20:24:01	19.70	2.336304
2240	5/25/2019	20:25:01	19.90	2.336304
2241	5/25/2019	20:26:01	19.90	2.335942
2242	5/25/2019	20:27:01	20.10	2.335942
2243	5/25/2019	20:28:01	20.10	2.335942
2244	5/25/2019	20:29:01	20.10	2.335942
2245	5/25/2019	20:30:01	19.90	2.335942
2246	5/25/2019	20:31:01	19.70	2.336304
2247	5/25/2019	20:32:01	19.60	2.335942
2248	5/25/2019	20:33:01	19.60	2.335942
2249	5/25/2019	20:34:01	19.70	2.335942
2250	5/25/2019	20:35:01	19.80	2.335942
2251	5/25/2019	20:36:01	19.90	2.335219
2252	5/25/2019	20:37:01	20.00	2.335942
2253	5/25/2019	20:38:01	20.10	2.335942
2254	5/25/2019	20:39:01	20.10	2.335580
2255	5/25/2019	20:40:01	20.00	2.335580

2256	5/25/2019	20:41:01	19.80	2.335219
2257	5/25/2019	20:42:01	19.70	2.335942
2258	5/25/2019	20:43:01	19.60	2.335580
2259	5/25/2019	20:44:01	19.60	2.335942
2260	5/25/2019	20:45:01	19.70	2.334857
2261	5/25/2019	20:46:01	19.80	2.335942
2262	5/25/2019	20:47:01	19.90	2.335942
2263	5/25/2019	20:48:01	20.00	2.335219
2264	5/25/2019	20:49:01	20.10	2.335580
2265	5/25/2019	20:50:01	20.10	2.335219
2266	5/25/2019	20:51:01	20.00	2.335580
2267	5/25/2019	20:52:01	19.80	2.335219
2268	5/25/2019	20:53:01	19.70	2.334857
2269	5/25/2019	20:54:01	19.60	2.335219
2270	5/25/2019	20:55:01	19.70	2.334857
2271	5/25/2019	20:56:01	19.70	2.334134
2272	5/25/2019	20:57:01	19.90	2.334857
2273	5/25/2019	20:58:01	19.90	2.334495
2274	5/25/2019	20:59:01	20.10	2.334134
2275	5/25/2019	21:00:01	20.10	2.333410
2276	5/25/2019	21:01:01	20.10	2.334495
2277	5/25/2019	21:02:01	19.90	2.334495
2278	5/25/2019	21:03:01	19.70	2.334495
2279	5/25/2019	21:04:01	19.60	2.333410
2280	5/25/2019	21:05:01	19.60	2.333772
2281	5/25/2019	21:06:01	19.70	2.333772
2282	5/25/2019	21:07:01	19.80	2.334134
2283	5/25/2019	21:08:01	19.90	2.333048
2284	5/25/2019	21:09:01	20.00	2.333772
2285	5/25/2019	21:10:01	20.10	2.334134
2286	5/25/2019	21:11:01	20.10	2.333410
2287	5/25/2019	21:12:01	20.10	2.333410
2288	5/25/2019	21:13:01	19.90	2.333410
2289	5/25/2019	21:14:01	19.70	2.333048
2290	5/25/2019	21:15:01	19.60	2.333410
2291	5/25/2019	21:16:01	19.60	2.333048
2292	5/25/2019	21:17:01	19.70	2.334134
2293	5/25/2019	21:18:01	19.80	2.333410
2294	5/25/2019	21:19:01	19.90	2.333048
2295	5/25/2019	21:20:01	20.00	2.333410
2296	5/25/2019	21:21:01	20.10	2.333048
2297	5/25/2019	21:22:01	20.10	2.333048
2298	5/25/2019	21:23:01	20.10	2.333410
2299	5/25/2019	21:24:01	19.90	2.333048
2300	5/25/2019	21:25:01	19.70	2.333048
2301	5/25/2019	21:26:01	19.60	2.333048
2302	5/25/2019	21:27:01	19.60	2.333048

2303	5/25/2019	21:28:01	19.70	2.333048
2304	5/25/2019	21:29:01	19.80	2.333048
2305	5/25/2019	21:30:01	19.90	2.333410
2306	5/25/2019	21:31:01	20.00	2.333048
2307	5/25/2019	21:32:01	20.10	2.332687
2308	5/25/2019	21:33:01	20.10	2.333048
2309	5/25/2019	21:34:01	20.10	2.333048
2310	5/25/2019	21:35:01	19.90	2.333048
2311	5/25/2019	21:36:01	19.70	2.333048
2312	5/25/2019	21:37:01	19.60	2.333048
2313	5/25/2019	21:38:01	19.60	2.332687
2314	5/25/2019	21:39:01	19.70	2.333048
2315	5/25/2019	21:40:01	19.80	2.333048
2316	5/25/2019	21:41:01	19.90	2.333048
2317	5/25/2019	21:42:01	20.00	2.333048
2318	5/25/2019	21:43:01	20.10	2.332687
2319	5/25/2019	21:44:01	20.10	2.332687
2320	5/25/2019	21:45:01	20.00	2.332325
2321	5/25/2019	21:46:01	19.90	2.333048
2322	5/25/2019	21:47:01	19.70	2.333048
2323	5/25/2019	21:48:01	19.60	2.333048
2324	5/25/2019	21:49:01	19.60	2.332687
2325	5/25/2019	21:50:01	19.70	2.332687
2326	5/25/2019	21:51:01	19.80	2.332687
2327	5/25/2019	21:52:01	19.90	2.333048
2328	5/25/2019	21:53:01	20.00	2.331963
2329	5/25/2019	21:54:01	20.10	2.331601
2330	5/25/2019	21:55:01	20.10	2.330878
2331	5/25/2019	21:56:01	20.00	2.331963
2332	5/25/2019	21:57:01	19.80	2.332687
2333	5/25/2019	21:58:01	19.70	2.331601
2334	5/25/2019	21:59:01	19.60	2.331240
2335	5/25/2019	22:00:01	19.60	2.331601
2336	5/25/2019	22:01:01	19.70	2.331963
2337	5/25/2019	22:02:01	19.80	2.331601
2338	5/25/2019	22:03:01	19.90	2.331601
2339	5/25/2019	22:04:01	20.00	2.331601
2340	5/25/2019	22:05:01	20.10	2.330878
2341	5/25/2019	22:06:01	20.10	2.331240
2342	5/25/2019	22:07:01	20.10	2.331963
2343	5/25/2019	22:08:01	19.90	2.330878
2344	5/25/2019	22:09:01	19.70	2.330878
2345	5/25/2019	22:10:01	19.60	2.331240
2346	5/25/2019	22:11:01	19.60	2.331240
2347	5/25/2019	22:12:01	19.70	2.331240
2348	5/25/2019	22:13:01	19.80	2.330878
2349	5/25/2019	22:14:01	19.90	2.330516

2350	5/25/2019	22:15:01	19.90	2.330878
2351	5/25/2019	22:16:01	20.00	2.330155
2352	5/25/2019	22:17:01	20.10	2.330155
2353	5/25/2019	22:18:01	20.10	2.330878
2354	5/25/2019	22:19:01	19.90	2.330155
2355	5/25/2019	22:20:01	19.70	2.330155
2356	5/25/2019	22:21:01	19.60	2.330516
2357	5/25/2019	22:22:01	19.60	2.330155
2358	5/25/2019	22:23:01	19.70	2.330516
2359	5/25/2019	22:24:01	19.70	2.330155
2360	5/25/2019	22:25:01	19.80	2.330155
2361	5/25/2019	22:26:01	19.90	2.330155
2362	5/25/2019	22:27:01	20.00	2.330155
2363	5/25/2019	22:28:01	20.10	2.330155
2364	5/25/2019	22:29:01	20.10	2.330155
2365	5/25/2019	22:30:01	19.90	2.330155
2366	5/25/2019	22:31:01	19.80	2.330516
2367	5/25/2019	22:32:01	19.60	2.330155
2368	5/25/2019	22:33:01	19.60	2.330155
2369	5/25/2019	22:34:01	19.60	2.330155
2370	5/25/2019	22:35:01	19.70	2.330155
2371	5/25/2019	22:36:01	19.80	2.330155
2372	5/25/2019	22:37:01	19.90	2.330155
2373	5/25/2019	22:38:01	20.00	2.330155
2374	5/25/2019	22:39:01	20.10	2.330155
2375	5/25/2019	22:40:01	20.10	2.330155
2376	5/25/2019	22:41:01	20.00	2.330155
2377	5/25/2019	22:42:01	19.80	2.330155
2378	5/25/2019	22:43:01	19.70	2.329793
2379	5/25/2019	22:44:01	19.60	2.330155
2380	5/25/2019	22:45:01	19.60	2.329431
2381	5/25/2019	22:46:01	19.70	2.329793
2382	5/25/2019	22:47:01	19.80	2.330155
2383	5/25/2019	22:48:01	19.90	2.330155
2384	5/25/2019	22:49:01	20.00	2.329069
2385	5/25/2019	22:50:01	20.10	2.329793
2386	5/25/2019	22:51:01	20.10	2.329793
2387	5/25/2019	22:52:01	20.00	2.329431
2388	5/25/2019	22:53:01	19.90	2.329793
2389	5/25/2019	22:54:01	19.70	2.329793
2390	5/25/2019	22:55:01	19.60	2.329793
2391	5/25/2019	22:56:01	19.60	2.329431
2392	5/25/2019	22:57:01	19.70	2.330155
2393	5/25/2019	22:58:01	19.80	2.329431
2394	5/25/2019	22:59:01	19.90	2.329793
2395	5/25/2019	23:00:01	20.00	2.328708
2396	5/25/2019	23:01:01	20.10	2.329431

2397	5/25/2019	23:02:01	20.10	2.329793
2398	5/25/2019	23:03:01	20.00	2.328346
2399	5/25/2019	23:04:01	19.90	2.328708
2400	5/25/2019	23:05:01	19.70	2.329431
2401	5/25/2019	23:06:01	19.60	2.329069
2402	5/25/2019	23:07:01	19.60	2.328346
2403	5/25/2019	23:08:01	19.70	2.329069
2404	5/25/2019	23:09:01	19.80	2.329069
2405	5/25/2019	23:10:01	19.90	2.328346
2406	5/25/2019	23:11:01	19.90	2.328346
2407	5/25/2019	23:12:01	20.00	2.328346
2408	5/25/2019	23:13:01	20.10	2.328708
2409	5/25/2019	23:14:01	20.10	2.327623
2410	5/25/2019	23:15:01	19.90	2.328346
2411	5/25/2019	23:16:01	19.70	2.327623
2412	5/25/2019	23:17:01	19.60	2.328708
2413	5/25/2019	23:18:01	19.60	2.327984
2414	5/25/2019	23:19:01	19.60	2.328346
2415	5/25/2019	23:20:01	19.70	2.327984
2416	5/25/2019	23:21:01	19.80	2.327261
2417	5/25/2019	23:22:01	19.90	2.328346
2418	5/25/2019	23:23:01	20.00	2.327623
2419	5/25/2019	23:24:01	20.10	2.328346
2420	5/25/2019	23:25:01	20.10	2.327261
2421	5/25/2019	23:26:01	20.00	2.327623
2422	5/25/2019	23:27:01	19.80	2.327261
2423	5/25/2019	23:28:01	19.70	2.327623
2424	5/25/2019	23:29:01	19.60	2.327623
2425	5/25/2019	23:30:01	19.60	2.327623
2426	5/25/2019	23:31:01	19.70	2.327261
2427	5/25/2019	23:32:01	19.80	2.327623
2428	5/25/2019	23:33:01	19.90	2.327261
2429	5/25/2019	23:34:01	19.90	2.327261
2430	5/25/2019	23:35:01	20.00	2.327261
2431	5/25/2019	23:36:01	20.10	2.327261
2432	5/25/2019	23:37:01	20.10	2.327261
2433	5/25/2019	23:38:01	19.90	2.327261
2434	5/25/2019	23:39:01	19.70	2.327261
2435	5/25/2019	23:40:01	19.60	2.327261
2436	5/25/2019	23:41:01	19.60	2.327261
2437	5/25/2019	23:42:01	19.60	2.327261
2438	5/25/2019	23:43:01	19.70	2.327261
2439	5/25/2019	23:44:01	19.80	2.327261
2440	5/25/2019	23:45:01	19.90	2.326899
2441	5/25/2019	23:46:01	20.00	2.327261
2442	5/25/2019	23:47:01	20.10	2.327261
2443	5/25/2019	23:48:01	20.10	2.326899

2444	5/25/2019	23:49:01	20.00	2.327261
2445	5/25/2019	23:50:01	19.90	2.327261
2446	5/25/2019	23:51:01	19.70	2.327261
2447	5/25/2019	23:52:01	19.60	2.326899
2448	5/25/2019	23:53:01	19.60	2.327261
2449	5/25/2019	23:54:01	19.70	2.327261
2450	5/25/2019	23:55:01	19.70	2.327261
2451	5/25/2019	23:56:01	19.80	2.326537
2452	5/25/2019	23:57:01	19.90	2.327261
2453	5/25/2019	23:58:01	20.00	2.326537
2454	5/25/2019	23:59:01	20.10	2.326899
2455	5/26/2019	0:00:01	20.10	2.326899
2456	5/26/2019	0:01:01	19.90	2.326899
2457	5/26/2019	0:02:01	19.80	2.326537
2458	5/26/2019	0:03:01	19.60	2.326176
2459	5/26/2019	0:04:01	19.60	2.325452
2460	5/26/2019	0:05:01	19.60	2.326537
2461	5/26/2019	0:06:01	19.70	2.326176
2462	5/26/2019	0:07:01	19.80	2.326899
2463	5/26/2019	0:08:01	19.90	2.326537
2464	5/26/2019	0:09:01	19.90	2.326537
2465	5/26/2019	0:10:01	20.00	2.326537
2466	5/26/2019	0:11:01	20.10	2.326537
2467	5/26/2019	0:12:01	20.10	2.326176
2468	5/26/2019	0:13:01	19.90	2.326176
2469	5/26/2019	0:14:01	19.70	2.325814
2470	5/26/2019	0:15:01	19.60	2.325452
2471	5/26/2019	0:16:01	19.60	2.325814
2472	5/26/2019	0:17:01	19.60	2.326176
2473	5/26/2019	0:18:01	19.70	2.326176
2474	5/26/2019	0:19:01	19.80	2.325814
2475	5/26/2019	0:20:01	19.90	2.325814
2476	5/26/2019	0:21:01	20.00	2.324729
2477	5/26/2019	0:22:01	20.10	2.325091
2478	5/26/2019	0:23:01	20.10	2.325091
2479	5/26/2019	0:24:01	20.00	2.325452
2480	5/26/2019	0:25:01	19.90	2.325452
2481	5/26/2019	0:26:01	19.70	2.325091
2482	5/26/2019	0:27:01	19.60	2.325091
2483	5/26/2019	0:28:01	19.60	2.325091
2484	5/26/2019	0:29:01	19.60	2.324729
2485	5/26/2019	0:30:01	19.70	2.324729
2486	5/26/2019	0:31:01	19.80	2.324367
2487	5/26/2019	0:32:01	19.90	2.324729
2488	5/26/2019	0:33:01	20.00	2.324367
2489	5/26/2019	0:34:01	20.10	2.324367
2490	5/26/2019	0:35:01	20.10	2.324367

2491	5/26/2019	0:36:01	20.00	2.325452
2492	5/26/2019	0:37:01	19.80	2.324367
2493	5/26/2019	0:38:01	19.70	2.324367
2494	5/26/2019	0:39:01	19.60	2.324729
2495	5/26/2019	0:40:01	19.60	2.324367
2496	5/26/2019	0:41:01	19.60	2.324367
2497	5/26/2019	0:42:01	19.70	2.324367
2498	5/26/2019	0:43:01	19.80	2.324367
2499	5/26/2019	0:44:01	19.90	2.324367
2500	5/26/2019	0:45:01	20.00	2.324367
2501	5/26/2019	0:46:01	20.10	2.324367
2502	5/26/2019	0:47:01	20.10	2.324367
2503	5/26/2019	0:48:01	20.00	2.324367
2504	5/26/2019	0:49:01	19.80	2.324367
2505	5/26/2019	0:50:01	19.70	2.324367
2506	5/26/2019	0:51:01	19.60	2.324367
2507	5/26/2019	0:52:01	19.60	2.324367
2508	5/26/2019	0:53:01	19.60	2.324367
2509	5/26/2019	0:54:01	19.70	2.324367
2510	5/26/2019	0:55:01	19.80	2.324006
2511	5/26/2019	0:56:01	19.90	2.324006
2512	5/26/2019	0:57:01	20.00	2.324367
2513	5/26/2019	0:58:01	20.00	2.324367
2514	5/26/2019	0:59:01	20.10	2.324367
2515	5/26/2019	1:00:01	20.00	2.324367
2516	5/26/2019	1:01:01	19.90	2.324367
2517	5/26/2019	1:02:01	19.70	2.324006
2518	5/26/2019	1:03:01	19.60	2.324367
2519	5/26/2019	1:04:01	19.60	2.324367
2520	5/26/2019	1:05:01	19.60	2.324367
2521	5/26/2019	1:06:01	19.70	2.324006
2522	5/26/2019	1:07:01	19.80	2.323644
2523	5/26/2019	1:08:01	19.90	2.323644
2524	5/26/2019	1:09:01	20.00	2.324367
2525	5/26/2019	1:10:01	20.00	2.323644
2526	5/26/2019	1:11:01	20.10	2.324006
2527	5/26/2019	1:12:01	20.00	2.323282
2528	5/26/2019	1:13:01	19.90	2.323282
2529	5/26/2019	1:14:01	19.70	2.324006
2530	5/26/2019	1:15:01	19.60	2.324006
2531	5/26/2019	1:16:01	19.60	2.323644
2532	5/26/2019	1:17:01	19.60	2.323282
2533	5/26/2019	1:18:01	19.70	2.322920
2534	5/26/2019	1:19:01	19.80	2.323282
2535	5/26/2019	1:20:01	19.90	2.323644
2536	5/26/2019	1:21:01	19.90	2.322559
2537	5/26/2019	1:22:01	20.00	2.322920

2538	5/26/2019	1:23:01	20.10	2.322920
2539	5/26/2019	1:24:01	20.10	2.322197
2540	5/26/2019	1:25:01	19.90	2.323282
2541	5/26/2019	1:26:01	19.80	2.322559
2542	5/26/2019	1:27:01	19.60	2.322197
2543	5/26/2019	1:28:01	19.60	2.322920
2544	5/26/2019	1:29:01	19.60	2.322559
2545	5/26/2019	1:30:01	19.60	2.322920
2546	5/26/2019	1:31:01	19.70	2.322197
2547	5/26/2019	1:32:01	19.80	2.321835
2548	5/26/2019	1:33:01	19.90	2.321835
2549	5/26/2019	1:34:01	20.00	2.322197
2550	5/26/2019	1:35:01	20.00	2.322559
2551	5/26/2019	1:36:01	20.10	2.321835
2552	5/26/2019	1:37:01	20.00	2.321835
2553	5/26/2019	1:38:01	19.90	2.321474
2554	5/26/2019	1:39:01	19.70	2.322920
2555	5/26/2019	1:40:01	19.60	2.321835
2556	5/26/2019	1:41:01	19.60	2.321835
2557	5/26/2019	1:42:01	19.60	2.321835
2558	5/26/2019	1:43:01	19.70	2.321474
2559	5/26/2019	1:44:01	19.80	2.321474
2560	5/26/2019	1:45:01	19.80	2.322197
2561	5/26/2019	1:46:01	19.90	2.321835
2562	5/26/2019	1:47:01	20.00	2.321835
2563	5/26/2019	1:48:01	20.10	2.321474
2564	5/26/2019	1:49:01	20.10	2.322197
2565	5/26/2019	1:50:01	20.00	2.321474
2566	5/26/2019	1:51:01	19.80	2.321474
2567	5/26/2019	1:52:01	19.60	2.321835
2568	5/26/2019	1:53:01	19.60	2.321474
2569	5/26/2019	1:54:01	19.60	2.321474
2570	5/26/2019	1:55:01	19.60	2.321112
2571	5/26/2019	1:56:01	19.70	2.321474
2572	5/26/2019	1:57:01	19.80	2.321474
2573	5/26/2019	1:58:01	19.90	2.320750
2574	5/26/2019	1:59:01	19.90	2.321474
2575	5/26/2019	2:00:01	20.00	2.321474
2576	5/26/2019	2:01:01	20.10	2.321474
2577	5/26/2019	2:02:01	20.10	2.321474
2578	5/26/2019	2:03:01	19.90	2.321474
2579	5/26/2019	2:04:01	19.70	2.321474
2580	5/26/2019	2:05:01	19.60	2.321474
2581	5/26/2019	2:06:01	19.60	2.321474
2582	5/26/2019	2:07:01	19.60	2.321474
2583	5/26/2019	2:08:01	19.60	2.320750
2584	5/26/2019	2:09:01	19.70	2.321474

2585	5/26/2019	2:10:01	19.80	2.320750
2586	5/26/2019	2:11:01	19.90	2.320750
2587	5/26/2019	2:12:01	19.90	2.321474
2588	5/26/2019	2:13:01	20.00	2.321112
2589	5/26/2019	2:14:01	20.10	2.321474
2590	5/26/2019	2:15:01	20.10	2.321474
2591	5/26/2019	2:16:01	19.90	2.321112
2592	5/26/2019	2:17:01	19.70	2.321474
2593	5/26/2019	2:18:01	19.60	2.321474
2594	5/26/2019	2:19:01	19.60	2.321112
2595	5/26/2019	2:20:01	19.60	2.321112
2596	5/26/2019	2:21:01	19.60	2.320750
2597	5/26/2019	2:22:01	19.70	2.320750
2598	5/26/2019	2:23:01	19.80	2.320750
2599	5/26/2019	2:24:01	19.90	2.320750
2600	5/26/2019	2:25:01	19.90	2.320750
2601	5/26/2019	2:26:01	20.00	2.320750
2602	5/26/2019	2:27:01	20.10	2.320750
2603	5/26/2019	2:28:01	20.10	2.320750
2604	5/26/2019	2:29:01	19.90	2.320027
2605	5/26/2019	2:30:01	19.80	2.320388
2606	5/26/2019	2:31:01	19.60	2.320750
2607	5/26/2019	2:32:01	19.60	2.320027
2608	5/26/2019	2:33:01	19.60	2.319665
2609	5/26/2019	2:34:01	19.60	2.319665
2610	5/26/2019	2:35:01	19.70	2.320388
2611	5/26/2019	2:36:01	19.80	2.319665
2612	5/26/2019	2:37:01	19.90	2.319665
2613	5/26/2019	2:38:01	19.90	2.320388
2614	5/26/2019	2:39:01	20.00	2.319665
2615	5/26/2019	2:40:01	20.00	2.319665
2616	5/26/2019	2:41:01	20.10	2.319303
2617	5/26/2019	2:42:01	20.00	2.320027
2618	5/26/2019	2:43:01	19.80	2.320027
2619	5/26/2019	2:44:01	19.60	2.320027
2620	5/26/2019	2:45:01	19.60	2.319665
2621	5/26/2019	2:46:01	19.60	2.320027
2622	5/26/2019	2:47:01	19.60	2.318941
2623	5/26/2019	2:48:01	19.70	2.319303
2624	5/26/2019	2:49:01	19.70	2.319303
2625	5/26/2019	2:50:01	19.80	2.318580
2626	5/26/2019	2:51:01	19.90	2.319665
2627	5/26/2019	2:52:01	19.90	2.318941
2628	5/26/2019	2:53:01	20.00	2.319303
2629	5/26/2019	2:54:01	20.10	2.318580
2630	5/26/2019	2:55:01	20.10	2.319303
2631	5/26/2019	2:56:01	19.90	2.318941

2632	5/26/2019	2:57:01	19.70	2.318580
2633	5/26/2019	2:58:01	19.60	2.319303
2634	5/26/2019	2:59:01	19.50	2.318580
2635	5/26/2019	3:00:01	19.60	2.318580
2636	5/26/2019	3:01:01	19.60	2.318580
2637	5/26/2019	3:02:01	19.70	2.318941
2638	5/26/2019	3:03:01	19.80	2.318580
2639	5/26/2019	3:04:01	19.80	2.318580
2640	5/26/2019	3:05:01	19.90	2.318580
2641	5/26/2019	3:06:01	20.00	2.318580
2642	5/26/2019	3:07:01	20.00	2.318580
2643	5/26/2019	3:08:01	20.10	2.318580
2644	5/26/2019	3:09:01	20.00	2.318580
2645	5/26/2019	3:10:01	19.90	2.318580
2646	5/26/2019	3:11:01	19.70	2.318580
2647	5/26/2019	3:12:01	19.60	2.318580
2648	5/26/2019	3:13:01	19.50	2.318218
2649	5/26/2019	3:14:01	19.60	2.318580
2650	5/26/2019	3:15:01	19.60	2.318580
2651	5/26/2019	3:16:01	19.70	2.318580
2652	5/26/2019	3:17:01	19.80	2.318580
2653	5/26/2019	3:18:01	19.90	2.318580
2654	5/26/2019	3:19:01	19.90	2.318580
2655	5/26/2019	3:20:01	20.00	2.318218
2656	5/26/2019	3:21:01	20.00	2.318580
2657	5/26/2019	3:22:01	20.10	2.318580
2658	5/26/2019	3:23:01	20.00	2.318580
2659	5/26/2019	3:24:01	19.80	2.317856
2660	5/26/2019	3:25:01	19.60	2.317495
2661	5/26/2019	3:26:01	19.60	2.318580
2662	5/26/2019	3:27:01	19.60	2.318218
2663	5/26/2019	3:28:01	19.60	2.317856
2664	5/26/2019	3:29:01	19.70	2.318580
2665	5/26/2019	3:30:01	19.70	2.318580
2666	5/26/2019	3:31:01	19.80	2.318218
2667	5/26/2019	3:32:01	19.90	2.317856
2668	5/26/2019	3:33:01	19.90	2.318218
2669	5/26/2019	3:34:01	20.00	2.317856
2670	5/26/2019	3:35:01	20.10	2.318218
2671	5/26/2019	3:36:01	20.10	2.318218
2672	5/26/2019	3:37:01	19.90	2.318218
2673	5/26/2019	3:38:01	19.80	2.318218
2674	5/26/2019	3:39:01	19.60	2.317856
2675	5/26/2019	3:40:01	19.60	2.317856
2676	5/26/2019	3:41:01	19.60	2.317856
2677	5/26/2019	3:42:01	19.60	2.317856
2678	5/26/2019	3:43:01	19.70	2.317495

2679	5/26/2019	3:44:01	19.80	2.317133
2680	5/26/2019	3:45:01	19.80	2.316410
2681	5/26/2019	3:46:01	19.90	2.317133
2682	5/26/2019	3:47:01	19.90	2.317133
2683	5/26/2019	3:48:01	20.00	2.316771
2684	5/26/2019	3:49:01	20.10	2.318218
2685	5/26/2019	3:50:01	20.00	2.317133
2686	5/26/2019	3:51:01	19.90	2.317133
2687	5/26/2019	3:52:01	19.70	2.317133
2688	5/26/2019	3:53:01	19.60	2.316771
2689	5/26/2019	3:54:01	19.60	2.316771
2690	5/26/2019	3:55:01	19.60	2.317133
2691	5/26/2019	3:56:01	19.60	2.316771
2692	5/26/2019	3:57:01	19.70	2.315686
2693	5/26/2019	3:58:01	19.80	2.316771
2694	5/26/2019	3:59:01	19.80	2.316410
2695	5/26/2019	4:00:01	19.90	2.316410
2696	5/26/2019	4:01:01	19.90	2.316410
2697	5/26/2019	4:02:01	20.00	2.316048
2698	5/26/2019	4:03:01	20.00	2.316410
2699	5/26/2019	4:04:01	20.10	2.316771
2700	5/26/2019	4:05:01	20.00	2.316048
2701	5/26/2019	4:06:01	19.80	2.316048
2702	5/26/2019	4:07:01	19.60	2.316048
2703	5/26/2019	4:08:01	19.60	2.316410
2704	5/26/2019	4:09:01	19.60	2.315686
2705	5/26/2019	4:10:01	19.60	2.316048
2706	5/26/2019	4:11:01	19.60	2.315686
2707	5/26/2019	4:12:01	19.70	2.315686
2708	5/26/2019	4:13:01	19.80	2.315686
2709	5/26/2019	4:14:01	19.80	2.315686
2710	5/26/2019	4:15:01	19.90	2.316048
2711	5/26/2019	4:16:01	20.00	2.315686
2712	5/26/2019	4:17:01	20.00	2.315686
2713	5/26/2019	4:18:01	20.10	2.315686
2714	5/26/2019	4:19:01	20.10	2.315686
2715	5/26/2019	4:20:01	19.90	2.316048
2716	5/26/2019	4:21:01	19.70	2.315686
2717	5/26/2019	4:22:01	19.60	2.315686
2718	5/26/2019	4:23:01	19.50	2.315686
2719	5/26/2019	4:24:01	19.50	2.315686
2720	5/26/2019	4:25:01	19.60	2.315325
2721	5/26/2019	4:26:01	19.60	2.315686
2722	5/26/2019	4:27:01	19.70	2.315686
2723	5/26/2019	4:28:01	19.80	2.315686
2724	5/26/2019	4:29:01	19.90	2.315686
2725	5/26/2019	4:30:01	19.90	2.315325

2726	5/26/2019	4:31:01	20.00	2.315686
2727	5/26/2019	4:32:01	20.00	2.315686
2728	5/26/2019	4:33:01	20.10	2.315686
2729	5/26/2019	4:34:01	20.00	2.315686
2730	5/26/2019	4:35:01	19.90	2.315686
2731	5/26/2019	4:36:01	19.70	2.315686
2732	5/26/2019	4:37:01	19.60	2.315686
2733	5/26/2019	4:38:01	19.50	2.315686
2734	5/26/2019	4:39:01	19.60	2.315686
2735	5/26/2019	4:40:01	19.60	2.315325
2736	5/26/2019	4:41:01	19.70	2.315686
2737	5/26/2019	4:42:01	19.70	2.315325
2738	5/26/2019	4:43:01	19.80	2.315325
2739	5/26/2019	4:44:01	19.90	2.314601
2740	5/26/2019	4:45:01	19.90	2.315325
2741	5/26/2019	4:46:01	19.90	2.315686
2742	5/26/2019	4:47:01	20.00	2.315325
2743	5/26/2019	4:48:01	20.00	2.314963
2744	5/26/2019	4:49:01	20.10	2.315325
2745	5/26/2019	4:50:01	19.90	2.314601
2746	5/26/2019	4:51:01	19.80	2.314963
2747	5/26/2019	4:52:01	19.60	2.314963
2748	5/26/2019	4:53:01	19.60	2.314601
2749	5/26/2019	4:54:01	19.50	2.314963
2750	5/26/2019	4:55:01	19.60	2.314601
2751	5/26/2019	4:56:01	19.60	2.314963
2752	5/26/2019	4:57:01	19.70	2.315325
2753	5/26/2019	4:58:01	19.80	2.314963
2754	5/26/2019	4:59:01	19.80	2.314963
2755	5/26/2019	5:00:01	19.90	2.314601
2756	5/26/2019	5:01:01	19.90	2.313878
2757	5/26/2019	5:02:01	20.00	2.314239
2758	5/26/2019	5:03:01	20.00	2.314963
2759	5/26/2019	5:04:01	20.10	2.313516
2760	5/26/2019	5:05:01	20.00	2.314601
2761	5/26/2019	5:06:01	19.90	2.314239
2762	5/26/2019	5:07:01	19.70	2.313516
2763	5/26/2019	5:08:01	19.60	2.313878
2764	5/26/2019	5:09:01	19.50	2.314601
2765	5/26/2019	5:10:01	19.60	2.313878
2766	5/26/2019	5:11:01	19.60	2.313154
2767	5/26/2019	5:12:01	19.70	2.313516
2768	5/26/2019	5:13:01	19.70	2.313878
2769	5/26/2019	5:14:01	19.80	2.312792
2770	5/26/2019	5:15:01	19.90	2.313154
2771	5/26/2019	5:16:01	19.90	2.313516
2772	5/26/2019	5:17:01	19.90	2.313878

2773	5/26/2019	5:18:01	20.00	2.313878
2774	5/26/2019	5:19:01	20.00	2.313516
2775	5/26/2019	5:20:01	20.10	2.314239
2776	5/26/2019	5:21:01	19.90	2.313154
2777	5/26/2019	5:22:01	19.80	2.314239
2778	5/26/2019	5:23:01	19.60	2.313516
2779	5/26/2019	5:24:01	19.50	2.312792
2780	5/26/2019	5:25:01	19.50	2.313154
2781	5/26/2019	5:26:01	19.60	2.312792
2782	5/26/2019	5:27:01	19.60	2.312792
2783	5/26/2019	5:28:01	19.70	2.312792
2784	5/26/2019	5:29:01	19.80	2.312792
2785	5/26/2019	5:30:01	19.80	2.312792
2786	5/26/2019	5:31:01	19.90	2.312792
2787	5/26/2019	5:32:01	19.90	2.312792
2788	5/26/2019	5:33:01	20.00	2.312792
2789	5/26/2019	5:34:01	20.00	2.312792
2790	5/26/2019	5:35:01	20.10	2.312792
2791	5/26/2019	5:36:01	20.00	2.312792
2792	5/26/2019	5:37:01	19.90	2.312792
2793	5/26/2019	5:38:01	19.70	2.313154
2794	5/26/2019	5:39:01	19.60	2.312792
2795	5/26/2019	5:40:01	19.50	2.312792
2796	5/26/2019	5:41:01	19.60	2.312792
2797	5/26/2019	5:42:01	19.60	2.312792
2798	5/26/2019	5:43:01	19.70	2.312792
2799	5/26/2019	5:44:01	19.70	2.312792
2800	5/26/2019	5:45:01	19.80	2.312792
2801	5/26/2019	5:46:01	19.90	2.312792
2802	5/26/2019	5:47:01	19.90	2.312792
2803	5/26/2019	5:48:01	19.90	2.312792
2804	5/26/2019	5:49:01	20.00	2.312792
2805	5/26/2019	5:50:01	20.00	2.312792
2806	5/26/2019	5:51:01	20.10	2.312792
2807	5/26/2019	5:52:01	20.00	2.312431
2808	5/26/2019	5:53:01	19.80	2.312431
2809	5/26/2019	5:54:01	19.60	2.312792
2810	5/26/2019	5:55:01	19.50	2.312792
2811	5/26/2019	5:56:01	19.50	2.312792
2812	5/26/2019	5:57:01	19.60	2.312792
2813	5/26/2019	5:58:01	19.60	2.312069
2814	5/26/2019	5:59:01	19.70	2.311707
2815	5/26/2019	6:00:01	19.70	2.312792
2816	5/26/2019	6:01:01	19.80	2.312431
2817	5/26/2019	6:02:01	19.90	2.312431
2818	5/26/2019	6:03:01	19.90	2.312069
2819	5/26/2019	6:04:01	19.90	2.312792

2820	5/26/2019	6:05:01	20.00	2.312069
2821	5/26/2019	6:06:01	20.00	2.312792
2822	5/26/2019	6:07:01	20.10	2.312431
2823	5/26/2019	6:08:01	19.90	2.311707
2824	5/26/2019	6:09:01	19.80	2.312431
2825	5/26/2019	6:10:01	19.60	2.312069
2826	5/26/2019	6:11:01	19.60	2.311707
2827	5/26/2019	6:12:01	19.50	2.311707
2828	5/26/2019	6:13:01	19.60	2.311346
2829	5/26/2019	6:14:01	19.60	2.312069
2830	5/26/2019	6:15:01	19.70	2.312069
2831	5/26/2019	6:16:01	19.80	2.310984
2832	5/26/2019	6:17:01	19.80	2.310984
2833	5/26/2019	6:18:01	19.90	2.311707
2834	5/26/2019	6:19:01	19.90	2.310984
2835	5/26/2019	6:20:01	20.00	2.310984
2836	5/26/2019	6:21:01	20.00	2.311346
2837	5/26/2019	6:22:01	20.10	2.311346
2838	5/26/2019	6:23:01	20.00	2.310984
2839	5/26/2019	6:24:01	19.80	2.311707
2840	5/26/2019	6:25:01	19.70	2.311346
2841	5/26/2019	6:26:01	19.60	2.310984
2842	5/26/2019	6:27:01	19.60	2.310984
2843	5/26/2019	6:28:01	19.60	2.310622
2844	5/26/2019	6:29:01	19.60	2.310984
2845	5/26/2019	6:30:01	19.70	2.310622
2846	5/26/2019	6:31:01	19.80	2.310622
2847	5/26/2019	6:32:01	19.80	2.310984
2848	5/26/2019	6:33:01	19.90	2.311346
2849	5/26/2019	6:34:01	19.90	2.309899
2850	5/26/2019	6:35:01	20.00	2.310984
2851	5/26/2019	6:36:01	20.00	2.309899
2852	5/26/2019	6:37:01	20.10	2.310622
2853	5/26/2019	6:38:01	20.00	2.310622
2854	5/26/2019	6:39:01	19.90	2.310622
2855	5/26/2019	6:40:01	19.70	2.310260
2856	5/26/2019	6:41:01	19.60	2.309899
2857	5/26/2019	6:42:01	19.50	2.309899
2858	5/26/2019	6:43:01	19.60	2.309899
2859	5/26/2019	6:44:01	19.60	2.310260
2860	5/26/2019	6:45:01	19.70	2.310260
2861	5/26/2019	6:46:01	19.70	2.309899
2862	5/26/2019	6:47:01	19.80	2.310622
2863	5/26/2019	6:48:01	19.90	2.310622
2864	5/26/2019	6:49:01	19.90	2.309899
2865	5/26/2019	6:50:01	20.00	2.309899
2866	5/26/2019	6:51:01	20.00	2.309899

2867	5/26/2019	6:52:01	20.10	2.309899
2868	5/26/2019	6:53:01	20.10	2.309899
2869	5/26/2019	6:54:01	19.90	2.310622
2870	5/26/2019	6:55:01	19.70	2.310260
2871	5/26/2019	6:56:01	19.60	2.309899
2872	5/26/2019	6:57:01	19.60	2.309899
2873	5/26/2019	6:58:01	19.50	2.309899
2874	5/26/2019	6:59:01	19.60	2.309899
2875	5/26/2019	7:00:01	19.70	2.309899
2876	5/26/2019	7:01:01	19.70	2.309899
2877	5/26/2019	7:02:01	19.80	2.309899
2878	5/26/2019	7:03:01	19.90	2.309899
2879	5/26/2019	7:04:01	19.90	2.309899
2880	5/26/2019	7:05:01	20.00	2.309899
2881	5/26/2019	7:06:01	20.00	2.309899
2882	5/26/2019	7:07:01	20.10	2.309899
2883	5/26/2019	7:08:01	20.00	2.309537
2884	5/26/2019	7:09:01	19.90	2.309899
2885	5/26/2019	7:10:01	19.70	2.309899
2886	5/26/2019	7:11:01	19.60	2.309899
2887	5/26/2019	7:12:01	19.50	2.309537
2888	5/26/2019	7:13:01	19.60	2.309899
2889	5/26/2019	7:14:01	19.60	2.309899
2890	5/26/2019	7:15:01	19.70	2.309537
2891	5/26/2019	7:16:01	19.70	2.308814
2892	5/26/2019	7:17:01	19.80	2.309899
2893	5/26/2019	7:18:01	19.90	2.309537
2894	5/26/2019	7:19:01	19.90	2.309175
2895	5/26/2019	7:20:01	20.00	2.309175
2896	5/26/2019	7:21:01	20.00	2.309175
2897	5/26/2019	7:22:01	20.10	2.309537
2898	5/26/2019	7:23:01	20.00	2.309175
2899	5/26/2019	7:24:01	19.80	2.309537
2900	5/26/2019	7:25:01	19.70	2.309175
2901	5/26/2019	7:26:01	19.60	2.309537
2902	5/26/2019	7:27:01	19.60	2.309175
2903	5/26/2019	7:28:01	19.60	2.309175
2904	5/26/2019	7:29:01	19.60	2.308814
2905	5/26/2019	7:30:01	19.70	2.309175
2906	5/26/2019	7:31:01	19.80	2.309175
2907	5/26/2019	7:32:01	19.80	2.308090
2908	5/26/2019	7:33:01	19.90	2.308814
2909	5/26/2019	7:34:01	19.90	2.307728
2910	5/26/2019	7:35:01	20.00	2.308452
2911	5/26/2019	7:36:01	20.10	2.308452
2912	5/26/2019	7:37:01	20.00	2.308814
2913	5/26/2019	7:38:01	19.90	2.308814

2914	5/26/2019	7:39:01	19.70	2.309537
2915	5/26/2019	7:40:01	19.60	2.308090
2916	5/26/2019	7:41:01	19.50	2.308090
2917	5/26/2019	7:42:01	19.60	2.308090
2918	5/26/2019	7:43:01	19.60	2.308090
2919	5/26/2019	7:44:01	19.70	2.307728
2920	5/26/2019	7:45:01	19.80	2.307367
2921	5/26/2019	7:46:01	19.80	2.307367
2922	5/26/2019	7:47:01	19.90	2.307728
2923	5/26/2019	7:48:01	19.90	2.307728
2924	5/26/2019	7:49:01	20.00	2.308090
2925	5/26/2019	7:50:01	20.00	2.307728
2926	5/26/2019	7:51:01	20.10	2.308090
2927	5/26/2019	7:52:01	19.90	2.308452
2928	5/26/2019	7:53:01	19.80	2.308090
2929	5/26/2019	7:54:01	19.60	2.307367
2930	5/26/2019	7:55:01	19.60	2.307367
2931	5/26/2019	7:56:01	19.60	2.308090
2932	5/26/2019	7:57:01	19.60	2.308090
2933	5/26/2019	7:58:01	19.70	2.307005
2934	5/26/2019	7:59:01	19.70	2.308090
2935	5/26/2019	8:00:01	19.80	2.307367
2936	5/26/2019	8:01:01	19.90	2.307005
2937	5/26/2019	8:02:01	19.90	2.307005
2938	5/26/2019	8:03:01	20.00	2.307367
2939	5/26/2019	8:04:01	20.00	2.307367
2940	5/26/2019	8:05:01	20.10	2.307005
2941	5/26/2019	8:06:01	20.00	2.307005
2942	5/26/2019	8:07:01	19.80	2.307367
2943	5/26/2019	8:08:01	19.70	2.307005
2944	5/26/2019	8:09:01	19.60	2.307005
2945	5/26/2019	8:10:01	19.50	2.307005
2946	5/26/2019	8:11:01	19.60	2.307005
2947	5/26/2019	8:12:01	19.60	2.307005
2948	5/26/2019	8:13:01	19.70	2.307005
2949	5/26/2019	8:14:01	19.80	2.307005
2950	5/26/2019	8:15:01	19.90	2.307005
2951	5/26/2019	8:16:01	19.90	2.307367
2952	5/26/2019	8:17:01	20.00	2.307005
2953	5/26/2019	8:18:01	20.00	2.307005
2954	5/26/2019	8:19:01	20.10	2.307005
2955	5/26/2019	8:20:01	20.00	2.307005
2956	5/26/2019	8:21:01	19.90	2.307005
2957	5/26/2019	8:22:01	19.70	2.307367
2958	5/26/2019	8:23:01	19.60	2.307005
2959	5/26/2019	8:24:01	19.60	2.307005
2960	5/26/2019	8:25:01	19.60	2.307005

2961	5/26/2019	8:26:01	19.60	2.307005
2962	5/26/2019	8:27:01	19.70	2.306643
2963	5/26/2019	8:28:01	19.80	2.306643
2964	5/26/2019	8:29:01	19.90	2.307005
2965	5/26/2019	8:30:01	19.90	2.307005
2966	5/26/2019	8:31:01	20.00	2.307005
2967	5/26/2019	8:32:01	20.10	2.307005
2968	5/26/2019	8:33:01	20.10	2.307005
2969	5/26/2019	8:34:01	20.00	2.307005
2970	5/26/2019	8:35:01	19.80	2.306643
2971	5/26/2019	8:36:01	19.60	2.307005
2972	5/26/2019	8:37:01	19.60	2.306282
2973	5/26/2019	8:38:01	19.60	2.306643
2974	5/26/2019	8:39:01	19.60	2.306643
2975	5/26/2019	8:40:01	19.70	2.306643
2976	5/26/2019	8:41:01	19.70	2.306282
2977	5/26/2019	8:42:01	19.80	2.306643
2978	5/26/2019	8:43:01	19.90	2.307005
2979	5/26/2019	8:44:01	19.90	2.307005
2980	5/26/2019	8:45:01	20.00	2.306643
2981	5/26/2019	8:46:01	20.10	2.306643
2982	5/26/2019	8:47:01	20.10	2.305920
2983	5/26/2019	8:48:01	19.90	2.306282
2984	5/26/2019	8:49:01	19.70	2.306282
2985	5/26/2019	8:50:01	19.60	2.305920
2986	5/26/2019	8:51:01	19.60	2.306282
2987	5/26/2019	8:52:01	19.60	2.306643
2988	5/26/2019	8:53:01	19.60	2.305920
2989	5/26/2019	8:54:01	19.70	2.306282
2990	5/26/2019	8:55:01	19.80	2.305558
2991	5/26/2019	8:56:01	19.90	2.304473
2992	5/26/2019	8:57:01	19.90	2.305920
2993	5/26/2019	8:58:01	20.00	2.305197
2994	5/26/2019	8:59:01	20.00	2.305558
2995	5/26/2019	9:00:01	20.10	2.305197
2996	5/26/2019	9:01:01	20.00	2.305558
2997	5/26/2019	9:02:01	19.80	2.306282
2998	5/26/2019	9:03:01	19.70	2.305197
2999	5/26/2019	9:04:01	19.60	2.305920
3000	5/26/2019	9:05:01	19.60	2.304473
3001	5/26/2019	9:06:01	19.60	2.305197
3002	5/26/2019	9:07:01	19.70	2.304835
3003	5/26/2019	9:08:01	19.70	2.305197
3004	5/26/2019	9:09:01	19.80	2.304835
3005	5/26/2019	9:10:01	19.90	2.304473
3006	5/26/2019	9:11:01	20.00	2.304835
3007	5/26/2019	9:12:01	20.00	2.304835

3008	5/26/2019	9:13:01	20.10	2.304473
3009	5/26/2019	9:14:01	20.00	2.304473
3010	5/26/2019	9:15:01	19.90	2.304835
3011	5/26/2019	9:16:01	19.70	2.304473
3012	5/26/2019	9:17:01	19.60	2.305197
3013	5/26/2019	9:18:01	19.60	2.304835
3014	5/26/2019	9:19:01	19.60	2.304835
3015	5/26/2019	9:20:01	19.70	2.304473
3016	5/26/2019	9:21:01	19.70	2.304111
3017	5/26/2019	9:22:01	19.80	2.304473
3018	5/26/2019	9:23:01	19.90	2.304111
3019	5/26/2019	9:24:01	19.90	2.304473
3020	5/26/2019	9:25:01	20.00	2.305197
3021	5/26/2019	9:26:01	20.10	2.304111
3022	5/26/2019	9:27:01	20.10	2.304473
3023	5/26/2019	9:28:01	19.90	2.304111
3024	5/26/2019	9:29:01	19.80	2.304111
3025	5/26/2019	9:30:01	19.60	2.304111
3026	5/26/2019	9:31:01	19.60	2.304111
3027	5/26/2019	9:32:01	19.60	2.304111
3028	5/26/2019	9:33:01	19.60	2.304473
3029	5/26/2019	9:34:01	19.70	2.304111
3030	5/26/2019	9:35:01	19.80	2.304111
3031	5/26/2019	9:36:01	19.90	2.304111
3032	5/26/2019	9:37:01	19.90	2.304111
3033	5/26/2019	9:38:01	20.00	2.304111
3034	5/26/2019	9:39:01	20.10	2.304111
3035	5/26/2019	9:40:01	20.10	2.304111
3036	5/26/2019	9:41:01	20.00	2.304473
3037	5/26/2019	9:42:01	19.80	2.304473
3038	5/26/2019	9:43:01	19.60	2.304473
3039	5/26/2019	9:44:01	19.60	2.304111
3040	5/26/2019	9:45:01	19.60	2.303750
3041	5/26/2019	9:46:01	19.60	2.304111
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3043	5/26/2019	9:48:01	19.80	2.304111
3044	5/26/2019	9:49:01	19.90	2.304111
3045	5/26/2019	9:50:01	19.90	2.304111
3046	5/26/2019	9:51:01	20.00	2.304111
3047	5/26/2019	9:52:01	20.10	2.303750
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3049	5/26/2019	9:54:01	19.90	2.304111
3050	5/26/2019	9:55:01	19.70	2.304473
3051	5/26/2019	9:56:01	19.60	2.303388
3052	5/26/2019	9:57:01	19.60	2.304111
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3054	5/26/2019	9:59:01	19.60	2.303026

3055	5/26/2019	10:00:01	19.70	2.304111
3056	5/26/2019	10:01:01	19.80	2.304111
3057	5/26/2019	10:02:01	19.90	2.303750
3058	5/26/2019	10:03:01	20.00	2.303026
3059	5/26/2019	10:04:01	20.00	2.303750
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3061	5/26/2019	10:06:01	20.00	2.303026
3062	5/26/2019	10:07:01	19.90	2.303388
3063	5/26/2019	10:08:01	19.70	2.302303
3064	5/26/2019	10:09:01	19.60	2.303750
3065	5/26/2019	10:10:01	19.60	2.303026
3066	5/26/2019	10:11:01	19.60	2.303750
3067	5/26/2019	10:12:01	19.70	2.302665
3068	5/26/2019	10:13:01	19.80	2.303026
3069	5/26/2019	10:14:01	19.80	2.302665
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3072	5/26/2019	10:17:01	20.10	2.303388
3073	5/26/2019	10:18:01	20.10	2.303388
3074	5/26/2019	10:19:01	20.00	2.302303
3075	5/26/2019	10:20:01	19.80	2.303026
3076	5/26/2019	10:21:01	19.60	2.302303
3077	5/26/2019	10:22:01	19.60	2.302303
3078	5/26/2019	10:23:01	19.60	2.303026
3079	5/26/2019	10:24:01	19.60	2.302665
3080	5/26/2019	10:25:01	19.70	2.302665
3081	5/26/2019	10:26:01	19.80	2.301218
3082	5/26/2019	10:27:01	19.90	2.301941
3083	5/26/2019	10:28:01	20.00	2.302303
3084	5/26/2019	10:29:01	20.00	2.301579
3085	5/26/2019	10:30:01	20.10	2.301941
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3087	5/26/2019	10:32:01	19.90	2.301941
3088	5/26/2019	10:33:01	19.70	2.301941
3089	5/26/2019	10:34:01	19.60	2.301941
3090	5/26/2019	10:35:01	19.60	2.301579
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3092	5/26/2019	10:37:01	19.70	2.301579
3093	5/26/2019	10:38:01	19.80	2.301218
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3095	5/26/2019	10:40:01	19.90	2.301218
3096	5/26/2019	10:41:01	20.00	2.301579
3097	5/26/2019	10:42:01	20.10	2.301218
3098	5/26/2019	10:43:01	20.10	2.301941
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3101	5/26/2019	10:46:01	19.60	2.301218

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3110	5/26/2019	10:55:01	20.00	2.301218
3111	5/26/2019	10:56:01	19.90	2.301218
3112	5/26/2019	10:57:01	19.70	2.301579
3113	5/26/2019	10:58:01	19.60	2.301218
3114	5/26/2019	10:59:01	19.60	2.301218
3115	5/26/2019	11:00:01	19.60	2.301218
3116	5/26/2019	11:01:01	19.70	2.301579
3117	5/26/2019	11:02:01	19.80	2.300856
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3119	5/26/2019	11:04:01	20.00	2.300856
3120	5/26/2019	11:05:01	20.00	2.301218
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3123	5/26/2019	11:08:01	19.90	2.301218
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3132	5/26/2019	11:17:01	20.10	2.300494
3133	5/26/2019	11:18:01	20.10	2.301218
3134	5/26/2019	11:19:01	20.00	2.300856
3135	5/26/2019	11:20:01	19.90	2.301218
3136	5/26/2019	11:21:01	19.70	2.300494
3137	5/26/2019	11:22:01	19.60	2.300856
3138	5/26/2019	11:23:01	19.60	2.301218
3139	5/26/2019	11:24:01	19.60	2.301218
3140	5/26/2019	11:25:01	19.70	2.300856
3141	5/26/2019	11:26:01	19.80	2.300494
3142	5/26/2019	11:27:01	19.90	2.300856
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3144	5/26/2019	11:29:01	20.10	2.300132
3145	5/26/2019	11:30:01	20.10	2.300856
3146	5/26/2019	11:31:01	20.00	2.300856
3147	5/26/2019	11:32:01	19.80	2.300494
3148	5/26/2019	11:33:01	19.60	2.300856

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3152	5/26/2019	11:37:01	19.80	2.300132
3153	5/26/2019	11:38:01	19.80	2.300494
3154	5/26/2019	11:39:01	19.90	2.300132
3155	5/26/2019	11:40:01	20.00	2.300494
3156	5/26/2019	11:41:01	20.10	2.300132
3157	5/26/2019	11:42:01	20.10	2.299771
3158	5/26/2019	11:43:01	19.90	2.299047
3159	5/26/2019	11:44:01	19.80	2.300132
3160	5/26/2019	11:45:01	19.60	2.300494
3161	5/26/2019	11:46:01	19.60	2.300494
3162	5/26/2019	11:47:01	19.60	2.299409
3163	5/26/2019	11:48:01	19.70	2.300132
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3168	5/26/2019	11:53:01	20.10	2.299047
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3170	5/26/2019	11:55:01	19.90	2.299771
3171	5/26/2019	11:56:01	19.70	2.300132
3172	5/26/2019	11:57:01	19.60	2.299409
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3174	5/26/2019	11:59:01	19.70	2.298324
3175	5/26/2019	12:00:01	19.70	2.298686
3176	5/26/2019	12:01:01	19.80	2.299409
3177	5/26/2019	12:02:01	19.90	2.298324
3178	5/26/2019	12:03:01	20.00	2.299409
3179	5/26/2019	12:04:01	20.10	2.298324
3180	5/26/2019	12:05:01	20.10	2.298686
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3190	5/26/2019	12:15:01	20.10	2.298324
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3192	5/26/2019	12:17:01	20.00	2.298324
3193	5/26/2019	12:18:01	19.80	2.298686
3194	5/26/2019	12:19:01	19.70	2.298324
3195	5/26/2019	12:20:01	19.60	2.298324

3196	5/26/2019	12:21:01	19.60	2.298324
3197	5/26/2019	12:22:01	19.70	2.298324
3198	5/26/2019	12:23:01	19.80	2.298324
3199	5/26/2019	12:24:01	19.90	2.298324
3200	5/26/2019	12:25:01	19.90	2.298324
3201	5/26/2019	12:26:01	20.00	2.298324
3202	5/26/2019	12:27:01	20.10	2.298324
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3204	5/26/2019	12:29:01	19.90	2.298324
3205	5/26/2019	12:30:01	19.70	2.298324
3206	5/26/2019	12:31:01	19.60	2.298324
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3209	5/26/2019	12:34:01	19.70	2.298324
3210	5/26/2019	12:35:01	19.80	2.298324
3211	5/26/2019	12:36:01	19.90	2.297962
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3213	5/26/2019	12:38:01	20.10	2.297601
3214	5/26/2019	12:39:01	20.10	2.298324
3215	5/26/2019	12:40:01	20.00	2.298324
3216	5/26/2019	12:41:01	19.80	2.298324
3217	5/26/2019	12:42:01	19.60	2.298324
3218	5/26/2019	12:43:01	19.60	2.297601
3219	5/26/2019	12:44:01	19.60	2.297962
3220	5/26/2019	12:45:01	19.70	2.297962
3221	5/26/2019	12:46:01	19.80	2.298324
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3223	5/26/2019	12:48:01	20.00	2.298324
3224	5/26/2019	12:49:01	20.10	2.297601
3225	5/26/2019	12:50:01	20.10	2.297239
3226	5/26/2019	12:51:01	20.00	2.297962
3227	5/26/2019	12:52:01	19.80	2.297962
3228	5/26/2019	12:53:01	19.70	2.297962
3229	5/26/2019	12:54:01	19.60	2.298324
3230	5/26/2019	12:55:01	19.60	2.298324
3231	5/26/2019	12:56:01	19.70	2.296877
3232	5/26/2019	12:57:01	19.80	2.297962
3233	5/26/2019	12:58:01	19.90	2.297962
3234	5/26/2019	12:59:01	20.00	2.297601
3235	5/26/2019	13:00:01	20.10	2.296877
3236	5/26/2019	13:01:01	20.10	2.297601
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3238	5/26/2019	13:03:01	19.90	2.297962
3239	5/26/2019	13:04:01	19.70	2.297962
3240	5/26/2019	13:05:01	19.60	2.296877
3241	5/26/2019	13:06:01	19.60	2.297601
3242	5/26/2019	13:07:01	19.70	2.297962

3243	5/26/2019	13:08:01	19.70	2.296877
3244	5/26/2019	13:09:01	19.80	2.297962
3245	5/26/2019	13:10:01	19.90	2.296515
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3249	5/26/2019	13:14:01	19.90	2.296877
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3253	5/26/2019	13:18:01	19.70	2.297239
3254	5/26/2019	13:19:01	19.70	2.297239
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3256	5/26/2019	13:21:01	19.90	2.296154
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3259	5/26/2019	13:24:01	20.10	2.296154
3260	5/26/2019	13:25:01	19.90	2.295792
3261	5/26/2019	13:26:01	19.80	2.295792
3262	5/26/2019	13:27:01	19.60	2.296154
3263	5/26/2019	13:28:01	19.60	2.296154
3264	5/26/2019	13:29:01	19.70	2.295792
3265	5/26/2019	13:30:01	19.70	2.295792
3266	5/26/2019	13:31:01	19.80	2.295430
3267	5/26/2019	13:32:01	19.90	2.296515
3268	5/26/2019	13:33:01	20.00	2.295430
3269	5/26/2019	13:34:01	20.10	2.295792
3270	5/26/2019	13:35:01	20.10	2.296154
3271	5/26/2019	13:36:01	19.90	2.295430
3272	5/26/2019	13:37:01	19.80	2.295430
3273	5/26/2019	13:38:01	19.60	2.295792
3274	5/26/2019	13:39:01	19.60	2.296515
3275	5/26/2019	13:40:01	19.60	2.295430
3276	5/26/2019	13:41:01	19.70	2.295430
3277	5/26/2019	13:42:01	19.80	2.295792
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3279	5/26/2019	13:44:01	20.00	2.295430
3280	5/26/2019	13:45:01	20.10	2.295430
3281	5/26/2019	13:46:01	20.10	2.295430
3282	5/26/2019	13:47:01	20.00	2.295430
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3284	5/26/2019	13:49:01	19.60	2.295430
3285	5/26/2019	13:50:01	19.60	2.295430
3286	5/26/2019	13:51:01	19.60	2.295430
3287	5/26/2019	13:52:01	19.70	2.295430
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3291	5/26/2019	13:56:01	20.10	2.295792
3292	5/26/2019	13:57:01	20.10	2.295069
3293	5/26/2019	13:58:01	20.00	2.295430
3294	5/26/2019	13:59:01	19.80	2.295430
3295	5/26/2019	14:00:01	19.60	2.295430
3296	5/26/2019	14:01:01	19.60	2.295430
3297	5/26/2019	14:02:01	19.60	2.295430
3298	5/26/2019	14:03:01	19.70	2.295430
3299	5/26/2019	14:04:01	19.80	2.295430
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3301	5/26/2019	14:06:01	20.00	2.295069
3302	5/26/2019	14:07:01	20.10	2.295430
3303	5/26/2019	14:08:01	20.10	2.294707
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3316	5/26/2019	14:21:01	19.80	2.294707
3317	5/26/2019	14:22:01	19.60	2.295069
3318	5/26/2019	14:23:01	19.60	2.295069
3319	5/26/2019	14:24:01	19.60	2.295430
3320	5/26/2019	14:25:01	19.70	2.295069
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3324	5/26/2019	14:29:01	20.10	2.294707
3325	5/26/2019	14:30:01	20.10	2.294345
3326	5/26/2019	14:31:01	20.00	2.294707
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3329	5/26/2019	14:34:01	19.60	2.294707
3330	5/26/2019	14:35:01	19.60	2.295430
3331	5/26/2019	14:36:01	19.70	2.293983
3332	5/26/2019	14:37:01	19.80	2.294345
3333	5/26/2019	14:38:01	19.90	2.293622
3334	5/26/2019	14:39:01	20.00	2.295069
3335	5/26/2019	14:40:01	20.10	2.294707
3336	5/26/2019	14:41:01	20.10	2.293260

3337	5/26/2019	14:42:01	19.90	2.293260	
3338	5/26/2019	14:43:01	19.70	2.293983	
3339	5/26/2019	14:44:01	19.70	2.292898	
3340	5/26/2019	14:45:01	19.60	2.293983	
3341	5/26/2019	14:46:01	19.70	2.292898	
3342	5/26/2019	14:47:01	19.80	2.293260	
3343	5/26/2019	14:48:01	19.90	2.293622	
3344	5/26/2019	14:49:01	20.00	2.293622	
3345	5/26/2019	14:50:01	20.10	2.293260	
3346	5/26/2019	14:51:01	20.10	2.292898	
3347	5/26/2019	14:52:01	20.00	2.293622	
3348	5/26/2019	14:53:01	19.90	2.293983	
3349	5/26/2019	14:54:01	19.70	2.292898	
3350	5/26/2019	14:55:01	19.60	2.292898	
3351	5/26/2019	14:56:01	19.60	2.293260	
3352	5/26/2019	14:57:01	19.70	2.293622	
3353	5/26/2019	14:58:01	19.80	2.293260	
3354	5/26/2019	14:59:01	19.90	2.292536	
3355	5/26/2019	15:00:01	20.00	2.293622	
3356	5/26/2019	15:01:01	20.10	2.292898	
3357	5/26/2019	15:02:01	20.10	2.292536	
3358	5/26/2019	15:03:01	20.00	2.292536	
3359	5/26/2019	15:04:01	19.90	2.292898	
3360	5/26/2019	15:05:01	19.70	2.292898	
3361	5/26/2019	15:06:01	19.60	2.292898	48 horas
3362	5/26/2019	15:07:01	19.60	2.292536	
3363	5/26/2019	15:08:01	19.70	2.292536	
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3365	5/26/2019	15:10:01	19.90	2.292536	
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3371	5/26/2019	15:16:01	19.70	2.292536	
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3379	5/26/2019	15:24:01	20.10	2.292536	
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3389	5/26/2019	15:34:01	20.10	2.292536
3390	5/26/2019	15:35:01	20.10	2.292536
3391	5/26/2019	15:36:01	20.00	2.292536
3392	5/26/2019	15:37:01	19.80	2.292536
3393	5/26/2019	15:38:01	19.70	2.292175
3394	5/26/2019	15:39:01	19.60	2.291813
3395	5/26/2019	15:40:01	19.60	2.292536
3396	5/26/2019	15:41:01	19.70	2.292175
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3400	5/26/2019	15:45:01	20.10	2.291813
3401	5/26/2019	15:46:01	20.10	2.292536
3402	5/26/2019	15:47:01	20.00	2.291813
3403	5/26/2019	15:48:01	19.80	2.292536
3404	5/26/2019	15:49:01	19.70	2.291813
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3409	5/26/2019	15:54:01	19.90	2.292536
3410	5/26/2019	15:55:01	20.00	2.291451
3411	5/26/2019	15:56:01	20.10	2.290366
3412	5/26/2019	15:57:01	20.10	2.291813
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3415	5/26/2019	16:00:01	19.60	2.291451
3416	5/26/2019	16:01:01	19.60	2.292175
3417	5/26/2019	16:02:01	19.70	2.291813
3418	5/26/2019	16:03:01	19.80	2.291451
3419	5/26/2019	16:04:01	19.90	2.291090
3420	5/26/2019	16:05:01	20.00	2.291451
3421	5/26/2019	16:06:01	20.10	2.290728
3422	5/26/2019	16:07:01	20.10	2.290728
3423	5/26/2019	16:08:01	20.10	2.290004
3424	5/26/2019	16:09:01	19.90	2.291090
3425	5/26/2019	16:10:01	19.70	2.291090
3426	5/26/2019	16:11:01	19.60	2.291813
3427	5/26/2019	16:12:01	19.60	2.290728
3428	5/26/2019	16:13:01	19.70	2.291451
3429	5/26/2019	16:14:01	19.80	2.291090
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3439	5/26/2019	16:24:01	19.70	2.290728
3440	5/26/2019	16:25:01	19.80	2.291090
3441	5/26/2019	16:26:01	19.90	2.291090
3442	5/26/2019	16:27:01	20.00	2.289643
3443	5/26/2019	16:28:01	20.10	2.290004
3444	5/26/2019	16:29:01	20.10	2.290366
3445	5/26/2019	16:30:01	20.00	2.290366
3446	5/26/2019	16:31:01	19.80	2.290366
3447	5/26/2019	16:32:01	19.70	2.290004
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3450	5/26/2019	16:35:01	19.70	2.290004
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3452	5/26/2019	16:37:01	19.90	2.289643
3453	5/26/2019	16:38:01	20.00	2.289643
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3456	5/26/2019	16:41:01	20.00	2.290004
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3472	5/26/2019	16:57:01	19.70	2.289281
3473	5/26/2019	16:58:01	19.90	2.289643
3474	5/26/2019	16:59:01	19.90	2.289643
3475	5/26/2019	17:00:01	20.10	2.289643
3476	5/26/2019	17:01:01	20.10	2.289643
3477	5/26/2019	17:02:01	20.10	2.289643

3478	5/26/2019	17:03:01	19.90	2.289643
3479	5/26/2019	17:04:01	19.70	2.289643
3480	5/26/2019	17:05:01	19.60	2.289281
3481	5/26/2019	17:06:01	19.60	2.288919
3482	5/26/2019	17:07:01	19.70	2.289643
3483	5/26/2019	17:08:01	19.80	2.289643
3484	5/26/2019	17:09:01	19.90	2.289643
3485	5/26/2019	17:10:01	20.00	2.289643
3486	5/26/2019	17:11:01	20.10	2.288919
3487	5/26/2019	17:12:01	20.10	2.289281
3488	5/26/2019	17:13:01	20.10	2.289643
3489	5/26/2019	17:14:01	19.90	2.289281
3490	5/26/2019	17:15:01	19.70	2.289643
3491	5/26/2019	17:16:01	19.60	2.289643
3492	5/26/2019	17:17:01	19.60	2.289281
3493	5/26/2019	17:18:01	19.70	2.289643
3494	5/26/2019	17:19:01	19.80	2.289643
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3499	5/26/2019	17:24:01	20.00	2.288558
3500	5/26/2019	17:25:01	19.90	2.289281
3501	5/26/2019	17:26:01	19.70	2.289281
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3510	5/26/2019	17:35:01	20.00	2.288196
3511	5/26/2019	17:36:01	19.90	2.288919
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3514	5/26/2019	17:39:01	19.60	2.289281
3515	5/26/2019	17:40:01	19.70	2.288196
3516	5/26/2019	17:41:01	19.80	2.288558
3517	5/26/2019	17:42:01	19.90	2.288558
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3520	5/26/2019	17:45:01	20.10	2.287472
3521	5/26/2019	17:46:01	20.00	2.288196
3522	5/26/2019	17:47:01	19.90	2.288196
3523	5/26/2019	17:48:01	19.70	2.288558
3524	5/26/2019	17:49:01	19.60	2.287472

3525	5/26/2019	17:50:01	19.60	2.287834
3526	5/26/2019	17:51:01	19.70	2.287472
3527	5/26/2019	17:52:01	19.80	2.287111
3528	5/26/2019	17:53:01	19.90	2.288196
3529	5/26/2019	17:54:01	20.00	2.287111
3530	5/26/2019	17:55:01	20.10	2.287472
3531	5/26/2019	17:56:01	20.10	2.287472
3532	5/26/2019	17:57:01	20.00	2.287111
3533	5/26/2019	17:58:01	19.90	2.287472
3534	5/26/2019	17:59:01	19.70	2.288196
3535	5/26/2019	18:00:01	19.60	2.287834
3536	5/26/2019	18:01:01	19.60	2.287111
3537	5/26/2019	18:02:01	19.70	2.287834
3538	5/26/2019	18:03:01	19.80	2.287472
3539	5/26/2019	18:04:01	19.90	2.287111
3540	5/26/2019	18:05:01	20.00	2.287111
3541	5/26/2019	18:06:01	20.10	2.287834
3542	5/26/2019	18:07:01	20.10	2.287111
3543	5/26/2019	18:08:01	20.00	2.287111
3544	5/26/2019	18:09:01	19.80	2.287472
3545	5/26/2019	18:10:01	19.70	2.286749
3546	5/26/2019	18:11:01	19.60	2.287111
3547	5/26/2019	18:12:01	19.60	2.286749
3548	5/26/2019	18:13:01	19.70	2.287111
3549	5/26/2019	18:14:01	19.80	2.287111
3550	5/26/2019	18:15:01	19.90	2.287111
3551	5/26/2019	18:16:01	20.00	2.286749
3552	5/26/2019	18:17:01	20.10	2.286749
3553	5/26/2019	18:18:01	20.10	2.286387
3554	5/26/2019	18:19:01	20.00	2.286749
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3556	5/26/2019	18:21:01	19.70	2.286387
3557	5/26/2019	18:22:01	19.60	2.287472
3558	5/26/2019	18:23:01	19.60	2.286749
3559	5/26/2019	18:24:01	19.70	2.286749
3560	5/26/2019	18:25:01	19.80	2.286749
3561	5/26/2019	18:26:01	19.90	2.286387
3562	5/26/2019	18:27:01	20.00	2.286749
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3565	5/26/2019	18:30:01	20.00	2.286749
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3577	5/26/2019	18:42:01	19.90	2.286749
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3581	5/26/2019	18:46:01	19.70	2.286387
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3587	5/26/2019	18:52:01	20.00	2.285664
3588	5/26/2019	18:53:01	19.90	2.286749
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3590	5/26/2019	18:55:01	19.60	2.286749
3591	5/26/2019	18:56:01	19.60	2.286749
3592	5/26/2019	18:57:01	19.70	2.286749
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3600	5/26/2019	19:05:01	19.70	2.286387
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3611	5/26/2019	19:16:01	19.70	2.284940
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3615	5/26/2019	19:20:01	19.80	2.284579
3616	5/26/2019	19:21:01	19.90	2.284940
3617	5/26/2019	19:22:01	20.00	2.284940
3618	5/26/2019	19:23:01	20.10	2.284217

3619	5/26/2019	19:24:01	20.10	2.284579
3620	5/26/2019	19:25:01	20.00	2.284579
3621	5/26/2019	19:26:01	19.90	2.284217
3622	5/26/2019	19:27:01	19.70	2.284217
3623	5/26/2019	19:28:01	19.60	2.284940
3624	5/26/2019	19:29:01	19.60	2.284940
3625	5/26/2019	19:30:01	19.70	2.284940
3626	5/26/2019	19:31:01	19.80	2.284579
3627	5/26/2019	19:32:01	19.90	2.284217
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3629	5/26/2019	19:34:01	20.10	2.283855
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3634	5/26/2019	19:39:01	19.60	2.284940
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3640	5/26/2019	19:45:01	20.10	2.284217
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3648	5/26/2019	19:53:01	19.80	2.284217
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3650	5/26/2019	19:55:01	19.90	2.283855
3651	5/26/2019	19:56:01	20.00	2.283855
3652	5/26/2019	19:57:01	20.10	2.283855
3653	5/26/2019	19:58:01	20.10	2.283855
3654	5/26/2019	19:59:01	19.90	2.283855
3655	5/26/2019	20:00:01	19.80	2.283855
3656	5/26/2019	20:01:01	19.60	2.283855
3657	5/26/2019	20:02:01	19.60	2.283494
3658	5/26/2019	20:03:01	19.60	2.283855
3659	5/26/2019	20:04:01	19.70	2.283855
3660	5/26/2019	20:05:01	19.80	2.283855
3661	5/26/2019	20:06:01	19.90	2.283855
3662	5/26/2019	20:07:01	20.00	2.283855
3663	5/26/2019	20:08:01	20.10	2.283855
3664	5/26/2019	20:09:01	20.10	2.283855
3665	5/26/2019	20:10:01	19.90	2.283494

3666	5/26/2019	20:11:01	19.80	2.283132
3667	5/26/2019	20:12:01	19.60	2.283855
3668	5/26/2019	20:13:01	19.60	2.283855
3669	5/26/2019	20:14:01	19.60	2.283855
3670	5/26/2019	20:15:01	19.70	2.283855
3671	5/26/2019	20:16:01	19.80	2.283855
3672	5/26/2019	20:17:01	19.90	2.283855
3673	5/26/2019	20:18:01	20.00	2.283132
3674	5/26/2019	20:19:01	20.10	2.283855
3675	5/26/2019	20:20:01	20.10	2.283494
3676	5/26/2019	20:21:01	20.00	2.283855
3677	5/26/2019	20:22:01	19.80	2.283132
3678	5/26/2019	20:23:01	19.70	2.283855
3679	5/26/2019	20:24:01	19.60	2.283855
3680	5/26/2019	20:25:01	19.60	2.283855
3681	5/26/2019	20:26:01	19.70	2.283132
3682	5/26/2019	20:27:01	19.80	2.283494
3683	5/26/2019	20:28:01	19.90	2.283855
3684	5/26/2019	20:29:01	19.90	2.283855
3685	5/26/2019	20:30:01	20.00	2.283855
3686	5/26/2019	20:31:01	20.10	2.283132
3687	5/26/2019	20:32:01	20.10	2.283494
3688	5/26/2019	20:33:01	19.90	2.283494
3689	5/26/2019	20:34:01	19.70	2.283855
3690	5/26/2019	20:35:01	19.60	2.283494
3691	5/26/2019	20:36:01	19.60	2.283494
3692	5/26/2019	20:37:01	19.60	2.283494
3693	5/26/2019	20:38:01	19.70	2.283494
3694	5/26/2019	20:39:01	19.80	2.283132
3695	5/26/2019	20:40:01	19.90	2.283132
3696	5/26/2019	20:41:01	20.00	2.283494
3697	5/26/2019	20:42:01	20.10	2.282047
3698	5/26/2019	20:43:01	20.10	2.283132
3699	5/26/2019	20:44:01	20.00	2.282770
3700	5/26/2019	20:45:01	19.80	2.283132
3701	5/26/2019	20:46:01	19.60	2.282770
3702	5/26/2019	20:47:01	19.60	2.282770
3703	5/26/2019	20:48:01	19.60	2.282408
3704	5/26/2019	20:49:01	19.70	2.283132
3705	5/26/2019	20:50:01	19.80	2.283855
3706	5/26/2019	20:51:01	19.90	2.282770
3707	5/26/2019	20:52:01	19.90	2.282408
3708	5/26/2019	20:53:01	20.00	2.283494
3709	5/26/2019	20:54:01	20.10	2.281685
3710	5/26/2019	20:55:01	20.10	2.282047
3711	5/26/2019	20:56:01	19.90	2.282770
3712	5/26/2019	20:57:01	19.70	2.281685

3713	5/26/2019	20:58:01	19.60	2.282047
3714	5/26/2019	20:59:01	19.60	2.282408
3715	5/26/2019	21:00:01	19.60	2.282408
3716	5/26/2019	21:01:01	19.70	2.282047
3717	5/26/2019	21:02:01	19.80	2.281685
3718	5/26/2019	21:03:01	19.90	2.281323
3719	5/26/2019	21:04:01	20.00	2.281685
3720	5/26/2019	21:05:01	20.10	2.281323
3721	5/26/2019	21:06:01	20.10	2.281323
3722	5/26/2019	21:07:01	20.00	2.282047
3723	5/26/2019	21:08:01	19.80	2.282408
3724	5/26/2019	21:09:01	19.70	2.281685
3725	5/26/2019	21:10:01	19.60	2.281685
3726	5/26/2019	21:11:01	19.60	2.280962
3727	5/26/2019	21:12:01	19.70	2.282408
3728	5/26/2019	21:13:01	19.70	2.281323
3729	5/26/2019	21:14:01	19.80	2.280962
3730	5/26/2019	21:15:01	19.90	2.281323
3731	5/26/2019	21:16:01	20.00	2.281685
3732	5/26/2019	21:17:01	20.10	2.280962
3733	5/26/2019	21:18:01	20.10	2.281685
3734	5/26/2019	21:19:01	20.00	2.281323
3735	5/26/2019	21:20:01	19.80	2.281323
3736	5/26/2019	21:21:01	19.60	2.281323
3737	5/26/2019	21:22:01	19.60	2.280962
3738	5/26/2019	21:23:01	19.60	2.281323
3739	5/26/2019	21:24:01	19.70	2.280962
3740	5/26/2019	21:25:01	19.80	2.280962
3741	5/26/2019	21:26:01	19.90	2.280962
3742	5/26/2019	21:27:01	19.90	2.280962
3743	5/26/2019	21:28:01	20.00	2.280962
3744	5/26/2019	21:29:01	20.10	2.281323
3745	5/26/2019	21:30:01	20.10	2.280962
3746	5/26/2019	21:31:01	19.90	2.280962
3747	5/26/2019	21:32:01	19.70	2.280962
3748	5/26/2019	21:33:01	19.60	2.280962
3749	5/26/2019	21:34:01	19.60	2.280962
3750	5/26/2019	21:35:01	19.60	2.280962
3751	5/26/2019	21:36:01	19.70	2.280962
3752	5/26/2019	21:37:01	19.80	2.280962
3753	5/26/2019	21:38:01	19.90	2.280600
3754	5/26/2019	21:39:01	20.00	2.280962
3755	5/26/2019	21:40:01	20.00	2.280962
3756	5/26/2019	21:41:01	20.10	2.280962
3757	5/26/2019	21:42:01	20.10	2.280962
3758	5/26/2019	21:43:01	19.90	2.280962
3759	5/26/2019	21:44:01	19.70	2.280962

3760	5/26/2019	21:45:01	19.60	2.280962
3761	5/26/2019	21:46:01	19.60	2.280962
3762	5/26/2019	21:47:01	19.60	2.280962
3763	5/26/2019	21:48:01	19.70	2.280962
3764	5/26/2019	21:49:01	19.80	2.280962
3765	5/26/2019	21:50:01	19.90	2.280962
3766	5/26/2019	21:51:01	20.00	2.280238
3767	5/26/2019	21:52:01	20.10	2.280962
3768	5/26/2019	21:53:01	20.10	2.280962
3769	5/26/2019	21:54:01	20.00	2.280962
3770	5/26/2019	21:55:01	19.90	2.280962
3771	5/26/2019	21:56:01	19.70	2.280962
3772	5/26/2019	21:57:01	19.60	2.280600
3773	5/26/2019	21:58:01	19.60	2.280600
3774	5/26/2019	21:59:01	19.60	2.280600
3775	5/26/2019	22:00:01	19.70	2.280238
3776	5/26/2019	22:01:01	19.80	2.280238
3777	5/26/2019	22:02:01	19.90	2.280600
3778	5/26/2019	22:03:01	20.00	2.279876
3779	5/26/2019	22:04:01	20.10	2.280238
3780	5/26/2019	22:05:01	20.10	2.280600
3781	5/26/2019	22:06:01	20.00	2.280600
3782	5/26/2019	22:07:01	19.80	2.280238
3783	5/26/2019	22:08:01	19.70	2.280600
3784	5/26/2019	22:09:01	19.60	2.280600
3785	5/26/2019	22:10:01	19.60	2.280600
3786	5/26/2019	22:11:01	19.70	2.280238
3787	5/26/2019	22:12:01	19.70	2.280238
3788	5/26/2019	22:13:01	19.80	2.279153
3789	5/26/2019	22:14:01	19.90	2.280600
3790	5/26/2019	22:15:01	20.00	2.280238
3791	5/26/2019	22:16:01	20.10	2.280238
3792	5/26/2019	22:17:01	20.10	2.280962
3793	5/26/2019	22:18:01	20.00	2.279876
3794	5/26/2019	22:19:01	19.80	2.280238
3795	5/26/2019	22:20:01	19.70	2.279876
3796	5/26/2019	22:21:01	19.60	2.280238
3797	5/26/2019	22:22:01	19.60	2.279876
3798	5/26/2019	22:23:01	19.70	2.280600
3799	5/26/2019	22:24:01	19.70	2.280238
3800	5/26/2019	22:25:01	19.80	2.279515
3801	5/26/2019	22:26:01	19.90	2.279515
3802	5/26/2019	22:27:01	20.00	2.278791
3803	5/26/2019	22:28:01	20.10	2.279515
3804	5/26/2019	22:29:01	20.10	2.280238
3805	5/26/2019	22:30:01	20.00	2.279876
3806	5/26/2019	22:31:01	19.80	2.280238

3807	5/26/2019	22:32:01	19.60	2.279515
3808	5/26/2019	22:33:01	19.60	2.279876
3809	5/26/2019	22:34:01	19.60	2.279515
3810	5/26/2019	22:35:01	19.70	2.279876
3811	5/26/2019	22:36:01	19.70	2.279515
3812	5/26/2019	22:37:01	19.80	2.278791
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3814	5/26/2019	22:39:01	20.00	2.278791
3815	5/26/2019	22:40:01	20.10	2.279515
3816	5/26/2019	22:41:01	20.10	2.278430
3817	5/26/2019	22:42:01	20.00	2.279515
3818	5/26/2019	22:43:01	19.80	2.279153
3819	5/26/2019	22:44:01	19.70	2.279515
3820	5/26/2019	22:45:01	19.60	2.278791
3821	5/26/2019	22:46:01	19.60	2.278430
3822	5/26/2019	22:47:01	19.60	2.279515
3823	5/26/2019	22:48:01	19.70	2.278430
3824	5/26/2019	22:49:01	19.80	2.278430
3825	5/26/2019	22:50:01	19.90	2.278430
3826	5/26/2019	22:51:01	20.00	2.278068
3827	5/26/2019	22:52:01	20.10	2.278791
3828	5/26/2019	22:53:01	20.10	2.278068
3829	5/26/2019	22:54:01	20.00	2.278068
3830	5/26/2019	22:55:01	19.90	2.278430
3831	5/26/2019	22:56:01	19.70	2.278068
3832	5/26/2019	22:57:01	19.60	2.278791
3833	5/26/2019	22:58:01	19.60	2.278068
3834	5/26/2019	22:59:01	19.60	2.278068
3835	5/26/2019	23:00:01	19.70	2.278068
3836	5/26/2019	23:01:01	19.80	2.278791
3837	5/26/2019	23:02:01	19.90	2.278068
3838	5/26/2019	23:03:01	19.90	2.278430
3839	5/26/2019	23:04:01	20.00	2.278068
3840	5/26/2019	23:05:01	20.10	2.278068
3841	5/26/2019	23:06:01	20.00	2.278430
3842	5/26/2019	23:07:01	19.90	2.278068
3843	5/26/2019	23:08:01	19.70	2.278068
3844	5/26/2019	23:09:01	19.60	2.278430
3845	5/26/2019	23:10:01	19.60	2.278068
3846	5/26/2019	23:11:01	19.60	2.278068
3847	5/26/2019	23:12:01	19.70	2.278068
3848	5/26/2019	23:13:01	19.80	2.278068
3849	5/26/2019	23:14:01	19.90	2.278791
3850	5/26/2019	23:15:01	19.90	2.278068
3851	5/26/2019	23:16:01	20.00	2.278068
3852	5/26/2019	23:17:01	20.10	2.278068
3853	5/26/2019	23:18:01	20.10	2.278068

3854	5/26/2019	23:19:01	19.90	2.278068
3855	5/26/2019	23:20:01	19.70	2.278068
3856	5/26/2019	23:21:01	19.60	2.278791
3857	5/26/2019	23:22:01	19.60	2.278068
3858	5/26/2019	23:23:01	19.60	2.277706
3859	5/26/2019	23:24:01	19.70	2.277706
3860	5/26/2019	23:25:01	19.80	2.278068
3861	5/26/2019	23:26:01	19.80	2.278068
3862	5/26/2019	23:27:01	19.90	2.278068
3863	5/26/2019	23:28:01	20.00	2.278068
3864	5/26/2019	23:29:01	20.10	2.278068
3865	5/26/2019	23:30:01	20.10	2.277706
3866	5/26/2019	23:31:01	20.00	2.278068
3867	5/26/2019	23:32:01	19.80	2.278068
3868	5/26/2019	23:33:01	19.60	2.277344
3869	5/26/2019	23:34:01	19.60	2.277706
3870	5/26/2019	23:35:01	19.60	2.278068
3871	5/26/2019	23:36:01	19.70	2.277706
3872	5/26/2019	23:37:01	19.70	2.277344
3873	5/26/2019	23:38:01	19.80	2.278068
3874	5/26/2019	23:39:01	19.90	2.277344
3875	5/26/2019	23:40:01	20.00	2.278068
3876	5/26/2019	23:41:01	20.10	2.277706
3877	5/26/2019	23:42:01	20.10	2.277344
3878	5/26/2019	23:43:01	20.00	2.278068
3879	5/26/2019	23:44:01	19.80	2.277706
3880	5/26/2019	23:45:01	19.70	2.277706
3881	5/26/2019	23:46:01	19.60	2.278068
3882	5/26/2019	23:47:01	19.60	2.277344
3883	5/26/2019	23:48:01	19.60	2.278068
3884	5/26/2019	23:49:01	19.70	2.278068
3885	5/26/2019	23:50:01	19.80	2.278068
3886	5/26/2019	23:51:01	19.90	2.278068
3887	5/26/2019	23:52:01	19.90	2.278068
3888	5/26/2019	23:53:01	20.00	2.276983
3889	5/26/2019	23:54:01	20.10	2.276983
3890	5/26/2019	23:55:01	20.00	2.277344
3891	5/26/2019	23:56:01	19.90	2.277344
3892	5/26/2019	23:57:01	19.70	2.276621
3893	5/26/2019	23:58:01	19.60	2.276983
3894	5/26/2019	23:59:01	19.60	2.277344
3895	5/27/2019	0:00:01	19.60	2.277706
3896	5/27/2019	0:01:01	19.70	2.276983
3897	5/27/2019	0:02:01	19.80	2.276259
3898	5/27/2019	0:03:01	19.80	2.276621
3899	5/27/2019	0:04:01	19.90	2.276259
3900	5/27/2019	0:05:01	20.00	2.277344

3901	5/27/2019	0:06:01	20.10	2.276983
3902	5/27/2019	0:07:01	20.10	2.277706
3903	5/27/2019	0:08:01	19.90	2.275898
3904	5/27/2019	0:09:01	19.80	2.276983
3905	5/27/2019	0:10:01	19.60	2.277706
3906	5/27/2019	0:11:01	19.60	2.276259
3907	5/27/2019	0:12:01	19.60	2.276983
3908	5/27/2019	0:13:01	19.60	2.276621
3909	5/27/2019	0:14:01	19.70	2.275174
3910	5/27/2019	0:15:01	19.80	2.276621
3911	5/27/2019	0:16:01	19.90	2.275898
3912	5/27/2019	0:17:01	19.90	2.275898
3913	5/27/2019	0:18:01	20.00	2.276259
3914	5/27/2019	0:19:01	20.10	2.276259
3915	5/27/2019	0:20:01	20.00	2.275898
3916	5/27/2019	0:21:01	19.90	2.276259
3917	5/27/2019	0:22:01	19.70	2.275898
3918	5/27/2019	0:23:01	19.60	2.276621
3919	5/27/2019	0:24:01	19.60	2.276621
3920	5/27/2019	0:25:01	19.60	2.275898
3921	5/27/2019	0:26:01	19.70	2.275536
3922	5/27/2019	0:27:01	19.80	2.275898
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3925	5/27/2019	0:30:01	20.00	2.276259
3926	5/27/2019	0:31:01	20.10	2.275536
3927	5/27/2019	0:32:01	20.10	2.275898
3928	5/27/2019	0:33:01	20.00	2.275536
3929	5/27/2019	0:34:01	19.80	2.275898
3930	5/27/2019	0:35:01	19.60	2.275536
3931	5/27/2019	0:36:01	19.60	2.275536
3932	5/27/2019	0:37:01	19.60	2.275898
3933	5/27/2019	0:38:01	19.60	2.275174
3934	5/27/2019	0:39:01	19.70	2.275174
3935	5/27/2019	0:40:01	19.80	2.275536
3936	5/27/2019	0:41:01	19.80	2.275174
3937	5/27/2019	0:42:01	19.90	2.275898
3938	5/27/2019	0:43:01	20.00	2.275898
3939	5/27/2019	0:44:01	20.00	2.275174
3940	5/27/2019	0:45:01	20.10	2.275174
3941	5/27/2019	0:46:01	20.00	2.275898
3942	5/27/2019	0:47:01	19.90	2.275174
3943	5/27/2019	0:48:01	19.70	2.275898
3944	5/27/2019	0:49:01	19.60	2.275536
3945	5/27/2019	0:50:01	19.60	2.275174
3946	5/27/2019	0:51:01	19.60	2.275536
3947	5/27/2019	0:52:01	19.70	2.275174

3948	5/27/2019	0:53:01	19.70	2.275174
3949	5/27/2019	0:54:01	19.80	2.275174
3950	5/27/2019	0:55:01	19.90	2.275174
3951	5/27/2019	0:56:01	19.90	2.275174
3952	5/27/2019	0:57:01	20.00	2.275536
3953	5/27/2019	0:58:01	20.10	2.275174
3954	5/27/2019	0:59:01	20.10	2.275174
3955	5/27/2019	1:00:01	19.90	2.275174
3956	5/27/2019	1:01:01	19.70	2.275174
3957	5/27/2019	1:02:01	19.60	2.275174
3958	5/27/2019	1:03:01	19.60	2.275174
3959	5/27/2019	1:04:01	19.60	2.275174
3960	5/27/2019	1:05:01	19.60	2.275174
3961	5/27/2019	1:06:01	19.70	2.275898
3962	5/27/2019	1:07:01	19.80	2.275174
3963	5/27/2019	1:08:01	19.90	2.275174
3964	5/27/2019	1:09:01	19.90	2.274812
3965	5/27/2019	1:10:01	20.00	2.275174
3966	5/27/2019	1:11:01	20.10	2.274812
3967	5/27/2019	1:12:01	20.10	2.274812
3968	5/27/2019	1:13:01	20.00	2.275174
3969	5/27/2019	1:14:01	19.80	2.275174
3970	5/27/2019	1:15:01	19.60	2.275536
3971	5/27/2019	1:16:01	19.60	2.275174
3972	5/27/2019	1:17:01	19.60	2.275174
3973	5/27/2019	1:18:01	19.60	2.275174
3974	5/27/2019	1:19:01	19.70	2.274812
3975	5/27/2019	1:20:01	19.80	2.275174
3976	5/27/2019	1:21:01	19.80	2.274812
3977	5/27/2019	1:22:01	19.90	2.275174
3978	5/27/2019	1:23:01	19.90	2.274812
3979	5/27/2019	1:24:01	20.00	2.274451
3980	5/27/2019	1:25:01	20.10	2.274812
3981	5/27/2019	1:26:01	20.00	2.275174
3982	5/27/2019	1:27:01	19.90	2.275174
3983	5/27/2019	1:28:01	19.70	2.275174
3984	5/27/2019	1:29:01	19.60	2.274089
3985	5/27/2019	1:30:01	19.60	2.274451
3986	5/27/2019	1:31:01	19.60	2.274812
3987	5/27/2019	1:32:01	19.60	2.274812
3988	5/27/2019	1:33:01	19.70	2.275174
3989	5/27/2019	1:34:01	19.80	2.274089
3990	5/27/2019	1:35:01	19.80	2.274812
3991	5/27/2019	1:36:01	19.90	2.274812
3992	5/27/2019	1:37:01	19.90	2.273727
3993	5/27/2019	1:38:01	20.00	2.274812
3994	5/27/2019	1:39:01	20.10	2.274812

3995	5/27/2019	1:40:01	20.00	2.274451
3996	5/27/2019	1:41:01	19.90	2.274451
3997	5/27/2019	1:42:01	19.70	2.274089
3998	5/27/2019	1:43:01	19.60	2.273727
3999	5/27/2019	1:44:01	19.60	2.273727
4000	5/27/2019	1:45:01	19.60	2.274089
4001	5/27/2019	1:46:01	19.60	2.273366
4002	5/27/2019	1:47:01	19.70	2.274089
4003	5/27/2019	1:48:01	19.80	2.273727
4004	5/27/2019	1:49:01	19.80	2.273727
4005	5/27/2019	1:50:01	19.90	2.274451
4006	5/27/2019	1:51:01	19.90	2.273004
4007	5/27/2019	1:52:01	20.00	2.273727
4008	5/27/2019	1:53:01	20.10	2.273366
4009	5/27/2019	1:54:01	20.00	2.273727
4010	5/27/2019	1:55:01	19.90	2.273727
4011	5/27/2019	1:56:01	19.70	2.273366
4012	5/27/2019	1:57:01	19.60	2.273727
4013	5/27/2019	1:58:01	19.60	2.273004
4014	5/27/2019	1:59:01	19.60	2.273727
4015	5/27/2019	2:00:01	19.60	2.273004
4016	5/27/2019	2:01:01	19.70	2.273004
4017	5/27/2019	2:02:01	19.80	2.272642
4018	5/27/2019	2:03:01	19.80	2.273366
4019	5/27/2019	2:04:01	19.90	2.273004
4020	5/27/2019	2:05:01	20.00	2.273004
4021	5/27/2019	2:06:01	20.00	2.273004
4022	5/27/2019	2:07:01	20.10	2.273366
4023	5/27/2019	2:08:01	20.10	2.273366
4024	5/27/2019	2:09:01	19.90	2.272280
4025	5/27/2019	2:10:01	19.70	2.272642
4026	5/27/2019	2:11:01	19.60	2.273366
4027	5/27/2019	2:12:01	19.60	2.274089
4028	5/27/2019	2:13:01	19.60	2.273004
4029	5/27/2019	2:14:01	19.60	2.272280
4030	5/27/2019	2:15:01	19.70	2.272280
4031	5/27/2019	2:16:01	19.80	2.272280
4032	5/27/2019	2:17:01	19.80	2.272280
4033	5/27/2019	2:18:01	19.90	2.272280
4034	5/27/2019	2:19:01	19.90	2.273366
4035	5/27/2019	2:20:01	20.00	2.273004
4036	5/27/2019	2:21:01	20.10	2.272642
4037	5/27/2019	2:22:01	20.10	2.272642
4038	5/27/2019	2:23:01	19.90	2.273004
4039	5/27/2019	2:24:01	19.80	2.272642
4040	5/27/2019	2:25:01	19.60	2.272280
4041	5/27/2019	2:26:01	19.50	2.272280

4042	5/27/2019	2:27:01	19.50	2.272280
4043	5/27/2019	2:28:01	19.60	2.272280
4044	5/27/2019	2:29:01	19.60	2.272280
4045	5/27/2019	2:30:01	19.70	2.272280
4046	5/27/2019	2:31:01	19.80	2.272642
4047	5/27/2019	2:32:01	19.90	2.272280
4048	5/27/2019	2:33:01	19.90	2.272280
4049	5/27/2019	2:34:01	20.00	2.272280
4050	5/27/2019	2:35:01	20.00	2.272642
4051	5/27/2019	2:36:01	20.10	2.272642
4052	5/27/2019	2:37:01	20.00	2.272280
4053	5/27/2019	2:38:01	19.90	2.272280
4054	5/27/2019	2:39:01	19.70	2.272280
4055	5/27/2019	2:40:01	19.60	2.272642
4056	5/27/2019	2:41:01	19.50	2.272642
4057	5/27/2019	2:42:01	19.60	2.272280
4058	5/27/2019	2:43:01	19.60	2.272280
4059	5/27/2019	2:44:01	19.70	2.272280
4060	5/27/2019	2:45:01	19.70	2.272280
4061	5/27/2019	2:46:01	19.80	2.272280
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4065	5/27/2019	2:50:01	20.00	2.272280
4066	5/27/2019	2:51:01	20.10	2.272280
4067	5/27/2019	2:52:01	20.00	2.272280
4068	5/27/2019	2:53:01	19.90	2.272280
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4071	5/27/2019	2:56:01	19.50	2.272280
4072	5/27/2019	2:57:01	19.50	2.272280
4073	5/27/2019	2:58:01	19.60	2.272280
4074	5/27/2019	2:59:01	19.60	2.271919
4075	5/27/2019	3:00:01	19.70	2.272280
4076	5/27/2019	3:01:01	19.80	2.272280
4077	5/27/2019	3:02:01	19.80	2.271919
4078	5/27/2019	3:03:01	19.90	2.272280
4079	5/27/2019	3:04:01	19.90	2.271919
4080	5/27/2019	3:05:01	19.90	2.271919
4081	5/27/2019	3:06:01	20.00	2.271919
4082	5/27/2019	3:07:01	20.00	2.271557
4083	5/27/2019	3:08:01	20.10	2.272280
4084	5/27/2019	3:09:01	20.00	2.272280
4085	5/27/2019	3:10:01	19.90	2.272280
4086	5/27/2019	3:11:01	19.70	2.271919
4087	5/27/2019	3:12:01	19.60	2.272280
4088	5/27/2019	3:13:01	19.50	2.272280

4089	5/27/2019	3:14:01	19.60	2.271919
4090	5/27/2019	3:15:01	19.60	2.271919
4091	5/27/2019	3:16:01	19.60	2.271919
4092	5/27/2019	3:17:01	19.70	2.271557
4093	5/27/2019	3:18:01	19.80	2.271557
4094	5/27/2019	3:19:01	19.80	2.270833
4095	5/27/2019	3:20:01	19.90	2.271557
4096	5/27/2019	3:21:01	19.90	2.272280
4097	5/27/2019	3:22:01	20.00	2.271557
4098	5/27/2019	3:23:01	20.00	2.272280
4099	5/27/2019	3:24:01	20.00	2.271919
4100	5/27/2019	3:25:01	20.10	2.271919
4101	5/27/2019	3:26:01	20.00	2.271557
4102	5/27/2019	3:27:01	19.80	2.271557
4103	5/27/2019	3:28:01	19.60	2.271557
4104	5/27/2019	3:29:01	19.60	2.271195
4105	5/27/2019	3:30:01	19.50	2.270472
4106	5/27/2019	3:31:01	19.60	2.270472
4107	5/27/2019	3:32:01	19.60	2.270472
4108	5/27/2019	3:33:01	19.70	2.271195
4109	5/27/2019	3:34:01	19.70	2.270833
4110	5/27/2019	3:35:01	19.80	2.271557
4111	5/27/2019	3:36:01	19.90	2.270472
4112	5/27/2019	3:37:01	19.90	2.270833
4113	5/27/2019	3:38:01	19.90	2.270833
4114	5/27/2019	3:39:01	20.00	2.271557
4115	5/27/2019	3:40:01	20.00	2.270833
4116	5/27/2019	3:41:01	20.10	2.271195
4117	5/27/2019	3:42:01	20.00	2.271557
4118	5/27/2019	3:43:01	19.80	2.271195
4119	5/27/2019	3:44:01	19.60	2.270110
4120	5/27/2019	3:45:01	19.60	2.270110
4121	5/27/2019	3:46:01	19.50	2.269748
4122	5/27/2019	3:47:01	19.60	2.270472
4123	5/27/2019	3:48:01	19.60	2.270833
4124	5/27/2019	3:49:01	19.70	2.270110
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4126	5/27/2019	3:51:01	19.80	2.270472
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4128	5/27/2019	3:53:01	19.90	2.270110
4129	5/27/2019	3:54:01	19.90	2.269748
4130	5/27/2019	3:55:01	20.00	2.270110
4131	5/27/2019	3:56:01	20.00	2.270110
4132	5/27/2019	3:57:01	20.10	2.270472
4133	5/27/2019	3:58:01	20.00	2.270472
4134	5/27/2019	3:59:01	19.90	2.269387
4135	5/27/2019	4:00:01	19.70	2.269748

4136	5/27/2019	4:01:01	19.60	2.270472
4137	5/27/2019	4:02:01	19.50	2.270110
4138	5/27/2019	4:03:01	19.50	2.270110
4139	5/27/2019	4:04:01	19.60	2.269387
4140	5/27/2019	4:05:01	19.60	2.269387
4141	5/27/2019	4:06:01	19.70	2.270110
4142	5/27/2019	4:07:01	19.80	2.269387
4143	5/27/2019	4:08:01	19.80	2.269748
4144	5/27/2019	4:09:01	19.90	2.269748
4145	5/27/2019	4:10:01	19.90	2.270472
4146	5/27/2019	4:11:01	20.00	2.269387
4147	5/27/2019	4:12:01	20.00	2.269748
4148	5/27/2019	4:13:01	20.00	2.270110
4149	5/27/2019	4:14:01	20.00	2.269387
4150	5/27/2019	4:15:01	19.90	2.269387
4151	5/27/2019	4:16:01	19.70	2.269387
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4153	5/27/2019	4:18:01	19.50	2.269387
4154	5/27/2019	4:19:01	19.50	2.269748
4155	5/27/2019	4:20:01	19.60	2.269387
4156	5/27/2019	4:21:01	19.60	2.269748
4157	5/27/2019	4:22:01	19.70	2.269025
4158	5/27/2019	4:23:01	19.70	2.269387
4159	5/27/2019	4:24:01	19.80	2.270110
4160	5/27/2019	4:25:01	19.90	2.269387
4161	5/27/2019	4:26:01	19.90	2.269387
4162	5/27/2019	4:27:01	19.90	2.269387
4163	5/27/2019	4:28:01	20.00	2.269387
4164	5/27/2019	4:29:01	20.00	2.269387
4165	5/27/2019	4:30:01	20.10	2.269387
4166	5/27/2019	4:31:01	20.00	2.269387
4167	5/27/2019	4:32:01	19.80	2.269387
4168	5/27/2019	4:33:01	19.60	2.269387
4169	5/27/2019	4:34:01	19.50	2.269387
4170	5/27/2019	4:35:01	19.50	2.269387
4171	5/27/2019	4:36:01	19.50	2.269387
4172	5/27/2019	4:37:01	19.60	2.269387
4173	5/27/2019	4:38:01	19.60	2.269387
4174	5/27/2019	4:39:01	19.70	2.268663
4175	5/27/2019	4:40:01	19.70	2.269387
4176	5/27/2019	4:41:01	19.80	2.269387
4177	5/27/2019	4:42:01	19.80	2.269025
4178	5/27/2019	4:43:01	19.90	2.269387
4179	5/27/2019	4:44:01	19.90	2.269387
4180	5/27/2019	4:45:01	20.00	2.269387
4181	5/27/2019	4:46:01	20.00	2.269387
4182	5/27/2019	4:47:01	20.00	2.269387

4183	5/27/2019	4:48:01	20.10	2.269387
4184	5/27/2019	4:49:01	20.00	2.269025
4185	5/27/2019	4:50:01	19.80	2.269387
4186	5/27/2019	4:51:01	19.60	2.269387
4187	5/27/2019	4:52:01	19.60	2.268302
4188	5/27/2019	4:53:01	19.50	2.269387
4189	5/27/2019	4:54:01	19.60	2.268302
4190	5/27/2019	4:55:01	19.60	2.269025
4191	5/27/2019	4:56:01	19.70	2.268663
4192	5/27/2019	4:57:01	19.70	2.269025
4193	5/27/2019	4:58:01	19.80	2.269387
4194	5/27/2019	4:59:01	19.80	2.268663
4195	5/27/2019	5:00:01	19.90	2.269387
4196	5/27/2019	5:01:01	19.90	2.268663
4197	5/27/2019	5:02:01	19.90	2.269025
4198	5/27/2019	5:03:01	19.90	2.269025
4199	5/27/2019	5:04:01	20.00	2.269025
4200	5/27/2019	5:05:01	20.00	2.268663
4201	5/27/2019	5:06:01	20.00	2.269387
4202	5/27/2019	5:07:01	20.00	2.269025
4203	5/27/2019	5:08:01	19.90	2.269025
4204	5/27/2019	5:09:01	19.70	2.268663
4205	5/27/2019	5:10:01	19.60	2.267940
4206	5/27/2019	5:11:01	19.50	2.267217
4207	5/27/2019	5:12:01	19.50	2.268663
4208	5/27/2019	5:13:01	19.50	2.269025
4209	5/27/2019	5:14:01	19.60	2.269025
4210	5/27/2019	5:15:01	19.60	2.268663
4211	5/27/2019	5:16:01	19.60	2.269025
4212	5/27/2019	5:17:01	19.70	2.268663
4213	5/27/2019	5:18:01	19.70	2.268302
4214	5/27/2019	5:19:01	19.80	2.269025
4215	5/27/2019	5:20:01	19.80	2.268302
4216	5/27/2019	5:21:01	19.90	2.268663
4217	5/27/2019	5:22:01	19.90	2.268302
4218	5/27/2019	5:23:01	19.90	2.267940
4219	5/27/2019	5:24:01	19.90	2.267940
4220	5/27/2019	5:25:01	20.00	2.268663
4221	5/27/2019	5:26:01	20.00	2.267940
4222	5/27/2019	5:27:01	20.00	2.267578
4223	5/27/2019	5:28:01	20.00	2.267940
4224	5/27/2019	5:29:01	20.00	2.267217
4225	5/27/2019	5:30:01	20.00	2.267217
4226	5/27/2019	5:31:01	19.80	2.267578
4227	5/27/2019	5:32:01	19.60	2.267940
4228	5/27/2019	5:33:01	19.60	2.267217
4229	5/27/2019	5:34:01	19.50	2.267578

4230	5/27/2019	5:35:01	19.50	2.267578
4231	5/27/2019	5:36:01	19.60	2.266855
4232	5/27/2019	5:37:01	19.60	2.267578
4233	5/27/2019	5:38:01	19.70	2.266855
4234	5/27/2019	5:39:01	19.70	2.267217
4235	5/27/2019	5:40:01	19.80	2.266855
4236	5/27/2019	5:41:01	19.80	2.267217
4237	5/27/2019	5:42:01	19.90	2.266855
4238	5/27/2019	5:43:01	19.90	2.267578
4239	5/27/2019	5:44:01	19.90	2.267217
4240	5/27/2019	5:45:01	20.00	2.267217
4241	5/27/2019	5:46:01	20.00	2.266855
4242	5/27/2019	5:47:01	20.00	2.267217
4243	5/27/2019	5:48:01	20.10	2.266855
4244	5/27/2019	5:49:01	20.00	2.267217
4245	5/27/2019	5:50:01	19.80	2.266855
4246	5/27/2019	5:51:01	19.70	2.266493
4247	5/27/2019	5:52:01	19.60	2.267217
4248	5/27/2019	5:53:01	19.50	2.266855
4249	5/27/2019	5:54:01	19.50	2.267217
4250	5/27/2019	5:55:01	19.60	2.266493
4251	5/27/2019	5:56:01	19.60	2.266855
4252	5/27/2019	5:57:01	19.70	2.266493
4253	5/27/2019	5:58:01	19.70	2.267578
4254	5/27/2019	5:59:01	19.80	2.266493
4255	5/27/2019	6:00:01	19.80	2.266493
4256	5/27/2019	6:01:01	19.90	2.266493
4257	5/27/2019	6:02:01	19.90	2.266493
4258	5/27/2019	6:03:01	19.90	2.267217
4259	5/27/2019	6:04:01	20.00	2.266493
4260	5/27/2019	6:05:01	20.00	2.266493
4261	5/27/2019	6:06:01	20.00	2.266493
4262	5/27/2019	6:07:01	20.00	2.267217
4263	5/27/2019	6:08:01	19.90	2.266493
4264	5/27/2019	6:09:01	19.80	2.266855
4265	5/27/2019	6:10:01	19.60	2.266493
4266	5/27/2019	6:11:01	19.50	2.266493
4267	5/27/2019	6:12:01	19.50	2.266493
4268	5/27/2019	6:13:01	19.60	2.266493
4269	5/27/2019	6:14:01	19.60	2.266855
4270	5/27/2019	6:15:01	19.70	2.266493
4271	5/27/2019	6:16:01	19.70	2.266493
4272	5/27/2019	6:17:01	19.80	2.266493
4273	5/27/2019	6:18:01	19.80	2.266493
4274	5/27/2019	6:19:01	19.90	2.266855
4275	5/27/2019	6:20:01	19.90	2.266131
4276	5/27/2019	6:21:01	19.90	2.266855

4277	5/27/2019	6:22:01	20.00	2.266493
4278	5/27/2019	6:23:01	20.00	2.266493
4279	5/27/2019	6:24:01	20.10	2.266493
4280	5/27/2019	6:25:01	20.00	2.266855
4281	5/27/2019	6:26:01	19.80	2.266493
4282	5/27/2019	6:27:01	19.70	2.266493
4283	5/27/2019	6:28:01	19.60	2.266493
4284	5/27/2019	6:29:01	19.50	2.266493
4285	5/27/2019	6:30:01	19.50	2.266493
4286	5/27/2019	6:31:01	19.60	2.266493
4287	5/27/2019	6:32:01	19.60	2.266131
4288	5/27/2019	6:33:01	19.70	2.266493
4289	5/27/2019	6:34:01	19.80	2.266493
4290	5/27/2019	6:35:01	19.80	2.266493
4291	5/27/2019	6:36:01	19.90	2.266493
4292	5/27/2019	6:37:01	19.90	2.266131
4293	5/27/2019	6:38:01	19.90	2.266131
4294	5/27/2019	6:39:01	20.00	2.266493
4295	5/27/2019	6:40:01	20.00	2.266493
4296	5/27/2019	6:41:01	20.10	2.266131
4297	5/27/2019	6:42:01	20.00	2.265770
4298	5/27/2019	6:43:01	19.90	2.266493
4299	5/27/2019	6:44:01	19.70	2.265770
4300	5/27/2019	6:45:01	19.60	2.265770
4301	5/27/2019	6:46:01	19.50	2.265770
4302	5/27/2019	6:47:01	19.60	2.266131
4303	5/27/2019	6:48:01	19.60	2.266131
4304	5/27/2019	6:49:01	19.70	2.266131
4305	5/27/2019	6:50:01	19.70	2.266131
4306	5/27/2019	6:51:01	19.80	2.265770
4307	5/27/2019	6:52:01	19.80	2.265770
4308	5/27/2019	6:53:01	19.90	2.265408
4309	5/27/2019	6:54:01	19.90	2.265770
4310	5/27/2019	6:55:01	20.00	2.266493
4311	5/27/2019	6:56:01	20.00	2.266131
4312	5/27/2019	6:57:01	20.00	2.266493
4313	5/27/2019	6:58:01	20.10	2.266493
4314	5/27/2019	6:59:01	20.00	2.265408
4315	5/27/2019	7:00:01	19.80	2.266131
4316	5/27/2019	7:01:01	19.60	2.265408
4317	5/27/2019	7:02:01	19.60	2.265408
4318	5/27/2019	7:03:01	19.50	2.265408
4319	5/27/2019	7:04:01	19.60	2.265408
4320	5/27/2019	7:05:01	19.60	2.266493
4321	5/27/2019	7:06:01	19.70	2.265046
4322	5/27/2019	7:07:01	19.70	2.265408
4323	5/27/2019	7:08:01	19.80	2.265408

4324	5/27/2019	7:09:01	19.90	2.265408
4325	5/27/2019	7:10:01	19.90	2.265046
4326	5/27/2019	7:11:01	19.90	2.265408
4327	5/27/2019	7:12:01	20.00	2.265046
4328	5/27/2019	7:13:01	20.00	2.264685
4329	5/27/2019	7:14:01	20.10	2.265408
4330	5/27/2019	7:15:01	20.00	2.265408
4331	5/27/2019	7:16:01	19.90	2.265046
4332	5/27/2019	7:17:01	19.70	2.265408
4333	5/27/2019	7:18:01	19.60	2.264685
4334	5/27/2019	7:19:01	19.50	2.265408
4335	5/27/2019	7:20:01	19.50	2.264323
4336	5/27/2019	7:21:01	19.60	2.265046
4337	5/27/2019	7:22:01	19.60	2.265408
4338	5/27/2019	7:23:01	19.70	2.264323
4339	5/27/2019	7:24:01	19.80	2.264323
4340	5/27/2019	7:25:01	19.80	2.265046
4341	5/27/2019	7:26:01	19.90	2.264685
4342	5/27/2019	7:27:01	19.90	2.264685
4343	5/27/2019	7:28:01	20.00	2.264323
4344	5/27/2019	7:29:01	20.00	2.265046
4345	5/27/2019	7:30:01	20.00	2.265408
4346	5/27/2019	7:31:01	20.10	2.265046
4347	5/27/2019	7:32:01	20.00	2.263961
4348	5/27/2019	7:33:01	19.80	2.265046
4349	5/27/2019	7:34:01	19.60	2.263961
4350	5/27/2019	7:35:01	19.50	2.264323
4351	5/27/2019	7:36:01	19.50	2.263961
4352	5/27/2019	7:37:01	19.60	2.264685
4353	5/27/2019	7:38:01	19.60	2.265046
4354	5/27/2019	7:39:01	19.70	2.263961
4355	5/27/2019	7:40:01	19.70	2.263599
4356	5/27/2019	7:41:01	19.80	2.264323
4357	5/27/2019	7:42:01	19.90	2.264685
4358	5/27/2019	7:43:01	19.90	2.264323
4359	5/27/2019	7:44:01	20.00	2.264323
4360	5/27/2019	7:45:01	20.00	2.263961
4361	5/27/2019	7:46:01	20.00	2.263961
4362	5/27/2019	7:47:01	20.10	2.263599
4363	5/27/2019	7:48:01	20.00	2.263599
4364	5/27/2019	7:49:01	19.80	2.263599
4365	5/27/2019	7:50:01	19.60	2.263961
4366	5/27/2019	7:51:01	19.50	2.263961
4367	5/27/2019	7:52:01	19.50	2.263599
4368	5/27/2019	7:53:01	19.60	2.263599
4369	5/27/2019	7:54:01	19.60	2.263599
4370	5/27/2019	7:55:01	19.70	2.264323

4371	5/27/2019	7:56:01	19.80	2.263599
4372	5/27/2019	7:57:01	19.80	2.263599
4373	5/27/2019	7:58:01	19.90	2.263961
4374	5/27/2019	7:59:01	19.90	2.263599
4375	5/27/2019	8:00:01	20.00	2.263599
4376	5/27/2019	8:01:01	20.00	2.263961
4377	5/27/2019	8:02:01	20.10	2.263599
4378	5/27/2019	8:03:01	20.00	2.263599
4379	5/27/2019	8:04:01	19.80	2.263599
4380	5/27/2019	8:05:01	19.70	2.263961
4381	5/27/2019	8:06:01	19.60	2.263599
4382	5/27/2019	8:07:01	19.60	2.263961
4383	5/27/2019	8:08:01	19.60	2.263961
4384	5/27/2019	8:09:01	19.60	2.263599
4385	5/27/2019	8:10:01	19.70	2.263599
4386	5/27/2019	8:11:01	19.80	2.263599
4387	5/27/2019	8:12:01	19.80	2.263599
4388	5/27/2019	8:13:01	19.90	2.263599
4389	5/27/2019	8:14:01	19.90	2.263599
4390	5/27/2019	8:15:01	20.00	2.263599
4391	5/27/2019	8:16:01	20.00	2.263599
4392	5/27/2019	8:17:01	20.10	2.263599
4393	5/27/2019	8:18:01	20.00	2.263599
4394	5/27/2019	8:19:01	19.90	2.263238
4395	5/27/2019	8:20:01	19.70	2.263238
4396	5/27/2019	8:21:01	19.60	2.263599
4397	5/27/2019	8:22:01	19.50	2.263599
4398	5/27/2019	8:23:01	19.60	2.263599
4399	5/27/2019	8:24:01	19.60	2.263599
4400	5/27/2019	8:25:01	19.70	2.263599
4401	5/27/2019	8:26:01	19.80	2.263238
4402	5/27/2019	8:27:01	19.80	2.263238
4403	5/27/2019	8:28:01	19.90	2.263599
4404	5/27/2019	8:29:01	19.90	2.263599
4405	5/27/2019	8:30:01	20.00	2.263238
4406	5/27/2019	8:31:01	20.00	2.263599
4407	5/27/2019	8:32:01	20.10	2.263238
4408	5/27/2019	8:33:01	20.00	2.263599
4409	5/27/2019	8:34:01	19.80	2.263238
4410	5/27/2019	8:35:01	19.60	2.263599
4411	5/27/2019	8:36:01	19.60	2.263599
4412	5/27/2019	8:37:01	19.60	2.263599
4413	5/27/2019	8:38:01	19.60	2.263599
4414	5/27/2019	8:39:01	19.60	2.263599
4415	5/27/2019	8:40:01	19.70	2.262876
4416	5/27/2019	8:41:01	19.80	2.263961
4417	5/27/2019	8:42:01	19.90	2.263599

4418	5/27/2019	8:43:01	19.90	2.262876
4419	5/27/2019	8:44:01	20.00	2.263238
4420	5/27/2019	8:45:01	20.00	2.262876
4421	5/27/2019	8:46:01	20.10	2.263238
4422	5/27/2019	8:47:01	20.10	2.263599
4423	5/27/2019	8:48:01	19.90	2.263599
4424	5/27/2019	8:49:01	19.70	2.262876
4425	5/27/2019	8:50:01	19.60	2.263238
4426	5/27/2019	8:51:01	19.60	2.262152
4427	5/27/2019	8:52:01	19.60	2.262876
4428	5/27/2019	8:53:01	19.60	2.263599
4429	5/27/2019	8:54:01	19.70	2.263238
4430	5/27/2019	8:55:01	19.80	2.263238
4431	5/27/2019	8:56:01	19.80	2.262876
4432	5/27/2019	8:57:01	19.90	2.262152
4433	5/27/2019	8:58:01	19.90	2.262514
4434	5/27/2019	8:59:01	20.00	2.263599
4435	5/27/2019	9:00:01	20.00	2.262876
4436	5/27/2019	9:01:01	20.10	2.262514
4437	5/27/2019	9:02:01	20.00	2.263238
4438	5/27/2019	9:03:01	19.80	2.262876
4439	5/27/2019	9:04:01	19.70	2.262876
4440	5/27/2019	9:05:01	19.60	2.262876
4441	5/27/2019	9:06:01	19.60	2.262152
4442	5/27/2019	9:07:01	19.60	2.262876
4443	5/27/2019	9:08:01	19.70	2.261429
4444	5/27/2019	9:09:01	19.70	2.262514
4445	5/27/2019	9:10:01	19.80	2.262152
4446	5/27/2019	9:11:01	19.90	2.263238
4447	5/27/2019	9:12:01	19.90	2.263238
4448	5/27/2019	9:13:01	20.00	2.262152
4449	5/27/2019	9:14:01	20.00	2.262152
4450	5/27/2019	9:15:01	20.10	2.261429
4451	5/27/2019	9:16:01	20.00	2.262514
4452	5/27/2019	9:17:01	19.90	2.261791
4453	5/27/2019	9:18:01	19.70	2.262152
4454	5/27/2019	9:19:01	19.60	2.262876
4455	5/27/2019	9:20:01	19.60	2.261791
4456	5/27/2019	9:21:01	19.60	2.262152
4457	5/27/2019	9:22:01	19.70	2.261067
4458	5/27/2019	9:23:01	19.70	2.261791
4459	5/27/2019	9:24:01	19.80	2.261429
4460	5/27/2019	9:25:01	19.90	2.261429
4461	5/27/2019	9:26:01	19.90	2.261429
4462	5/27/2019	9:27:01	20.00	2.261791
4463	5/27/2019	9:28:01	20.00	2.261791
4464	5/27/2019	9:29:01	20.10	2.261429

4465	5/27/2019	9:30:01	20.00	2.261791
4466	5/27/2019	9:31:01	19.90	2.261429
4467	5/27/2019	9:32:01	19.70	2.261429
4468	5/27/2019	9:33:01	19.60	2.261429
4469	5/27/2019	9:34:01	19.60	2.262876
4470	5/27/2019	9:35:01	19.60	2.262152
4471	5/27/2019	9:36:01	19.60	2.261429
4472	5/27/2019	9:37:01	19.70	2.261791
4473	5/27/2019	9:38:01	19.80	2.261067
4474	5/27/2019	9:39:01	19.90	2.261429
4475	5/27/2019	9:40:01	19.90	2.261067
4476	5/27/2019	9:41:01	20.00	2.260706
4477	5/27/2019	9:42:01	20.00	2.261429
4478	5/27/2019	9:43:01	20.10	2.261429
4479	5/27/2019	9:44:01	20.00	2.261067
4480	5/27/2019	9:45:01	19.80	2.261429
4481	5/27/2019	9:46:01	19.70	2.261067
4482	5/27/2019	9:47:01	19.60	2.261429
4483	5/27/2019	9:48:01	19.60	2.261067
4484	5/27/2019	9:49:01	19.60	2.260706
4485	5/27/2019	9:50:01	19.70	2.261067
4486	5/27/2019	9:51:01	19.70	2.261429
4487	5/27/2019	9:52:01	19.80	2.260706
4488	5/27/2019	9:53:01	19.90	2.261067
4489	5/27/2019	9:54:01	20.00	2.260706
4490	5/27/2019	9:55:01	20.00	2.260706
4491	5/27/2019	9:56:01	20.10	2.261067
4492	5/27/2019	9:57:01	20.00	2.260706
4493	5/27/2019	9:58:01	19.90	2.260344
4494	5/27/2019	9:59:01	19.70	2.260706
4495	5/27/2019	10:00:01	19.60	2.260706
4496	5/27/2019	10:01:01	19.60	2.260706
4497	5/27/2019	10:02:01	19.60	2.261067
4498	5/27/2019	10:03:01	19.70	2.260706
4499	5/27/2019	10:04:01	19.70	2.260706
4500	5/27/2019	10:05:01	19.80	2.261429
4501	5/27/2019	10:06:01	19.90	2.260706
4502	5/27/2019	10:07:01	19.90	2.260706
4503	5/27/2019	10:08:01	20.00	2.260706
4504	5/27/2019	10:09:01	20.10	2.260706
4505	5/27/2019	10:10:01	20.00	2.260344
4506	5/27/2019	10:11:01	19.90	2.260344
4507	5/27/2019	10:12:01	19.70	2.260706
4508	5/27/2019	10:13:01	19.60	2.260344
4509	5/27/2019	10:14:01	19.60	2.261067
4510	5/27/2019	10:15:01	19.60	2.260706
4511	5/27/2019	10:16:01	19.70	2.260706

4512	5/27/2019	10:17:01	19.70	2.261067
4513	5/27/2019	10:18:01	19.80	2.260706
4514	5/27/2019	10:19:01	19.90	2.260706
4515	5/27/2019	10:20:01	20.00	2.260706
4516	5/27/2019	10:21:01	20.00	2.260706
4517	5/27/2019	10:22:01	20.10	2.260706
4518	5/27/2019	10:23:01	20.00	2.260706
4519	5/27/2019	10:24:01	19.90	2.260706
4520	5/27/2019	10:25:01	19.70	2.260344
4521	5/27/2019	10:26:01	19.60	2.260344
4522	5/27/2019	10:27:01	19.60	2.260706
4523	5/27/2019	10:28:01	19.60	2.260344
4524	5/27/2019	10:29:01	19.70	2.260706
4525	5/27/2019	10:30:01	19.80	2.260706
4526	5/27/2019	10:31:01	19.80	2.260706
4527	5/27/2019	10:32:01	19.90	2.260706
4528	5/27/2019	10:33:01	20.00	2.260706
4529	5/27/2019	10:34:01	20.10	2.260344
4530	5/27/2019	10:35:01	20.10	2.259982
4531	5/27/2019	10:36:01	20.00	2.260344
4532	5/27/2019	10:37:01	19.80	2.259982
4533	5/27/2019	10:38:01	19.70	2.260706
4534	5/27/2019	10:39:01	19.60	2.260344
4535	5/27/2019	10:40:01	19.60	2.260706
4536	5/27/2019	10:41:01	19.60	2.260344
4537	5/27/2019	10:42:01	19.70	2.260344
4538	5/27/2019	10:43:01	19.80	2.260344
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4540	5/27/2019	10:45:01	19.90	2.260706
4541	5/27/2019	10:46:01	20.00	2.260706
4542	5/27/2019	10:47:01	20.10	2.260706
4543	5/27/2019	10:48:01	20.10	2.259982
4544	5/27/2019	10:49:01	19.90	2.260706
4545	5/27/2019	10:50:01	19.70	2.259982
4546	5/27/2019	10:51:01	19.60	2.260706
4547	5/27/2019	10:52:01	19.60	2.260344
4548	5/27/2019	10:53:01	19.60	2.260344
4549	5/27/2019	10:54:01	19.70	2.260344
4550	5/27/2019	10:55:01	19.80	2.260706
4551	5/27/2019	10:56:01	19.90	2.259982
4552	5/27/2019	10:57:01	19.90	2.259982
4553	5/27/2019	10:58:01	20.00	2.260706
4554	5/27/2019	10:59:01	20.10	2.259982
4555	5/27/2019	11:00:01	20.10	2.259621
4556	5/27/2019	11:01:01	19.90	2.259621
4557	5/27/2019	11:02:01	19.80	2.259621
4558	5/27/2019	11:03:01	19.60	2.259982

4559	5/27/2019	11:04:01	19.60	2.258897
4560	5/27/2019	11:05:01	19.60	2.258897
4561	5/27/2019	11:06:01	19.70	2.259621
4562	5/27/2019	11:07:01	19.80	2.259621
4563	5/27/2019	11:08:01	19.80	2.259621
4564	5/27/2019	11:09:01	19.90	2.259982
4565	5/27/2019	11:10:01	20.00	2.259259
4566	5/27/2019	11:11:01	20.10	2.258897
4567	5/27/2019	11:12:01	20.10	2.259259
4568	5/27/2019	11:13:01	19.90	2.258535
4569	5/27/2019	11:14:01	19.80	2.259982
4570	5/27/2019	11:15:01	19.60	2.259259
4571	5/27/2019	11:16:01	19.60	2.259259
4572	5/27/2019	11:17:01	19.60	2.258535
4573	5/27/2019	11:18:01	19.70	2.259621
4574	5/27/2019	11:19:01	19.80	2.259259
4575	5/27/2019	11:20:01	19.90	2.259259
4576	5/27/2019	11:21:01	19.90	2.259259
4577	5/27/2019	11:22:01	20.00	2.258174
4578	5/27/2019	11:23:01	20.10	2.258174
4579	5/27/2019	11:24:01	20.10	2.258535
4580	5/27/2019	11:25:01	19.90	2.258897
4581	5/27/2019	11:26:01	19.70	2.259259
4582	5/27/2019	11:27:01	19.60	2.258174
4583	5/27/2019	11:28:01	19.60	2.258897
4584	5/27/2019	11:29:01	19.60	2.257812
4585	5/27/2019	11:30:01	19.70	2.258174
4586	5/27/2019	11:31:01	19.80	2.258535
4587	5/27/2019	11:32:01	19.90	2.258535
4588	5/27/2019	11:33:01	20.00	2.257812
4589	5/27/2019	11:34:01	20.10	2.258535
4590	5/27/2019	11:35:01	20.10	2.258535
4591	5/27/2019	11:36:01	20.00	2.257812
4592	5/27/2019	11:37:01	19.80	2.258535
4593	5/27/2019	11:38:01	19.70	2.258174
4594	5/27/2019	11:39:01	19.60	2.257812
4595	5/27/2019	11:40:01	19.60	2.258535
4596	5/27/2019	11:41:01	19.70	2.258535
4597	5/27/2019	11:42:01	19.80	2.258897
4598	5/27/2019	11:43:01	19.90	2.257812
4599	5/27/2019	11:44:01	20.00	2.258174
4600	5/27/2019	11:45:01	20.10	2.258174
4601	5/27/2019	11:46:01	20.10	2.257812
4602	5/27/2019	11:47:01	20.00	2.257812
4603	5/27/2019	11:48:01	19.90	2.257812
4604	5/27/2019	11:49:01	19.70	2.257812
4605	5/27/2019	11:50:01	19.60	2.257812

4606	5/27/2019	11:51:01	19.60	2.258174
4607	5/27/2019	11:52:01	19.70	2.257812
4608	5/27/2019	11:53:01	19.80	2.257812
4609	5/27/2019	11:54:01	19.90	2.257812
4610	5/27/2019	11:55:01	20.00	2.257812
4611	5/27/2019	11:56:01	20.00	2.258174
4612	5/27/2019	11:57:01	20.10	2.258535
4613	5/27/2019	11:58:01	20.10	2.257812
4614	5/27/2019	11:59:01	19.90	2.257812
4615	5/27/2019	12:00:01	19.70	2.257089
4616	5/27/2019	12:01:01	19.60	2.257812
4617	5/27/2019	12:02:01	19.60	2.258174
4618	5/27/2019	12:03:01	19.70	2.257812
4619	5/27/2019	12:04:01	19.70	2.257812
4620	5/27/2019	12:05:01	19.80	2.257812
4621	5/27/2019	12:06:01	19.90	2.257812
4622	5/27/2019	12:07:01	20.00	2.257812
4623	5/27/2019	12:08:01	20.10	2.257812
4624	5/27/2019	12:09:01	20.10	2.257812
4625	5/27/2019	12:10:01	20.00	2.257812
4626	5/27/2019	12:11:01	19.80	2.258174
4627	5/27/2019	12:12:01	19.60	2.257812
4628	5/27/2019	12:13:01	19.60	2.257812
4629	5/27/2019	12:14:01	19.60	2.257812
4630	5/27/2019	12:15:01	19.70	2.257812
4631	5/27/2019	12:16:01	19.80	2.257812
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4633	5/27/2019	12:18:01	20.00	2.257812
4634	5/27/2019	12:19:01	20.10	2.257812
4635	5/27/2019	12:20:01	20.10	2.257812
4636	5/27/2019	12:21:01	20.00	2.257812
4637	5/27/2019	12:22:01	19.80	2.257812
4638	5/27/2019	12:23:01	19.70	2.258174
4639	5/27/2019	12:24:01	19.60	2.257812
4640	5/27/2019	12:25:01	19.60	2.257450
4641	5/27/2019	12:26:01	19.70	2.257812
4642	5/27/2019	12:27:01	19.80	2.257089
4643	5/27/2019	12:28:01	19.90	2.257812
4644	5/27/2019	12:29:01	20.00	2.257450
4645	5/27/2019	12:30:01	20.10	2.257812
4646	5/27/2019	12:31:01	20.10	2.257812
4647	5/27/2019	12:32:01	20.00	2.257812
4648	5/27/2019	12:33:01	19.80	2.257812
4649	5/27/2019	12:34:01	19.60	2.257450
4650	5/27/2019	12:35:01	19.60	2.257089
4651	5/27/2019	12:36:01	19.60	2.257089
4652	5/27/2019	12:37:01	19.70	2.257812

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4655	5/27/2019	12:40:01	20.00	2.257812
4656	5/27/2019	12:41:01	20.10	2.257812
4657	5/27/2019	12:42:01	20.10	2.257450
4658	5/27/2019	12:43:01	20.00	2.257450
4659	5/27/2019	12:44:01	19.80	2.257089
4660	5/27/2019	12:45:01	19.60	2.257089
4661	5/27/2019	12:46:01	19.60	2.257089
4662	5/27/2019	12:47:01	19.70	2.257812
4663	5/27/2019	12:48:01	19.70	2.256727
4664	5/27/2019	12:49:01	19.80	2.257450
4665	5/27/2019	12:50:01	19.90	2.257089
4666	5/27/2019	12:51:01	20.00	2.257450
4667	5/27/2019	12:52:01	20.10	2.256003
4668	5/27/2019	12:53:01	20.10	2.257450
4669	5/27/2019	12:54:01	20.00	2.257089
4670	5/27/2019	12:55:01	19.80	2.257089
4671	5/27/2019	12:56:01	19.60	2.256727
4672	5/27/2019	12:57:01	19.60	2.257089
4673	5/27/2019	12:58:01	19.70	2.255642
4674	5/27/2019	12:59:01	19.80	2.256727
4675	5/27/2019	13:00:01	19.90	2.257089
4676	5/27/2019	13:01:01	19.90	2.257450
4677	5/27/2019	13:02:01	20.10	2.256727
4678	5/27/2019	13:03:01	20.10	2.256727
4679	5/27/2019	13:04:01	20.10	2.257089
4680	5/27/2019	13:05:01	19.90	2.257450
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4682	5/27/2019	13:07:01	19.60	2.256365
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4688	5/27/2019	13:13:01	20.10	2.255280
4689	5/27/2019	13:14:01	20.10	2.256727
4690	5/27/2019	13:15:01	20.10	2.257089
4691	5/27/2019	13:16:01	19.90	2.256727
4692	5/27/2019	13:17:01	19.70	2.255642
4693	5/27/2019	13:18:01	19.60	2.255642
4694	5/27/2019	13:19:01	19.60	2.255642
4695	5/27/2019	13:20:01	19.70	2.255280
4696	5/27/2019	13:21:01	19.80	2.256003
4697	5/27/2019	13:22:01	19.90	2.255642
4698	5/27/2019	13:23:01	20.00	2.255642
4699	5/27/2019	13:24:01	20.10	2.256727

4700	5/27/2019	13:25:01	20.10	2.255642
4701	5/27/2019	13:26:01	20.00	2.256003
4702	5/27/2019	13:27:01	19.80	2.255642
4703	5/27/2019	13:28:01	19.70	2.256365
4704	5/27/2019	13:29:01	19.60	2.256365
4705	5/27/2019	13:30:01	19.70	2.254918
4706	5/27/2019	13:31:01	19.70	2.255280
4707	5/27/2019	13:32:01	19.80	2.254918
4708	5/27/2019	13:33:01	19.90	2.255280
4709	5/27/2019	13:34:01	20.00	2.255642
4710	5/27/2019	13:35:01	20.10	2.255642
4711	5/27/2019	13:36:01	20.10	2.255642
4712	5/27/2019	13:37:01	20.00	2.255280
4713	5/27/2019	13:38:01	19.80	2.255280
4714	5/27/2019	13:39:01	19.60	2.256365
4715	5/27/2019	13:40:01	19.60	2.255642
4716	5/27/2019	13:41:01	19.70	2.254918
4717	5/27/2019	13:42:01	19.70	2.254918
4718	5/27/2019	13:43:01	19.90	2.254918
4719	5/27/2019	13:44:01	19.90	2.255642
4720	5/27/2019	13:45:01	20.10	2.254918
4721	5/27/2019	13:46:01	20.10	2.255280
4722	5/27/2019	13:47:01	20.10	2.255280
4723	5/27/2019	13:48:01	19.90	2.255280
4724	5/27/2019	13:49:01	19.80	2.255642
4725	5/27/2019	13:50:01	19.60	2.254918
4726	5/27/2019	13:51:01	19.60	2.254918
4727	5/27/2019	13:52:01	19.70	2.254918
4728	5/27/2019	13:53:01	19.80	2.254918
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4730	5/27/2019	13:55:01	20.00	2.254557
4731	5/27/2019	13:56:01	20.10	2.255280
4732	5/27/2019	13:57:01	20.10	2.254918
4733	5/27/2019	13:58:01	20.10	2.254918
4734	5/27/2019	13:59:01	19.90	2.255280
4735	5/27/2019	14:00:01	19.70	2.254918
4736	5/27/2019	14:01:01	19.60	2.254918
4737	5/27/2019	14:02:01	19.70	2.254918
4738	5/27/2019	14:03:01	19.70	2.254918
4739	5/27/2019	14:04:01	19.80	2.254918
4740	5/27/2019	14:05:01	19.90	2.254918
4741	5/27/2019	14:06:01	20.00	2.254918
4742	5/27/2019	14:07:01	20.10	2.255280
4743	5/27/2019	14:08:01	20.10	2.254918
4744	5/27/2019	14:09:01	20.00	2.254918
4745	5/27/2019	14:10:01	19.80	2.254918
4746	5/27/2019	14:11:01	19.70	2.254557

4747	5/27/2019	14:12:01	19.60	2.254918
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4751	5/27/2019	14:16:01	19.90	2.254557
4752	5/27/2019	14:17:01	20.10	2.254918
4753	5/27/2019	14:18:01	20.10	2.254918
4754	5/27/2019	14:19:01	20.10	2.254918
4755	5/27/2019	14:20:01	19.90	2.254918
4756	5/27/2019	14:21:01	19.80	2.254918
4757	5/27/2019	14:22:01	19.60	2.254918
4758	5/27/2019	14:23:01	19.60	2.254557
4759	5/27/2019	14:24:01	19.70	2.254918
4760	5/27/2019	14:25:01	19.80	2.254918
4761	5/27/2019	14:26:01	19.90	2.254918
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4763	5/27/2019	14:28:01	20.10	2.254918
4764	5/27/2019	14:29:01	20.10	2.254918
4765	5/27/2019	14:30:01	20.00	2.254918
4766	5/27/2019	14:31:01	19.90	2.254918
4767	5/27/2019	14:32:01	19.70	2.254557
4768	5/27/2019	14:33:01	19.60	2.254918
4769	5/27/2019	14:34:01	19.70	2.254557
4770	5/27/2019	14:35:01	19.70	2.254195
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4772	5/27/2019	14:37:01	19.90	2.254918
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4774	5/27/2019	14:39:01	20.10	2.254557
4775	5/27/2019	14:40:01	20.10	2.254557
4776	5/27/2019	14:41:01	19.90	2.254918
4777	5/27/2019	14:42:01	19.80	2.254918
4778	5/27/2019	14:43:01	19.70	2.254918
4779	5/27/2019	14:44:01	19.60	2.254918
4780	5/27/2019	14:45:01	19.70	2.254557
4781	5/27/2019	14:46:01	19.80	2.254195
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4783	5/27/2019	14:48:01	20.00	2.253471
4784	5/27/2019	14:49:01	20.10	2.254195
4785	5/27/2019	14:50:01	20.10	2.254557
4786	5/27/2019	14:51:01	20.00	2.254918
4787	5/27/2019	14:52:01	19.80	2.254918
4788	5/27/2019	14:53:01	19.70	2.254195
4789	5/27/2019	14:54:01	19.60	2.253833
4790	5/27/2019	14:55:01	19.70	2.254918
4791	5/27/2019	14:56:01	19.70	2.254195
4792	5/27/2019	14:57:01	19.90	2.253833
4793	5/27/2019	14:58:01	19.90	2.253833

4794	5/27/2019	14:59:01	20.10	2.254195	
4795	5/27/2019	15:00:01	20.20	2.254557	
4796	5/27/2019	15:01:01	20.10	2.253471	
4797	5/27/2019	15:02:01	19.90	2.254195	
4798	5/27/2019	15:03:01	19.80	2.254195	
4799	5/27/2019	15:04:01	19.70	2.253833	
4800	5/27/2019	15:05:01	19.60	2.254195	
4801	5/27/2019	15:06:01	19.70	2.254195	72 horas
4802	5/27/2019	15:07:01	19.80	2.253471	
4803	5/27/2019	15:08:01	19.90	2.253471	
4804	5/27/2019	15:09:01	20.00	2.254195	
4805	5/27/2019	15:10:01	20.10	2.253833	
4806	5/27/2019	15:11:01	20.10	2.253110	
4807	5/27/2019	15:12:01	20.00	2.253833	
4808	5/27/2019	15:13:01	19.80	2.253833	
4809	5/27/2019	15:14:01	19.70	2.253471	
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4811	5/27/2019	15:16:01	19.70	2.253833	
4812	5/27/2019	15:17:01	19.80	2.253471	
4813	5/27/2019	15:18:01	19.90	2.253471	
4814	5/27/2019	15:19:01	20.00	2.252748	
4815	5/27/2019	15:20:01	20.10	2.253471	
4816	5/27/2019	15:21:01	20.20	2.253110	
4817	5/27/2019	15:22:01	20.10	2.253110	
4818	5/27/2019	15:23:01	19.90	2.253471	
4819	5/27/2019	15:24:01	19.70	2.253110	
4820	5/27/2019	15:25:01	19.60	2.253110	
4821	5/27/2019	15:26:01	19.60	2.254195	
4822	5/27/2019	15:27:01	19.70	2.252748	
4823	5/27/2019	15:28:01	19.80	2.252748	
4824	5/27/2019	15:29:01	19.90	2.252748	
4825	5/27/2019	15:30:01	20.00	2.253110	
4826	5/27/2019	15:31:01	20.10	2.253471	
4827	5/27/2019	15:32:01	20.10	2.253110	
4828	5/27/2019	15:33:01	20.00	2.252748	
4829	5/27/2019	15:34:01	19.80	2.252386	
4830	5/27/2019	15:35:01	19.70	2.253471	
4831	5/27/2019	15:36:01	19.60	2.252386	
4832	5/27/2019	15:37:01	19.70	2.252748	
4833	5/27/2019	15:38:01	19.80	2.252748	
4834	5/27/2019	15:39:01	19.90	2.253110	
4835	5/27/2019	15:40:01	20.00	2.253110	
4836	5/27/2019	15:41:01	20.10	2.252386	
4837	5/27/2019	15:42:01	20.10	2.252386	
4838	5/27/2019	15:43:01	20.10	2.252748	
4839	5/27/2019	15:44:01	19.90	2.252025	
4840	5/27/2019	15:45:01	19.70	2.252386	

4841	5/27/2019	15:46:01	19.60	2.252386
4842	5/27/2019	15:47:01	19.70	2.252748
4843	5/27/2019	15:48:01	19.70	2.252748
4844	5/27/2019	15:49:01	19.80	2.252386
4845	5/27/2019	15:50:01	19.90	2.252025
4846	5/27/2019	15:51:01	20.00	2.252025
4847	5/27/2019	15:52:01	20.10	2.252748
4848	5/27/2019	15:53:01	20.10	2.252386
4849	5/27/2019	15:54:01	19.90	2.251663
4850	5/27/2019	15:55:01	19.80	2.252748
4851	5/27/2019	15:56:01	19.70	2.252025
4852	5/27/2019	15:57:01	19.60	2.252386
4853	5/27/2019	15:58:01	19.70	2.252748
4854	5/27/2019	15:59:01	19.80	2.252025
4855	5/27/2019	16:00:01	19.90	2.252025
4856	5/27/2019	16:01:01	20.00	2.252025
4857	5/27/2019	16:02:01	20.10	2.252025
4858	5/27/2019	16:03:01	20.10	2.252025
4859	5/27/2019	16:04:01	20.00	2.252025
4860	5/27/2019	16:05:01	19.80	2.252386
4861	5/27/2019	16:06:01	19.70	2.252025
4862	5/27/2019	16:07:01	19.60	2.252386
4863	5/27/2019	16:08:01	19.70	2.252025
4864	5/27/2019	16:09:01	19.70	2.252025
4865	5/27/2019	16:10:01	19.90	2.252025
4866	5/27/2019	16:11:01	19.90	2.252025
4867	5/27/2019	16:12:01	20.10	2.252025
4868	5/27/2019	16:13:01	20.20	2.252025
4869	5/27/2019	16:14:01	20.10	2.252025
4870	5/27/2019	16:15:01	19.90	2.252025
4871	5/27/2019	16:16:01	19.80	2.252025
4872	5/27/2019	16:17:01	19.70	2.252025
4873	5/27/2019	16:18:01	19.60	2.252025
4874	5/27/2019	16:19:01	19.70	2.252025
4875	5/27/2019	16:20:01	19.80	2.252025
4876	5/27/2019	16:21:01	19.90	2.252025
4877	5/27/2019	16:22:01	20.00	2.252025
4878	5/27/2019	16:23:01	20.10	2.251301
4879	5/27/2019	16:24:01	20.10	2.252025
4880	5/27/2019	16:25:01	20.00	2.252025
4881	5/27/2019	16:26:01	19.80	2.252025
4882	5/27/2019	16:27:01	19.70	2.252025
4883	5/27/2019	16:28:01	19.70	2.252025
4884	5/27/2019	16:29:01	19.70	2.251663
4885	5/27/2019	16:30:01	19.80	2.252025
4886	5/27/2019	16:31:01	19.90	2.251663
4887	5/27/2019	16:32:01	20.00	2.252025

4888	5/27/2019	16:33:01	20.20	2.252025
4889	5/27/2019	16:34:01	20.20	2.251663
4890	5/27/2019	16:35:01	20.00	2.252025
4891	5/27/2019	16:36:01	19.90	2.251301
4892	5/27/2019	16:37:01	19.70	2.251663
4893	5/27/2019	16:38:01	19.70	2.251663
4894	5/27/2019	16:39:01	19.70	2.251663
4895	5/27/2019	16:40:01	19.80	2.252025
4896	5/27/2019	16:41:01	19.90	2.251663
4897	5/27/2019	16:42:01	20.00	2.252025
4898	5/27/2019	16:43:01	20.20	2.251301
4899	5/27/2019	16:44:01	20.20	2.252025
4900	5/27/2019	16:45:01	20.00	2.252025
4901	5/27/2019	16:46:01	19.90	2.251301
4902	5/27/2019	16:47:01	19.70	2.250939
4903	5/27/2019	16:48:01	19.60	2.251663
4904	5/27/2019	16:49:01	19.70	2.251663
4905	5/27/2019	16:50:01	19.80	2.251663
4906	5/27/2019	16:51:01	19.90	2.251663
4907	5/27/2019	16:52:01	20.00	2.251663
4908	5/27/2019	16:53:01	20.10	2.250939
4909	5/27/2019	16:54:01	20.20	2.250939
4910	5/27/2019	16:55:01	20.10	2.251663
4911	5/27/2019	16:56:01	19.90	2.251663
4912	5/27/2019	16:57:01	19.70	2.251301
4913	5/27/2019	16:58:01	19.70	2.252025
4914	5/27/2019	16:59:01	19.70	2.250939
4915	5/27/2019	17:00:01	19.80	2.250939
4916	5/27/2019	17:01:01	19.90	2.251301
4917	5/27/2019	17:02:01	20.00	2.251301
4918	5/27/2019	17:03:01	20.20	2.250578
4919	5/27/2019	17:04:01	20.20	2.251301
4920	5/27/2019	17:05:01	20.00	2.250216
4921	5/27/2019	17:06:01	19.90	2.251301
4922	5/27/2019	17:07:01	19.70	2.250578
4923	5/27/2019	17:08:01	19.70	2.251663
4924	5/27/2019	17:09:01	19.70	2.251301
4925	5/27/2019	17:10:01	19.80	2.250939
4926	5/27/2019	17:11:01	19.90	2.250939
4927	5/27/2019	17:12:01	20.00	2.250578
4928	5/27/2019	17:13:01	20.10	2.251301
4929	5/27/2019	17:14:01	20.20	2.250578
4930	5/27/2019	17:15:01	20.00	2.250939
4931	5/27/2019	17:16:01	19.90	2.250578
4932	5/27/2019	17:17:01	19.70	2.251301
4933	5/27/2019	17:18:01	19.70	2.250216
4934	5/27/2019	17:19:01	19.70	2.250939

4935	5/27/2019	17:20:01	19.80	2.251663
4936	5/27/2019	17:21:01	19.90	2.251301
4937	5/27/2019	17:22:01	20.10	2.249854
4938	5/27/2019	17:23:01	20.20	2.250216
4939	5/27/2019	17:24:01	20.20	2.250939
4940	5/27/2019	17:25:01	20.00	2.250216
4941	5/27/2019	17:26:01	19.90	2.250216
4942	5/27/2019	17:27:01	19.70	2.250578
4943	5/27/2019	17:28:01	19.70	2.250216
4944	5/27/2019	17:29:01	19.70	2.250578
4945	5/27/2019	17:30:01	19.80	2.250939
4946	5/27/2019	17:31:01	19.90	2.249854
4947	5/27/2019	17:32:01	20.10	2.250939
4948	5/27/2019	17:33:01	20.20	2.249854
4949	5/27/2019	17:34:01	20.10	2.250578
4950	5/27/2019	17:35:01	20.00	2.250216
4951	5/27/2019	17:36:01	19.80	2.250216
4952	5/27/2019	17:37:01	19.70	2.249854
4953	5/27/2019	17:38:01	19.70	2.249493
4954	5/27/2019	17:39:01	19.70	2.249854
4955	5/27/2019	17:40:01	19.80	2.249854
4956	5/27/2019	17:41:01	20.00	2.249493
4957	5/27/2019	17:42:01	20.10	2.249131
4958	5/27/2019	17:43:01	20.20	2.249854
4959	5/27/2019	17:44:01	20.10	2.249493
4960	5/27/2019	17:45:01	20.00	2.249854
4961	5/27/2019	17:46:01	19.80	2.249493
4962	5/27/2019	17:47:01	19.70	2.250216
4963	5/27/2019	17:48:01	19.70	2.249854
4964	5/27/2019	17:49:01	19.70	2.249131
4965	5/27/2019	17:50:01	19.80	2.249131
4966	5/27/2019	17:51:01	20.00	2.249854
4967	5/27/2019	17:52:01	20.10	2.249131
4968	5/27/2019	17:53:01	20.20	2.249131
4969	5/27/2019	17:54:01	20.10	2.249493
4970	5/27/2019	17:55:01	20.00	2.249131
4971	5/27/2019	17:56:01	19.80	2.249493
4972	5/27/2019	17:57:01	19.70	2.249131
4973	5/27/2019	17:58:01	19.70	2.249493
4974	5/27/2019	17:59:01	19.80	2.249131
4975	5/27/2019	18:00:01	19.90	2.249131
4976	5/27/2019	18:01:01	20.00	2.249493
4977	5/27/2019	18:02:01	20.10	2.249493
4978	5/27/2019	18:03:01	20.20	2.249131
4979	5/27/2019	18:04:01	20.10	2.249131
4980	5/27/2019	18:05:01	19.90	2.249131
4981	5/27/2019	18:06:01	19.80	2.249131

4982	5/27/2019	18:07:01	19.70	2.249854
4983	5/27/2019	18:08:01	19.70	2.249131
4984	5/27/2019	18:09:01	19.80	2.249131
4985	5/27/2019	18:10:01	19.90	2.249131
4986	5/27/2019	18:11:01	20.00	2.249131
4987	5/27/2019	18:12:01	20.20	2.249131
4988	5/27/2019	18:13:01	20.20	2.249131
4989	5/27/2019	18:14:01	20.10	2.248769
4990	5/27/2019	18:15:01	19.90	2.248769
4991	5/27/2019	18:16:01	19.70	2.249131
4992	5/27/2019	18:17:01	19.70	2.249131
4993	5/27/2019	18:18:01	19.70	2.249493
4994	5/27/2019	18:19:01	19.80	2.249131
4995	5/27/2019	18:20:01	19.90	2.249131
4996	5/27/2019	18:21:01	20.00	2.249131
4997	5/27/2019	18:22:01	20.10	2.249493
4998	5/27/2019	18:23:01	20.20	2.249131
4999	5/27/2019	18:24:01	20.10	2.248408
5000	5/27/2019	18:25:01	19.90	2.249131
5001	5/27/2019	18:26:01	19.70	2.249131
5002	5/27/2019	18:27:01	19.70	2.249131
5003	5/27/2019	18:28:01	19.70	2.249131
5004	5/27/2019	18:29:01	19.80	2.249131
5005	5/27/2019	18:30:01	19.90	2.249131
5006	5/27/2019	18:31:01	20.00	2.249131
5007	5/27/2019	18:32:01	20.20	2.249131
5008	5/27/2019	18:33:01	20.20	2.249131
5009	5/27/2019	18:34:01	20.10	2.248769
5010	5/27/2019	18:35:01	19.90	2.249131
5011	5/27/2019	18:36:01	19.70	2.249131
5012	5/27/2019	18:37:01	19.70	2.248769
5013	5/27/2019	18:38:01	19.70	2.248769
5014	5/27/2019	18:39:01	19.80	2.248769
5015	5/27/2019	18:40:01	19.90	2.248769
5016	5/27/2019	18:41:01	20.10	2.249131
5017	5/27/2019	18:42:01	20.20	2.248408
5018	5/27/2019	18:43:01	20.20	2.249131
5019	5/27/2019	18:44:01	20.00	2.248408
5020	5/27/2019	18:45:01	19.90	2.249131
5021	5/27/2019	18:46:01	19.70	2.249131
5022	5/27/2019	18:47:01	19.60	2.248769
5023	5/27/2019	18:48:01	19.70	2.249131
5024	5/27/2019	18:49:01	19.80	2.249131
5025	5/27/2019	18:50:01	19.90	2.249131
5026	5/27/2019	18:51:01	20.00	2.248769
5027	5/27/2019	18:52:01	20.20	2.248769
5028	5/27/2019	18:53:01	20.20	2.247684

5029	5/27/2019	18:54:01	20.00	2.249131
5030	5/27/2019	18:55:01	19.90	2.249131
5031	5/27/2019	18:56:01	19.70	2.248769
5032	5/27/2019	18:57:01	19.70	2.248408
5033	5/27/2019	18:58:01	19.70	2.248408
5034	5/27/2019	18:59:01	19.80	2.248769
5035	5/27/2019	19:00:01	19.90	2.248769
5036	5/27/2019	19:01:01	20.10	2.248408
5037	5/27/2019	19:02:01	20.20	2.248408
5038	5/27/2019	19:03:01	20.20	2.248046
5039	5/27/2019	19:04:01	20.00	2.248769
5040	5/27/2019	19:05:01	19.80	2.247684
5041	5/27/2019	19:06:01	19.70	2.248769
5042	5/27/2019	19:07:01	19.70	2.249131
5043	5/27/2019	19:08:01	19.70	2.247684
5044	5/27/2019	19:09:01	19.80	2.246961
5045	5/27/2019	19:10:01	19.90	2.248046
5046	5/27/2019	19:11:01	20.10	2.248408
5047	5/27/2019	19:12:01	20.20	2.248769
5048	5/27/2019	19:13:01	20.10	2.248408
5049	5/27/2019	19:14:01	20.00	2.246961
5050	5/27/2019	19:15:01	19.80	2.248046
5051	5/27/2019	19:16:01	19.70	2.248408
5052	5/27/2019	19:17:01	19.70	2.247684
5053	5/27/2019	19:18:01	19.70	2.248408
5054	5/27/2019	19:19:01	19.80	2.248769
5055	5/27/2019	19:20:01	20.00	2.248046
5056	5/27/2019	19:21:01	20.10	2.247684
5057	5/27/2019	19:22:01	20.20	2.247684
5058	5/27/2019	19:23:01	20.10	2.248408
5059	5/27/2019	19:24:01	20.00	2.247684
5060	5/27/2019	19:25:01	19.80	2.248046
5061	5/27/2019	19:26:01	19.70	2.248046
5062	5/27/2019	19:27:01	19.70	2.247684
5063	5/27/2019	19:28:01	19.70	2.248769
5064	5/27/2019	19:29:01	19.90	2.246961
5065	5/27/2019	19:30:01	20.00	2.247684
5066	5/27/2019	19:31:01	20.10	2.246961
5067	5/27/2019	19:32:01	20.20	2.247322
5068	5/27/2019	19:33:01	20.10	2.248046
5069	5/27/2019	19:34:01	20.00	2.246961
5070	5/27/2019	19:35:01	19.80	2.246961
5071	5/27/2019	19:36:01	19.70	2.247322
5072	5/27/2019	19:37:01	19.70	2.248046
5073	5/27/2019	19:38:01	19.70	2.246237
5074	5/27/2019	19:39:01	19.90	2.246599
5075	5/27/2019	19:40:01	20.00	2.246961

5076	5/27/2019	19:41:01	20.10	2.246599
5077	5/27/2019	19:42:01	20.20	2.246961
5078	5/27/2019	19:43:01	20.10	2.246599
5079	5/27/2019	19:44:01	19.90	2.247322
5080	5/27/2019	19:45:01	19.80	2.246599
5081	5/27/2019	19:46:01	19.70	2.246961
5082	5/27/2019	19:47:01	19.70	2.246599
5083	5/27/2019	19:48:01	19.80	2.246961
5084	5/27/2019	19:49:01	19.90	2.246961
5085	5/27/2019	19:50:01	20.00	2.246237
5086	5/27/2019	19:51:01	20.10	2.246237
5087	5/27/2019	19:52:01	20.20	2.246961
5088	5/27/2019	19:53:01	20.10	2.246599
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5090	5/27/2019	19:55:01	19.70	2.246237
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5092	5/27/2019	19:57:01	19.70	2.247322
5093	5/27/2019	19:58:01	19.80	2.246961
5094	5/27/2019	19:59:01	19.90	2.246237
5095	5/27/2019	20:00:01	20.00	2.246237
5096	5/27/2019	20:01:01	20.20	2.246599
5097	5/27/2019	20:02:01	20.20	2.246237
5098	5/27/2019	20:03:01	20.00	2.246237
5099	5/27/2019	20:04:01	19.90	2.246237
5100	5/27/2019	20:05:01	19.70	2.246599
5101	5/27/2019	20:06:01	19.70	2.246961
5102	5/27/2019	20:07:01	19.70	2.246961
5103	5/27/2019	20:08:01	19.80	2.246599
5104	5/27/2019	20:09:01	19.90	2.246237
5105	5/27/2019	20:10:01	20.10	2.246237
5106	5/27/2019	20:11:01	20.20	2.246237
5107	5/27/2019	20:12:01	20.10	2.246237
5108	5/27/2019	20:13:01	20.00	2.246237
5109	5/27/2019	20:14:01	19.80	2.246237
5110	5/27/2019	20:15:01	19.70	2.246237
5111	5/27/2019	20:16:01	19.70	2.246599
5112	5/27/2019	20:17:01	19.70	2.246237
5113	5/27/2019	20:18:01	19.80	2.246237
5114	5/27/2019	20:19:01	19.90	2.246237
5115	5/27/2019	20:20:01	20.10	2.246237
5116	5/27/2019	20:21:01	20.20	2.246237
5117	5/27/2019	20:22:01	20.10	2.246237
5118	5/27/2019	20:23:01	20.00	2.246237
5119	5/27/2019	20:24:01	19.80	2.246237
5120	5/27/2019	20:25:01	19.70	2.246237
5121	5/27/2019	20:26:01	19.70	2.246237
5122	5/27/2019	20:27:01	19.70	2.246237

5123	5/27/2019	20:28:01	19.80	2.246237
5124	5/27/2019	20:29:01	20.00	2.245876
5125	5/27/2019	20:30:01	20.10	2.246237
5126	5/27/2019	20:31:01	20.20	2.246237
5127	5/27/2019	20:32:01	20.10	2.246237
5128	5/27/2019	20:33:01	20.00	2.246237
5129	5/27/2019	20:34:01	19.80	2.246237
5130	5/27/2019	20:35:01	19.70	2.246237
5131	5/27/2019	20:36:01	19.70	2.246237
5132	5/27/2019	20:37:01	19.70	2.246237
5133	5/27/2019	20:38:01	19.90	2.246237
5134	5/27/2019	20:39:01	20.00	2.245876
5135	5/27/2019	20:40:01	20.10	2.245876
5136	5/27/2019	20:41:01	20.20	2.246237
5137	5/27/2019	20:42:01	20.10	2.245514
5138	5/27/2019	20:43:01	20.00	2.246237
5139	5/27/2019	20:44:01	19.80	2.246237
5140	5/27/2019	20:45:01	19.70	2.246237
5141	5/27/2019	20:46:01	19.70	2.245514
5142	5/27/2019	20:47:01	19.70	2.246237
5143	5/27/2019	20:48:01	19.90	2.246237
5144	5/27/2019	20:49:01	20.00	2.246237
5145	5/27/2019	20:50:01	20.10	2.246237
5146	5/27/2019	20:51:01	20.20	2.245514
5147	5/27/2019	20:52:01	20.10	2.246237
5148	5/27/2019	20:53:01	20.00	2.246237
5149	5/27/2019	20:54:01	19.80	2.246237
5150	5/27/2019	20:55:01	19.70	2.246237
5151	5/27/2019	20:56:01	19.70	2.246237
5152	5/27/2019	20:57:01	19.70	2.245514
5153	5/27/2019	20:58:01	19.80	2.245514
5154	5/27/2019	20:59:01	19.90	2.245876
5155	5/27/2019	21:00:01	20.10	2.246237
5156	5/27/2019	21:01:01	20.20	2.245876
5157	5/27/2019	21:02:01	20.10	2.245876
5158	5/27/2019	21:03:01	20.00	2.245514
5159	5/27/2019	21:04:01	19.80	2.245876
5160	5/27/2019	21:05:01	19.70	2.245514
5161	5/27/2019	21:06:01	19.70	2.245514
5162	5/27/2019	21:07:01	19.80	2.245876
5163	5/27/2019	21:08:01	19.90	2.245152
5164	5/27/2019	21:09:01	20.00	2.245514
5165	5/27/2019	21:10:01	20.10	2.245514
5166	5/27/2019	21:11:01	20.20	2.245514
5167	5/27/2019	21:12:01	20.10	2.245152
5168	5/27/2019	21:13:01	19.90	2.245514
5169	5/27/2019	21:14:01	19.70	2.245152

5170	5/27/2019	21:15:01	19.70	2.245152
5171	5/27/2019	21:16:01	19.70	2.245514
5172	5/27/2019	21:17:01	19.80	2.245876
5173	5/27/2019	21:18:01	19.90	2.245152
5174	5/27/2019	21:19:01	20.00	2.245152
5175	5/27/2019	21:20:01	20.10	2.245152
5176	5/27/2019	21:21:01	20.20	2.244790
5177	5/27/2019	21:22:01	20.10	2.245152
5178	5/27/2019	21:23:01	19.90	2.245152
5179	5/27/2019	21:24:01	19.70	2.244790
5180	5/27/2019	21:25:01	19.70	2.245876
5181	5/27/2019	21:26:01	19.70	2.245514
5182	5/27/2019	21:27:01	19.80	2.245152
5183	5/27/2019	21:28:01	19.90	2.245514
5184	5/27/2019	21:29:01	20.00	2.245152
5185	5/27/2019	21:30:01	20.10	2.244790
5186	5/27/2019	21:31:01	20.20	2.244790
5187	5/27/2019	21:32:01	20.10	2.245152
5188	5/27/2019	21:33:01	19.90	2.244067
5189	5/27/2019	21:34:01	19.70	2.244429
5190	5/27/2019	21:35:01	19.70	2.245152
5191	5/27/2019	21:36:01	19.70	2.244429
5192	5/27/2019	21:37:01	19.80	2.244790
5193	5/27/2019	21:38:01	19.90	2.244067
5194	5/27/2019	21:39:01	20.00	2.244067
5195	5/27/2019	21:40:01	20.10	2.244067
5196	5/27/2019	21:41:01	20.20	2.244429
5197	5/27/2019	21:42:01	20.10	2.244790
5198	5/27/2019	21:43:01	19.90	2.244067
5199	5/27/2019	21:44:01	19.70	2.244067
5200	5/27/2019	21:45:01	19.70	2.244429
5201	5/27/2019	21:46:01	19.70	2.244429
5202	5/27/2019	21:47:01	19.80	2.243705
5203	5/27/2019	21:48:01	19.90	2.244067
5204	5/27/2019	21:49:01	20.00	2.244790
5205	5/27/2019	21:50:01	20.10	2.244067
5206	5/27/2019	21:51:01	20.20	2.244067
5207	5/27/2019	21:52:01	20.10	2.243705
5208	5/27/2019	21:53:01	19.90	2.244067
5209	5/27/2019	21:54:01	19.70	2.243705
5210	5/27/2019	21:55:01	19.70	2.244067
5211	5/27/2019	21:56:01	19.70	2.244067
5212	5/27/2019	21:57:01	19.80	2.243705
5213	5/27/2019	21:58:01	19.90	2.243705
5214	5/27/2019	21:59:01	20.00	2.244790
5215	5/27/2019	22:00:01	20.10	2.244067
5216	5/27/2019	22:01:01	20.20	2.243705

5217	5/27/2019	22:02:01	20.10	2.244067
5218	5/27/2019	22:03:01	19.90	2.243705
5219	5/27/2019	22:04:01	19.70	2.244429
5220	5/27/2019	22:05:01	19.70	2.243705
5221	5/27/2019	22:06:01	19.70	2.244067
5222	5/27/2019	22:07:01	19.80	2.244067
5223	5/27/2019	22:08:01	19.90	2.243705
5224	5/27/2019	22:09:01	20.00	2.243705
5225	5/27/2019	22:10:01	20.10	2.243705
5226	5/27/2019	22:11:01	20.20	2.243705
5227	5/27/2019	22:12:01	20.10	2.243705
5228	5/27/2019	22:13:01	19.90	2.244067
5229	5/27/2019	22:14:01	19.80	2.243705
5230	5/27/2019	22:15:01	19.60	2.243705
5231	5/27/2019	22:16:01	19.60	2.243705
5232	5/27/2019	22:17:01	19.70	2.243705
5233	5/27/2019	22:18:01	19.80	2.243705
5234	5/27/2019	22:19:01	19.90	2.243705
5235	5/27/2019	22:20:01	20.00	2.243705
5236	5/27/2019	22:21:01	20.10	2.243705
5237	5/27/2019	22:22:01	20.10	2.243705
5238	5/27/2019	22:23:01	20.00	2.243705
5239	5/27/2019	22:24:01	19.80	2.243705
5240	5/27/2019	22:25:01	19.70	2.244067
5241	5/27/2019	22:26:01	19.60	2.243705
5242	5/27/2019	22:27:01	19.70	2.243705
5243	5/27/2019	22:28:01	19.80	2.243705
5244	5/27/2019	22:29:01	19.90	2.243705
5245	5/27/2019	22:30:01	20.00	2.243705
5246	5/27/2019	22:31:01	20.10	2.243705
5247	5/27/2019	22:32:01	20.20	2.243705
5248	5/27/2019	22:33:01	20.10	2.243705
5249	5/27/2019	22:34:01	19.90	2.243705
5250	5/27/2019	22:35:01	19.70	2.243705
5251	5/27/2019	22:36:01	19.60	2.243705
5252	5/27/2019	22:37:01	19.60	2.243705
5253	5/27/2019	22:38:01	19.70	2.243705
5254	5/27/2019	22:39:01	19.80	2.243705
5255	5/27/2019	22:40:01	19.90	2.243705
5256	5/27/2019	22:41:01	20.00	2.243343
5257	5/27/2019	22:42:01	20.10	2.243705
5258	5/27/2019	22:43:01	20.10	2.243705
5259	5/27/2019	22:44:01	20.00	2.243705
5260	5/27/2019	22:45:01	19.90	2.243705
5261	5/27/2019	22:46:01	19.70	2.243705
5262	5/27/2019	22:47:01	19.60	2.243705
5263	5/27/2019	22:48:01	19.60	2.243343

5264	5/27/2019	22:49:01	19.70	2.243705
5265	5/27/2019	22:50:01	19.80	2.243705
5266	5/27/2019	22:51:01	19.90	2.243705
5267	5/27/2019	22:52:01	20.00	2.242982
5268	5/27/2019	22:53:01	20.10	2.243705
5269	5/27/2019	22:54:01	20.10	2.243705
5270	5/27/2019	22:55:01	20.00	2.243705
5271	5/27/2019	22:56:01	19.80	2.243705
5272	5/27/2019	22:57:01	19.70	2.243705
5273	5/27/2019	22:58:01	19.60	2.243705
5274	5/27/2019	22:59:01	19.70	2.243343
5275	5/27/2019	23:00:01	19.80	2.243343
5276	5/27/2019	23:01:01	19.90	2.243705
5277	5/27/2019	23:02:01	20.00	2.242982
5278	5/27/2019	23:03:01	20.10	2.243343
5279	5/27/2019	23:04:01	20.10	2.243343
5280	5/27/2019	23:05:01	20.10	2.243343
5281	5/27/2019	23:06:01	19.90	2.243343
5282	5/27/2019	23:07:01	19.70	2.243705
5283	5/27/2019	23:08:01	19.60	2.243705
5284	5/27/2019	23:09:01	19.60	2.242982
5285	5/27/2019	23:10:01	19.70	2.242620
5286	5/27/2019	23:11:01	19.80	2.243343
5287	5/27/2019	23:12:01	19.90	2.243343
5288	5/27/2019	23:13:01	20.00	2.242982
5289	5/27/2019	23:14:01	20.10	2.242620
5290	5/27/2019	23:15:01	20.10	2.242982
5291	5/27/2019	23:16:01	20.00	2.242982
5292	5/27/2019	23:17:01	19.90	2.243343
5293	5/27/2019	23:18:01	19.70	2.242982
5294	5/27/2019	23:19:01	19.60	2.242982
5295	5/27/2019	23:20:01	19.60	2.243343
5296	5/27/2019	23:21:01	19.70	2.242620
5297	5/27/2019	23:22:01	19.80	2.243343
5298	5/27/2019	23:23:01	19.90	2.242620
5299	5/27/2019	23:24:01	20.00	2.243343
5300	5/27/2019	23:25:01	20.10	2.242982
5301	5/27/2019	23:26:01	20.10	2.243343
5302	5/27/2019	23:27:01	20.00	2.242982
5303	5/27/2019	23:28:01	19.80	2.242982
5304	5/27/2019	23:29:01	19.70	2.242258
5305	5/27/2019	23:30:01	19.60	2.242620
5306	5/27/2019	23:31:01	19.70	2.242982
5307	5/27/2019	23:32:01	19.70	2.242258
5308	5/27/2019	23:33:01	19.80	2.241897
5309	5/27/2019	23:34:01	19.90	2.242620
5310	5/27/2019	23:35:01	20.10	2.241897

5311	5/27/2019	23:36:01	20.10	2.242258
5312	5/27/2019	23:37:01	20.10	2.241535
5313	5/27/2019	23:38:01	19.90	2.242620
5314	5/27/2019	23:39:01	19.70	2.241897
5315	5/27/2019	23:40:01	19.60	2.242258
5316	5/27/2019	23:41:01	19.60	2.241897
5317	5/27/2019	23:42:01	19.70	2.242258
5318	5/27/2019	23:43:01	19.80	2.241535
5319	5/27/2019	23:44:01	19.90	2.242620
5320	5/27/2019	23:45:01	20.00	2.242258
5321	5/27/2019	23:46:01	20.10	2.241897
5322	5/27/2019	23:47:01	20.10	2.241897
5323	5/27/2019	23:48:01	20.10	2.242620
5324	5/27/2019	23:49:01	19.90	2.242258
5325	5/27/2019	23:50:01	19.70	2.242258
5326	5/27/2019	23:51:01	19.60	2.241173
5327	5/27/2019	23:52:01	19.60	2.241535
5328	5/27/2019	23:53:01	19.70	2.241535
5329	5/27/2019	23:54:01	19.80	2.241535
5330	5/27/2019	23:55:01	19.90	2.242258
5331	5/27/2019	23:56:01	20.00	2.240812
5332	5/27/2019	23:57:01	20.10	2.240812
5333	5/27/2019	23:58:01	20.10	2.241897
5334	5/27/2019	23:59:01	20.10	2.241173
5335	5/28/2019	0:00:01	19.90	2.241173
5336	5/28/2019	0:01:01	19.70	2.240812
5337	5/28/2019	0:02:01	19.60	2.241535
5338	5/28/2019	0:03:01	19.60	2.241535
5339	5/28/2019	0:04:01	19.70	2.242620
5340	5/28/2019	0:05:01	19.80	2.241897
5341	5/28/2019	0:06:01	19.90	2.241173
5342	5/28/2019	0:07:01	19.90	2.241173
5343	5/28/2019	0:08:01	20.10	2.241173
5344	5/28/2019	0:09:01	20.10	2.241535
5345	5/28/2019	0:10:01	20.10	2.241173
5346	5/28/2019	0:11:01	19.90	2.241535
5347	5/28/2019	0:12:01	19.70	2.241173
5348	5/28/2019	0:13:01	19.60	2.241535
5349	5/28/2019	0:14:01	19.60	2.241173
5350	5/28/2019	0:15:01	19.60	2.240812
5351	5/28/2019	0:16:01	19.70	2.241173
5352	5/28/2019	0:17:01	19.80	2.241173
5353	5/28/2019	0:18:01	19.90	2.240812
5354	5/28/2019	0:19:01	20.00	2.240812
5355	5/28/2019	0:20:01	20.10	2.241173
5356	5/28/2019	0:21:01	20.10	2.241535
5357	5/28/2019	0:22:01	20.00	2.241173

5358	5/28/2019	0:23:01	19.80	2.241535
5359	5/28/2019	0:24:01	19.60	2.241173
5360	5/28/2019	0:25:01	19.60	2.240812
5361	5/28/2019	0:26:01	19.60	2.240812
5362	5/28/2019	0:27:01	19.70	2.240812
5363	5/28/2019	0:28:01	19.80	2.241535
5364	5/28/2019	0:29:01	19.90	2.240812
5365	5/28/2019	0:30:01	20.00	2.240812
5366	5/28/2019	0:31:01	20.10	2.240812
5367	5/28/2019	0:32:01	20.10	2.240812
5368	5/28/2019	0:33:01	20.00	2.240812
5369	5/28/2019	0:34:01	19.80	2.241535
5370	5/28/2019	0:35:01	19.70	2.240812
5371	5/28/2019	0:36:01	19.60	2.240812
5372	5/28/2019	0:37:01	19.60	2.240812
5373	5/28/2019	0:38:01	19.70	2.240812
5374	5/28/2019	0:39:01	19.80	2.240812
5375	5/28/2019	0:40:01	19.90	2.240812
5376	5/28/2019	0:41:01	19.90	2.240812
5377	5/28/2019	0:42:01	20.00	2.240812
5378	5/28/2019	0:43:01	20.10	2.240812
5379	5/28/2019	0:44:01	20.10	2.240450
5380	5/28/2019	0:45:01	19.90	2.240812
5381	5/28/2019	0:46:01	19.70	2.240812
5382	5/28/2019	0:47:01	19.60	2.240812
5383	5/28/2019	0:48:01	19.60	2.240812
5384	5/28/2019	0:49:01	19.60	2.240812
5385	5/28/2019	0:50:01	19.70	2.240812
5386	5/28/2019	0:51:01	19.80	2.240812
5387	5/28/2019	0:52:01	19.90	2.240812
5388	5/28/2019	0:53:01	20.00	2.240812
5389	5/28/2019	0:54:01	20.10	2.241173
5390	5/28/2019	0:55:01	20.10	2.240812
5391	5/28/2019	0:56:01	20.00	2.240812
5392	5/28/2019	0:57:01	19.80	2.240812
5393	5/28/2019	0:58:01	19.70	2.240812
5394	5/28/2019	0:59:01	19.60	2.240450
5395	5/28/2019	1:00:01	19.60	2.240812
5396	5/28/2019	1:01:01	19.70	2.240812
5397	5/28/2019	1:02:01	19.80	2.240812
5398	5/28/2019	1:03:01	19.90	2.240812
5399	5/28/2019	1:04:01	20.00	2.240812
5400	5/28/2019	1:05:01	20.10	2.240812
5401	5/28/2019	1:06:01	20.10	2.240450
5402	5/28/2019	1:07:01	20.00	2.240812
5403	5/28/2019	1:08:01	19.90	2.240812
5404	5/28/2019	1:09:01	19.70	2.240450

5405	5/28/2019	1:10:01	19.60	2.240812
5406	5/28/2019	1:11:01	19.60	2.240450
5407	5/28/2019	1:12:01	19.70	2.240088
5408	5/28/2019	1:13:01	19.80	2.240812
5409	5/28/2019	1:14:01	19.90	2.240088
5410	5/28/2019	1:15:01	19.90	2.240450
5411	5/28/2019	1:16:01	20.00	2.240812
5412	5/28/2019	1:17:01	20.10	2.240450
5413	5/28/2019	1:18:01	20.10	2.240450
5414	5/28/2019	1:19:01	19.90	2.240812
5415	5/28/2019	1:20:01	19.70	2.240088
5416	5/28/2019	1:21:01	19.60	2.240088
5417	5/28/2019	1:22:01	19.60	2.240450
5418	5/28/2019	1:23:01	19.60	2.240088
5419	5/28/2019	1:24:01	19.70	2.240450
5420	5/28/2019	1:25:01	19.80	2.240088
5421	5/28/2019	1:26:01	19.90	2.240088
5422	5/28/2019	1:27:01	20.00	2.240450
5423	5/28/2019	1:28:01	20.10	2.240450
5424	5/28/2019	1:29:01	20.10	2.240088
5425	5/28/2019	1:30:01	20.00	2.240812
5426	5/28/2019	1:31:01	19.90	2.240450
5427	5/28/2019	1:32:01	19.70	2.240088
5428	5/28/2019	1:33:01	19.60	2.240088
5429	5/28/2019	1:34:01	19.60	2.239726
5430	5/28/2019	1:35:01	19.70	2.239726
5431	5/28/2019	1:36:01	19.70	2.239726
5432	5/28/2019	1:37:01	19.80	2.239365
5433	5/28/2019	1:38:01	19.90	2.240450
5434	5/28/2019	1:39:01	20.00	2.240088
5435	5/28/2019	1:40:01	20.10	2.239365
5436	5/28/2019	1:41:01	20.10	2.240088
5437	5/28/2019	1:42:01	20.00	2.239365
5438	5/28/2019	1:43:01	19.80	2.239726
5439	5/28/2019	1:44:01	19.60	2.239365
5440	5/28/2019	1:45:01	19.60	2.239365
5441	5/28/2019	1:46:01	19.60	2.239003
5442	5/28/2019	1:47:01	19.70	2.240088
5443	5/28/2019	1:48:01	19.70	2.239003
5444	5/28/2019	1:49:01	19.80	2.238641
5445	5/28/2019	1:50:01	19.90	2.239726
5446	5/28/2019	1:51:01	20.00	2.239365
5447	5/28/2019	1:52:01	20.10	2.240088
5448	5/28/2019	1:53:01	20.10	2.239726
5449	5/28/2019	1:54:01	20.00	2.239003
5450	5/28/2019	1:55:01	19.80	2.239003
5451	5/28/2019	1:56:01	19.60	2.239003

5452	5/28/2019	1:57:01	19.60	2.239003
5453	5/28/2019	1:58:01	19.60	2.239365
5454	5/28/2019	1:59:01	19.60	2.239003
5455	5/28/2019	2:00:01	19.70	2.239003
5456	5/28/2019	2:01:01	19.80	2.239003
5457	5/28/2019	2:02:01	19.90	2.239003
5458	5/28/2019	2:03:01	19.90	2.239726
5459	5/28/2019	2:04:01	20.00	2.238641
5460	5/28/2019	2:05:01	20.10	2.238641
5461	5/28/2019	2:06:01	20.00	2.238641
5462	5/28/2019	2:07:01	19.90	2.239365
5463	5/28/2019	2:08:01	19.70	2.238641
5464	5/28/2019	2:09:01	19.60	2.239365
5465	5/28/2019	2:10:01	19.60	2.238641
5466	5/28/2019	2:11:01	19.60	2.238641
5467	5/28/2019	2:12:01	19.70	2.237918
5468	5/28/2019	2:13:01	19.80	2.237918
5469	5/28/2019	2:14:01	19.80	2.239003
5470	5/28/2019	2:15:01	19.90	2.239003
5471	5/28/2019	2:16:01	20.00	2.238280
5472	5/28/2019	2:17:01	20.10	2.238280
5473	5/28/2019	2:18:01	20.10	2.238641
5474	5/28/2019	2:19:01	20.00	2.238280
5475	5/28/2019	2:20:01	19.80	2.237918
5476	5/28/2019	2:21:01	19.60	2.238641
5477	5/28/2019	2:22:01	19.60	2.238280
5478	5/28/2019	2:23:01	19.60	2.238280
5479	5/28/2019	2:24:01	19.70	2.238280
5480	5/28/2019	2:25:01	19.70	2.237918
5481	5/28/2019	2:26:01	19.80	2.238280
5482	5/28/2019	2:27:01	19.90	2.237918
5483	5/28/2019	2:28:01	20.00	2.239003
5484	5/28/2019	2:29:01	20.00	2.237918
5485	5/28/2019	2:30:01	20.10	2.237918
5486	5/28/2019	2:31:01	20.00	2.237918
5487	5/28/2019	2:32:01	19.90	2.237918
5488	5/28/2019	2:33:01	19.70	2.238280
5489	5/28/2019	2:34:01	19.60	2.237918
5490	5/28/2019	2:35:01	19.60	2.237918
5491	5/28/2019	2:36:01	19.60	2.237918
5492	5/28/2019	2:37:01	19.70	2.238641
5493	5/28/2019	2:38:01	19.80	2.238641
5494	5/28/2019	2:39:01	19.80	2.237918
5495	5/28/2019	2:40:01	19.90	2.237918
5496	5/28/2019	2:41:01	20.00	2.238280
5497	5/28/2019	2:42:01	20.00	2.237918
5498	5/28/2019	2:43:01	20.10	2.238280

5499	5/28/2019	2:44:01	20.00	2.237918
5500	5/28/2019	2:45:01	19.80	2.237918
5501	5/28/2019	2:46:01	19.70	2.237918
5502	5/28/2019	2:47:01	19.60	2.237918
5503	5/28/2019	2:48:01	19.60	2.237918
5504	5/28/2019	2:49:01	19.60	2.237918
5505	5/28/2019	2:50:01	19.70	2.237918
5506	5/28/2019	2:51:01	19.80	2.237918
5507	5/28/2019	2:52:01	19.90	2.237918
5508	5/28/2019	2:53:01	19.90	2.238280
5509	5/28/2019	2:54:01	20.00	2.237918
5510	5/28/2019	2:55:01	20.10	2.237918
5511	5/28/2019	2:56:01	20.10	2.237918
5512	5/28/2019	2:57:01	19.90	2.237918
5513	5/28/2019	2:58:01	19.80	2.237918
5514	5/28/2019	2:59:01	19.60	2.237918
5515	5/28/2019	3:00:01	19.60	2.238280
5516	5/28/2019	3:01:01	19.60	2.237918
5517	5/28/2019	3:02:01	19.60	2.237556
5518	5/28/2019	3:03:01	19.70	2.237195
5519	5/28/2019	3:04:01	19.80	2.237918
5520	5/28/2019	3:05:01	19.90	2.237918
5521	5/28/2019	3:06:01	19.90	2.237918
5522	5/28/2019	3:07:01	20.00	2.237195
5523	5/28/2019	3:08:01	20.10	2.237918
5524	5/28/2019	3:09:01	20.10	2.237918
5525	5/28/2019	3:10:01	19.90	2.237918
5526	5/28/2019	3:11:01	19.70	2.237918
5527	5/28/2019	3:12:01	19.60	2.237918
5528	5/28/2019	3:13:01	19.60	2.237556
5529	5/28/2019	3:14:01	19.60	2.237918
5530	5/28/2019	3:15:01	19.60	2.237918
5531	5/28/2019	3:16:01	19.70	2.237918
5532	5/28/2019	3:17:01	19.80	2.237918
5533	5/28/2019	3:18:01	19.90	2.237918
5534	5/28/2019	3:19:01	19.90	2.237918
5535	5/28/2019	3:20:01	20.00	2.237918
5536	5/28/2019	3:21:01	20.00	2.237556
5537	5/28/2019	3:22:01	20.10	2.237918
5538	5/28/2019	3:23:01	20.00	2.237556
5539	5/28/2019	3:24:01	19.80	2.237556
5540	5/28/2019	3:25:01	19.60	2.237556
5541	5/28/2019	3:26:01	19.60	2.237195
5542	5/28/2019	3:27:01	19.60	2.237918
5543	5/28/2019	3:28:01	19.60	2.237918
5544	5/28/2019	3:29:01	19.70	2.237918
5545	5/28/2019	3:30:01	19.70	2.237918

5546	5/28/2019	3:31:01	19.80	2.237195
5547	5/28/2019	3:32:01	19.90	2.237918
5548	5/28/2019	3:33:01	19.90	2.236833
5549	5/28/2019	3:34:01	20.00	2.237556
5550	5/28/2019	3:35:01	20.10	2.237918
5551	5/28/2019	3:36:01	20.10	2.237195
5552	5/28/2019	3:37:01	20.00	2.237195
5553	5/28/2019	3:38:01	19.80	2.237195
5554	5/28/2019	3:39:01	19.60	2.237556
5555	5/28/2019	3:40:01	19.50	2.237918
5556	5/28/2019	3:41:01	19.50	2.237918
5557	5/28/2019	3:42:01	19.60	2.237918
5558	5/28/2019	3:43:01	19.60	2.237556
5559	5/28/2019	3:44:01	19.70	2.237195
5560	5/28/2019	3:45:01	19.80	2.237918
5561	5/28/2019	3:46:01	19.90	2.237556
5562	5/28/2019	3:47:01	19.90	2.237556
5563	5/28/2019	3:48:01	20.00	2.237195
5564	5/28/2019	3:49:01	20.10	2.237556
5565	5/28/2019	3:50:01	20.10	2.237195
5566	5/28/2019	3:51:01	20.00	2.237195
5567	5/28/2019	3:52:01	19.80	2.237556
5568	5/28/2019	3:53:01	19.60	2.237195
5569	5/28/2019	3:54:01	19.60	2.237556
5570	5/28/2019	3:55:01	19.60	2.236109
5571	5/28/2019	3:56:01	19.60	2.236833
5572	5/28/2019	3:57:01	19.60	2.236471
5573	5/28/2019	3:58:01	19.70	2.237195
5574	5/28/2019	3:59:01	19.80	2.237195
5575	5/28/2019	4:00:01	19.90	2.237556
5576	5/28/2019	4:01:01	19.90	2.237556
5577	5/28/2019	4:02:01	20.00	2.237556
5578	5/28/2019	4:03:01	20.10	2.236109
5579	5/28/2019	4:04:01	20.10	2.236471
5580	5/28/2019	4:05:01	20.00	2.236833
5581	5/28/2019	4:06:01	19.80	2.235386
5582	5/28/2019	4:07:01	19.60	2.236471
5583	5/28/2019	4:08:01	19.60	2.235748
5584	5/28/2019	4:09:01	19.60	2.235748
5585	5/28/2019	4:10:01	19.60	2.236109
5586	5/28/2019	4:11:01	19.70	2.235748
5587	5/28/2019	4:12:01	19.70	2.235748
5588	5/28/2019	4:13:01	19.80	2.236471
5589	5/28/2019	4:14:01	19.90	2.236471
5590	5/28/2019	4:15:01	19.90	2.236471
5591	5/28/2019	4:16:01	20.00	2.236109
5592	5/28/2019	4:17:01	20.00	2.235386

5593	5/28/2019	4:18:01	20.10	2.236109
5594	5/28/2019	4:19:01	20.00	2.236109
5595	5/28/2019	4:20:01	19.80	2.236109
5596	5/28/2019	4:21:01	19.60	2.235748
5597	5/28/2019	4:22:01	19.60	2.236109
5598	5/28/2019	4:23:01	19.60	2.236109
5599	5/28/2019	4:24:01	19.60	2.236109
5600	5/28/2019	4:25:01	19.70	2.235748
5601	5/28/2019	4:26:01	19.70	2.236471
5602	5/28/2019	4:27:01	19.80	2.236471
5603	5/28/2019	4:28:01	19.90	2.235748
5604	5/28/2019	4:29:01	19.90	2.236471
5605	5/28/2019	4:30:01	20.00	2.235024
5606	5/28/2019	4:31:01	20.00	2.235748
5607	5/28/2019	4:32:01	20.10	2.235748
5608	5/28/2019	4:33:01	20.00	2.235748
5609	5/28/2019	4:34:01	19.80	2.236109
5610	5/28/2019	4:35:01	19.60	2.235386
5611	5/28/2019	4:36:01	19.60	2.235386
5612	5/28/2019	4:37:01	19.60	2.235024
5613	5/28/2019	4:38:01	19.60	2.235748
5614	5/28/2019	4:39:01	19.70	2.236109
5615	5/28/2019	4:40:01	19.80	2.235024
5616	5/28/2019	4:41:01	19.80	2.235024
5617	5/28/2019	4:42:01	19.90	2.235024
5618	5/28/2019	4:43:01	20.00	2.235748
5619	5/28/2019	4:44:01	20.00	2.235386
5620	5/28/2019	4:45:01	20.10	2.235386
5621	5/28/2019	4:46:01	20.00	2.235386
5622	5/28/2019	4:47:01	19.90	2.235748
5623	5/28/2019	4:48:01	19.70	2.235386
5624	5/28/2019	4:49:01	19.60	2.235024
5625	5/28/2019	4:50:01	19.50	2.235748
5626	5/28/2019	4:51:01	19.60	2.235748
5627	5/28/2019	4:52:01	19.60	2.235386
5628	5/28/2019	4:53:01	19.70	2.235386
5629	5/28/2019	4:54:01	19.80	2.235386
5630	5/28/2019	4:55:01	19.80	2.235386
5631	5/28/2019	4:56:01	19.90	2.235748
5632	5/28/2019	4:57:01	20.00	2.235386
5633	5/28/2019	4:58:01	20.00	2.235024
5634	5/28/2019	4:59:01	20.10	2.235748
5635	5/28/2019	5:00:01	20.00	2.235024
5636	5/28/2019	5:01:01	19.90	2.235024
5637	5/28/2019	5:02:01	19.70	2.235386
5638	5/28/2019	5:03:01	19.60	2.235748
5639	5/28/2019	5:04:01	19.60	2.235024

5640	5/28/2019	5:05:01	19.60	2.235024
5641	5/28/2019	5:06:01	19.60	2.235024
5642	5/28/2019	5:07:01	19.70	2.235748
5643	5/28/2019	5:08:01	19.80	2.235024
5644	5/28/2019	5:09:01	19.90	2.235024
5645	5/28/2019	5:10:01	19.90	2.235386
5646	5/28/2019	5:11:01	20.00	2.235024
5647	5/28/2019	5:12:01	20.10	2.235386
5648	5/28/2019	5:13:01	20.10	2.235024
5649	5/28/2019	5:14:01	19.90	2.235024
5650	5/28/2019	5:15:01	19.80	2.235024
5651	5/28/2019	5:16:01	19.60	2.235024
5652	5/28/2019	5:17:01	19.60	2.234662
5653	5/28/2019	5:18:01	19.60	2.235024
5654	5/28/2019	5:19:01	19.60	2.235024
5655	5/28/2019	5:20:01	19.70	2.235024
5656	5/28/2019	5:21:01	19.80	2.235024
5657	5/28/2019	5:22:01	19.90	2.235386
5658	5/28/2019	5:23:01	19.90	2.234662
5659	5/28/2019	5:24:01	20.00	2.235386
5660	5/28/2019	5:25:01	20.00	2.235024
5661	5/28/2019	5:26:01	20.10	2.235024
5662	5/28/2019	5:27:01	20.00	2.235024
5663	5/28/2019	5:28:01	19.80	2.234662
5664	5/28/2019	5:29:01	19.70	2.235024
5665	5/28/2019	5:30:01	19.60	2.235024
5666	5/28/2019	5:31:01	19.60	2.235024
5667	5/28/2019	5:32:01	19.60	2.234662
5668	5/28/2019	5:33:01	19.70	2.234301
5669	5/28/2019	5:34:01	19.70	2.235024
5670	5/28/2019	5:35:01	19.80	2.235024
5671	5/28/2019	5:36:01	19.90	2.235024
5672	5/28/2019	5:37:01	19.90	2.234662
5673	5/28/2019	5:38:01	20.00	2.235024
5674	5/28/2019	5:39:01	20.10	2.234662
5675	5/28/2019	5:40:01	20.10	2.235024
5676	5/28/2019	5:41:01	19.90	2.235024
5677	5/28/2019	5:42:01	19.70	2.235024
5678	5/28/2019	5:43:01	19.60	2.233939
5679	5/28/2019	5:44:01	19.60	2.235024
5680	5/28/2019	5:45:01	19.60	2.234662
5681	5/28/2019	5:46:01	19.60	2.235024
5682	5/28/2019	5:47:01	19.70	2.234662
5683	5/28/2019	5:48:01	19.80	2.234301
5684	5/28/2019	5:49:01	19.90	2.234301
5685	5/28/2019	5:50:01	19.90	2.234301
5686	5/28/2019	5:51:01	20.00	2.234301

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5688	5/28/2019	5:53:01	20.10	2.235024
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5690	5/28/2019	5:55:01	19.90	2.235024
5691	5/28/2019	5:56:01	19.70	2.234662
5692	5/28/2019	5:57:01	19.60	2.233939
5693	5/28/2019	5:58:01	19.60	2.233939
5694	5/28/2019	5:59:01	19.60	2.233577
5695	5/28/2019	6:00:01	19.70	2.234301
5696	5/28/2019	6:01:01	19.70	2.234301
5697	5/28/2019	6:02:01	19.80	2.235024
5698	5/28/2019	6:03:01	19.90	2.234662
5699	5/28/2019	6:04:01	19.90	2.234662
5700	5/28/2019	6:05:01	20.00	2.234301
5701	5/28/2019	6:06:01	20.10	2.233939
5702	5/28/2019	6:07:01	20.10	2.233577
5703	5/28/2019	6:08:01	19.90	2.234662
5704	5/28/2019	6:09:01	19.70	2.234301
5705	5/28/2019	6:10:01	19.60	2.233577
5706	5/28/2019	6:11:01	19.60	2.234301
5707	5/28/2019	6:12:01	19.60	2.234301
5708	5/28/2019	6:13:01	19.60	2.233577
5709	5/28/2019	6:14:01	19.70	2.233216
5710	5/28/2019	6:15:01	19.80	2.233939
5711	5/28/2019	6:16:01	19.90	2.233577
5712	5/28/2019	6:17:01	19.90	2.234301
5713	5/28/2019	6:18:01	20.00	2.233939
5714	5/28/2019	6:19:01	20.10	2.235024
5715	5/28/2019	6:20:01	20.10	2.233577
5716	5/28/2019	6:21:01	20.00	2.233939
5717	5/28/2019	6:22:01	19.80	2.233216
5718	5/28/2019	6:23:01	19.70	2.233216
5719	5/28/2019	6:24:01	19.60	2.233939
5720	5/28/2019	6:25:01	19.60	2.233216
5721	5/28/2019	6:26:01	19.60	2.233939
5722	5/28/2019	6:27:01	19.70	2.233216
5723	5/28/2019	6:28:01	19.70	2.233939
5724	5/28/2019	6:29:01	19.80	2.233216
5725	5/28/2019	6:30:01	19.90	2.233577
5726	5/28/2019	6:31:01	19.90	2.233939
5727	5/28/2019	6:32:01	20.00	2.233216
5728	5/28/2019	6:33:01	20.10	2.233939
5729	5/28/2019	6:34:01	20.00	2.233216
5730	5/28/2019	6:35:01	19.90	2.232492
5731	5/28/2019	6:36:01	19.70	2.233216
5732	5/28/2019	6:37:01	19.60	2.232854
5733	5/28/2019	6:38:01	19.60	2.233216

5734	5/28/2019	6:39:01	19.60	2.233216
5735	5/28/2019	6:40:01	19.60	2.233216
5736	5/28/2019	6:41:01	19.70	2.232854
5737	5/28/2019	6:42:01	19.80	2.232492
5738	5/28/2019	6:43:01	19.90	2.232854
5739	5/28/2019	6:44:01	19.90	2.233216
5740	5/28/2019	6:45:01	20.00	2.233216
5741	5/28/2019	6:46:01	20.10	2.232854
5742	5/28/2019	6:47:01	20.10	2.232492
5743	5/28/2019	6:48:01	20.00	2.232854
5744	5/28/2019	6:49:01	19.80	2.232492
5745	5/28/2019	6:50:01	19.60	2.232492
5746	5/28/2019	6:51:01	19.60	2.232492
5747	5/28/2019	6:52:01	19.60	2.233577
5748	5/28/2019	6:53:01	19.60	2.232492
5749	5/28/2019	6:54:01	19.70	2.232854
5750	5/28/2019	6:55:01	19.70	2.232492
5751	5/28/2019	6:56:01	19.80	2.232492
5752	5/28/2019	6:57:01	19.90	2.232130
5753	5/28/2019	6:58:01	20.00	2.232130
5754	5/28/2019	6:59:01	20.00	2.232130
5755	5/28/2019	7:00:01	20.10	2.232854
5756	5/28/2019	7:01:01	20.00	2.232492
5757	5/28/2019	7:02:01	19.90	2.232130
5758	5/28/2019	7:03:01	19.70	2.232492
5759	5/28/2019	7:04:01	19.60	2.232492
5760	5/28/2019	7:05:01	19.60	2.232492
5761	5/28/2019	7:06:01	19.60	2.232492
5762	5/28/2019	7:07:01	19.70	2.232854
5763	5/28/2019	7:08:01	19.70	2.233216
5764	5/28/2019	7:09:01	19.80	2.232492
5765	5/28/2019	7:10:01	19.90	2.232854
5766	5/28/2019	7:11:01	19.90	2.232130
5767	5/28/2019	7:12:01	20.00	2.232130
5768	5/28/2019	7:13:01	20.10	2.232492
5769	5/28/2019	7:14:01	20.10	2.232130
5770	5/28/2019	7:15:01	19.90	2.232130
5771	5/28/2019	7:16:01	19.70	2.232492
5772	5/28/2019	7:17:01	19.60	2.232854
5773	5/28/2019	7:18:01	19.60	2.232492
5774	5/28/2019	7:19:01	19.60	2.232130
5775	5/28/2019	7:20:01	19.60	2.232130
5776	5/28/2019	7:21:01	19.70	2.232492
5777	5/28/2019	7:22:01	19.80	2.232130
5778	5/28/2019	7:23:01	19.80	2.232130
5779	5/28/2019	7:24:01	19.90	2.232130
5780	5/28/2019	7:25:01	20.00	2.232130

5781	5/28/2019	7:26:01	20.10	2.232130
5782	5/28/2019	7:27:01	20.10	2.232130
5783	5/28/2019	7:28:01	20.00	2.232130
5784	5/28/2019	7:29:01	19.80	2.232130
5785	5/28/2019	7:30:01	19.60	2.232130
5786	5/28/2019	7:31:01	19.60	2.232492
5787	5/28/2019	7:32:01	19.60	2.232492
5788	5/28/2019	7:33:01	19.60	2.232130
5789	5/28/2019	7:34:01	19.70	2.232130
5790	5/28/2019	7:35:01	19.80	2.232492
5791	5/28/2019	7:36:01	19.90	2.232130
5792	5/28/2019	7:37:01	19.90	2.232130
5793	5/28/2019	7:38:01	20.00	2.232130
5794	5/28/2019	7:39:01	20.10	2.232130
5795	5/28/2019	7:40:01	20.10	2.232130
5796	5/28/2019	7:41:01	20.00	2.232130
5797	5/28/2019	7:42:01	19.80	2.232130
5798	5/28/2019	7:43:01	19.70	2.232130
5799	5/28/2019	7:44:01	19.60	2.232130
5800	5/28/2019	7:45:01	19.60	2.231769
5801	5/28/2019	7:46:01	19.60	2.232130
5802	5/28/2019	7:47:01	19.70	2.231769
5803	5/28/2019	7:48:01	19.80	2.232130
5804	5/28/2019	7:49:01	19.90	2.232130
5805	5/28/2019	7:50:01	19.90	2.232130
5806	5/28/2019	7:51:01	20.00	2.232130
5807	5/28/2019	7:52:01	20.10	2.232492
5808	5/28/2019	7:53:01	20.10	2.231407
5809	5/28/2019	7:54:01	20.00	2.231407
5810	5/28/2019	7:55:01	19.80	2.232130
5811	5/28/2019	7:56:01	19.60	2.231769
5812	5/28/2019	7:57:01	19.60	2.231769
5813	5/28/2019	7:58:01	19.60	2.232130
5814	5/28/2019	7:59:01	19.60	2.232130
5815	5/28/2019	8:00:01	19.70	2.232130
5816	5/28/2019	8:01:01	19.80	2.232130
5817	5/28/2019	8:02:01	19.90	2.232130
5818	5/28/2019	8:03:01	19.90	2.232130
5819	5/28/2019	8:04:01	20.00	2.232130
5820	5/28/2019	8:05:01	20.10	2.232130
5821	5/28/2019	8:06:01	20.10	2.232130
5822	5/28/2019	8:07:01	20.00	2.231769
5823	5/28/2019	8:08:01	19.80	2.232130
5824	5/28/2019	8:09:01	19.70	2.231407
5825	5/28/2019	8:10:01	19.60	2.231769
5826	5/28/2019	8:11:01	19.60	2.232130
5827	5/28/2019	8:12:01	19.60	2.231407

5828	5/28/2019	8:13:01	19.70	2.231769
5829	5/28/2019	8:14:01	19.80	2.231407
5830	5/28/2019	8:15:01	19.90	2.231407
5831	5/28/2019	8:16:01	19.90	2.232130
5832	5/28/2019	8:17:01	20.00	2.232130
5833	5/28/2019	8:18:01	20.10	2.232130
5834	5/28/2019	8:19:01	20.10	2.230684
5835	5/28/2019	8:20:01	20.00	2.231407
5836	5/28/2019	8:21:01	19.80	2.230684
5837	5/28/2019	8:22:01	19.60	2.232130
5838	5/28/2019	8:23:01	19.60	2.231407
5839	5/28/2019	8:24:01	19.60	2.231045
5840	5/28/2019	8:25:01	19.60	2.231407
5841	5/28/2019	8:26:01	19.70	2.231407
5842	5/28/2019	8:27:01	19.80	2.231407
5843	5/28/2019	8:28:01	19.90	2.230322
5844	5/28/2019	8:29:01	20.00	2.231769
5845	5/28/2019	8:30:01	20.00	2.231407
5846	5/28/2019	8:31:01	20.10	2.231769
5847	5/28/2019	8:32:01	20.00	2.231045
5848	5/28/2019	8:33:01	19.90	2.231045
5849	5/28/2019	8:34:01	19.70	2.231769
5850	5/28/2019	8:35:01	19.60	2.231045
5851	5/28/2019	8:36:01	19.60	2.231407
5852	5/28/2019	8:37:01	19.60	2.231045
5853	5/28/2019	8:38:01	19.70	2.231407
5854	5/28/2019	8:39:01	19.80	2.229960
5855	5/28/2019	8:40:01	19.90	2.230684
5856	5/28/2019	8:41:01	19.90	2.231045
5857	5/28/2019	8:42:01	20.00	2.230322
5858	5/28/2019	8:43:01	20.10	2.231769
5859	5/28/2019	8:44:01	20.10	2.231045
5860	5/28/2019	8:45:01	19.90	2.231407
5861	5/28/2019	8:46:01	19.80	2.231045
5862	5/28/2019	8:47:01	19.60	2.231045
5863	5/28/2019	8:48:01	19.60	2.231045
5864	5/28/2019	8:49:01	19.60	2.229960
5865	5/28/2019	8:50:01	19.70	2.230684
5866	5/28/2019	8:51:01	19.70	2.230322
5867	5/28/2019	8:52:01	19.80	2.231045
5868	5/28/2019	8:53:01	19.90	2.231045
5869	5/28/2019	8:54:01	20.00	2.230684
5870	5/28/2019	8:55:01	20.10	2.231407
5871	5/28/2019	8:56:01	20.10	2.230322
5872	5/28/2019	8:57:01	20.00	2.231045
5873	5/28/2019	8:58:01	19.80	2.230684
5874	5/28/2019	8:59:01	19.70	2.230684

5875	5/28/2019	9:00:01	19.60	2.229960
5876	5/28/2019	9:01:01	19.60	2.229960
5877	5/28/2019	9:02:01	19.70	2.229960
5878	5/28/2019	9:03:01	19.70	2.229599
5879	5/28/2019	9:04:01	19.80	2.230322
5880	5/28/2019	9:05:01	19.90	2.229960
5881	5/28/2019	9:06:01	20.00	2.230684
5882	5/28/2019	9:07:01	20.10	2.229960
5883	5/28/2019	9:08:01	20.10	2.229960
5884	5/28/2019	9:09:01	20.00	2.229960
5885	5/28/2019	9:10:01	19.80	2.229599
5886	5/28/2019	9:11:01	19.70	2.229599
5887	5/28/2019	9:12:01	19.60	2.229599
5888	5/28/2019	9:13:01	19.60	2.229237
5889	5/28/2019	9:14:01	19.60	2.229960
5890	5/28/2019	9:15:01	19.70	2.229237
5891	5/28/2019	9:16:01	19.80	2.230322
5892	5/28/2019	9:17:01	19.90	2.229237
5893	5/28/2019	9:18:01	20.00	2.229237
5894	5/28/2019	9:19:01	20.10	2.230684
5895	5/28/2019	9:20:01	20.10	2.230684
5896	5/28/2019	9:21:01	20.00	2.229237
5897	5/28/2019	9:22:01	19.80	2.229960
5898	5/28/2019	9:23:01	19.70	2.229599
5899	5/28/2019	9:24:01	19.60	2.229237
5900	5/28/2019	9:25:01	19.60	2.229960
5901	5/28/2019	9:26:01	19.70	2.229960
5902	5/28/2019	9:27:01	19.80	2.229960
5903	5/28/2019	9:28:01	19.90	2.229599
5904	5/28/2019	9:29:01	20.00	2.229599
5905	5/28/2019	9:30:01	20.00	2.229960
5906	5/28/2019	9:31:01	20.10	2.229960
5907	5/28/2019	9:32:01	20.10	2.229599
5908	5/28/2019	9:33:01	19.90	2.229237
5909	5/28/2019	9:34:01	19.70	2.230322
5910	5/28/2019	9:35:01	19.60	2.229237
5911	5/28/2019	9:36:01	19.60	2.229599
5912	5/28/2019	9:37:01	19.70	2.229237
5913	5/28/2019	9:38:01	19.70	2.229237
5914	5/28/2019	9:39:01	19.80	2.229237
5915	5/28/2019	9:40:01	19.90	2.229237
5916	5/28/2019	9:41:01	20.00	2.229599
5917	5/28/2019	9:42:01	20.10	2.229237
5918	5/28/2019	9:43:01	20.10	2.229599
5919	5/28/2019	9:44:01	19.90	2.229237
5920	5/28/2019	9:45:01	19.80	2.230684
5921	5/28/2019	9:46:01	19.60	2.229237

5922	5/28/2019	9:47:01	19.60	2.229599
5923	5/28/2019	9:48:01	19.60	2.229237
5924	5/28/2019	9:49:01	19.70	2.229237
5925	5/28/2019	9:50:01	19.80	2.229237
5926	5/28/2019	9:51:01	19.90	2.229237
5927	5/28/2019	9:52:01	20.00	2.229599
5928	5/28/2019	9:53:01	20.10	2.229237
5929	5/28/2019	9:54:01	20.10	2.229237
5930	5/28/2019	9:55:01	20.00	2.229960
5931	5/28/2019	9:56:01	19.80	2.229960
5932	5/28/2019	9:57:01	19.70	2.229237
5933	5/28/2019	9:58:01	19.60	2.229237
5934	5/28/2019	9:59:01	19.60	2.229237
5935	5/28/2019	10:00:01	19.70	2.229237
5936	5/28/2019	10:01:01	19.80	2.229237
5937	5/28/2019	10:02:01	19.90	2.229599
5938	5/28/2019	10:03:01	20.00	2.229237
5939	5/28/2019	10:04:01	20.10	2.229237
5940	5/28/2019	10:05:01	20.10	2.228875
5941	5/28/2019	10:06:01	19.90	2.229237
5942	5/28/2019	10:07:01	19.80	2.229237
5943	5/28/2019	10:08:01	19.60	2.229237
5944	5/28/2019	10:09:01	19.60	2.229237
5945	5/28/2019	10:10:01	19.70	2.229237
5946	5/28/2019	10:11:01	19.80	2.229237
5947	5/28/2019	10:12:01	19.90	2.229237
5948	5/28/2019	10:13:01	20.00	2.229237
5949	5/28/2019	10:14:01	20.10	2.229237
5950	5/28/2019	10:15:01	20.10	2.229237
5951	5/28/2019	10:16:01	20.10	2.229237
5952	5/28/2019	10:17:01	19.90	2.229237
5953	5/28/2019	10:18:01	19.70	2.228875
5954	5/28/2019	10:19:01	19.60	2.228875
5955	5/28/2019	10:20:01	19.60	2.229237
5956	5/28/2019	10:21:01	19.70	2.229237
5957	5/28/2019	10:22:01	19.80	2.229237
5958	5/28/2019	10:23:01	19.90	2.229237
5959	5/28/2019	10:24:01	20.00	2.228875
5960	5/28/2019	10:25:01	20.10	2.229237
5961	5/28/2019	10:26:01	20.10	2.229237
5962	5/28/2019	10:27:01	20.00	2.229237
5963	5/28/2019	10:28:01	19.80	2.229237
5964	5/28/2019	10:29:01	19.70	2.229237
5965	5/28/2019	10:30:01	19.60	2.229237
5966	5/28/2019	10:31:01	19.70	2.229237
5967	5/28/2019	10:32:01	19.80	2.228875
5968	5/28/2019	10:33:01	19.90	2.228513

5969	5/28/2019	10:34:01	20.00	2.229237
5970	5/28/2019	10:35:01	20.10	2.228513
5971	5/28/2019	10:36:01	20.10	2.228875
5972	5/28/2019	10:37:01	20.10	2.229237
5973	5/28/2019	10:38:01	19.90	2.229237
5974	5/28/2019	10:39:01	19.70	2.229237
5975	5/28/2019	10:40:01	19.60	2.228875
5976	5/28/2019	10:41:01	19.70	2.228875
5977	5/28/2019	10:42:01	19.80	2.228875
5978	5/28/2019	10:43:01	19.80	2.229237
5979	5/28/2019	10:44:01	20.00	2.228875
5980	5/28/2019	10:45:01	20.10	2.228875
5981	5/28/2019	10:46:01	20.20	2.228152
5982	5/28/2019	10:47:01	20.10	2.227790
5983	5/28/2019	10:48:01	19.90	2.229237
5984	5/28/2019	10:49:01	19.80	2.229237
5985	5/28/2019	10:50:01	19.70	2.228513
5986	5/28/2019	10:51:01	19.60	2.229237
5987	5/28/2019	10:52:01	19.70	2.229237
5988	5/28/2019	10:53:01	19.80	2.228875
5989	5/28/2019	10:54:01	19.90	2.228875
5990	5/28/2019	10:55:01	20.00	2.228152
5991	5/28/2019	10:56:01	20.20	2.228875
5992	5/28/2019	10:57:01	20.10	2.228875
5993	5/28/2019	10:58:01	20.00	2.228152
5994	5/28/2019	10:59:01	19.80	2.228513
5995	5/28/2019	11:00:01	19.70	2.228152
5996	5/28/2019	11:01:01	19.60	2.228152
5997	5/28/2019	11:02:01	19.70	2.228513
5998	5/28/2019	11:03:01	19.80	2.228513
5999	5/28/2019	11:04:01	19.90	2.228513
6000	5/28/2019	11:05:01	20.00	2.228513
6001	5/28/2019	11:06:01	20.10	2.228875
6002	5/28/2019	11:07:01	20.20	2.229237
6003	5/28/2019	11:08:01	20.00	2.228152
6004	5/28/2019	11:09:01	19.90	2.228152
6005	5/28/2019	11:10:01	19.70	2.227790
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6007	5/28/2019	11:12:01	19.70	2.227790
6008	5/28/2019	11:13:01	19.80	2.228152
6009	5/28/2019	11:14:01	19.90	2.228152
6010	5/28/2019	11:15:01	20.00	2.228513
6011	5/28/2019	11:16:01	20.10	2.227067
6012	5/28/2019	11:17:01	20.20	2.227067
6013	5/28/2019	11:18:01	20.10	2.227428
6014	5/28/2019	11:19:01	19.90	2.228875
6015	5/28/2019	11:20:01	19.70	2.228152

6016	5/28/2019	11:21:01	19.70	2.228152
6017	5/28/2019	11:22:01	19.70	2.227428
6018	5/28/2019	11:23:01	19.80	2.227790
6019	5/28/2019	11:24:01	19.90	2.227790
6020	5/28/2019	11:25:01	20.00	2.227428
6021	5/28/2019	11:26:01	20.10	2.227790
6022	5/28/2019	11:27:01	20.20	2.227790
6023	5/28/2019	11:28:01	20.10	2.227790
6024	5/28/2019	11:29:01	19.90	2.227067
6025	5/28/2019	11:30:01	19.80	2.227790
6026	5/28/2019	11:31:01	19.70	2.227428
6027	5/28/2019	11:32:01	19.70	2.227067
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6031	5/28/2019	11:36:01	20.00	2.227790
6032	5/28/2019	11:37:01	20.20	2.227067
6033	5/28/2019	11:38:01	20.10	2.227790
6034	5/28/2019	11:39:01	20.00	2.226343
6035	5/28/2019	11:40:01	19.80	2.226705
6036	5/28/2019	11:41:01	19.70	2.227067
6037	5/28/2019	11:42:01	19.60	2.227428
6038	5/28/2019	11:43:01	19.70	2.227428
6039	5/28/2019	11:44:01	19.80	2.226705
6040	5/28/2019	11:45:01	19.90	2.227428
6041	5/28/2019	11:46:01	20.00	2.227428
6042	5/28/2019	11:47:01	20.10	2.227428
6043	5/28/2019	11:48:01	20.20	2.226705
6044	5/28/2019	11:49:01	20.10	2.227067
6045	5/28/2019	11:50:01	19.90	2.227067
6046	5/28/2019	11:51:01	19.70	2.227428
6047	5/28/2019	11:52:01	19.60	2.226705
6048	5/28/2019	11:53:01	19.70	2.227067
6049	5/28/2019	11:54:01	19.80	2.227067
6050	5/28/2019	11:55:01	19.90	2.226343
6051	5/28/2019	11:56:01	20.00	2.226343
6052	5/28/2019	11:57:01	20.10	2.226705
6053	5/28/2019	11:58:01	20.20	2.226705
6054	5/28/2019	11:59:01	20.10	2.227067
6055	5/28/2019	12:00:01	19.90	2.226705
6056	5/28/2019	12:01:01	19.80	2.226705
6057	5/28/2019	12:02:01	19.60	2.226705
6058	5/28/2019	12:03:01	19.70	2.226705
6059	5/28/2019	12:04:01	19.70	2.226705
6060	5/28/2019	12:05:01	19.80	2.226705
6061	5/28/2019	12:06:01	19.90	2.226343
6062	5/28/2019	12:07:01	20.10	2.226343

6063	5/28/2019	12:08:01	20.10	2.226343
6064	5/28/2019	12:09:01	20.10	2.226343
6065	5/28/2019	12:10:01	20.00	2.226705
6066	5/28/2019	12:11:01	19.80	2.226705
6067	5/28/2019	12:12:01	19.70	2.226343
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6069	5/28/2019	12:14:01	19.70	2.226343
6070	5/28/2019	12:15:01	19.80	2.226343
6071	5/28/2019	12:16:01	19.90	2.226705
6072	5/28/2019	12:17:01	20.00	2.226343
6073	5/28/2019	12:18:01	20.10	2.226343
6074	5/28/2019	12:19:01	20.10	2.226343
6075	5/28/2019	12:20:01	20.10	2.226343
6076	5/28/2019	12:21:01	19.90	2.226343
6077	5/28/2019	12:22:01	19.70	2.226343
6078	5/28/2019	12:23:01	19.60	2.226343
6079	5/28/2019	12:24:01	19.70	2.226343
6080	5/28/2019	12:25:01	19.70	2.226343
6081	5/28/2019	12:26:01	19.80	2.226343
6082	5/28/2019	12:27:01	19.90	2.225981
6083	5/28/2019	12:28:01	20.10	2.226343
6084	5/28/2019	12:29:01	20.10	2.226343
6085	5/28/2019	12:30:01	20.10	2.226343
6086	5/28/2019	12:31:01	19.90	2.226343
6087	5/28/2019	12:32:01	19.80	2.226343
6088	5/28/2019	12:33:01	19.70	2.226343
6089	5/28/2019	12:34:01	19.60	2.226343
6090	5/28/2019	12:35:01	19.70	2.226343
6091	5/28/2019	12:36:01	19.80	2.226343
6092	5/28/2019	12:37:01	19.90	2.226343
6093	5/28/2019	12:38:01	20.00	2.225981
6094	5/28/2019	12:39:01	20.10	2.226343
6095	5/28/2019	12:40:01	20.10	2.226343
6096	5/28/2019	12:41:01	20.00	2.225981
6097	5/28/2019	12:42:01	19.90	2.226343
6098	5/28/2019	12:43:01	19.70	2.226343
6099	5/28/2019	12:44:01	19.60	2.226343
6100	5/28/2019	12:45:01	19.60	2.226343
6101	5/28/2019	12:46:01	19.70	2.226343
6102	5/28/2019	12:47:01	19.80	2.226343
6103	5/28/2019	12:48:01	19.90	2.225620
6104	5/28/2019	12:49:01	20.10	2.226343
6105	5/28/2019	12:50:01	20.10	2.226343
6106	5/28/2019	12:51:01	20.10	2.226343
6107	5/28/2019	12:52:01	19.90	2.226343
6108	5/28/2019	12:53:01	19.80	2.225981
6109	5/28/2019	12:54:01	19.60	2.225981

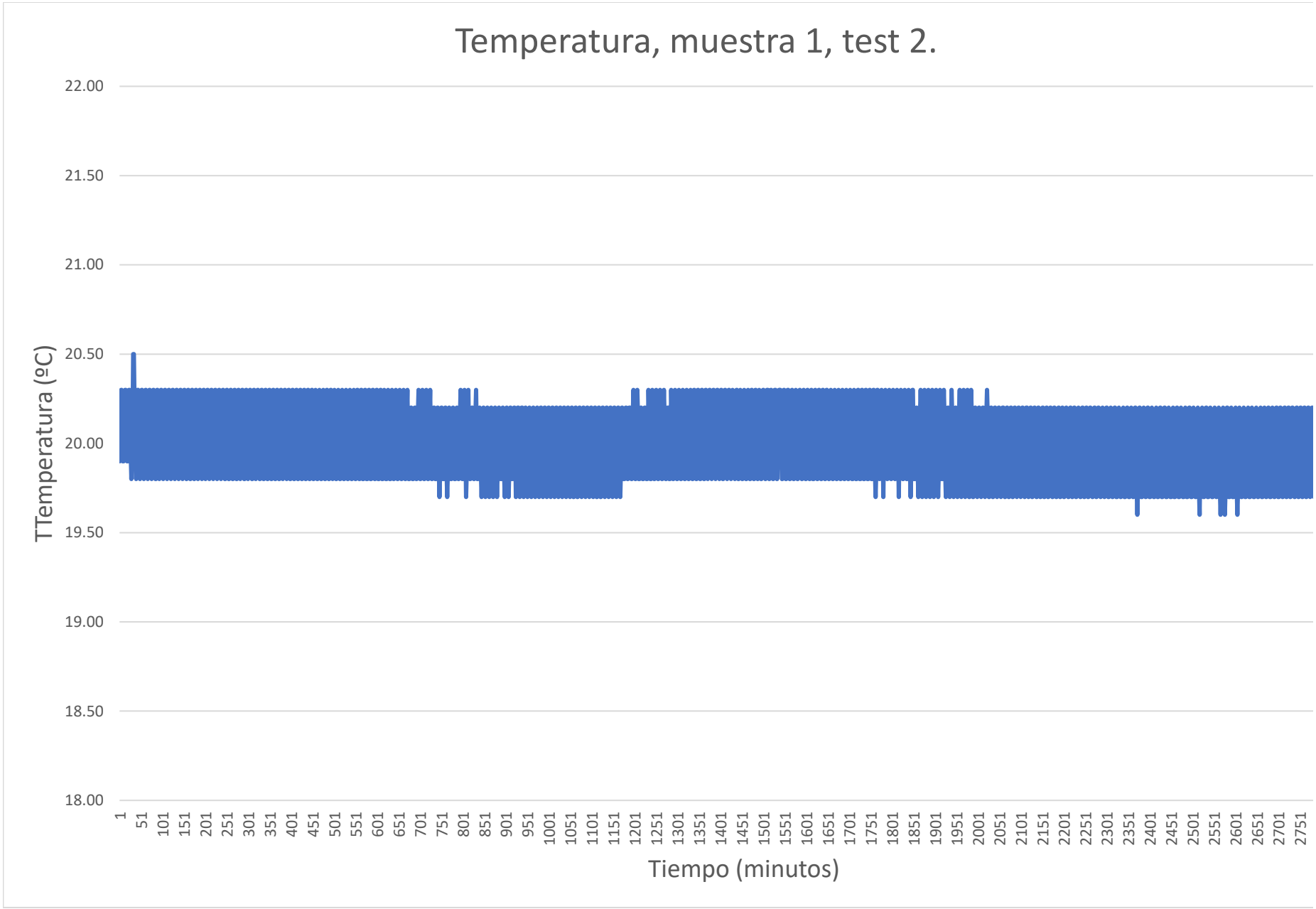
6110	5/28/2019	12:55:01	19.60	2.225620
6111	5/28/2019	12:56:01	19.70	2.226343
6112	5/28/2019	12:57:01	19.80	2.226343
6113	5/28/2019	12:58:01	19.90	2.225981
6114	5/28/2019	12:59:01	20.00	2.225981
6115	5/28/2019	13:00:01	20.10	2.225981
6116	5/28/2019	13:01:01	20.10	2.226343
6117	5/28/2019	13:02:01	20.00	2.225620
6118	5/28/2019	13:03:01	19.80	2.225620
6119	5/28/2019	13:04:01	19.70	2.226343
6120	5/28/2019	13:05:01	19.60	2.226343
6121	5/28/2019	13:06:01	19.70	2.225981
6122	5/28/2019	13:07:01	19.70	2.225981
6123	5/28/2019	13:08:01	19.80	2.226343
6124	5/28/2019	13:09:01	19.90	2.225620
6125	5/28/2019	13:10:01	20.00	2.225981
6126	5/28/2019	13:11:01	20.10	2.225620
6127	5/28/2019	13:12:01	20.10	2.225620
6128	5/28/2019	13:13:01	19.90	2.225981
6129	5/28/2019	13:14:01	19.80	2.226343
6130	5/28/2019	13:15:01	19.70	2.226343
6131	5/28/2019	13:16:01	19.60	2.225981
6132	5/28/2019	13:17:01	19.70	2.225258
6133	5/28/2019	13:18:01	19.80	2.226343
6134	5/28/2019	13:19:01	19.90	2.225620
6135	5/28/2019	13:20:01	20.00	2.225258
6136	5/28/2019	13:21:01	20.10	2.226343
6137	5/28/2019	13:22:01	20.10	2.225620
6138	5/28/2019	13:23:01	20.00	2.225620
6139	5/28/2019	13:24:01	19.90	2.225981
6140	5/28/2019	13:25:01	19.70	2.225620
6141	5/28/2019	13:26:01	19.60	2.225620
6142	5/28/2019	13:27:01	19.60	2.225620
6143	5/28/2019	13:28:01	19.70	2.225981
6144	5/28/2019	13:29:01	19.80	2.225620
6145	5/28/2019	13:30:01	19.90	2.225620
6146	5/28/2019	13:31:01	20.00	2.225981
6147	5/28/2019	13:32:01	20.10	2.225258
6148	5/28/2019	13:33:01	20.10	2.224535
6149	5/28/2019	13:34:01	20.00	2.224896
6150	5/28/2019	13:35:01	19.80	2.225620
6151	5/28/2019	13:36:01	19.70	2.225620
6152	5/28/2019	13:37:01	19.60	2.225620
6153	5/28/2019	13:38:01	19.60	2.225258
6154	5/28/2019	13:39:01	19.70	2.224896
6155	5/28/2019	13:40:01	19.80	2.224896
6156	5/28/2019	13:41:01	19.90	2.224535

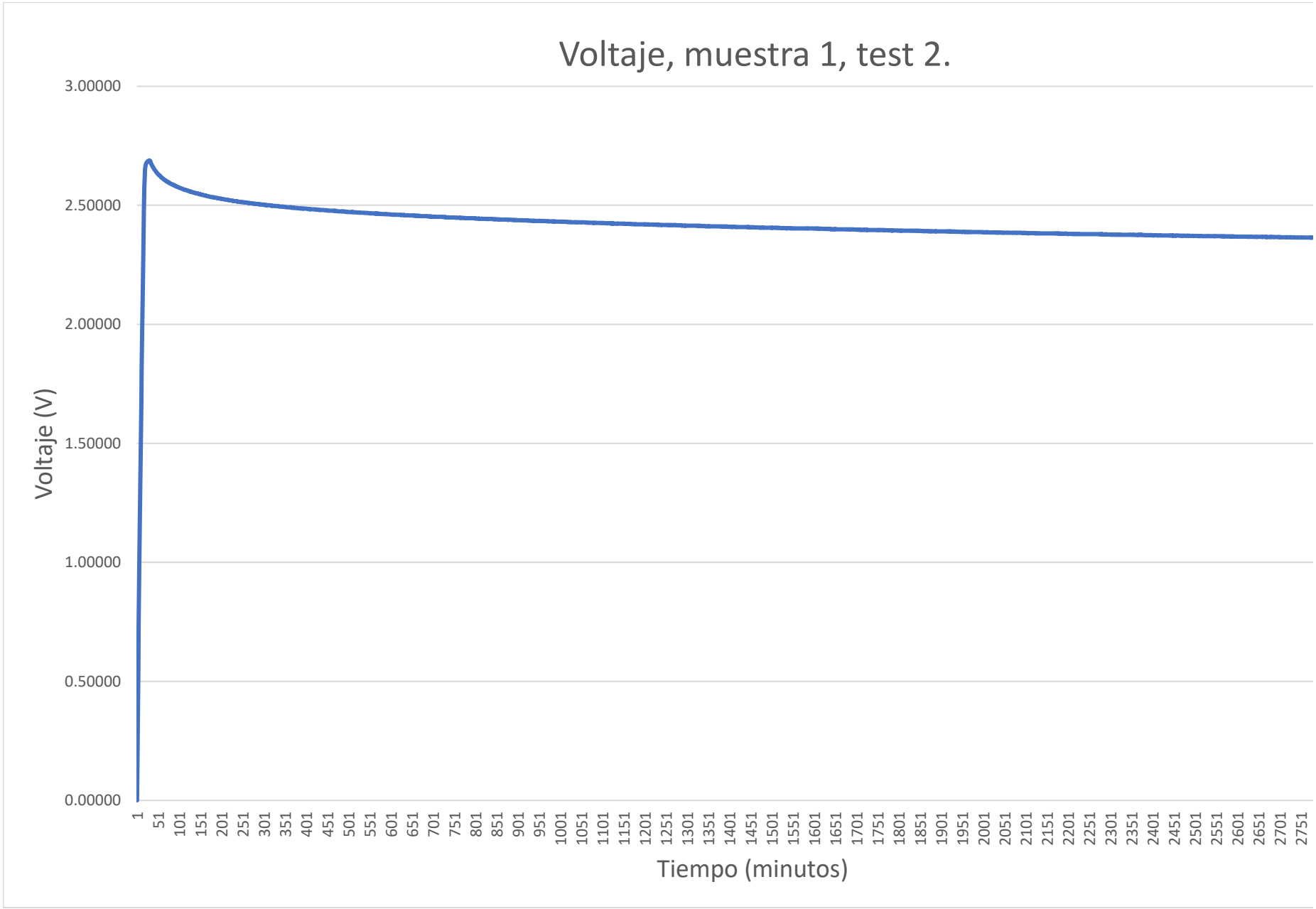
6157	5/28/2019	13:42:01	20.00	2.224535
6158	5/28/2019	13:43:01	20.10	2.225258
6159	5/28/2019	13:44:01	20.20	2.225981
6160	5/28/2019	13:45:01	20.00	2.224896
6161	5/28/2019	13:46:01	19.80	2.225620
6162	5/28/2019	13:47:01	19.70	2.225258
6163	5/28/2019	13:48:01	19.60	2.224535
6164	5/28/2019	13:49:01	19.60	2.225258
6165	5/28/2019	13:50:01	19.70	2.224896
6166	5/28/2019	13:51:01	19.80	2.224535
6167	5/28/2019	13:52:01	19.90	2.224535
6168	5/28/2019	13:53:01	20.00	2.224173
6169	5/28/2019	13:54:01	20.10	2.224535
6170	5/28/2019	13:55:01	20.10	2.225981
6171	5/28/2019	13:56:01	20.00	2.224535
6172	5/28/2019	13:57:01	19.80	2.226343
6173	5/28/2019	13:58:01	19.70	2.224173
6174	5/28/2019	13:59:01	19.60	2.225258
6175	5/28/2019	14:00:01	19.70	2.223811
6176	5/28/2019	14:01:01	19.80	2.224896
6177	5/28/2019	14:02:01	19.90	2.224173
6178	5/28/2019	14:03:01	20.00	2.224535
6179	5/28/2019	14:04:01	20.10	2.224173
6180	5/28/2019	14:05:01	20.20	2.224896
6181	5/28/2019	14:06:01	20.10	2.223811
6182	5/28/2019	14:07:01	19.90	2.223811
6183	5/28/2019	14:08:01	19.70	2.223811
6184	5/28/2019	14:09:01	19.70	2.224896
6185	5/28/2019	14:10:01	19.70	2.224173
6186	5/28/2019	14:11:01	19.80	2.224173
6187	5/28/2019	14:12:01	19.90	2.224535
6188	5/28/2019	14:13:01	20.00	2.224173
6189	5/28/2019	14:14:01	20.10	2.224173
6190	5/28/2019	14:15:01	20.20	2.223449
6191	5/28/2019	14:16:01	20.10	2.224173
6192	5/28/2019	14:17:01	19.90	2.224535
6193	5/28/2019	14:18:01	19.80	2.223449
6194	5/28/2019	14:19:01	19.70	2.223811
6195	5/28/2019	14:20:01	19.70	2.223811
6196	5/28/2019	14:21:01	19.70	2.224173
6197	5/28/2019	14:22:01	19.90	2.223811
6198	5/28/2019	14:23:01	19.90	2.223811
6199	5/28/2019	14:24:01	20.10	2.223811
6200	5/28/2019	14:25:01	20.20	2.224173
6201	5/28/2019	14:26:01	20.10	2.223811
6202	5/28/2019	14:27:01	20.00	2.223449
6203	5/28/2019	14:28:01	19.80	2.223811

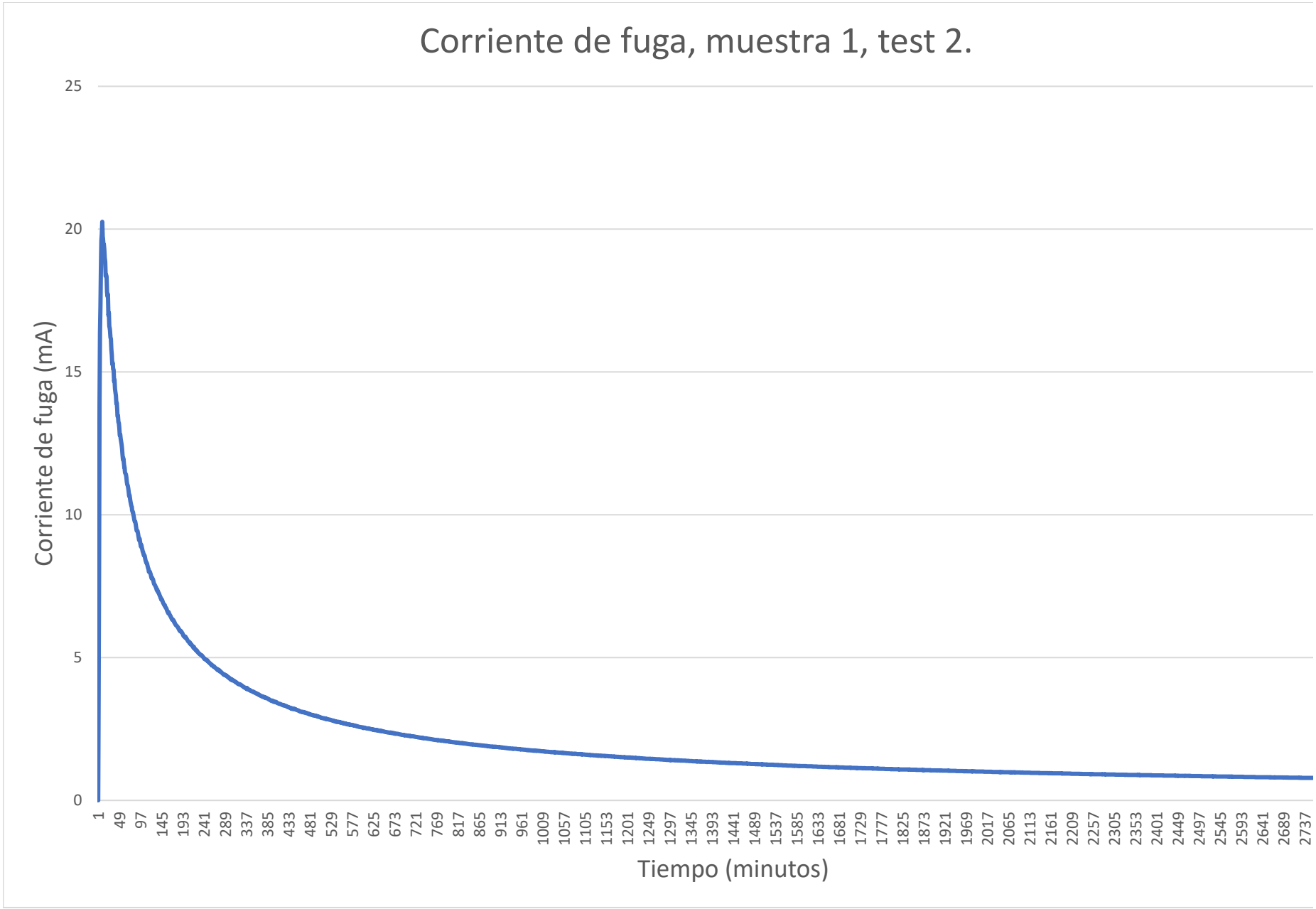
6204	5/28/2019	14:29:01	19.70	2.224173	
6205	5/28/2019	14:30:01	19.70	2.223811	
6206	5/28/2019	14:31:01	19.70	2.223811	
6207	5/28/2019	14:32:01	19.80	2.224173	
6208	5/28/2019	14:33:01	19.90	2.223449	
6209	5/28/2019	14:34:01	20.10	2.223449	
6210	5/28/2019	14:35:01	20.20	2.223811	
6211	5/28/2019	14:36:01	20.10	2.223811	
6212	5/28/2019	14:37:01	20.00	2.224173	
6213	5/28/2019	14:38:01	19.80	2.223449	
6214	5/28/2019	14:39:01	19.70	2.223449	
6215	5/28/2019	14:40:01	19.70	2.223449	
6216	5/28/2019	14:41:01	19.70	2.223449	
6217	5/28/2019	14:42:01	19.80	2.223449	
6218	5/28/2019	14:43:01	19.90	2.223449	
6219	5/28/2019	14:44:01	20.00	2.223811	
6220	5/28/2019	14:45:01	20.10	2.223449	
6221	5/28/2019	14:46:01	20.20	2.223449	
6222	5/28/2019	14:47:01	20.10	2.223449	
6223	5/28/2019	14:48:01	19.90	2.223449	
6224	5/28/2019	14:49:01	19.80	2.224173	
6225	5/28/2019	14:50:01	19.90	2.223449	
6226	5/28/2019	14:51:01	20.00	2.223449	
6227	5/28/2019	14:52:01	20.10	2.223449	
6228	5/28/2019	14:53:01	20.20	2.223449	
6229	5/28/2019	14:54:01	20.10	2.223449	
6230	5/28/2019	14:55:01	19.90	2.223811	
6231	5/28/2019	14:56:01	19.80	2.223449	
6232	5/28/2019	14:57:01	19.90	2.223449	
6233	5/28/2019	14:58:01	20.00	2.223449	
6234	5/28/2019	14:59:01	20.10	2.223449	
6235	5/28/2019	15:00:01	20.20	2.223449	
6236	5/28/2019	15:01:01	20.10	2.223449	
6237	5/28/2019	15:02:01	19.90	2.223449	
6238	5/28/2019	15:03:01	19.80	2.223449	
6239	5/28/2019	15:04:01	19.90	2.223811	
6240	5/28/2019	15:05:01	20.00	2.223449	
6241	5/28/2019	15:06:01	20.10	2.223449	96 horas

ANEXO 2.

RESULTADOS ENSAYOS CORRIENTE DE FUGA


Temperatura, muestra 1, test 2.
TTemperatura (ºC)
22.00
21.50
21.00
20.50
20.00
19.50
19.00
18.50
18.00
1
51
101
151
201
251
301
351
401
451
501
551
601
651
701
751
801
851
901
951
1001
1051
1101
1151
1201
1251
1301
1351
1401
1451
1501
1551
1601
1651
1701
1751
1801
1851
1901
1951
2001
2051
2101
2151
2201
2251
2301
2351
2401
2451
2501
2551
2601
2651
2701
2751
Tiempo (minutos)


Voltaje, muestra 1, test 2.
3.00000
2.50000
2.00000
1.50000
1.00000
0.50000
0.00000
Voltaje (V)
1
51
101
151
201
251
301
351
401
451
501
551
601
651
701
751
801
851
901
951
1001
1051
1101
1151
1201
1251
1301
1351
1401
1451
1501
1551
1601
1651
1701
1751
1801
1851
1901
1951
2001
2051
2101
2151
2201
2251
2301
2351
2401
2451
2501
2551
2601
2651
2701
2751
Tiempo (minutos)


Corriente de fuga, muestra 1, test 2.
Corriente de fuga (mA)
25
20
15
10
5
0
1
49
97
145
193
241
289
337
385
433
481
529
577
625
673
721
769
817
865
913
961
1009
1057
1105
1153
1201
1249
1297
1345
1393
1441
1489
1537
1585
1633
1681
1729
1777
1825
1873
1921
1969
2017
2065
2113
2161
2209
2257
2305
2353
2401
2449
2497
2545
2593
2641
2689
2737
Tiempo (minutos)

Numero	Hora	Temperatura	Voltaje (V)		
1	12:51:01	19.90	0.00000		
2	12:52:01	20.00	0.18375		
3	12:53:01	20.20	0.37799		
4	12:54:01	20.30	0.56861		
5	12:55:01	20.30	0.74983		
6	12:56:01	20.20	0.92128		
7	12:57:01	20.10	1.08225		
8	12:58:01	19.90	1.23597		
9	12:59:01	19.90	1.38283		
10	13:00:01	19.90	1.52715		
11	13:01:01	20.00	1.66605		
12	13:02:01	20.20	1.80278		
13	13:03:01	20.30	1.93444		
14	13:04:01	20.30	2.06430		
15	13:05:01	20.30	2.19126		
16	13:06:01	20.10	2.32147		
17	13:07:01	20.00	2.47737		
18	13:08:01	19.90	2.57576		
19	13:09:01	19.90	2.62387		
20	13:10:01	19.90	2.65099		
21	13:11:01	20.10	2.66510		
22	13:12:01	20.30	2.67306		
23	13:13:01	20.30	2.67812		
24	13:14:01	20.30	2.68029		
25	13:15:01	20.20	2.68246		
26	13:16:01	20.10	2.68463		
27	13:17:01	19.90	2.68572		
28	13:18:01	19.80	2.68680		
29	13:19:01	19.90	2.68753	Ifuga (mA)	
30	13:20:01	20.00	2.68897	0	30 minutos
31	13:21:01	20.20	2.68789	3.6166667	
32	13:22:01	20.50	2.68536	8.0377778	
33	13:23:01	20.50	2.68066	13.865	
34	13:24:01	20.50	2.67668	16.397333	
35	13:25:01	20.30	2.67342	17.282222	
36	13:26:01	20.20	2.66944	18.602857	
37	13:27:01	20.00	2.66546	19.593333	
38	13:28:01	19.90	2.66221	19.827407	
39	13:29:01	19.80	2.65859	20.256	
40	13:30:01	19.90	2.65642	19.729697	
41	13:31:01	20.00	2.65353	19.693333	
42	13:32:01	20.30	2.65099	19.476923	
43	13:33:01	20.30	2.64810	19.46381	
44	13:34:01	20.30	2.64557	19.291556	
45	13:35:01	20.20	2.64340	18.99	

U1 (V)	2.68897
U2 (V)	2.361262
tiempo (s)	172860
Capacidad (F)	400
I(A)	0.00075833
I(mA)	0.75832928

46	13:36:01	20.10	2.64087	18.865882
47	13:37:01	19.90	2.63942	18.353704
48	13:38:01	19.80	2.63653	18.403158
49	13:39:01	19.90	2.63399	18.327
50	13:40:01	20.00	2.63291	17.79873
51	13:41:01	20.20	2.63074	17.647273
52	13:42:01	20.30	2.62784	17.718841
53	13:43:01	20.30	2.62784	16.980556
54	13:44:01	20.20	2.62495	17.0728
55	13:45:01	20.10	2.62423	16.601795
56	13:46:01	19.90	2.62206	16.522716
57	13:47:01	19.80	2.61989	16.449524
58	13:48:01	19.90	2.61844	16.214713
59	13:49:01	20.00	2.61627	16.156444
60	13:50:01	20.20	2.61555	15.790968
61	13:51:01	20.30	2.61410	15.598958
62	13:52:01	20.30	2.61338	15.272323
63	13:53:01	20.20	2.61084	15.319608
64	13:54:01	20.10	2.60976	15.088571
65	13:55:01	19.90	2.60759	15.071296
66	13:56:01	19.80	2.60759	14.663964
67	13:57:01	19.90	2.60506	14.722456
68	13:58:01	20.00	2.60470	14.406667
69	13:59:01	20.20	2.60325	14.287667
70	14:00:01	20.30	2.60180	14.174472
71	14:01:01	20.30	2.60144	13.894444
72	14:02:01	20.20	2.59927	13.907752
73	14:03:01	20.10	2.59891	13.646515
74	14:04:01	19.90	2.59818	13.45037
75	14:05:01	19.80	2.59601	13.472464
76	14:06:01	19.90	2.59565	13.237163
77	14:07:01	20.00	2.59384	13.212639
78	14:08:01	20.20	2.59312	13.041361
79	14:09:01	20.30	2.59312	12.780533
80	14:10:01	20.30	2.59095	12.813595
81	14:11:01	20.20	2.59023	12.66
82	14:12:01	20.10	2.58914	12.55761
83	14:13:01	19.90	2.58806	12.459012
84	14:14:01	19.80	2.58733	12.320242
85	14:15:01	19.80	2.58733	12.100238
86	14:16:01	20.00	2.58697	11.930175
87	14:17:01	20.20	2.58480	11.974023
88	14:18:01	20.30	2.58444	11.811864
89	14:19:01	20.30	2.58408	11.655222
90	14:20:01	20.20	2.58227	11.661749
91	14:21:01	20.10	2.58227	11.473656
92	14:22:01	19.90	2.58082	11.444656

93	14:23:01	19.80	2.57938	11.416563
94	14:24:01	19.90	2.57865	11.315179
95	14:25:01	20.00	2.57865	11.143737
96	14:26:01	20.20	2.57793	11.049353
97	14:27:01	20.30	2.57648	11.028725
98	14:28:01	20.30	2.57576	10.938744
99	14:29:01	20.20	2.57540	10.816952
100	14:30:01	20.10	2.57540	10.664601
101	14:31:01	19.90	2.57359	10.683889
102	14:32:01	19.80	2.57323	10.570594
103	14:33:01	19.90	2.57286	10.46036
104	14:34:01	20.00	2.57214	10.385244
105	14:35:01	20.20	2.57142	10.312018
106	14:36:01	20.30	2.57033	10.272035
107	14:37:01	20.30	2.56997	10.171282
108	14:38:01	20.20	2.56925	10.103544
109	14:39:01	20.10	2.56780	10.097833
110	14:40:01	19.90	2.56744	10.002963
111	14:41:01	19.80	2.56708	9.9103252
112	14:42:01	19.90	2.56672	9.82
113	14:43:01	20.00	2.56599	9.7605556
114	14:44:01	20.20	2.56455	9.7591373
115	14:45:01	20.30	2.56418	9.6737209
116	14:46:01	20.30	2.56418	9.5625287
117	14:47:01	20.20	2.56418	9.4538636
118	14:48:01	20.10	2.56310	9.4289139
119	14:49:01	19.90	2.56165	9.4313333
120	14:50:01	19.80	2.56129	9.3542125
121	14:51:01	19.90	2.56129	9.2525362
122	14:52:01	20.00	2.56129	9.1530466
123	14:53:01	20.20	2.56057	9.1069504
124	14:54:01	20.30	2.55840	9.1634386
125	14:55:01	20.30	2.55840	9.0679861
126	14:56:01	20.20	2.55840	8.9745017
127	14:57:01	20.10	2.55840	8.8829252
128	14:58:01	19.90	2.55623	8.9393266
129	14:59:01	19.80	2.55623	8.8499333
130	15:00:01	19.90	2.55586	8.7861386
131	15:01:01	20.00	2.55586	8.7
132	15:02:01	20.20	2.55478	8.6858252
133	15:03:01	20.30	2.55478	8.6023077
134	15:04:01	20.30	2.55406	8.5662857
135	15:05:01	20.20	2.55261	8.576478
136	15:06:01	20.10	2.55261	8.496324
137	15:07:01	19.90	2.55261	8.4176543
138	15:08:01	19.80	2.55225	8.3625688
139	15:09:01	19.90	2.55188	8.3084848

140	15:10:01	20.00	2.55044	8.3204805
141	15:11:01	20.20	2.54971	8.2892857
142	15:12:01	20.30	2.54971	8.2159292
143	15:13:01	20.30	2.54971	8.1438596
144	15:14:01	20.20	2.54899	8.1149565
145	15:15:01	20.10	2.54971	8.0034483
146	15:16:01	19.90	2.54827	8.0174359
147	15:17:01	19.80	2.54718	8.0108475
148	15:18:01	19.90	2.54682	7.9637535
149	15:19:01	20.00	2.54646	7.9175
150	15:20:01	20.20	2.54682	7.8321212
151	15:21:01	20.30	2.54682	7.7679235
152	15:22:01	20.30	2.54501	7.8028184
153	15:23:01	20.20	2.54465	7.7593011
154	15:24:01	20.10	2.54393	7.73584
155	15:25:01	19.90	2.54393	7.6744444
156	15:26:01	19.80	2.54357	7.6330184
157	15:27:01	19.80	2.54357	7.5733854
158	15:28:01	19.90	2.54284	7.5520413
159	15:29:01	20.10	2.54212	7.5310256
160	15:30:01	20.30	2.54176	7.4919593
161	15:31:01	20.30	2.54103	7.4717677
162	15:32:01	20.20	2.54103	7.415589
163	15:33:01	20.10	2.54103	7.3602488
164	15:34:01	19.90	2.53959	7.3771852
165	15:35:01	19.80	2.53995	7.3051961
166	15:36:01	19.80	2.53886	7.3046715
167	15:37:01	19.90	2.53886	7.2517391
168	15:38:01	20.10	2.53814	7.2342446
169	15:39:01	20.30	2.53814	7.1825714
170	15:40:01	20.30	2.53778	7.148747
171	15:41:01	20.20	2.53778	7.0984038
172	15:42:01	20.10	2.53705	7.0825175
173	15:43:01	19.90	2.53705	7.0333333
174	15:44:01	19.80	2.53597	7.0347126
175	15:45:01	19.80	2.53525	7.0195434
176	15:46:01	19.90	2.53525	6.9717914
177	15:47:01	20.10	2.53525	6.9246847
178	15:48:01	20.30	2.53488	6.8944072
179	15:49:01	20.30	2.53452	6.8645333
180	15:50:01	20.20	2.53416	6.835011
181	15:51:01	20.10	2.53308	6.8376316
182	15:52:01	19.90	2.53344	6.7772113
183	15:53:01	19.80	2.53308	6.7488312
184	15:54:01	19.90	2.53235	6.7364301
185	15:55:01	20.00	2.53235	6.6932479
186	15:56:01	20.20	2.53235	6.6506157

187	15:57:01	20.30	2.53235	6.6085232
188	15:58:01	20.30	2.53199	6.5821384
189	15:59:01	20.20	2.53163	6.5560417
190	16:00:01	20.10	2.52982	6.5902277
191	16:01:01	19.90	2.53018	6.5346502
192	16:02:01	19.80	2.52982	6.5093661
193	16:03:01	19.90	2.52982	6.4696748
194	16:04:01	20.00	2.52910	6.4596768
195	16:05:01	20.20	2.52910	6.4207631
196	16:06:01	20.30	2.52910	6.3823154
197	16:07:01	20.30	2.52910	6.3443254
198	16:08:01	20.20	2.52874	6.3210651
199	16:09:01	20.10	2.52729	6.3406275
200	16:10:01	19.90	2.52693	6.3176218
201	16:11:01	19.80	2.52657	6.2949225
202	16:12:01	19.90	2.52729	6.2306744
203	16:13:01	20.00	2.52620	6.2364368
204	16:14:01	20.20	2.52657	6.1870095
205	16:15:01	20.30	2.52657	6.1518561
206	16:16:01	20.30	2.52584	6.1443691
207	16:17:01	20.20	2.52548	6.1233708
208	16:18:01	20.00	2.52476	6.1161266
209	16:19:01	19.90	2.52440	6.0955185
210	16:20:01	19.80	2.52403	6.075175
211	16:21:01	19.90	2.52367	6.0550549
212	16:22:01	20.00	2.52367	6.0219672
213	16:23:01	20.20	2.52331	6.0023551
214	16:24:01	20.30	2.52367	5.9568649
215	16:25:01	20.30	2.52259	5.9637276
216	16:26:01	20.20	2.52295	5.9189305
217	16:27:01	20.00	2.52222	5.9131206
218	16:28:01	19.90	2.52114	5.9201058
219	16:29:01	19.80	2.52114	5.8889474
220	16:30:01	19.90	2.52078	5.8707504
221	16:31:01	20.00	2.52078	5.8401736
222	16:32:01	20.20	2.52042	5.8223834
223	16:33:01	20.30	2.52078	5.7799656
224	16:34:01	20.30	2.52078	5.7503248
225	16:35:01	20.20	2.52005	5.7455782
226	16:36:01	20.00	2.51969	5.7286633
227	16:37:01	19.90	2.51969	5.6997306
228	16:38:01	19.80	2.51788	5.7316583
229	16:39:01	19.90	2.51861	5.6789
230	16:40:01	20.00	2.51788	5.6746269
231	16:41:01	20.20	2.51788	5.6465347
232	16:42:01	20.30	2.51788	5.6187192
233	16:43:01	20.30	2.51788	5.5911765

234	16:44:01	20.20	2.51788	5.5639024
235	16:45:01	20.00	2.51752	5.5486084
236	16:46:01	19.90	2.51716	5.5334622
237	16:47:01	19.80	2.51608	5.5416346
238	16:48:01	19.90	2.51680	5.4920574
239	16:49:01	20.00	2.51571	5.5003492
240	16:50:01	20.20	2.51608	5.4628436
241	16:51:01	20.30	2.51499	5.471195
242	16:52:01	20.30	2.51499	5.4455086
243	16:53:01	20.20	2.51499	5.4200623
244	16:54:01	20.10	2.51499	5.3948527
245	16:55:01	19.90	2.51463	5.3810494
246	16:56:01	19.80	2.51499	5.3451306
247	16:57:01	19.80	2.51318	5.3759327
248	16:58:01	20.00	2.51391	5.3293455
249	16:59:01	20.20	2.51391	5.3051212
250	17:00:01	20.30	2.51391	5.2811161
251	17:01:01	20.30	2.51282	5.2899099
252	17:02:01	20.20	2.51282	5.2661883
253	17:03:01	20.10	2.51318	5.2319345
254	17:04:01	19.90	2.51210	5.2408296
255	17:05:01	19.80	2.51210	5.2176401
256	17:06:01	19.80	2.51246	5.1840235
257	17:07:01	19.90	2.51210	5.1718713
258	17:08:01	20.10	2.51210	5.1492868
259	17:09:01	20.30	2.51173	5.1373913
260	17:10:01	20.30	2.51101	5.1360173
261	17:11:01	20.20	2.51101	5.1138793
262	17:12:01	20.10	2.51101	5.0919313
263	17:13:01	19.90	2.51029	5.0907692
264	17:14:01	19.80	2.50993	5.0793759
265	17:15:01	19.80	2.50920	5.0783051
266	17:16:01	19.90	2.50956	5.0466948
267	17:17:01	20.10	2.50920	5.0356303
268	17:18:01	20.30	2.50920	5.0145607
269	17:19:01	20.30	2.50920	4.9936667
270	17:20:01	20.20	2.50920	4.9729461
271	17:21:01	20.10	2.50920	4.9523967
272	17:22:01	19.90	2.50884	4.9419204
273	17:23:01	19.80	2.50812	4.9414481
274	17:24:01	19.80	2.50776	4.931102
275	17:25:01	20.00	2.50739	4.9208672
276	17:26:01	20.20	2.50703	4.9107152
277	17:27:01	20.30	2.50631	4.9103495
278	17:28:01	20.30	2.50703	4.8712718
279	17:29:01	20.20	2.50631	4.8710667
280	17:30:01	20.10	2.50631	4.85166

281	17:31:01	19.90	2.50631	4.8324074
282	17:32:01	19.80	2.50631	4.813307
283	17:33:01	19.90	2.50595	4.8038583
284	17:34:01	20.00	2.50559	4.7944837
285	17:35:01	20.20	2.50595	4.7663281
286	17:36:01	20.30	2.50559	4.7571725
287	17:37:01	20.30	2.50595	4.7293798
288	17:38:01	20.20	2.50450	4.7483655
289	17:39:01	20.10	2.50450	4.7301026
290	17:40:01	19.90	2.50486	4.7027331
291	17:41:01	19.80	2.50450	4.6939949
292	17:42:01	19.80	2.50414	4.6853232
293	17:43:01	19.90	2.50342	4.6858333
294	17:44:01	20.10	2.50342	4.6681509
295	17:45:01	20.30	2.50342	4.6506015
296	17:46:01	20.30	2.50342	4.6331835
297	17:47:01	20.20	2.50342	4.6158955
298	17:48:01	20.10	2.50305	4.6077076
299	17:49:01	19.90	2.50305	4.590642
300	17:50:01	19.80	2.50305	4.5737023
301	17:51:01	19.90	2.50161	4.5923529
302	17:52:01	20.00	2.50233	4.557851
303	17:53:01	20.20	2.50161	4.5588321
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306	17:56:01	20.20	2.50125	4.5181468
307	17:57:01	20.10	2.50052	4.5192566
308	17:58:01	19.90	2.50052	4.5030585
309	17:59:01	19.80	2.50052	4.4869762
310	18:00:01	19.80	2.50052	4.4710083
311	18:01:01	20.00	2.50052	4.4551537
312	18:02:01	20.20	2.50052	4.4394111
313	18:03:01	20.30	2.50052	4.4237793
314	18:04:01	20.30	2.50052	4.4082573
315	18:05:01	20.20	2.50052	4.3928438
316	18:06:01	20.10	2.49908	4.4111266
317	18:07:01	19.90	2.49871	4.4041898
318	18:08:01	19.80	2.49908	4.3805998
319	18:09:01	19.90	2.49799	4.3904598
320	18:10:01	20.00	2.49835	4.367079
321	18:11:01	20.10	2.49835	4.3521233
322	18:12:01	20.30	2.49763	4.3537201
323	18:13:01	20.30	2.49799	4.3307256
324	18:14:01	20.20	2.49763	4.3242034
325	18:15:01	20.10	2.49763	4.3095946
326	18:16:01	19.90	2.49763	4.2950842
327	18:17:01	19.80	2.49690	4.296868

328	18:18:01	19.80	2.49763	4.2663545
329	18:19:01	19.90	2.49763	4.2521333
330	18:20:01	20.10	2.49763	4.2380066
331	18:21:01	20.30	2.49654	4.247947
332	18:22:01	20.30	2.49690	4.2259626
333	18:23:01	20.20	2.49727	4.2041228
334	18:24:01	20.10	2.49546	4.2298798
335	18:25:01	19.90	2.49582	4.2081699
336	18:26:01	19.80	2.49582	4.1944625
337	18:27:01	19.80	2.49546	4.1886797
338	18:28:01	20.00	2.49473	4.1907228
339	18:29:01	20.20	2.49473	4.1772043
340	18:30:01	20.30	2.49473	4.1637728
341	18:31:01	20.30	2.49473	4.1504274
342	18:32:01	20.20	2.49473	4.1371672
343	18:33:01	20.00	2.49401	4.1393631
344	18:34:01	19.90	2.49437	4.1185608
345	18:35:01	19.80	2.49437	4.1055274
346	18:36:01	19.80	2.49437	4.0925762
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349	18:39:01	20.30	2.49365	4.0692708
350	18:40:01	20.30	2.49365	4.056594
351	18:41:01	20.20	2.49256	4.0664596
352	18:42:01	20.00	2.49256	4.05387
353	18:43:01	19.90	2.49256	4.041358
354	18:44:01	19.80	2.49184	4.0437744
355	18:45:01	19.80	2.49184	4.0313701
356	18:46:01	20.00	2.49184	4.0190418
357	18:47:01	20.20	2.49184	4.0067886
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359	18:49:01	20.30	2.49184	3.9825051
360	18:50:01	20.20	2.49220	3.9631823
361	18:51:01	20.00	2.49184	3.9585141
362	18:52:01	19.90	2.49184	3.9466266
363	18:53:01	19.80	2.49112	3.9492415
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365	18:55:01	20.00	2.49076	3.9329167
366	18:56:01	20.20	2.49184	3.8997824
367	18:57:01	20.30	2.48931	3.9381854
368	18:58:01	20.30	2.49039	3.9052311
369	18:59:01	20.20	2.49076	3.8866471
370	19:00:01	20.10	2.48967	3.8964614
371	19:01:01	19.90	2.48931	3.8921248
372	19:02:01	19.80	2.49003	3.8667055
373	19:03:01	19.80	2.48967	3.8624806
374	19:04:01	20.00	2.48931	3.8582802

375	19:05:01	20.10	2.48931	3.8471291
376	19:06:01	20.30	2.48895	3.8429779
377	19:07:01	20.30	2.48895	3.8319349
378	19:08:01	20.20	2.48895	3.8209551
379	19:09:01	20.00	2.48895	3.8100381
380	19:10:01	19.90	2.48822	3.8129345
381	19:11:01	19.80	2.48822	3.8021023
382	19:12:01	19.90	2.48822	3.7913314
383	19:13:01	20.00	2.48750	3.7942373
384	19:14:01	20.20	2.48750	3.7835493
385	19:15:01	20.30	2.48750	3.7729213
386	19:16:01	20.30	2.48786	3.7556116
387	19:17:01	20.20	2.48714	3.7585847
388	19:18:01	20.00	2.48642	3.7615413
389	19:19:01	19.90	2.48678	3.7444074
390	19:20:01	19.80	2.48678	3.7340351
391	19:21:01	19.90	2.48642	3.7303683
392	19:22:01	20.00	2.48605	3.7267401
393	19:23:01	20.20	2.48678	3.7032601
394	19:24:01	20.30	2.48569	3.7129315
395	19:25:01	20.30	2.48605	3.6961931
396	19:26:01	20.10	2.48605	3.6861217
397	19:27:01	20.00	2.48605	3.6761051
398	19:28:01	19.80	2.48605	3.6661427
399	19:29:01	19.80	2.48605	3.6562342
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403	19:33:01	20.30	2.48533	3.6300357
404	19:34:01	20.30	2.48533	3.6203556
405	19:35:01	20.20	2.48424	3.6299645
406	19:36:01	20.00	2.48424	3.620336
407	19:37:01	19.80	2.48424	3.6107584
408	19:38:01	19.80	2.48352	3.613949
409	19:39:01	19.90	2.48497	3.5790526
410	19:40:01	20.00	2.48352	3.5949781
411	19:41:01	20.20	2.48352	3.5855672
412	19:42:01	20.30	2.48316	3.5825065
413	19:43:01	20.30	2.48316	3.5731771
414	19:44:01	20.10	2.48316	3.5638961
415	19:45:01	20.00	2.48280	3.5609154
416	19:46:01	19.80	2.48316	3.545478
417	19:47:01	19.80	2.48316	3.5363402
418	19:48:01	19.90	2.48280	3.5334533
419	19:49:01	20.00	2.48316	3.5182051
420	19:50:01	20.20	2.48316	3.5092072
421	19:51:01	20.30	2.48280	3.5064116

422	19:52:01	20.30	2.48280	3.4974894
423	19:53:01	20.10	2.48316	3.4824873
424	19:54:01	20.00	2.48171	3.4980928
425	19:55:01	19.80	2.48135	3.4953367
426	19:56:01	19.80	2.48135	3.4865323
427	19:57:01	19.90	2.48135	3.4777722
428	19:58:01	20.00	2.48244	3.4509273
429	19:59:01	20.20	2.48171	3.4543667
430	20:00:01	20.30	2.48099	3.4577722
431	20:01:01	20.30	2.48063	3.4551741
432	20:02:01	20.10	2.48027	3.4525889
433	20:03:01	20.00	2.48099	3.4320957
434	20:04:01	19.80	2.48027	3.4355391
435	20:05:01	19.80	2.48063	3.421133
436	20:06:01	19.90	2.48027	3.4186568
437	20:07:01	20.00	2.48027	3.4102778
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439	20:09:01	20.30	2.48027	3.3936423
440	20:10:01	20.30	2.48027	3.3853852
441	20:11:01	20.10	2.47990	3.3830097
442	20:12:01	20.00	2.47990	3.3748184
443	20:13:01	19.80	2.47954	3.372496
444	20:14:01	19.80	2.47918	3.3701847
445	20:15:01	19.90	2.47954	3.3562821
446	20:16:01	20.00	2.47954	3.3482334
447	20:17:01	20.20	2.47954	3.3402233
448	20:18:01	20.30	2.47918	3.3380111
449	20:19:01	20.30	2.47954	3.3243175
450	20:20:01	20.10	2.47773	3.3450515
451	20:21:01	20.00	2.47810	3.3314218
452	20:22:01	19.80	2.47846	3.3178408
453	20:23:01	19.80	2.47773	3.3213836
454	20:24:01	19.90	2.47773	3.3135686
455	20:25:01	20.00	2.47737	3.3114554
456	20:26:01	20.20	2.47737	3.3037002
457	20:27:01	20.30	2.47737	3.2959813
458	20:28:01	20.20	2.47773	3.2826729
459	20:29:01	20.10	2.47737	3.2806512
460	20:30:01	19.90	2.47737	3.2730394
461	20:31:01	19.80	2.47737	3.265463
462	20:32:01	19.80	2.47701	3.263495
463	20:33:01	19.90	2.47737	3.2504147
464	20:34:01	20.00	2.47701	3.2484904
465	20:35:01	20.20	2.47701	3.2410398
466	20:36:01	20.30	2.47737	3.2281007
467	20:37:01	20.20	2.47701	3.2262405
468	20:38:01	20.10	2.47593	3.2353683

469	20:39:01	19.90	2.47701	3.2115758
470	20:40:01	19.80	2.47701	3.2042933
471	20:41:01	19.80	2.47593	3.2134087
472	20:42:01	19.90	2.47520	3.2170504
473	20:43:01	20.10	2.47593	3.1989339
474	20:44:01	20.20	2.47593	3.1917453
475	20:45:01	20.30	2.47448	3.2062182
476	20:46:01	20.20	2.47448	3.1990455
477	20:47:01	20.10	2.47448	3.1919048
478	20:48:01	19.90	2.47484	3.1794209
479	20:49:01	19.80	2.47448	3.1777185
480	20:50:01	19.80	2.47448	3.1706726
481	20:51:01	19.90	2.47448	3.1636578
482	20:52:01	20.10	2.47448	3.156674
483	20:53:01	20.30	2.47448	3.149721
484	20:54:01	20.30	2.47448	3.1427985
485	20:55:01	20.20	2.47448	3.1359064
486	20:56:01	20.00	2.47412	3.1343253
487	20:57:01	19.90	2.47448	3.1222125
488	20:58:01	19.80	2.47448	3.1154103
489	20:59:01	19.80	2.47448	3.1086377
490	21:00:01	20.00	2.47448	3.1018944
491	21:01:01	20.10	2.47376	3.1056133
492	21:02:01	20.30	2.47339	3.1041181
493	21:03:01	20.30	2.47376	3.092227
494	21:04:01	20.10	2.47303	3.095957
495	21:05:01	20.00	2.47376	3.0789557
496	21:06:01	19.90	2.47195	3.098187
497	21:07:01	19.80	2.47195	3.091567
498	21:08:01	19.90	2.47231	3.0798294
499	21:09:01	20.00	2.47267	3.068156
500	21:10:01	20.20	2.47158	3.0769993
501	21:11:01	20.30	2.47195	3.0653672
502	21:12:01	20.20	2.47195	3.0588865
503	21:13:01	20.10	2.47158	3.0575246
504	21:14:01	19.90	2.47158	3.0510877
505	21:15:01	19.80	2.47158	3.0446779
506	21:16:01	19.80	2.47158	3.0382949
507	21:17:01	19.90	2.47158	3.0319386
508	21:18:01	20.00	2.47231	3.0155324
509	21:19:01	20.20	2.47122	3.0243194
510	21:20:01	20.30	2.47158	3.0130284
511	21:21:01	20.20	2.47158	3.0067773
512	21:22:01	20.10	2.47158	3.0005521
513	21:23:01	19.90	2.47122	2.9993251
514	21:24:01	19.80	2.47122	2.9931409
515	21:25:01	19.80	2.47086	2.9919479

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517	21:27:01	20.10	2.47086	2.9796858
518	21:28:01	20.20	2.47086	2.9735924
519	21:29:01	20.30	2.47014	2.9773605
520	21:30:01	20.20	2.46941	2.981127
521	21:31:01	20.10	2.46978	2.9701626
522	21:32:01	19.90	2.46978	2.9641379
523	21:33:01	19.80	2.46978	2.9581377
524	21:34:01	19.80	2.46869	2.9667744
525	21:35:01	19.90	2.46941	2.9510753
526	21:36:01	20.10	2.46941	2.9451375
527	21:37:01	20.20	2.46905	2.9440696
528	21:38:01	20.30	2.46941	2.9333333
529	21:39:01	20.20	2.46869	2.9371067
530	21:40:01	20.10	2.46869	2.9312442
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532	21:42:01	19.80	2.46869	2.9195891
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534	21:44:01	19.90	2.46869	2.9080264
535	21:45:01	20.10	2.46869	2.9022793
536	21:46:01	20.20	2.46905	2.891808
537	21:47:01	20.30	2.46869	2.890853
538	21:48:01	20.20	2.46869	2.8851735
539	21:49:01	20.00	2.46833	2.8842484
540	21:50:01	19.90	2.46833	2.878604
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543	21:53:01	19.90	2.46761	2.8711803
544	21:54:01	20.10	2.46833	2.856246
545	21:55:01	20.20	2.46761	2.8600517
546	21:56:01	20.30	2.46761	2.8545197
547	21:57:01	20.20	2.46797	2.8443629
548	21:58:01	20.00	2.46652	2.8574695
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550	22:00:01	19.80	2.46688	2.8418682
551	22:01:01	19.80	2.46616	2.8456577
552	22:02:01	19.90	2.46652	2.835615
553	22:03:01	20.10	2.46616	2.8347964
554	22:04:01	20.30	2.46616	2.8293968
555	22:05:01	20.30	2.46616	2.8240177
556	22:06:01	20.20	2.46580	2.8232385
557	22:07:01	20.00	2.46580	2.8178914
558	22:08:01	19.90	2.46616	2.8080025
559	22:09:01	19.80	2.46580	2.8072579
560	22:10:01	19.80	2.46580	2.8019711
561	22:11:01	19.90	2.46580	2.7967043
562	22:12:01	20.10	2.46544	2.795985

563	22:13:01	20.30	2.46544	2.7907491
564	22:14:01	20.30	2.46580	2.7810218
565	22:15:01	20.10	2.46544	2.7803358
566	22:16:01	20.00	2.46580	2.7706642
567	22:17:01	19.80	2.46544	2.77
568	22:18:01	19.80	2.46471	2.7738033
569	22:19:01	19.80	2.46435	2.7731358
570	22:20:01	20.00	2.46580	2.7501787
571	22:21:01	20.20	2.46544	2.7495572
572	22:22:01	20.30	2.46507	2.7489257
573	22:23:01	20.30	2.46507	2.7438725
574	22:24:01	20.10	2.46399	2.7521223
575	22:25:01	20.00	2.46399	2.7470818
576	22:26:01	19.80	2.46363	2.7464595
577	22:27:01	19.80	2.46399	2.737056
578	22:28:01	19.80	2.46327	2.74085
579	22:29:01	20.00	2.46435	2.7227152
580	22:30:01	20.10	2.46327	2.7309014
581	22:31:01	20.30	2.46363	2.7215821
582	22:32:01	20.30	2.46290	2.7253888
583	22:33:01	20.10	2.46363	2.7117569
584	22:34:01	20.00	2.46327	2.7112192
585	22:35:01	19.80	2.46363	2.7020024
586	22:36:01	19.80	2.46290	2.7058169
587	22:37:01	19.80	2.46290	2.7009677
588	22:38:01	19.90	2.46290	2.696136
589	22:39:01	20.10	2.46254	2.695619
590	22:40:01	20.30	2.46290	2.6865241
591	22:41:01	20.30	2.46290	2.6817438
592	22:42:01	20.20	2.46290	2.6769805
593	22:43:01	20.00	2.46218	2.6807801
594	22:44:01	19.90	2.46218	2.6760354
595	22:45:01	19.80	2.46254	2.6670436
596	22:46:01	19.80	2.46254	2.6623398
597	22:47:01	19.90	2.46254	2.6576526
598	22:48:01	20.10	2.46182	2.6614646
599	22:49:01	20.30	2.46218	2.6525614
600	22:50:01	20.30	2.46146	2.6563689
601	22:51:01	20.10	2.46146	2.6517249
602	22:52:01	20.00	2.46110	2.6512973
603	22:53:01	19.80	2.46110	2.6466783
604	22:54:01	19.80	2.46110	2.6420754
605	22:55:01	19.80	2.46073	2.6416782
606	22:56:01	19.90	2.46037	2.6412825
607	22:57:01	20.10	2.46073	2.6325375
608	22:58:01	20.30	2.46110	2.6238227
609	22:59:01	20.30	2.46110	2.6192989

610	23:00:01	20.20	2.46001	2.6272404
611	23:01:01	20.00	2.46037	2.6185911
612	23:02:01	19.80	2.46001	2.6182276
613	23:03:01	19.80	2.46001	2.6137443
614	23:04:01	19.80	2.46001	2.6092764
615	23:05:01	19.90	2.46001	2.6048237
616	23:06:01	20.10	2.46001	2.6003861
617	23:07:01	20.30	2.46001	2.5959637
618	23:08:01	20.20	2.46001	2.5915563
619	23:09:01	20.10	2.46001	2.5871638
620	23:10:01	20.00	2.46001	2.5827862
621	23:11:01	19.80	2.46001	2.5784234
622	23:12:01	19.80	2.46001	2.5740753
623	23:13:01	19.80	2.45965	2.5738047
624	23:14:01	20.00	2.45965	2.569479
625	23:15:01	20.10	2.46001	2.5611186
626	23:16:01	20.30	2.45929	2.5649135
627	23:17:01	20.20	2.45929	2.5606243
628	23:18:01	20.10	2.45965	2.5523205
629	23:19:01	19.90	2.45929	2.5520889
630	23:20:01	19.80	2.45893	2.5518469
631	23:21:01	19.80	2.46001	2.5355925
632	23:22:01	19.80	2.45856	2.5473853
633	23:23:01	20.00	2.45820	2.5471634
634	23:24:01	20.20	2.45856	2.5389642
635	23:25:01	20.30	2.45784	2.5427393
636	23:26:01	20.20	2.45820	2.5345744
637	23:27:01	20.10	2.45784	2.534375
638	23:28:01	19.90	2.45820	2.5262507
639	23:29:01	19.80	2.45820	2.5221093
640	23:30:01	19.80	2.45820	2.5179815
641	23:31:01	19.90	2.45784	2.5178105
642	23:32:01	20.00	2.45712	2.5215661
643	23:33:01	20.20	2.45820	2.5056786
644	23:34:01	20.30	2.45712	2.5133659
645	23:35:01	20.20	2.45748	2.505368
646	23:36:01	20.10	2.45712	2.5052188
647	23:37:01	19.90	2.45748	2.49726
648	23:38:01	19.80	2.45712	2.4971244
649	23:39:01	19.80	2.45712	2.4930968
650	23:40:01	19.90	2.45712	2.4890821
651	23:41:01	20.00	2.45712	2.4850804
652	23:42:01	20.20	2.45712	2.4810915
653	23:43:01	20.30	2.45712	2.4771154
654	23:44:01	20.20	2.45639	2.4808747
655	23:45:01	20.10	2.45712	2.4692013
656	23:46:01	19.90	2.45639	2.4729612

657	23:47:01	19.80	2.45712	2.4613376
658	23:48:01	19.80	2.45675	2.4612613
659	23:49:01	19.90	2.45603	2.4650053
660	23:50:01	20.00	2.45567	2.4649234
661	23:51:01	20.20	2.45639	2.4533966
662	23:52:01	20.30	2.45567	2.4571353
663	23:53:01	20.20	2.45531	2.4570662
664	23:54:01	20.00	2.45603	2.4455958
665	23:55:01	19.90	2.45531	2.4493396
666	23:56:01	19.80	2.45603	2.4379173
667	23:57:01	19.80	2.45531	2.4416614
668	23:58:01	19.90	2.45531	2.4378404
669	23:59:01	20.10	2.45458	2.4415625
670	0:00:01	20.20	2.45567	2.4264691
671	0:01:01	20.30	2.45495	2.4301973
672	0:02:01	20.20	2.45422	2.4339243
673	0:03:01	20.00	2.45458	2.4263975
674	0:04:01	19.80	2.45422	2.4263773
675	0:05:01	19.80	2.45422	2.4226213
676	0:06:01	19.80	2.45422	2.4188769
677	0:07:01	19.90	2.45422	2.415144
678	0:08:01	20.10	2.45422	2.4114227
679	0:09:01	20.20	2.45458	2.404
680	0:10:01	20.20	2.45458	2.4003072
681	0:11:01	20.10	2.45422	2.4003272
682	0:12:01	20.00	2.45422	2.3966514
683	0:13:01	19.80	2.45422	2.3929867
684	0:14:01	19.80	2.45422	2.3893333
685	0:15:01	19.80	2.45386	2.3893699
686	0:16:01	20.00	2.45422	2.3820599
687	0:17:01	20.10	2.45422	2.3784397
688	0:18:01	20.20	2.45386	2.3784927
689	0:19:01	20.20	2.45386	2.3748889
690	0:20:01	20.10	2.45386	2.371296
691	0:21:01	19.90	2.45350	2.3713494
692	0:22:01	19.80	2.45350	2.3677728
693	0:23:01	19.80	2.45205	2.3787349
694	0:24:01	19.90	2.45350	2.3606516
695	0:25:01	20.00	2.45314	2.3607307
696	0:26:01	20.20	2.45350	2.3535732
697	0:27:01	20.30	2.45278	2.3572754
698	0:28:01	20.20	2.45205	2.3609567
699	0:29:01	20.00	2.45205	2.3574328
700	0:30:01	19.90	2.45205	2.3539195
701	0:31:01	19.80	2.45241	2.3468254
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703	0:33:01	19.90	2.45278	2.3362908

704	0:34:01	20.00	2.45205	2.3399704
705	0:35:01	20.20	2.45241	2.3329389
706	0:36:01	20.30	2.45205	2.3330576
707	0:37:01	20.20	2.45169	2.333176
708	0:38:01	20.00	2.45169	2.3297398
709	0:39:01	19.90	2.45133	2.3298529
710	0:40:01	19.80	2.45169	2.3228977
711	0:41:01	19.80	2.45133	2.3230205
712	0:42:01	19.90	2.45133	2.3196193
713	0:43:01	20.00	2.45133	2.3162281
714	0:44:01	20.20	2.45169	2.3093333
715	0:45:01	20.30	2.45133	2.3094752
716	0:46:01	20.20	2.45133	2.3061135
717	0:47:01	20.00	2.45133	2.3027616
718	0:48:01	19.90	2.45133	2.2994194
719	0:49:01	19.80	2.45133	2.296087
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721	0:51:01	19.90	2.45133	2.2894509
722	0:52:01	20.00	2.45097	2.2896296
723	0:53:01	20.20	2.45133	2.282853
724	0:54:01	20.30	2.45133	2.2795683
725	0:55:01	20.20	2.45061	2.283228
726	0:56:01	20.00	2.45097	2.2764897
727	0:57:01	19.90	2.45061	2.2766858
728	0:58:01	19.80	2.45061	2.2734287
729	0:59:01	19.80	2.45024	2.2736286
730	1:00:01	19.90	2.45061	2.2669425
731	1:01:01	20.00	2.45024	2.267151
732	1:02:01	20.20	2.45024	2.263926
733	1:03:01	20.20	2.45024	2.2607102
734	1:04:01	20.20	2.44916	2.2677636
735	1:05:01	20.00	2.44988	2.2577148
736	1:06:01	19.80	2.44880	2.2647525
737	1:07:01	19.80	2.44880	2.2615537
738	1:08:01	19.80	2.44988	2.2481617
739	1:09:01	19.90	2.44916	2.2517934
740	1:10:01	20.10	2.44916	2.2486263
741	1:11:01	20.20	2.44916	2.2454682
742	1:12:01	20.20	2.44844	2.249079
743	1:13:01	20.10	2.44880	2.242549
744	1:14:01	20.00	2.44844	2.2427879
745	1:15:01	19.80	2.44844	2.2396555
746	1:16:01	19.70	2.44844	2.2365318
747	1:17:01	19.80	2.44844	2.2334169
748	1:18:01	19.90	2.44844	2.2303106
749	1:19:01	20.10	2.44844	2.227213
750	1:20:01	20.20	2.44844	2.2241239

751	1:21:01	20.20	2.44844	2.2210434
752	1:22:01	20.10	2.44844	2.2179714
753	1:23:01	19.90	2.44807	2.2182413
754	1:24:01	19.80	2.44807	2.2151816
755	1:25:01	19.80	2.44771	2.2154545
756	1:26:01	19.80	2.44807	2.2090876
757	1:27:01	20.00	2.44844	2.2027381
758	1:28:01	20.10	2.44771	2.2063374
759	1:29:01	20.20	2.44807	2.2000091
760	1:30:01	20.20	2.44807	2.1969995
761	1:31:01	20.10	2.44807	2.1939982
762	1:32:01	19.90	2.44771	2.1942974
763	1:33:01	19.80	2.44771	2.1913079
764	1:34:01	19.70	2.44735	2.1916009
765	1:35:01	19.80	2.44771	2.1853533
766	1:36:01	19.90	2.44663	2.1922026
767	1:37:01	20.10	2.44699	2.1859621
768	1:38:01	20.20	2.44771	2.1764817
769	1:39:01	20.20	2.44771	2.1735405
770	1:40:01	20.10	2.44699	2.177112
771	1:41:01	19.90	2.44735	2.1709254
772	1:42:01	19.80	2.44699	2.1712517
773	1:43:01	19.80	2.44663	2.1715771
774	1:44:01	19.80	2.44627	2.1718926
775	1:45:01	20.00	2.44627	2.1689812
776	1:46:01	20.10	2.44627	2.1660776
777	1:47:01	20.20	2.44663	2.1599643
778	1:48:01	20.20	2.44627	2.1602937
779	1:49:01	20.10	2.44627	2.1574133
780	1:50:01	19.90	2.44590	2.1577541
781	1:51:01	19.80	2.44627	2.1516755
782	1:52:01	19.80	2.44627	2.1488181
783	1:53:01	19.80	2.44590	2.1491689
784	1:54:01	20.00	2.44590	2.1463223
785	1:55:01	20.10	2.44590	2.1434832
786	1:56:01	20.20	2.44590	2.1406517
787	1:57:01	20.20	2.44590	2.1378276
788	1:58:01	20.10	2.44590	2.135011
789	1:59:01	19.90	2.44590	2.1322018
790	2:00:01	19.80	2.44590	2.1293999
791	2:01:01	19.80	2.44590	2.1266054
792	2:02:01	19.90	2.44554	2.1269812
793	2:03:01	20.00	2.44590	2.1210384
794	2:04:01	20.20	2.44590	2.1182658
795	2:05:01	20.30	2.44554	2.118651
796	2:06:01	20.20	2.44554	2.1158887
797	2:07:01	20.10	2.44590	2.1099913

798	2:08:01	19.90	2.44590	2.1072475
799	2:09:01	19.80	2.44518	2.1107792
800	2:10:01	19.80	2.44409	2.1174233
801	2:11:01	19.90	2.44518	2.1053109
802	2:12:01	20.00	2.44518	2.1025873
803	2:13:01	20.20	2.44518	2.0998708
804	2:14:01	20.30	2.44446	2.1033806
805	2:15:01	20.20	2.44409	2.1037801
806	2:16:01	20.00	2.44409	2.1010725
807	2:17:01	19.90	2.44446	2.0952699
808	2:18:01	19.70	2.44337	2.1018656
809	2:19:01	19.80	2.44482	2.0868034
810	2:20:01	19.90	2.44373	2.0933931
811	2:21:01	20.00	2.44337	2.0938022
812	2:22:01	20.20	2.44301	2.0942103
813	2:23:01	20.30	2.44337	2.0884609
814	2:24:01	20.20	2.44301	2.0888747
815	2:25:01	20.00	2.44409	2.0770144
816	2:26:01	19.90	2.44373	2.0774333
817	2:27:01	19.80	2.44337	2.0778596
818	2:28:01	19.80	2.44301	2.0782847
819	2:29:01	19.90	2.44337	2.0725992
820	2:30:01	20.00	2.44337	2.0699789
821	2:31:01	20.20	2.44337	2.0673653
822	2:32:01	20.20	2.44265	2.0708449
823	2:33:01	20.20	2.44265	2.0682368
824	2:34:01	20.00	2.44301	2.0625996
825	2:35:01	19.90	2.44229	2.0660637
826	2:36:01	19.80	2.44301	2.0574237
827	2:37:01	19.80	2.44265	2.0578697
828	2:38:01	19.90	2.44301	2.0522737
829	2:39:01	20.00	2.44301	2.0497083
830	2:40:01	20.20	2.44229	2.0531669
831	2:41:01	20.30	2.44301	2.0445968
832	2:42:01	20.20	2.44229	2.0480531
833	2:43:01	20.00	2.44301	2.0395108
834	2:44:01	19.80	2.44301	2.0369772
835	2:45:01	19.80	2.44265	2.0374442
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837	2:47:01	19.90	2.44229	2.0353795
838	2:48:01	20.00	2.44265	2.0298888
839	2:49:01	20.20	2.44265	2.0273827
840	2:50:01	20.20	2.44229	2.0278504
841	2:51:01	20.10	2.44265	2.0223892
842	2:52:01	20.00	2.44192	2.0258303
843	2:53:01	19.80	2.44156	2.0263063
844	2:54:01	19.70	2.44156	2.02382

845	2:55:01	19.80	2.44192	2.0183824
846	2:56:01	19.90	2.44192	2.0159119
847	2:57:01	20.00	2.44084	2.0222901
848	2:58:01	20.20	2.44048	2.0227676
849	2:59:01	20.20	2.44156	2.0114797
850	3:00:01	20.10	2.44156	2.0090296
851	3:01:01	20.00	2.44120	2.0095215
852	3:02:01	19.80	2.44084	2.0100041
853	3:03:01	19.70	2.44084	2.0075647
854	3:04:01	19.80	2.44048	2.0080566
855	3:05:01	19.90	2.44120	1.9997902
856	3:06:01	20.10	2.44012	2.0061185
857	3:07:01	20.20	2.44012	2.0036957
858	3:08:01	20.20	2.44012	2.0012786
859	3:09:01	20.10	2.44084	1.9930522
860	3:10:01	20.00	2.44012	1.9964621
861	3:11:01	19.80	2.44048	1.9911619
862	3:12:01	19.70	2.44012	1.9916687
863	3:13:01	19.80	2.44012	1.9892806
864	3:14:01	19.90	2.44012	1.9868982
865	3:15:01	20.10	2.44012	1.9845215
866	3:16:01	20.20	2.44012	1.9821505
867	3:17:01	20.20	2.44012	1.9797852
868	3:18:01	20.10	2.44012	1.9774255
869	3:19:01	19.90	2.44012	1.9750714
870	3:20:01	19.80	2.44012	1.9727229
871	3:21:01	19.70	2.44012	1.97038
872	3:22:01	19.80	2.44012	1.9680427
873	3:23:01	19.90	2.44012	1.9657109
874	3:24:01	20.10	2.43939	1.9690888
875	3:25:01	20.20	2.44012	1.9610638
876	3:26:01	20.20	2.43975	1.9615899
877	3:27:01	20.10	2.43939	1.9621226
878	3:28:01	19.90	2.43867	1.9654967
879	3:29:01	19.80	2.43975	1.9546667
880	3:30:01	19.70	2.43939	1.9552056
881	3:31:01	19.80	2.43939	1.9529108
882	3:32:01	19.90	2.43939	1.9506213
883	3:33:01	20.10	2.43939	1.9483372
884	3:34:01	20.20	2.43903	1.9488811
885	3:35:01	20.20	2.43903	1.9466044
886	3:36:01	20.10	2.43903	1.9443329
887	3:37:01	19.90	2.43831	1.9476845
888	3:38:01	19.80	2.43831	1.9454172
889	3:39:01	19.80	2.43795	1.9459612
890	3:40:01	19.80	2.43795	1.9437011
891	3:41:01	20.00	2.43903	1.9330549

892	3:42:01	20.10	2.43867	1.9336114
893	3:43:01	20.20	2.43831	1.934159
894	3:44:01	20.20	2.43795	1.9347129
895	3:45:01	20.10	2.43722	1.9380446
896	3:46:01	19.90	2.43795	1.9302499
897	3:47:01	19.80	2.43795	1.9280261
898	3:48:01	19.70	2.43758	1.9285846
899	3:49:01	19.80	2.43722	1.9291341
900	3:50:01	19.90	2.43758	1.9241561
901	3:51:01	20.10	2.43758	1.9219495
902	3:52:01	20.20	2.43722	1.9225048
903	3:53:01	20.20	2.43722	1.9203051
904	3:54:01	20.10	2.43722	1.9181105
905	3:55:01	19.90	2.43722	1.9159209
906	3:56:01	19.80	2.43722	1.9137362
907	3:57:01	19.70	2.43722	1.9115566
908	3:58:01	19.80	2.43722	1.9093819
909	3:59:01	20.00	2.43722	1.9072121
910	4:00:01	20.10	2.43686	1.9077866
911	4:01:01	20.20	2.43722	1.9028874
912	4:02:01	20.20	2.43722	1.9007324
913	4:03:01	20.00	2.43686	1.9013122
914	4:04:01	19.90	2.43722	1.8964369
915	4:05:01	19.80	2.43686	1.8970203
916	4:06:01	19.80	2.43722	1.8921608
917	4:07:01	19.90	2.43650	1.8954655
918	4:08:01	20.00	2.43722	1.887904
919	4:09:01	20.10	2.43686	1.8884944
920	4:10:01	20.20	2.43686	1.8863749
921	4:11:01	20.20	2.43686	1.8842601
922	4:12:01	20.00	2.43614	1.8875551
923	4:13:01	19.90	2.43722	1.8773453
924	4:14:01	19.70	2.43650	1.8806406
925	4:15:01	19.80	2.43505	1.889308
926	4:16:01	19.90	2.43614	1.8791379
927	4:17:01	20.00	2.43614	1.8770453
928	4:18:01	20.20	2.43578	1.8776344
929	4:19:01	20.20	2.43541	1.8782296
930	4:20:01	20.20	2.43578	1.8734665
931	4:21:01	20.00	2.43505	1.8767406
932	4:22:01	19.80	2.43541	1.8719897
933	4:23:01	19.70	2.43469	1.8752507
934	4:24:01	19.80	2.43541	1.8678527
935	4:25:01	19.90	2.43505	1.8684547
936	4:26:01	20.00	2.43433	1.8717089
937	4:27:01	20.20	2.43469	1.8669897
938	4:28:01	20.20	2.43541	1.8596333

939	4:29:01	20.20	2.43469	1.8628864
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941	4:31:01	19.80	2.43433	1.8614474
942	4:32:01	19.70	2.43433	1.8594085
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944	4:34:01	19.90	2.43469	1.8527067
945	4:35:01	20.00	2.43433	1.8533188
946	4:36:01	20.20	2.43433	1.8512977
947	4:37:01	20.20	2.43433	1.849281
948	4:38:01	20.10	2.43433	1.8472688
949	4:39:01	20.00	2.43397	1.8478841
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953	4:43:01	19.90	2.43433	1.8372727
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955	4:45:01	20.20	2.43433	1.8333045
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958	4:48:01	20.00	2.43397	1.8299821
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961	4:51:01	19.80	2.43360	1.826681
962	4:52:01	19.90	2.43397	1.8221365
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965	4:55:01	20.20	2.43397	1.8162963
966	4:56:01	20.10	2.43360	1.8169335
967	4:57:01	20.00	2.43397	1.8124236
968	4:58:01	19.80	2.43324	1.8156266
969	4:59:01	19.70	2.43397	1.8085674
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971	5:01:01	19.90	2.43288	1.8124062
972	5:02:01	20.00	2.43288	1.8104843
973	5:03:01	20.20	2.43360	1.8034605
974	5:04:01	20.20	2.43288	1.8066526
975	5:05:01	20.10	2.43252	1.8072939
976	5:06:01	20.00	2.43252	1.8053854
977	5:07:01	19.80	2.43216	1.8060197
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979	5:09:01	19.80	2.43252	1.7996842
980	5:10:01	19.90	2.43252	1.7977918
981	5:11:01	20.10	2.43252	1.7959034
982	5:12:01	20.20	2.43252	1.7940189
983	5:13:01	20.20	2.43180	1.7971908
984	5:14:01	20.10	2.43216	1.7927818
985	5:15:01	19.90	2.43143	1.7959554

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990	5:20:01	20.10	2.43143	1.7866112
991	5:21:01	20.20	2.43143	1.784754
992	5:22:01	20.20	2.43143	1.7829007
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994	5:24:01	19.90	2.43143	1.7792055
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997	5:27:01	19.80	2.43143	1.7736915
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999	5:29:01	20.00	2.43107	1.7725223
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1001	5:31:01	20.20	2.43143	1.7663923
1002	5:32:01	20.10	2.43180	1.7620966
1003	5:33:01	19.90	2.43143	1.7627652
1004	5:34:01	19.80	2.43143	1.7609573
1005	5:35:01	19.70	2.43071	1.7640915
1006	5:36:01	19.80	2.43071	1.7622859
1007	5:37:01	19.90	2.43143	1.7555556
1008	5:38:01	20.10	2.43107	1.7562274
1009	5:39:01	20.20	2.43107	1.7544354
1010	5:40:01	20.20	2.43107	1.752647
1011	5:41:01	20.10	2.43143	1.7484046
1012	5:42:01	19.90	2.43071	1.7515293
1013	5:43:01	19.80	2.43035	1.7522019
1014	5:44:01	19.70	2.43035	1.750423
1015	5:45:01	19.80	2.43107	1.7437593
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1017	5:47:01	20.00	2.42999	1.7475506
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1039	6:09:01	19.90	2.42890	1.7166469
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1046	6:16:01	20.20	2.42890	1.7048312
1047	6:17:01	20.10	2.42854	1.7055272
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1061	6:31:01	19.90	2.42782	1.6870607
1062	6:32:01	20.10	2.42746	1.6877638
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1097	7:07:01	19.90	2.42529	1.6459988
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1100	7:10:01	20.20	2.42529	1.6413881
1101	7:11:01	20.10	2.42565	1.6376057
1102	7:12:01	19.90	2.42565	1.6360795
1103	7:13:01	19.80	2.42565	1.6345562
1104	7:14:01	19.70	2.42565	1.6330357
1105	7:15:01	19.80	2.42492	1.6360037
1106	7:16:01	19.90	2.42529	1.6322439
1107	7:17:01	20.10	2.42529	1.6307297
1108	7:18:01	20.20	2.42529	1.6292184
1109	7:19:01	20.20	2.42492	1.6299444
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1112	7:22:01	19.70	2.42420	1.62988
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1115	7:25:01	19.90	2.42456	1.6231553
1116	7:26:01	20.10	2.42456	1.6216621
1117	7:27:01	20.20	2.42529	1.6157414
1118	7:28:01	20.20	2.42492	1.6164738
1119	7:29:01	20.10	2.42384	1.6216269
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1121	7:31:01	19.70	2.42348	1.6208669
1122	7:32:01	19.70	2.42384	1.617176
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1124	7:34:01	19.90	2.42275	1.620828
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1131	7:41:01	19.70	2.42312	1.6083424
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1135	7:45:01	20.20	2.42384	1.5981676
1136	7:46:01	20.20	2.42312	1.601078
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1138	7:48:01	19.90	2.42312	1.5981906
1139	7:49:01	19.80	2.42312	1.5967508
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1147	7:57:01	19.90	2.42275	1.5874836
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1151	8:01:01	19.90	2.42275	1.5818241
1152	8:02:01	20.10	2.42275	1.5804156
1153	8:03:01	20.20	2.42275	1.5790095
1154	8:04:01	20.20	2.42239	1.5797511
1155	8:05:01	20.10	2.42239	1.5783481
1156	8:06:01	19.90	2.42239	1.5769476
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1165	8:15:01	19.90	2.42167	1.5686972
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1169	8:19:01	19.90	2.42167	1.563193
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1172	8:22:01	20.20	2.42095	1.5633071
1173	8:23:01	20.10	2.42095	1.5619406

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1182	8:32:01	20.10	2.41986	1.5560278
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1195	8:45:01	19.90	2.42058	1.5345397
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1198	8:48:01	20.30	2.41986	1.5347305
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1205	8:55:01	20.10	2.41986	1.5255952
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1207	8:57:01	20.30	2.41950	1.5250481
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1209	8:59:01	20.00	2.41877	1.5265537
1210	9:00:01	19.80	2.41950	1.5211741
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1212	9:02:01	19.80	2.41914	1.5206424
1213	9:03:01	19.90	2.41877	1.5213964
1214	9:04:01	20.10	2.41950	1.5160394
1215	9:05:01	20.20	2.41914	1.516796
1216	9:06:01	20.20	2.41877	1.5175512
1217	9:07:01	20.10	2.41914	1.5142424
1218	9:08:01	20.00	2.41914	1.5129689
1219	9:09:01	19.80	2.41877	1.5137255
1220	9:10:01	19.80	2.41841	1.5144808

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1222	9:12:01	19.90	2.41877	1.509919
1223	9:13:01	20.10	2.41914	1.5066332
1224	9:14:01	20.20	2.41841	1.5094114
1225	9:15:01	20.20	2.41841	1.5081494
1226	9:16:01	20.10	2.41914	1.5028571
1227	9:17:01	19.90	2.41877	1.5036171
1228	9:18:01	19.80	2.41805	1.5063831
1229	9:19:01	19.80	2.41841	1.5031222
1230	9:20:01	19.80	2.41877	1.4998612
1231	9:21:01	20.00	2.41733	1.5066389
1232	9:22:01	20.10	2.41805	1.5013743
1233	9:23:01	20.30	2.41877	1.496124
1234	9:24:01	20.20	2.41733	1.502888
1235	9:25:01	20.10	2.41769	1.4996407
1236	9:26:01	19.90	2.41697	1.5023916
1237	9:27:01	19.80	2.41697	1.5011479
1238	9:28:01	19.80	2.41769	1.4959195
1239	9:29:01	19.80	2.41697	1.4986667
1240	9:30:01	20.00	2.41805	1.4914561
1241	9:31:01	20.20	2.41697	1.4961936
1242	9:32:01	20.30	2.41697	1.4949602
1243	9:33:01	20.20	2.41697	1.4937287
1244	9:34:01	20.10	2.41733	1.4905185
1245	9:35:01	19.90	2.41733	1.4892928
1246	9:36:01	19.80	2.41697	1.4900466
1247	9:37:01	19.80	2.41697	1.4888232
1248	9:38:01	19.90	2.41697	1.4876019
1249	9:39:01	20.00	2.41733	1.4844098
1250	9:40:01	20.20	2.41697	1.4851652
1251	9:41:01	20.30	2.41697	1.4839498
1252	9:42:01	20.20	2.41697	1.4827364
1253	9:43:01	20.10	2.41697	1.4815251
1254	9:44:01	19.90	2.41624	1.4842558
1255	9:45:01	19.80	2.41697	1.4791082
1256	9:46:01	19.80	2.41697	1.4779027
1257	9:47:01	19.90	2.41697	1.4766992
1258	9:48:01	20.00	2.41660	1.4774614
1259	9:49:01	20.20	2.41697	1.4742981
1260	9:50:01	20.30	2.41660	1.4750609
1261	9:51:01	20.20	2.41624	1.4758225
1262	9:52:01	20.10	2.41697	1.470711
1263	9:53:01	19.90	2.41697	1.4695192
1264	9:54:01	19.80	2.41588	1.4741916
1265	9:55:01	19.80	2.41697	1.4671413
1266	9:56:01	19.90	2.41697	1.4659553
1267	9:57:01	20.10	2.41660	1.4667205

1268	9:58:01	20.20	2.41660	1.4655367
1269	9:59:01	20.30	2.41624	1.4663011
1270	10:00:01	20.20	2.41697	1.4612302
1271	10:01:01	20.00	2.41697	1.4600537
1272	10:02:01	19.90	2.41697	1.4588791
1273	10:03:01	19.80	2.41697	1.4577063
1274	10:04:01	19.80	2.41624	1.4604123
1275	10:05:01	19.90	2.41697	1.4553665
1276	10:06:01	20.10	2.41588	1.4600053
1277	10:07:01	20.20	2.41588	1.4588355
1278	10:08:01	20.20	2.41624	1.4557353
1279	10:09:01	20.20	2.41552	1.4584267
1280	10:10:01	20.00	2.41552	1.4572609
1281	10:11:01	19.80	2.41588	1.4541747
1282	10:12:01	19.80	2.41624	1.4510881
1283	10:13:01	19.80	2.41552	1.4537746
1284	10:14:01	20.00	2.41588	1.4506985
1285	10:15:01	20.10	2.41660	1.4457006
1286	10:16:01	20.30	2.41588	1.4483903
1287	10:17:01	20.20	2.41480	1.4529889
1288	10:18:01	20.10	2.41480	1.4518348
1289	10:19:01	19.90	2.41516	1.4487672
1290	10:20:01	19.80	2.41516	1.4476183
1291	10:21:01	19.80	2.41443	1.4502905
1292	10:22:01	19.90	2.41480	1.4472367
1293	10:23:01	20.00	2.41480	1.4460918
1294	10:24:01	20.20	2.41552	1.4411331
1295	10:25:01	20.30	2.41480	1.4438073
1296	10:26:01	20.20	2.41480	1.4426677
1297	10:27:01	20.10	2.41552	1.4377234
1298	10:28:01	19.90	2.41407	1.4441923
1299	10:29:01	19.80	2.41443	1.4411549
1300	10:30:01	19.80	2.41443	1.440021
1301	10:31:01	19.90	2.41407	1.4407862
1302	10:32:01	20.00	2.41443	1.4377586
1303	10:33:01	20.20	2.41407	1.4385243
1304	10:34:01	20.30	2.41443	1.4355033
1305	10:35:01	20.20	2.41407	1.4362696
1306	10:36:01	20.10	2.41407	1.4351449
1307	10:37:01	19.90	2.41443	1.4321335
1308	10:38:01	19.80	2.41407	1.4329007
1309	10:39:01	19.80	2.41407	1.4317813
1310	10:40:01	19.90	2.41407	1.4306635
1311	10:41:01	20.00	2.41407	1.4295476
1312	10:42:01	20.20	2.41407	1.4284334
1313	10:43:01	20.30	2.41407	1.4273209
1314	10:44:01	20.20	2.41407	1.4262101

1315	10:45:01	20.10	2.41407	1.4251011
1316	10:46:01	19.90	2.41407	1.4239938
1317	10:47:01	19.80	2.41407	1.4228882
1318	10:48:01	19.80	2.41443	1.4199121
1319	10:49:01	19.90	2.41407	1.4206822
1320	10:50:01	20.10	2.41407	1.4195817
1321	10:51:01	20.20	2.41407	1.418483
1322	10:52:01	20.30	2.41407	1.4173859
1323	10:53:01	20.20	2.41371	1.4181556
1324	10:54:01	20.10	2.41371	1.4170605
1325	10:55:01	19.90	2.41407	1.4141049
1326	10:56:01	19.80	2.41407	1.4130146
1327	10:57:01	19.80	2.41371	1.4137853
1328	10:58:01	19.90	2.41407	1.4108391
1329	10:59:01	20.10	2.41299	1.4153179
1330	11:00:01	20.20	2.41407	1.4086703
1331	11:01:01	20.30	2.41407	1.4075883
1332	11:02:01	20.20	2.41335	1.4102072
1333	11:03:01	20.10	2.41335	1.4091258
1334	11:04:01	19.90	2.41371	1.4062018
1335	11:05:01	19.80	2.41335	1.4069678
1336	11:06:01	19.80	2.41299	1.4077378
1337	11:07:01	19.90	2.41371	1.4029766
1338	11:08:01	20.10	2.41299	1.405587
1339	11:09:01	20.30	2.41263	1.4063562
1340	11:10:01	20.30	2.41371	1.3997661
1341	11:11:01	20.20	2.41263	1.4042124
1342	11:12:01	20.00	2.41263	1.4031429
1343	11:13:01	19.90	2.41299	1.4002385
1344	11:14:01	19.80	2.41226	1.4028441
1345	11:15:01	19.80	2.41118	1.4072746
1346	11:16:01	19.90	2.41190	1.4025411
1347	11:17:01	20.10	2.41154	1.403308
1348	11:18:01	20.30	2.41154	1.4022441
1349	11:19:01	20.30	2.41190	1.3993535
1350	11:20:01	20.20	2.41263	1.3946455
1351	11:21:01	20.00	2.41226	1.395416
1352	11:22:01	19.90	2.41154	1.3980045
1353	11:23:01	19.80	2.41263	1.3914854
1354	11:24:01	19.80	2.41190	1.394073
1355	11:25:01	19.90	2.41190	1.3930216
1356	11:26:01	20.10	2.41118	1.3956091
1357	11:27:01	20.30	2.41154	1.392741
1358	11:28:01	20.30	2.41190	1.3898771
1359	11:29:01	20.20	2.41154	1.3906466
1360	11:30:01	20.00	2.41118	1.391415
1361	11:31:01	19.90	2.41118	1.3903704

1362	11:32:01	19.80	2.41118	1.3893273
1363	11:33:01	19.80	2.41154	1.3864768
1364	11:34:01	20.00	2.41118	1.3872459
1365	11:35:01	20.20	2.41118	1.3862076
1366	11:36:01	20.30	2.41118	1.3851708
1367	11:37:01	20.30	2.41118	1.3841355
1368	11:38:01	20.20	2.41118	1.3831018
1369	11:39:01	20.00	2.41118	1.3820697
1370	11:40:01	19.90	2.41118	1.381039
1371	11:41:01	19.80	2.41118	1.3800099
1372	11:42:01	19.90	2.41118	1.3789824
1373	11:43:01	20.00	2.41118	1.3779563
1374	11:44:01	20.20	2.41118	1.3769318
1375	11:45:01	20.30	2.41118	1.3759089
1376	11:46:01	20.30	2.41118	1.3748874
1377	11:47:01	20.20	2.41118	1.3738675
1378	11:48:01	20.00	2.41118	1.372849
1379	11:49:01	19.90	2.41118	1.3718321
1380	11:50:01	19.80	2.41082	1.3725981
1381	11:51:01	19.90	2.41082	1.3715828
1382	11:52:01	20.00	2.41082	1.3705691
1383	11:53:01	20.20	2.41118	1.3677794
1384	11:54:01	20.30	2.41046	1.3703272
1385	11:55:01	20.30	2.41046	1.3693166
1386	11:56:01	20.20	2.41118	1.3647556
1387	11:57:01	20.00	2.41046	1.3673
1388	11:58:01	19.90	2.41082	1.364518
1389	11:59:01	19.80	2.41046	1.3652892
1390	12:00:01	19.90	2.41046	1.3642861
1391	12:01:01	20.00	2.41118	1.3597455
1392	12:02:01	20.20	2.41046	1.3622842
1393	12:03:01	20.30	2.41046	1.3612854
1394	12:04:01	20.30	2.41118	1.356757
1395	12:05:01	20.20	2.41046	1.3592923
1396	12:06:01	20.00	2.41009	1.3600634
1397	12:07:01	19.90	2.41046	1.3573051
1398	12:08:01	19.80	2.41009	1.3580765
1399	12:09:01	19.90	2.40973	1.3588467
1400	12:10:01	20.00	2.41009	1.3560953
1401	12:11:01	20.20	2.41082	1.3515889
1402	12:12:01	20.30	2.41009	1.3541199
1403	12:13:01	20.30	2.41009	1.3531344
1404	12:14:01	20.10	2.41009	1.3521503
1405	12:15:01	20.00	2.40901	1.3564244
1406	12:16:01	19.80	2.40901	1.3554394
1407	12:17:01	19.80	2.40973	1.3509579
1408	12:18:01	19.90	2.40901	1.3534735

1409	12:19:01	20.00	2.41009	1.3472512
1410	12:20:01	20.20	2.40973	1.3480232
1411	12:21:01	20.30	2.41009	1.3453015
1412	12:22:01	20.30	2.41046	1.3425838
1413	12:23:01	20.10	2.40973	1.3451012
1414	12:24:01	20.00	2.40829	1.3510903
1415	12:25:01	19.90	2.40829	1.3501154
1416	12:26:01	19.80	2.40829	1.349142
1417	12:27:01	19.90	2.40937	1.3429587
1418	12:28:01	20.00	2.40829	1.3471994
1419	12:29:01	20.20	2.40901	1.3427626
1420	12:30:01	20.30	2.40829	1.3452624
1421	12:31:01	20.30	2.40865	1.342567
1422	12:32:01	20.10	2.40829	1.3433309
1423	12:33:01	20.00	2.40829	1.3423673
1424	12:34:01	19.90	2.40865	1.3396798
1425	12:35:01	19.80	2.40829	1.3404441
1426	12:36:01	19.90	2.40865	1.3377619
1427	12:37:01	20.10	2.40865	1.336805
1428	12:38:01	20.20	2.40865	1.3358494
1429	12:39:01	20.30	2.40829	1.3366143
1430	12:40:01	20.20	2.40829	1.3356602
1431	12:41:01	20.10	2.40829	1.3347076
1432	12:42:01	20.00	2.40829	1.3337562
1433	12:43:01	19.90	2.40829	1.3328063
1434	12:44:01	19.80	2.40829	1.3318577
1435	12:45:01	19.90	2.40829	1.3309104
1436	12:46:01	20.00	2.40829	1.3299645
1437	12:47:01	20.20	2.40829	1.3290199
1438	12:48:01	20.30	2.40829	1.3280767
1439	12:49:01	20.30	2.40829	1.3271348
1440	12:50:01	20.10	2.40829	1.3261942
1441	12:51:01	20.00	2.40829	1.325255
1442	12:52:01	19.80	2.40829	1.3243171
1443	12:53:01	19.80	2.40792	1.3250872
1444	12:54:01	19.90	2.40829	1.3224452
1445	12:55:01	20.00	2.40792	1.3232156
1446	12:56:01	20.20	2.40829	1.3205787
1447	12:57:01	20.30	2.40792	1.3213493
1448	12:58:01	20.20	2.40829	1.3187174
1449	12:59:01	20.10	2.40792	1.3194883
1450	13:00:01	19.90	2.40792	1.3185597
1451	13:01:01	19.80	2.40720	1.3210267
1452	13:02:01	19.80	2.40756	1.3184024
1453	13:03:01	19.90	2.40792	1.3157818
1454	13:04:01	20.10	2.40829	1.3131649
1455	13:05:01	20.20	2.40792	1.3139364

1456	13:06:01	20.30	2.40792	1.3130157	
1457	13:07:01	20.20	2.40792	1.3120962	
1458	13:08:01	20.10	2.40792	1.311178	
1459	13:09:01	19.90	2.40720	1.3136364	
1460	13:10:01	19.80	2.40792	1.3093454	
1461	13:11:01	19.80	2.40756	1.3101164	
1462	13:12:01	19.90	2.40684	1.3125657	
1463	13:13:01	20.10	2.40720	1.3099721	
1464	13:14:01	20.20	2.40720	1.3090592	
1465	13:15:01	20.30	2.40720	1.3081476	
1466	13:16:01	20.20	2.40756	1.3055579	
1467	13:17:01	20.10	2.40684	1.3080019	
1468	13:18:01	19.90	2.40684	1.3070929	
1469	13:19:01	19.80	2.40648	1.3078611	
1470	13:20:01	19.80	2.40684	1.3052787	24 horas
1471	13:21:01	19.90	2.40648	1.3060472	
1472	13:22:01	20.10	2.40575	1.3084869	
1473	13:23:01	20.30	2.40575	1.3075808	
1474	13:24:01	20.30	2.40684	1.3016655	
1475	13:25:01	20.20	2.40611	1.3041033	
1476	13:26:01	20.00	2.40575	1.3048698	
1477	13:27:01	19.90	2.40575	1.3039687	
1478	13:28:01	19.80	2.40648	1.2997378	
1479	13:29:01	19.80	2.40648	1.2988414	
1480	13:30:01	19.90	2.40575	1.3012727	
1481	13:31:01	20.10	2.40648	1.2970523	
1482	13:32:01	20.30	2.40539	1.3011379	
1483	13:33:01	20.30	2.40611	1.296928	
1484	13:34:01	20.20	2.40575	1.2976953	
1485	13:35:01	20.00	2.40575	1.296804	
1486	13:36:01	19.90	2.40539	1.2975658	
1487	13:37:01	19.80	2.40539	1.2966758	
1488	13:38:01	19.80	2.40575	1.2941375	
1489	13:39:01	20.00	2.40539	1.2948995	
1490	13:40:01	20.20	2.40539	1.2940132	
1491	13:41:01	20.30	2.40539	1.2931281	
1492	13:42:01	20.20	2.40539	1.2922442	
1493	13:43:01	20.10	2.40539	1.2913616	
1494	13:44:01	20.00	2.40539	1.2904801	
1495	13:45:01	19.80	2.40539	1.2895998	
1496	13:46:01	19.80	2.40539	1.2887207	
1497	13:47:01	19.90	2.40539	1.2878429	
1498	13:48:01	20.00	2.40539	1.2869662	
1499	13:49:01	20.20	2.40539	1.2860907	
1500	13:50:01	20.30	2.40503	1.286857	
1501	13:51:01	20.30	2.40539	1.2843433	
1502	13:52:01	20.20	2.40467	1.2867481	

1503	13:53:01	20.10	2.40539	1.2826006
1504	13:54:01	19.90	2.40539	1.2817311
1505	13:55:01	19.80	2.40539	1.2808627
1506	13:56:01	19.80	2.40539	1.2799955
1507	13:57:01	19.90	2.40539	1.2791295
1508	13:58:01	20.10	2.40539	1.2782646
1509	13:59:01	20.30	2.40467	1.2806622
1510	14:00:01	20.30	2.40539	1.2765384
1511	14:01:01	20.30	2.40539	1.275677
1512	14:02:01	20.10	2.40539	1.2748168
1513	14:03:01	20.00	2.40467	1.2772102
1514	14:04:01	19.80	2.40503	1.274725
1515	14:05:01	19.80	2.40539	1.2722432
1516	14:06:01	19.90	2.40539	1.2713876
1517	14:07:01	20.10	2.40539	1.2705332
1518	14:08:01	20.30	2.40503	1.2713006
1519	14:09:01	20.30	2.40503	1.2704474
1520	14:10:01	20.20	2.40503	1.2695953
1521	14:11:01	20.10	2.40503	1.2687444
1522	14:12:01	19.90	2.40394	1.2727395
1523	14:13:01	19.80	2.40431	1.2702722
1524	14:14:01	19.80	2.40431	1.2694225
1525	14:15:01	19.90	2.40431	1.268574
1526	14:16:01	20.10	2.40467	1.2661189
1527	14:17:01	20.30	2.40358	1.2701024
1528	14:18:01	20.30	2.40394	1.2676451
1529	14:19:01	20.30	2.40503	1.2619778
1530	14:20:01	20.10	2.40431	1.2643482
1531	14:21:01	20.00	2.40394	1.2651132
1532	14:22:01	19.80	2.40431	1.2626658
1533	14:23:01	19.80	2.40394	1.2634309
1534	14:24:01	19.90	2.40431	1.2609878
1535	14:25:01	20.00	2.40286	1.266556
1536	14:26:01	20.20	2.40394	1.2609157
1537	14:27:01	20.30	2.40322	1.2632759
1538	14:28:01	20.30	2.40322	1.2624387
1539	14:29:01	20.20	2.40467	1.2552185
1540	14:30:01	20.30	2.40358	1.2591749
1541	14:31:01	20.20	2.40358	1.2583422
1542	14:32:01	20.10	2.40358	1.2575105
1543	14:33:01	19.90	2.40394	1.2550859
1544	14:34:01	19.80	2.40322	1.2574389
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1547	14:37:01	20.20	2.40322	1.2549539
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1549	14:39:01	20.30	2.40322	1.2533026

1550	14:40:01	20.20	2.40322	1.2524786
1551	14:41:01	20.10	2.40286	1.2532413
1552	14:42:01	19.90	2.40286	1.2524185
1553	14:43:01	19.80	2.40286	1.2515967
1554	14:44:01	19.80	2.40250	1.2523585
1555	14:45:01	19.90	2.40286	1.2499563
1556	14:46:01	20.10	2.40286	1.2491377
1557	14:47:01	20.30	2.40286	1.2483202
1558	14:48:01	20.30	2.40250	1.2490822
1559	14:49:01	20.30	2.40250	1.2482658
1560	14:50:01	20.10	2.40250	1.2474505
1561	14:51:01	19.90	2.40250	1.2466362
1562	14:52:01	19.80	2.40250	1.245823
1563	14:53:01	19.80	2.40250	1.2450109
1564	14:54:01	19.90	2.40286	1.2426276
1565	14:55:01	20.00	2.40250	1.2433898
1566	14:56:01	20.20	2.40250	1.2425808
1567	14:57:01	20.30	2.40250	1.2417729
1568	14:58:01	20.30	2.40250	1.240966
1569	14:59:01	20.10	2.40250	1.2401602
1570	15:00:01	20.00	2.40250	1.2393554
1571	15:01:01	19.80	2.40250	1.2385517
1572	15:02:01	19.80	2.40250	1.237749
1573	15:03:01	19.90	2.40286	1.2353843
1574	15:04:01	20.00	2.40250	1.2361467
1575	15:05:01	20.20	2.40250	1.2353471
1576	15:06:01	20.30	2.40250	1.2345486
1577	15:07:01	20.20	2.40250	1.2337511
1578	15:08:01	20.10	2.40250	1.2329546
1579	15:09:01	20.00	2.40250	1.2321591
1580	15:10:01	19.80	2.40250	1.2313647
1581	15:11:01	19.80	2.40250	1.2305713
1582	15:12:01	19.90	2.40250	1.2297789
1583	15:13:01	20.00	2.40250	1.2289876
1584	15:14:01	20.20	2.40250	1.2281972
1585	15:15:01	20.30	2.40214	1.2289546
1586	15:16:01	20.30	2.40250	1.2266196
1587	15:17:01	20.20	2.40250	1.2258323
1588	15:18:01	20.00	2.40250	1.225046
1589	15:19:01	19.90	2.40250	1.2242607
1590	15:20:01	19.80	2.40250	1.2234764
1591	15:21:01	19.80	2.40250	1.2226931
1592	15:22:01	20.00	2.40250	1.2219109
1593	15:23:01	20.20	2.40250	1.2211296
1594	15:24:01	20.30	2.40250	1.2203493
1595	15:25:01	20.30	2.40250	1.21957
1596	15:26:01	20.20	2.40250	1.2187917

1597	15:27:01	20.00	2.40250	1.2180145
1598	15:28:01	19.90	2.40250	1.2172382
1599	15:29:01	19.80	2.40250	1.2164628
1600	15:30:01	19.80	2.40250	1.2156885
1601	15:31:01	19.90	2.40177	1.2179813
1602	15:32:01	20.20	2.40214	1.2156728
1603	15:33:01	20.30	2.40214	1.2149005
1604	15:34:01	20.30	2.40250	1.2126011
1605	15:35:01	20.20	2.40250	1.2118316
1606	15:36:01	20.00	2.40250	1.2110632
1607	15:37:01	19.90	2.40250	1.2102957
1608	15:38:01	19.80	2.40250	1.2095292
1609	15:39:01	19.80	2.40105	1.2148692
1610	15:40:01	20.00	2.40214	1.2095214
1611	15:41:01	20.10	2.40177	1.2102823
1612	15:42:01	20.30	2.40250	1.2064729
1613	15:43:01	20.30	2.40141	1.2102778
1614	15:44:01	20.20	2.40141	1.2095142
1615	15:45:01	20.00	2.40177	1.2072299
1616	15:46:01	19.80	2.40214	1.2049485
1617	15:47:01	19.80	2.40177	1.2057095
1618	15:48:01	19.80	2.40214	1.2034319
1619	15:49:01	19.90	2.40177	1.2041929
1620	15:50:01	20.10	2.40105	1.2064697
1621	15:51:01	20.30	2.40141	1.204196
1622	15:52:01	20.30	2.40141	1.2034401
1623	15:53:01	20.20	2.40105	1.2041991
1624	15:54:01	20.00	2.40069	1.204953
1625	15:55:01	19.90	2.40069	1.204198
1626	15:56:01	19.80	2.40105	1.201937
1627	15:57:01	19.80	2.40141	1.1996746
1628	15:58:01	19.90	2.39997	1.2049573
1629	15:59:01	20.10	2.40105	1.1996833
1630	16:00:01	20.30	2.40105	1.198934
1631	16:01:01	20.30	2.40069	1.1996879
1632	16:02:01	20.20	2.40069	1.1989395
1633	16:03:01	20.00	2.40069	1.198192
1634	16:04:01	19.90	2.40033	1.1989491
1635	16:05:01	19.80	2.40033	1.1982026
1636	16:06:01	19.80	2.40069	1.1959552
1637	16:07:01	19.90	2.40141	1.1922139
1638	16:08:01	20.10	2.39997	1.1974684
1639	16:09:01	20.30	2.40069	1.1937267
1640	16:10:01	20.30	2.40033	1.1944838
1641	16:11:01	20.20	2.39960	1.1967328
1642	16:12:01	20.00	2.40033	1.1930027
1643	16:13:01	19.90	2.39960	1.1952499

1644	16:14:01	19.80	2.39960	1.1945098
1645	16:15:01	19.80	2.39960	1.1937706
1646	16:16:01	19.90	2.39997	1.191544
1647	16:17:01	20.10	2.39997	1.1908076
1648	16:18:01	20.30	2.39960	1.1915586
1649	16:19:01	20.30	2.39960	1.190823
1650	16:20:01	20.20	2.39997	1.1886037
1651	16:21:01	20.00	2.39960	1.1893547
1652	16:22:01	19.90	2.39997	1.187139
1653	16:23:01	19.80	2.39997	1.186408
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1655	16:25:01	19.90	2.39960	1.1864289
1656	16:26:01	20.10	2.39960	1.1856997
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1658	16:28:01	20.30	2.39960	1.1842439
1659	16:29:01	20.20	2.39960	1.1835174
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1661	16:31:01	19.90	2.39960	1.182067
1662	16:32:01	19.80	2.39960	1.1813431
1663	16:33:01	19.80	2.39960	1.1806202
1664	16:34:01	19.90	2.39924	1.1813741
1665	16:35:01	20.10	2.39924	1.180652
1666	16:36:01	20.20	2.39960	1.1784565
1667	16:37:01	20.30	2.39960	1.1777371
1668	16:38:01	20.20	2.39960	1.1770185
1669	16:39:01	20.10	2.39960	1.1763008
1670	16:40:01	19.90	2.39960	1.175584
1671	16:41:01	19.80	2.39888	1.1778076
1672	16:42:01	19.80	2.39924	1.1756218
1673	16:43:01	19.90	2.39960	1.1734388
1674	16:44:01	20.10	2.39888	1.1756596
1675	16:45:01	20.20	2.39960	1.172013
1676	16:46:01	20.30	2.39960	1.1713014
1677	16:47:01	20.20	2.39924	1.172055
1678	16:48:01	20.10	2.39852	1.1742713
1679	16:49:01	19.90	2.39888	1.172097
1680	16:50:01	19.80	2.39924	1.1699253
1681	16:51:01	19.80	2.39924	1.1692171
1682	16:52:01	19.90	2.39924	1.1685098
1683	16:53:01	20.00	2.39888	1.1692624
1684	16:54:01	20.20	2.39888	1.1685559
1685	16:55:01	20.30	2.39852	1.1693076
1686	16:56:01	20.20	2.39960	1.1642325
1687	16:57:01	20.10	2.39816	1.1693486
1688	16:58:01	19.90	2.39816	1.1686438
1689	16:59:01	19.80	2.39888	1.1650361
1690	17:00:01	19.80	2.39888	1.1643347

1691	17:01:01	19.90	2.39924	1.1621821
1692	17:02:01	20.00	2.39888	1.1629345
1693	17:03:01	20.20	2.39888	1.1622356
1694	17:04:01	20.30	2.39888	1.1615375
1695	17:05:01	20.20	2.39780	1.1651821
1696	17:06:01	20.10	2.39780	1.1644831
1697	17:07:01	19.90	2.39816	1.1623381
1698	17:08:01	19.80	2.39816	1.1616417
1699	17:09:01	19.80	2.39852	1.159505
1700	17:10:01	19.90	2.39816	1.1602513
1701	17:11:01	20.00	2.39743	1.1624442
1702	17:12:01	20.20	2.39743	1.1617494
1703	17:13:01	20.30	2.39780	1.1596137
1704	17:14:01	20.20	2.39852	1.1560438
1705	17:15:01	20.10	2.39707	1.1611098
1706	17:16:01	19.90	2.39743	1.1589783
1707	17:17:01	19.80	2.39852	1.153977
1708	17:18:01	19.80	2.39780	1.1561604
1709	17:19:01	19.80	2.39671	1.1597778
1710	17:20:01	20.00	2.39780	1.1547849
1711	17:21:01	20.20	2.39707	1.1569679
1712	17:22:01	20.30	2.39707	1.1562805
1713	17:23:01	20.20	2.39671	1.157023
1714	17:24:01	20.10	2.39671	1.1563363
1715	17:25:01	20.00	2.39671	1.1556505
1716	17:26:01	19.80	2.39707	1.1535388
1717	17:27:01	19.80	2.39707	1.1528555
1718	17:28:01	19.80	2.39671	1.1535978
1719	17:29:01	20.00	2.39707	1.1514911
1720	17:30:01	20.20	2.39707	1.1508102
1721	17:31:01	20.30	2.39671	1.1515524
1722	17:32:01	20.30	2.39707	1.1494507
1723	17:33:01	20.10	2.39707	1.1487721
1724	17:34:01	20.00	2.39816	1.143823
1725	17:35:01	19.80	2.39671	1.1488365
1726	17:36:01	19.80	2.39671	1.1481595
1727	17:37:01	19.80	2.39707	1.146066
1728	17:38:01	19.90	2.39671	1.1468079
1729	17:39:01	20.10	2.39671	1.1461333
1730	17:40:01	20.30	2.39671	1.1454595
1731	17:41:01	20.30	2.39671	1.1447865
1732	17:42:01	20.20	2.39671	1.1441143
1733	17:43:01	20.00	2.39635	1.1448592
1734	17:44:01	19.80	2.39671	1.1427722
1735	17:45:01	19.80	2.39671	1.1421024
1736	17:46:01	19.80	2.39635	1.1428471
1737	17:47:01	19.90	2.39671	1.140765

1738	17:48:01	20.10	2.39671	1.1400975
1739	17:49:01	20.30	2.39635	1.1408421
1740	17:50:01	20.30	2.39671	1.1387649
1741	17:51:01	20.20	2.39671	1.1380997
1742	17:52:01	20.00	2.39671	1.1374353
1743	17:53:01	19.80	2.39671	1.1367717
1744	17:54:01	19.80	2.39671	1.1361088
1745	17:55:01	19.80	2.39671	1.1354468
1746	17:56:01	19.90	2.39671	1.1347855
1747	17:57:01	20.10	2.39635	1.1355297
1748	17:58:01	20.30	2.39671	1.1334652
1749	17:59:01	20.30	2.39635	1.1342093
1750	18:00:01	20.20	2.39635	1.1335503
1751	18:01:01	20.00	2.39563	1.1356911
1752	18:02:01	19.80	2.39635	1.1322345
1753	18:03:01	19.80	2.39563	1.1343735
1754	18:04:01	19.80	2.39671	1.1295227
1755	18:05:01	19.90	2.39599	1.1316647
1756	18:06:01	20.10	2.39563	1.132403
1757	18:07:01	20.30	2.39671	1.1275617
1758	18:08:01	20.30	2.39635	1.1283054
1759	18:09:01	20.20	2.39599	1.1290482
1760	18:10:01	20.00	2.39635	1.1270017
1761	18:11:01	19.80	2.39599	1.1277444
1762	18:12:01	19.70	2.39599	1.1270937
1763	18:13:01	19.80	2.39635	1.1250519
1764	18:14:01	19.90	2.39599	1.1257944
1765	18:15:01	20.10	2.39635	1.1237558
1766	18:16:01	20.30	2.39454	1.130048
1767	18:17:01	20.30	2.39563	1.1252359
1768	18:18:01	20.20	2.39490	1.1273644
1769	18:19:01	20.00	2.39599	1.1225594
1770	18:20:01	19.90	2.39490	1.1260693
1771	18:21:01	19.80	2.39490	1.1254229
1772	18:22:01	19.80	2.39490	1.1247772
1773	18:23:01	19.90	2.39526	1.1227485
1774	18:24:01	20.10	2.39526	1.1221051
1775	18:25:01	20.20	2.39490	1.1228446
1776	18:26:01	20.30	2.39490	1.1222019
1777	18:27:01	20.20	2.39490	1.1215599
1778	18:28:01	20.00	2.39418	1.1236745
1779	18:29:01	19.90	2.39490	1.1202781
1780	18:30:01	19.70	2.39418	1.122391
1781	18:31:01	19.80	2.39418	1.1217504
1782	18:32:01	19.90	2.39454	1.1197338
1783	18:33:01	20.10	2.39454	1.1190954
1784	18:34:01	20.20	2.39382	1.121208

1785	18:35:01	20.30	2.39490	1.1164503
1786	18:36:01	20.20	2.39382	1.1199317
1787	18:37:01	20.00	2.39490	1.1151801
1788	18:38:01	19.90	2.39418	1.1172863
1789	18:39:01	19.80	2.39418	1.1166515
1790	18:40:01	19.80	2.39418	1.1160174
1791	18:41:01	19.90	2.39418	1.115384
1792	18:42:01	20.10	2.39454	1.1133825
1793	18:43:01	20.20	2.39418	1.1141194
1794	18:44:01	20.30	2.39454	1.1121209
1795	18:45:01	20.20	2.39418	1.1128577
1796	18:46:01	20.00	2.39418	1.1122279
1797	18:47:01	19.90	2.39454	1.1102338
1798	18:48:01	19.80	2.39418	1.1109704
1799	18:49:01	19.80	2.39345	1.1130697
1800	18:50:01	19.90	2.39382	1.1110785
1801	18:51:01	20.00	2.39382	1.1104515
1802	18:52:01	20.20	2.39382	1.1098252
1803	18:53:01	20.30	2.39382	1.1091995
1804	18:54:01	20.20	2.39418	1.107215
1805	18:55:01	20.00	2.39382	1.1079505
1806	18:56:01	19.90	2.39382	1.107327
1807	18:57:01	19.80	2.39382	1.1067042
1808	18:58:01	19.80	2.39418	1.1047255
1809	18:59:01	19.90	2.39382	1.1054607
1810	19:00:01	20.00	2.39382	1.10484
1811	19:01:01	20.20	2.39382	1.10422
1812	19:02:01	20.30	2.39382	1.1036007
1813	19:03:01	20.20	2.39382	1.1029821
1814	19:04:01	20.10	2.39382	1.1023641
1815	19:05:01	19.90	2.39382	1.1017469
1816	19:06:01	19.70	2.39382	1.1011304
1817	19:07:01	19.80	2.39382	1.1005145
1818	19:08:01	19.90	2.39382	1.0998994
1819	19:09:01	20.00	2.39382	1.0992849
1820	19:10:01	20.20	2.39382	1.0986711
1821	19:11:01	20.30	2.39345	1.0994048
1822	19:12:01	20.20	2.39382	1.0974456
1823	19:13:01	20.10	2.39345	1.0981791
1824	19:14:01	19.90	2.39345	1.0975673
1825	19:15:01	19.80	2.39309	1.0982962
1826	19:16:01	19.80	2.39345	1.0963458
1827	19:17:01	19.80	2.39382	1.0943938
1828	19:18:01	20.00	2.39345	1.0951269
1829	19:19:01	20.20	2.39382	1.0931778
1830	19:20:01	20.30	2.39273	1.0965871
1831	19:21:01	20.20	2.39309	1.0946393

1832	19:22:01	20.10	2.39345	1.0926974
1833	19:23:01	19.90	2.39309	1.0934257
1834	19:24:01	19.80	2.39345	1.0914866
1835	19:25:01	19.80	2.39382	1.089546
1836	19:26:01	19.80	2.39237	1.0942815
1837	19:27:01	19.90	2.39273	1.0923414
1838	19:28:01	20.10	2.39345	1.0890732
1839	19:29:01	20.30	2.39382	1.0871381
1840	19:30:01	20.20	2.39345	1.0878704
1841	19:31:01	20.10	2.39309	1.0885982
1842	19:32:01	20.00	2.39201	1.0919875
1843	19:33:01	19.80	2.39309	1.087398
1844	19:34:01	19.70	2.39201	1.0907842
1845	19:35:01	19.80	2.39309	1.0862004
1846	19:36:01	19.90	2.39273	1.0869308
1847	19:37:01	20.10	2.39309	1.0850055
1848	19:38:01	20.30	2.39273	1.0857358
1849	19:39:01	20.30	2.39273	1.0851392
1850	19:40:01	20.10	2.39273	1.0845433
1851	19:41:01	20.00	2.39309	1.0826235
1852	19:42:01	19.80	2.39273	1.0833534
1853	19:43:01	19.80	2.39237	1.0840826
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1855	19:45:01	19.90	2.39165	1.0855349
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1858	19:48:01	20.20	2.39165	1.0837543
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1860	19:50:01	20.00	2.39201	1.0812525
1861	19:51:01	19.80	2.39165	1.0819796
1862	19:52:01	19.70	2.39092	1.0840225
1863	19:53:01	19.80	2.39165	1.0807997
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1865	19:55:01	20.10	2.39128	1.0809368
1866	19:56:01	20.20	2.39128	1.0803484
1867	19:57:01	20.30	2.39128	1.0797606
1868	19:58:01	20.20	2.39128	1.0791735
1869	19:59:01	20.00	2.39237	1.0746558
1870	20:00:01	19.80	2.39092	1.079312
1871	20:01:01	19.70	2.39092	1.078726
1872	20:02:01	19.80	2.39165	1.0755218
1873	20:03:01	19.90	2.39165	1.0749385
1874	20:04:01	20.10	2.39092	1.076972
1875	20:05:01	20.20	2.39092	1.0763886
1876	20:06:01	20.30	2.39165	1.0731926
1877	20:07:01	20.20	2.39092	1.0752237
1878	20:08:01	20.00	2.39092	1.0746421

1879	20:09:01	19.90	2.39092	1.0740613
1880	20:10:01	19.70	2.39128	1.0721772
1881	20:11:01	19.80	2.39128	1.0715983
1882	20:12:01	19.90	2.39092	1.0723224
1883	20:13:01	20.00	2.39092	1.071744
1884	20:14:01	20.20	2.39092	1.0711662
1885	20:15:01	20.30	2.39092	1.0705891
1886	20:16:01	20.20	2.39092	1.0700126
1887	20:17:01	20.00	2.39128	1.0681378
1888	20:18:01	19.90	2.39056	1.070156
1889	20:19:01	19.70	2.39128	1.0669892
1890	20:20:01	19.80	2.39092	1.0677127
1891	20:21:01	19.90	2.39092	1.0671393
1892	20:22:01	20.00	2.39056	1.0678583
1893	20:23:01	20.20	2.39092	1.0659943
1894	20:24:01	20.30	2.39092	1.0654227
1895	20:25:01	20.20	2.39092	1.0648517
1896	20:26:01	20.00	2.39056	1.0655704
1897	20:27:01	19.90	2.39092	1.0637116
1898	20:28:01	19.70	2.39092	1.0631425
1899	20:29:01	19.80	2.39092	1.062574
1900	20:30:01	19.90	2.39056	1.0632924
1901	20:31:01	20.00	2.39092	1.0614387
1902	20:32:01	20.20	2.39092	1.060872
1903	20:33:01	20.30	2.39020	1.062878
1904	20:34:01	20.20	2.39020	1.0623111
1905	20:35:01	20.10	2.39092	1.0591756
1906	20:36:01	19.90	2.39092	1.0586113
1907	20:37:01	19.80	2.39056	1.0593291
1908	20:38:01	19.70	2.39056	1.0587653
1909	20:39:01	19.80	2.39092	1.056922
1910	20:40:01	20.00	2.39020	1.0589226
1911	20:41:01	20.10	2.39092	1.0557988
1912	20:42:01	20.30	2.39020	1.0577978
1913	20:43:01	20.20	2.39056	1.0559554
1914	20:44:01	20.10	2.39020	1.0566755
1915	20:45:01	19.90	2.38984	1.0573948
1916	20:46:01	19.80	2.39020	1.0555556
1917	20:47:01	19.80	2.39092	1.0524435
1918	20:48:01	19.80	2.38948	1.0569896
1919	20:49:01	20.00	2.39092	1.0513298
1920	20:50:01	20.20	2.39020	1.0533228
1921	20:51:01	20.30	2.38984	1.0540416
1922	20:52:01	20.20	2.39020	1.0522099
1923	20:53:01	20.10	2.38948	1.0541992
1924	20:54:01	19.90	2.39020	1.0510994
1925	20:55:01	19.80	2.38911	1.0543601

1926	20:56:01	19.70	2.38984	1.0512634
1927	20:57:01	19.80	2.39020	1.049438
1928	20:58:01	19.90	2.38948	1.0514236
1929	20:59:01	20.10	2.38948	1.0508702
1930	21:00:01	20.20	2.38948	1.0503174
1931	21:01:01	20.20	2.38984	1.0484998
1932	21:02:01	20.10	2.39020	1.0466807
1933	21:03:01	19.90	2.38984	1.0473985
1934	21:04:01	19.80	2.38948	1.048112
1935	21:05:01	19.70	2.38839	1.0513606
1936	21:06:01	19.80	2.38948	1.0470128
1937	21:07:01	19.90	2.38911	1.0477289
1938	21:08:01	20.10	2.38984	1.0446551
1939	21:09:01	20.30	2.38875	1.0478953
1940	21:10:01	20.20	2.38911	1.0460841
1941	21:11:01	20.10	2.38875	1.0467992
1942	21:12:01	19.90	2.38839	1.0475135
1943	21:13:01	19.80	2.38911	1.0444444
1944	21:14:01	19.70	2.38875	1.0451593
1945	21:15:01	19.80	2.38875	1.0446138
1946	21:16:01	19.90	2.38875	1.0440689
1947	21:17:01	20.10	2.38839	1.0447828
1948	21:18:01	20.20	2.38875	1.0429807
1949	21:19:01	20.20	2.38875	1.0424375
1950	21:20:01	20.10	2.38839	1.0431511
1951	21:21:01	20.00	2.38803	1.0438606
1952	21:22:01	19.80	2.38803	1.0433177
1953	21:23:01	19.70	2.38839	1.0415246
1954	21:24:01	19.80	2.38875	1.0397299
1955	21:25:01	19.90	2.38839	1.0404431
1956	21:26:01	20.00	2.38839	1.0399031
1957	21:27:01	20.20	2.38803	1.040612
1958	21:28:01	20.30	2.38839	1.038825
1959	21:29:01	20.20	2.38803	1.0395337
1960	21:30:01	20.00	2.38803	1.0389953
1961	21:31:01	19.80	2.38803	1.0384576
1962	21:32:01	19.70	2.38839	1.0366753
1963	21:33:01	19.80	2.38803	1.0373837
1964	21:34:01	19.90	2.38803	1.0368475
1965	21:35:01	20.00	2.38803	1.036312
1966	21:36:01	20.20	2.38875	1.0332886
1967	21:37:01	20.30	2.38803	1.0352425
1968	21:38:01	20.20	2.38803	1.0347086
1969	21:39:01	20.00	2.38803	1.0341753
1970	21:40:01	19.90	2.38839	1.0324025
1971	21:41:01	19.70	2.38803	1.0331102
1972	21:42:01	19.80	2.38803	1.0325785

1973	21:43:01	19.90	2.38803	1.0320473
1974	21:44:01	20.00	2.38803	1.0315167
1975	21:45:01	20.20	2.38803	1.0309866
1976	21:46:01	20.30	2.38803	1.0304571
1977	21:47:01	20.20	2.38803	1.0299281
1978	21:48:01	20.00	2.38803	1.0293997
1979	21:49:01	19.90	2.38767	1.0301094
1980	21:50:01	19.70	2.38803	1.0283444
1981	21:51:01	19.70	2.38803	1.0278176
1982	21:52:01	19.80	2.38803	1.0272913
1983	21:53:01	20.00	2.38767	1.0280007
1984	21:54:01	20.20	2.38803	1.0262404
1985	21:55:01	20.30	2.38731	1.0281834
1986	21:56:01	20.20	2.38803	1.0251916
1987	21:57:01	20.10	2.38803	1.024668
1988	21:58:01	19.90	2.38767	1.0253769
1989	21:59:01	19.70	2.38731	1.026085
1990	22:00:01	19.70	2.38803	1.0231005
1991	22:01:01	19.80	2.38767	1.023809
1992	22:02:01	20.00	2.38803	1.0220581
1993	22:03:01	20.10	2.38731	1.0239952
1994	22:04:01	20.20	2.38803	1.0210178
1995	22:05:01	20.20	2.38767	1.021726
1996	22:06:01	20.10	2.38767	1.0212066
1997	22:07:01	19.90	2.38694	1.0231369
1998	22:08:01	19.80	2.38694	1.0226172
1999	22:09:01	19.70	2.38658	1.0233232
2000	22:10:01	19.80	2.38694	1.0215796
2001	22:11:01	19.90	2.38731	1.0198411
2002	22:12:01	20.10	2.38658	1.0217672
2003	22:13:01	20.20	2.38658	1.0212496
2004	22:14:01	20.20	2.38622	1.0219544
2005	22:15:01	20.10	2.38694	1.0189946
2006	22:16:01	19.90	2.38622	1.0209206
2007	22:17:01	19.80	2.38731	1.0167476
2008	22:18:01	19.70	2.38658	1.0186694
2009	22:19:01	19.80	2.38586	1.0205926
2010	22:20:01	19.90	2.38658	1.0176409
2011	22:21:01	20.10	2.38767	1.013478
2012	22:22:01	20.20	2.38694	1.0153975
2013	22:23:01	20.20	2.38694	1.0148858
2014	22:24:01	20.10	2.38622	1.016806
2015	22:25:01	20.00	2.38586	1.0175092
2016	22:26:01	19.80	2.38622	1.0157826
2017	22:27:01	19.70	2.38622	1.0152716
2018	22:28:01	19.80	2.38586	1.0159745
2019	22:29:01	19.90	2.38622	1.0142513

2020	22:30:01	20.00	2.38622	1.0137418
2021	22:31:01	20.20	2.38586	1.0144444
2022	22:32:01	20.30	2.38658	1.0115136
2023	22:33:01	20.20	2.38694	1.0097961
2024	22:34:01	20.00	2.38586	1.012919
2025	22:35:01	19.80	2.38622	1.0112024
2026	22:36:01	19.70	2.38550	1.0131097
2027	22:37:01	19.70	2.38586	1.0113981
2028	22:38:01	19.80	2.38586	1.0108921
2029	22:39:01	20.00	2.38550	1.01159
2030	22:40:01	20.10	2.38658	1.0074696
2031	22:41:01	20.20	2.38514	1.0117849
2032	22:42:01	20.20	2.38550	1.0100749
2033	22:43:01	20.10	2.38550	1.0095709
2034	22:44:01	19.90	2.38514	1.010271
2035	22:45:01	19.70	2.38550	1.0085643
2036	22:46:01	19.70	2.38550	1.0080618
2037	22:47:01	19.80	2.38514	1.0087616
2038	22:48:01	19.90	2.38550	1.0070582
2039	22:49:01	20.10	2.38550	1.0065572
2040	22:50:01	20.20	2.38586	1.0048599
2041	22:51:01	20.20	2.38586	1.0043605
2042	22:52:01	20.10	2.38586	1.0038616
2043	22:53:01	19.90	2.38514	1.0057564
2044	22:54:01	19.80	2.38514	1.0052572
2045	22:55:01	19.70	2.38514	1.0047586
2046	22:56:01	19.80	2.38514	1.0042605
2047	22:57:01	19.90	2.38550	1.0025669
2048	22:58:01	20.10	2.38514	1.0032656
2049	22:59:01	20.20	2.38514	1.002769
2050	23:00:01	20.20	2.38514	1.0022728
2051	23:01:01	20.10	2.38514	1.0017771
2052	23:02:01	19.90	2.38514	1.0012819
2053	23:03:01	19.80	2.38514	1.0007872
2054	23:04:01	19.70	2.38514	1.000293
2055	23:05:01	19.80	2.38514	0.9997993
2056	23:06:01	19.90	2.38514	0.999306
2057	23:07:01	20.00	2.38514	0.9988133
2058	23:08:01	20.20	2.38514	0.998321
2059	23:09:01	20.20	2.38550	0.9966404
2060	23:10:01	20.20	2.38514	0.9973379
2061	23:11:01	20.00	2.38514	0.9968471
2062	23:12:01	19.80	2.38514	0.9963568
2063	23:13:01	19.70	2.38514	0.9958669
2064	23:14:01	19.70	2.38477	0.9965635
2065	23:15:01	19.80	2.38514	0.9948887
2066	23:16:01	20.00	2.38477	0.995585

2067	23:17:01	20.10	2.38514	0.9939123
2068	23:18:01	20.20	2.38514	0.9934249
2069	23:19:01	20.20	2.38477	0.9941209
2070	23:20:01	20.00	2.38514	0.9924514
2071	23:21:01	19.90	2.38405	0.9955077
2072	23:22:01	19.70	2.38441	0.9938391
2073	23:23:01	19.70	2.38514	0.9909948
2074	23:24:01	19.80	2.38514	0.9905102
2075	23:25:01	19.90	2.38477	0.9912056
2076	23:26:01	20.10	2.38514	0.9895424
2077	23:27:01	20.20	2.38441	0.9914128
2078	23:28:01	20.20	2.38514	0.9885765
2079	23:29:01	20.10	2.38514	0.9880943
2080	23:30:01	19.90	2.38369	0.9923159
2081	23:31:01	19.70	2.38369	0.9918324
2082	23:32:01	19.70	2.38441	0.9889982
2083	23:33:01	19.80	2.38477	0.987345
2084	23:34:01	19.90	2.38477	0.9868646
2085	23:35:01	20.10	2.38477	0.9863846
2086	23:36:01	20.20	2.38441	0.987075
2087	23:37:01	20.20	2.38441	0.9865954
2088	23:38:01	20.10	2.38441	0.9861162
2089	23:39:01	19.90	2.38477	0.9844693
2090	23:40:01	19.80	2.38477	0.9839916
2091	23:41:01	19.70	2.38405	0.9858519
2092	23:42:01	19.80	2.38405	0.9853741
2093	23:43:01	19.90	2.38405	0.9848966
2094	23:44:01	20.10	2.38405	0.9844197
2095	23:45:01	20.20	2.38333	0.9862762
2096	23:46:01	20.20	2.38369	0.9846347
2097	23:47:01	20.10	2.38405	0.9829916
2098	23:48:01	19.90	2.38441	0.9813501
2099	23:49:01	19.80	2.38369	0.9832077
2100	23:50:01	19.70	2.38369	0.982733
2101	23:51:01	19.80	2.38369	0.9822587
2102	23:52:01	19.90	2.38297	0.98411
2103	23:53:01	20.00	2.38369	0.9813115
2104	23:54:01	20.20	2.38333	0.9819984
2105	23:55:01	20.20	2.38260	0.9838504
2106	23:56:01	20.10	2.38224	0.9845386
2107	23:57:01	20.00	2.38369	0.9794225
2108	23:58:01	19.80	2.38333	0.980109
2109	23:59:01	19.70	2.38224	0.9831186
2110	0:00:01	19.70	2.38297	0.9803268
2111	0:01:01	19.90	2.38297	0.9798559
2112	0:02:01	20.00	2.38260	0.9805441
2113	0:03:01	20.20	2.38260	0.9800736

2114	0:04:01	20.20	2.38369	0.9761343
2115	0:05:01	20.20	2.38260	0.9791339
2116	0:06:01	20.00	2.38333	0.976352
2117	0:07:01	19.80	2.38297	0.9770402
2118	0:08:01	19.70	2.38260	0.9777278
2119	0:09:01	19.70	2.38297	0.9761053
2120	0:10:01	19.80	2.38297	0.9756385
2121	0:11:01	19.90	2.38260	0.9763257
2122	0:12:01	20.10	2.38333	0.9735531
2123	0:13:01	20.20	2.38224	0.9765457
2124	0:14:01	20.20	2.38260	0.9749276
2125	0:15:01	20.10	2.38224	0.9756139
2126	0:16:01	19.90	2.38224	0.9751486
2127	0:17:01	19.70	2.38224	0.9746838
2128	0:18:01	19.70	2.38260	0.9730697
2129	0:19:01	19.80	2.38224	0.9737556
2130	0:20:01	19.90	2.38224	0.9732921
2131	0:21:01	20.00	2.38224	0.9728291
2132	0:22:01	20.20	2.38260	0.9712189
2133	0:23:01	20.20	2.38297	0.9696103
2134	0:24:01	20.10	2.38224	0.9714426
2135	0:25:01	19.90	2.38224	0.9709813
2136	0:26:01	19.80	2.38224	0.9705205
2137	0:27:01	19.70	2.38224	0.9700601
2138	0:28:01	19.70	2.38224	0.9696001
2139	0:29:01	19.90	2.38224	0.9691406
2140	0:30:01	20.00	2.38224	0.9686815
2141	0:31:01	20.20	2.38224	0.9682229
2142	0:32:01	20.20	2.38224	0.9677646
2143	0:33:01	20.10	2.38224	0.9673068
2144	0:34:01	20.00	2.38224	0.9668495
2145	0:35:01	19.80	2.38224	0.9663926
2146	0:36:01	19.70	2.38224	0.9659361
2147	0:37:01	19.70	2.38224	0.96548
2148	0:38:01	19.80	2.38224	0.9650244
2149	0:39:01	20.00	2.38224	0.9645692
2150	0:40:01	20.10	2.38224	0.9641144
2151	0:41:01	20.20	2.38224	0.9636601
2152	0:42:01	20.20	2.38224	0.9632062
2153	0:43:01	20.00	2.38224	0.9627527
2154	0:44:01	19.80	2.38224	0.9622996
2155	0:45:01	19.70	2.38224	0.961847
2156	0:46:01	19.70	2.38224	0.9613948
2157	0:47:01	19.80	2.38224	0.960943
2158	0:48:01	19.90	2.38188	0.961622
2159	0:49:01	20.10	2.38224	0.9600407
2160	0:50:01	20.20	2.38224	0.9595902

2161	0:51:01	20.20	2.38188	0.9602689
2162	0:52:01	20.00	2.38188	0.9598187
2163	0:53:01	19.90	2.38188	0.9593689
2164	0:54:01	19.70	2.38152	0.96005
2165	0:55:01	19.70	2.38224	0.9573439
2166	0:56:01	19.80	2.38152	0.9591515
2167	0:57:01	19.90	2.38224	0.9564484
2168	0:58:01	20.00	2.38224	0.9560012
2169	0:59:01	20.20	2.38152	0.9578069
2170	1:00:01	20.20	2.38152	0.9573595
2171	1:01:01	20.10	2.38116	0.9580392
2172	1:02:01	19.90	2.38188	0.9553399
2173	1:03:01	19.80	2.38152	0.9560199
2174	1:04:01	19.70	2.38188	0.9544491
2175	1:05:01	19.70	2.38152	0.9551289
2176	1:06:01	19.90	2.38080	0.956929
2177	1:07:01	20.00	2.38152	0.9542396
2178	1:08:01	20.20	2.38152	0.9537956
2179	1:09:01	20.20	2.38116	0.9544744
2180	1:10:01	20.10	2.38188	0.9517868
2181	1:11:01	20.00	2.38080	0.9547057
2182	1:12:01	19.80	2.38043	0.9553832
2183	1:13:01	19.70	2.38080	0.9538193
2184	1:14:01	19.70	2.38043	0.9544965
2185	1:15:01	19.80	2.38152	0.9506988
2186	1:16:01	19.90	2.38116	0.9513769
2187	1:17:01	20.10	2.38080	0.9520513
2188	1:18:01	20.20	2.38116	0.9504956
2189	1:19:01	20.20	2.38007	0.9534043
2190	1:20:01	20.00	2.38080	0.9507296
2191	1:21:01	19.80	2.38080	0.9502899
2192	1:22:01	19.70	2.38007	0.952082
2193	1:23:01	19.70	2.38080	0.9494116
2194	1:24:01	19.80	2.38080	0.9489731
2195	1:25:01	19.90	2.38043	0.9496491
2196	1:26:01	20.10	2.38152	0.9458729
2197	1:27:01	20.20	2.38007	0.9498862
2198	1:28:01	20.20	2.38043	0.9483356
2199	1:29:01	20.10	2.38007	0.9490108
2200	1:30:01	19.90	2.37935	0.9507938
2201	1:31:01	19.70	2.38007	0.9481369
2202	1:32:01	19.70	2.38007	0.9477006
2203	1:33:01	19.80	2.38007	0.9472646
2204	1:34:01	19.90	2.38043	0.9457195
2205	1:35:01	20.00	2.38007	0.946394
2206	1:36:01	20.20	2.37971	0.9470678
2207	1:37:01	20.20	2.38043	0.9444169

2208	1:38:01	20.10	2.38007	0.945091
2209	1:39:01	19.90	2.37935	0.9468685
2210	1:40:01	19.80	2.38007	0.9442244
2211	1:41:01	19.70	2.37971	0.9448976
2212	1:42:01	19.70	2.37935	0.9455673
2213	1:43:01	19.80	2.37935	0.9451343
2214	1:44:01	19.90	2.37935	0.9447018
2215	1:45:01	20.10	2.38007	0.9420647
2216	1:46:01	20.20	2.37935	0.9438378
2217	1:47:01	20.20	2.37971	0.9423065
2218	1:48:01	20.00	2.37971	0.941876
2219	1:49:01	19.80	2.37935	0.9425449
2220	1:50:01	19.70	2.37935	0.9421147
2221	1:51:01	19.70	2.37935	0.9416849
2222	1:52:01	19.80	2.37935	0.9412555
2223	1:53:01	19.90	2.37935	0.9408265
2224	1:54:01	20.10	2.38007	0.938202
2225	1:55:01	20.20	2.37971	0.9388737
2226	1:56:01	20.20	2.37935	0.9395418
2227	1:57:01	20.10	2.37935	0.9391143
2228	1:58:01	19.90	2.37971	0.9375928
2229	1:59:01	19.70	2.37935	0.9382606
2230	2:00:01	19.70	2.37935	0.9378343
2231	2:01:01	19.80	2.37935	0.9374084
2232	2:02:01	19.90	2.37935	0.9369829
2233	2:03:01	20.00	2.37935	0.9365578
2234	2:04:01	20.10	2.37935	0.936133
2235	2:05:01	20.20	2.37935	0.9357087
2236	2:06:01	20.10	2.37935	0.9352847
2237	2:07:01	19.90	2.37935	0.9348611
2238	2:08:01	19.80	2.37935	0.9344379
2239	2:09:01	19.70	2.37935	0.9340151
2240	2:10:01	19.70	2.37935	0.9335926
2241	2:11:01	19.80	2.37935	0.9331706
2242	2:12:01	20.00	2.37935	0.9327489
2243	2:13:01	20.10	2.37935	0.9323276
2244	2:14:01	20.20	2.37862	0.9340858
2245	2:15:01	20.20	2.37935	0.9314862
2246	2:16:01	20.00	2.37935	0.931066
2247	2:17:01	19.80	2.37935	0.9306462
2248	2:18:01	19.70	2.37935	0.9302268
2249	2:19:01	19.70	2.37862	0.931982
2250	2:20:01	19.80	2.37935	0.9293892
2251	2:21:01	19.90	2.37899	0.930057
2252	2:22:01	20.10	2.37935	0.928553
2253	2:23:01	20.20	2.37899	0.9292206
2254	2:24:01	20.20	2.37935	0.9277184

2255	2:25:01	20.10	2.37862	0.9294699
2256	2:26:01	19.90	2.37935	0.9268852
2257	2:27:01	19.70	2.37862	0.9286355
2258	2:28:01	19.70	2.37899	0.9271362
2259	2:29:01	19.80	2.37899	0.9267205
2260	2:30:01	19.90	2.37862	0.9273868
2261	2:31:01	20.00	2.37862	0.9269713
2262	2:32:01	20.20	2.37862	0.9265562
2263	2:33:01	20.20	2.37899	0.9250612
2264	2:34:01	20.10	2.37862	0.9257271
2265	2:35:01	19.90	2.37899	0.9242338
2266	2:36:01	19.80	2.37899	0.9238206
2267	2:37:01	19.70	2.37899	0.9234078
2268	2:38:01	19.70	2.37899	0.9229954
2269	2:39:01	19.80	2.37862	0.9236607
2270	2:40:01	19.90	2.37862	0.9232485
2271	2:41:01	20.10	2.37899	0.9217603
2272	2:42:01	20.20	2.37862	0.9224253
2273	2:43:01	20.20	2.37862	0.9220143
2274	2:44:01	20.00	2.37862	0.9216036
2275	2:45:01	19.90	2.37826	0.9222677
2276	2:46:01	19.70	2.37790	0.9229283
2277	2:47:01	19.70	2.37826	0.9214472
2278	2:48:01	19.80	2.37935	0.9178183
2279	2:49:01	19.90	2.37826	0.9206281
2280	2:50:01	20.00	2.37862	0.919147
2281	2:51:01	20.20	2.37790	0.9208792
2282	2:52:01	20.20	2.37862	0.9183311
2283	2:53:01	20.10	2.37754	0.9211328
2284	2:54:01	19.90	2.37826	0.9185868
2285	2:55:01	19.80	2.37718	0.9213859
2286	2:56:01	19.70	2.37754	0.9199084
2287	2:57:01	19.70	2.37826	0.9173664
2288	2:58:01	19.80	2.37790	0.9180257
2289	2:59:01	19.90	2.37790	0.9176195
2290	3:00:01	20.10	2.37899	0.9140144
2291	3:01:01	20.20	2.37718	0.9189419
2292	3:02:01	20.10	2.37718	0.9185359
2293	3:03:01	20.00	2.37826	0.9149352
2294	3:04:01	19.80	2.37754	0.9166593
2295	3:05:01	19.70	2.37718	0.9173198
2296	3:06:01	19.70	2.37718	0.9169152
2297	3:07:01	19.80	2.37754	0.9154468
2298	3:08:01	19.90	2.37718	0.9161069
2299	3:09:01	20.00	2.37718	0.9157034
2300	3:10:01	20.20	2.37682	0.9163599
2301	3:11:01	20.20	2.37682	0.9159566

2302	3:12:01	20.10	2.37645	0.9166153
2303	3:13:01	19.90	2.37645	0.9162123
2304	3:14:01	19.70	2.37682	0.9147487
2305	3:15:01	19.70	2.37718	0.9132894
2306	3:16:01	19.70	2.37645	0.9150051
2307	3:17:01	19.80	2.37754	0.9114282
2308	3:18:01	19.90	2.37682	0.9131432
2309	3:19:01	20.10	2.37645	0.9138012
2310	3:20:01	20.20	2.37645	0.9134006
2311	3:21:01	20.10	2.37645	0.9130003
2312	3:22:01	20.00	2.37682	0.9115433
2313	3:23:01	19.80	2.37682	0.9111442
2314	3:24:01	19.70	2.37645	0.9118016
2315	3:25:01	19.70	2.37682	0.910347
2316	3:26:01	19.80	2.37645	0.9110042
2317	3:27:01	19.90	2.37645	0.9106061
2318	3:28:01	20.00	2.37645	0.9102082
2319	3:29:01	20.20	2.37682	0.9087569
2320	3:30:01	20.20	2.37609	0.910467
2321	3:31:01	20.10	2.37682	0.9079639
2322	3:32:01	19.90	2.37645	0.9086204
2323	3:33:01	19.70	2.37645	0.9082244
2324	3:34:01	19.70	2.37682	0.9067771
2325	3:35:01	19.70	2.37645	0.9074332
2326	3:36:01	19.80	2.37645	0.9070382
2327	3:37:01	19.90	2.37645	0.9066435
2328	3:38:01	20.10	2.37645	0.9062491
2329	3:39:01	20.20	2.37645	0.9058551
2330	3:40:01	20.10	2.37645	0.9054614
2331	3:41:01	20.00	2.37645	0.9050681
2332	3:42:01	19.80	2.37645	0.9046751
2333	3:43:01	19.70	2.37645	0.9042824
2334	3:44:01	19.70	2.37645	0.9038901
2335	3:45:01	19.80	2.37609	0.9045447
2336	3:46:01	19.90	2.37609	0.9041526
2337	3:47:01	20.00	2.37645	0.9027152
2338	3:48:01	20.10	2.37645	0.9023242
2339	3:49:01	20.20	2.37645	0.9019336
2340	3:50:01	20.10	2.37645	0.9015433
2341	3:51:01	19.90	2.37609	0.9021972
2342	3:52:01	19.70	2.37645	0.9007638
2343	3:53:01	19.70	2.37645	0.9003745
2344	3:54:01	19.70	2.37609	0.9010281
2345	3:55:01	19.80	2.37645	0.899597
2346	3:56:01	19.90	2.37682	0.8981672
2347	3:57:01	20.10	2.37645	0.8988208
2348	3:58:01	20.20	2.37645	0.8984332

2349	3:59:01	20.20	2.37645	0.898046
2350	4:00:01	20.00	2.37645	0.8976591
2351	4:01:01	19.80	2.37645	0.8972725
2352	4:02:01	19.70	2.37609	0.8979251
2353	4:03:01	19.70	2.37609	0.8975387
2354	4:04:01	19.70	2.37573	0.8981878
2355	4:05:01	19.90	2.37537	0.8988392
2356	4:06:01	20.00	2.37573	0.8974158
2357	4:07:01	20.10	2.37573	0.8970304
2358	4:08:01	20.20	2.37645	0.8945756
2359	4:09:01	20.10	2.37609	0.8952275
2360	4:10:01	19.90	2.37645	0.8938081
2361	4:11:01	19.80	2.37501	0.8975615
2362	4:12:01	19.70	2.37537	0.8961423
2363	4:13:01	19.70	2.37501	0.8967923
2364	4:14:01	19.80	2.37537	0.8953747
2365	4:15:01	19.90	2.37537	0.8949914
2366	4:16:01	20.00	2.37609	0.892546
2367	4:17:01	20.20	2.37537	0.8942258
2368	4:18:01	20.20	2.37573	0.8928117
2369	4:19:01	20.10	2.37573	0.8924302
2370	4:20:01	19.90	2.37573	0.892049
2371	4:21:01	19.70	2.37537	0.8926985
2372	4:22:01	19.60	2.37573	0.8912875
2373	4:23:01	19.70	2.37609	0.8898805
2374	4:24:01	19.80	2.37501	0.8925856
2375	4:25:01	19.90	2.37573	0.8901478
2376	4:26:01	20.10	2.37573	0.8897685
2377	4:27:01	20.20	2.37501	0.8914452
2378	4:28:01	20.20	2.37501	0.8910657
2379	4:29:01	20.00	2.37537	0.8896596
2380	4:30:01	19.80	2.37501	0.8903077
2381	4:31:01	19.70	2.37537	0.8889031
2382	4:32:01	19.70	2.37501	0.8895509
2383	4:33:01	19.70	2.37392	0.8922458
2384	4:34:01	19.90	2.37465	0.8898202
2385	4:35:01	20.00	2.37428	0.8904641
2386	4:36:01	20.10	2.37501	0.8880413
2387	4:37:01	20.20	2.37537	0.8866412
2388	4:38:01	20.10	2.37465	0.8883114
2389	4:39:01	19.90	2.37428	0.8889548
2390	4:40:01	19.80	2.37392	0.8896005
2391	4:41:01	19.70	2.37537	0.8851397
2392	4:42:01	19.70	2.37428	0.8878262
2393	4:43:01	19.80	2.37465	0.8864326
2394	4:44:01	19.90	2.37465	0.8860578
2395	4:45:01	20.00	2.37501	0.8846633

2396	4:46:01	20.20	2.37392	0.8873454
2397	4:47:01	20.20	2.37501	0.8839161
2398	4:48:01	20.00	2.37392	0.8865963
2399	4:49:01	19.80	2.37392	0.8862222
2400	4:50:01	19.70	2.37392	0.8858484
2401	4:51:01	19.70	2.37356	0.8864924
2402	4:52:01	19.70	2.37356	0.8861188
2403	4:53:01	19.80	2.37356	0.8857456
2404	4:54:01	19.90	2.37428	0.8833404
2405	4:55:01	20.10	2.37356	0.885
2406	4:56:01	20.20	2.37428	0.8825971
2407	4:57:01	20.10	2.37428	0.882226
2408	4:58:01	20.00	2.37392	0.8828696
2409	4:59:01	19.80	2.37392	0.8824986
2410	5:00:01	19.70	2.37356	0.8831415
2411	5:01:01	19.70	2.37356	0.8827708
2412	5:02:01	19.70	2.37356	0.8824003
2413	5:03:01	19.90	2.37392	0.8810179
2414	5:04:01	20.00	2.37356	0.8816604
2415	5:05:01	20.10	2.37356	0.8812909
2416	5:06:01	20.20	2.37356	0.8809217
2417	5:07:01	20.10	2.37356	0.8805528
2418	5:08:01	19.90	2.37392	0.879174
2419	5:09:01	19.70	2.37356	0.8798159
2420	5:10:01	19.70	2.37392	0.8784386
2421	5:11:01	19.70	2.37356	0.8790803
2422	5:12:01	19.80	2.37356	0.8787129
2423	5:13:01	19.90	2.37356	0.8783459
2424	5:14:01	20.00	2.37356	0.8779791
2425	5:15:01	20.20	2.37356	0.8776127
2426	5:16:01	20.20	2.37356	0.8772466
2427	5:17:01	20.10	2.37356	0.8768807
2428	5:18:01	19.90	2.37356	0.8765152
2429	5:19:01	19.70	2.37356	0.87615
2430	5:20:01	19.70	2.37320	0.8767874
2431	5:21:01	19.70	2.37356	0.8754205
2432	5:22:01	19.80	2.37320	0.8760577
2433	5:23:01	19.90	2.37356	0.8746922
2434	5:24:01	20.00	2.37356	0.8743285
2435	5:25:01	20.20	2.37356	0.8739651
2436	5:26:01	20.20	2.37356	0.873602
2437	5:27:01	20.00	2.37356	0.8732392
2438	5:28:01	19.80	2.37320	0.8738757
2439	5:29:01	19.70	2.37356	0.8725145
2440	5:30:01	19.70	2.37320	0.8731508
2441	5:31:01	19.70	2.37320	0.8727888
2442	5:32:01	19.80	2.37284	0.8734273

2443	5:33:01	19.90	2.37320	0.8720657
2444	5:34:01	20.10	2.37320	0.8717046
2445	5:35:01	20.20	2.37320	0.8713438
2446	5:36:01	20.10	2.37356	0.8699876
2447	5:37:01	20.00	2.37284	0.8716212
2448	5:38:01	19.80	2.37356	0.8692683
2449	5:39:01	19.70	2.37284	0.8709008
2450	5:40:01	19.70	2.37356	0.8685502
2451	5:41:01	19.70	2.37284	0.8701817
2452	5:42:01	19.90	2.37248	0.8708185
2453	5:43:01	20.00	2.37284	0.8694637
2454	5:44:01	20.10	2.37284	0.8691052
2455	5:45:01	20.20	2.37320	0.8677521
2456	5:46:01	20.10	2.37284	0.868389
2457	5:47:01	19.90	2.37284	0.8680313
2458	5:48:01	19.70	2.37356	0.8656896
2459	5:49:01	19.70	2.37320	0.8663237
2460	5:50:01	19.70	2.37320	0.8659674
2461	5:51:01	19.80	2.37320	0.8656113
2462	5:52:01	19.90	2.37320	0.8652555
2463	5:53:01	20.00	2.37248	0.866883
2464	5:54:01	20.20	2.37284	0.8655359
2465	5:55:01	20.20	2.37284	0.8651806
2466	5:56:01	20.00	2.37284	0.8648256
2467	5:57:01	19.90	2.37284	0.8644709
2468	5:58:01	19.70	2.37139	0.8680716
2469	5:59:01	19.70	2.37248	0.8647514
2470	6:00:01	19.70	2.37175	0.8663717
2471	6:01:01	19.80	2.37211	0.8650314
2472	6:02:01	19.90	2.37284	0.8627016
2473	6:03:01	20.10	2.37175	0.8653082
2474	6:04:01	20.20	2.37211	0.86397
2475	6:05:01	20.10	2.37284	0.8616435
2476	6:06:01	20.00	2.37248	0.8622776
2477	6:07:01	19.80	2.37284	0.8609395
2478	6:08:01	19.70	2.37211	0.8625589
2479	6:09:01	19.70	2.37139	0.8641741
2480	6:10:01	19.70	2.37175	0.8628369
2481	6:11:01	19.90	2.37211	0.8615035
2482	6:12:01	20.00	2.37211	0.8611523
2483	6:13:01	20.10	2.37139	0.8627656
2484	6:14:01	20.20	2.37248	0.8594678
2485	6:15:01	20.10	2.37175	0.8610803
2486	6:16:01	19.90	2.37211	0.8597504
2487	6:17:01	19.70	2.37211	0.8594006
2488	6:18:01	19.70	2.37248	0.8580697
2489	6:19:01	19.70	2.37139	0.8606612

2490	6:20:01	19.80	2.37175	0.8593309
2491	6:21:01	19.90	2.37175	0.8589819
2492	6:22:01	20.00	2.37139	0.8596129
2493	6:23:01	20.20	2.37139	0.8592641
2494	6:24:01	20.20	2.37175	0.8579364
2495	6:25:01	20.00	2.37248	0.855634
2496	6:26:01	19.90	2.37175	0.8572409
2497	6:27:01	19.70	2.37067	0.8598244
2498	6:28:01	19.70	2.37139	0.857524
2499	6:29:01	19.70	2.37139	0.8571768
2500	6:30:01	19.80	2.37139	0.8568299
2501	6:31:01	19.90	2.37103	0.8574595
2502	6:32:01	20.10	2.37139	0.8561369
2503	6:33:01	20.20	2.37139	0.8557909
2504	6:34:01	20.10	2.37175	0.85447
2505	6:35:01	20.00	2.37103	0.8560743
2506	6:36:01	19.80	2.37103	0.8557287
2507	6:37:01	19.70	2.37067	0.8563546
2508	6:38:01	19.70	2.37175	0.8530913
2509	6:39:01	19.70	2.37139	0.8537204
2510	6:40:01	19.80	2.37067	0.8553191
2511	6:41:01	20.00	2.37067	0.8549745
2512	6:42:01	20.10	2.37067	0.8546302
2513	6:43:01	20.20	2.37103	0.8533172
2514	6:44:01	20.10	2.37067	0.8539423
2515	6:45:01	19.90	2.37139	0.85166
2516	6:46:01	19.70	2.37103	0.8522879
2517	6:47:01	19.60	2.37067	0.8529126
2518	6:48:01	19.70	2.37067	0.85257
2519	6:49:01	19.70	2.37031	0.8531968
2520	6:50:01	19.90	2.37067	0.8518855
2521	6:51:01	20.00	2.37067	0.8515436
2522	6:52:01	20.10	2.37067	0.851202
2523	6:53:01	20.20	2.37067	0.8508607
2524	6:54:01	20.10	2.37067	0.8505197
2525	6:55:01	19.90	2.37067	0.850179
2526	6:56:01	19.70	2.37067	0.8498385
2527	6:57:01	19.70	2.37067	0.8494983
2528	6:58:01	19.70	2.37067	0.8491583
2529	6:59:01	19.80	2.37067	0.8488187
2530	7:00:01	19.90	2.37067	0.8484793
2531	7:01:01	20.00	2.37103	0.8471783
2532	7:02:01	20.20	2.37031	0.8487655
2533	7:03:01	20.20	2.37067	0.8474627
2534	7:04:01	20.00	2.37067	0.8471244
2535	7:05:01	19.80	2.37067	0.8467864
2536	7:06:01	19.70	2.37067	0.8464486

2537	7:07:01	19.70	2.37067	0.8461111
2538	7:08:01	19.70	2.37067	0.8457739
2539	7:09:01	19.80	2.37067	0.8454369
2540	7:10:01	19.90	2.37067	0.8451002
2541	7:11:01	20.10	2.37067	0.8447638
2542	7:12:01	20.20	2.37067	0.8444276
2543	7:13:01	20.10	2.37067	0.8440918
2544	7:14:01	20.00	2.37067	0.8437561
2545	7:15:01	19.80	2.37031	0.84438
2546	7:16:01	19.70	2.37067	0.8430857
2547	7:17:01	19.70	2.36994	0.8446677
2548	7:18:01	19.70	2.37067	0.8424163
2549	7:19:01	19.90	2.37067	0.842082
2550	7:20:01	20.00	2.37031	0.8427053
2551	7:21:01	20.10	2.37031	0.8423711
2552	7:22:01	20.20	2.37067	0.8410807
2553	7:23:01	20.10	2.37067	0.8407475
2554	7:24:01	19.90	2.37031	0.8413703
2555	7:25:01	19.80	2.37067	0.8400818
2556	7:26:01	19.70	2.37031	0.8407044
2557	7:27:01	19.70	2.37067	0.8394172
2558	7:28:01	19.80	2.37031	0.8400395
2559	7:29:01	19.90	2.37031	0.8397075
2560	7:30:01	20.00	2.37031	0.8393757
2561	7:31:01	20.10	2.37067	0.8380911
2562	7:32:01	20.20	2.36958	0.8406185
2563	7:33:01	20.10	2.36958	0.8402868
2564	7:34:01	19.90	2.36922	0.8409047
2565	7:35:01	19.70	2.37067	0.8367692
2566	7:36:01	19.60	2.36958	0.8392931
2567	7:37:01	19.70	2.36994	0.8380116
2568	7:38:01	19.80	2.37031	0.836731
2569	7:39:01	19.90	2.36994	0.8373517
2570	7:40:01	20.00	2.36994	0.8370222
2571	7:41:01	20.10	2.37067	0.8347941
2572	7:42:01	20.20	2.36994	0.8363639
2573	7:43:01	20.00	2.36958	0.8369838
2574	7:44:01	19.90	2.36994	0.8357066
2575	7:45:01	19.70	2.36922	0.8372715
2576	7:46:01	19.60	2.36958	0.8359979
2577	7:47:01	19.70	2.36958	0.8356698
2578	7:48:01	19.80	2.36886	0.8372329
2579	7:49:01	19.90	2.36994	0.834068
2580	7:50:01	20.00	2.36994	0.833741
2581	7:51:01	20.20	2.36958	0.83436
2582	7:52:01	20.20	2.36922	0.8349758
2583	7:53:01	20.00	2.36886	0.8355938

2584	7:54:01	19.80	2.36922	0.8343222
2585	7:55:01	19.70	2.36886	0.83494
2586	7:56:01	19.70	2.36922	0.8336697
2587	7:57:01	19.70	2.36813	0.8361741
2588	7:58:01	19.80	2.36958	0.8320776
2589	7:59:01	19.90	2.36850	0.8345781
2590	8:00:01	20.10	2.36922	0.8323676
2591	8:01:01	20.20	2.36850	0.8339266
2592	8:02:01	20.10	2.36922	0.831718
2593	8:03:01	19.90	2.36958	0.830455
2594	8:04:01	19.70	2.36886	0.8320104
2595	8:05:01	19.70	2.36813	0.8335672
2596	8:06:01	19.70	2.36813	0.8332424
2597	8:07:01	19.80	2.36850	0.8319782
2598	8:08:01	19.90	2.36850	0.8316543
2599	8:09:01	20.00	2.36886	0.8303917
2600	8:10:01	20.10	2.36813	0.8319461
2601	8:11:01	20.20	2.36813	0.8316226
2602	8:12:01	20.10	2.36777	0.8322347
2603	8:13:01	19.90	2.36850	0.8300389
2604	8:14:01	19.70	2.36886	0.8287793
2605	8:15:01	19.60	2.36813	0.8303313
2606	8:16:01	19.70	2.36813	0.8300091
2607	8:17:01	19.80	2.36850	0.828751
2608	8:18:01	19.90	2.36777	0.8302986
2609	8:19:01	20.00	2.36813	0.8290439
2610	8:20:01	20.20	2.36813	0.8287227
2611	8:21:01	20.10	2.36886	0.8265324
2612	8:22:01	20.00	2.36886	0.8262124
2613	8:23:01	19.80	2.36850	0.8268266
2614	8:24:01	19.70	2.36777	0.8283714
2615	8:25:01	19.70	2.36813	0.8271204
2616	8:26:01	19.70	2.36813	0.8268007
2617	8:27:01	19.80	2.36813	0.8264812
2618	8:28:01	20.00	2.36813	0.826162
2619	8:29:01	20.10	2.36813	0.825843
2620	8:30:01	20.20	2.36850	0.8245928
2621	8:31:01	20.10	2.36813	0.8252058
2622	8:32:01	19.90	2.36813	0.8248875
2623	8:33:01	19.70	2.36777	0.8254973
2624	8:34:01	19.70	2.36777	0.8251792
2625	8:35:01	19.70	2.36777	0.8248613
2626	8:36:01	19.80	2.36777	0.8245437
2627	8:37:01	19.90	2.36777	0.8242263
2628	8:38:01	20.00	2.36850	0.8220546
2629	8:39:01	20.10	2.36813	0.8226667
2630	8:40:01	20.20	2.36777	0.8232757

2631	8:41:01	20.00	2.36777	0.8229593
2632	8:42:01	19.90	2.36777	0.8226431
2633	8:43:01	19.70	2.36777	0.8223272
2634	8:44:01	19.70	2.36813	0.8210877
2635	8:45:01	19.70	2.36850	0.8198465
2636	8:46:01	19.80	2.36777	0.8213809
2637	8:47:01	19.90	2.36777	0.821066
2638	8:48:01	20.10	2.36777	0.8207512
2639	8:49:01	20.20	2.36777	0.8204368
2640	8:50:01	20.10	2.36777	0.8201226
2641	8:51:01	20.00	2.36777	0.8198086
2642	8:52:01	19.80	2.36777	0.8194948
2643	8:53:01	19.70	2.36777	0.8191813
2644	8:54:01	19.70	2.36777	0.8188681
2645	8:55:01	19.70	2.36777	0.818555
2646	8:56:01	19.90	2.36705	0.8200866
2647	8:57:01	20.00	2.36777	0.8179297
2648	8:58:01	20.10	2.36777	0.8176174
2649	8:59:01	20.20	2.36777	0.8173053
2650	9:00:01	20.10	2.36777	0.8169935
2651	9:01:01	19.90	2.36777	0.8166819
2652	9:02:01	19.80	2.36777	0.8163706
2653	9:03:01	19.70	2.36741	0.8169792
2654	9:04:01	19.70	2.36777	0.8157486
2655	9:05:01	19.80	2.36777	0.8154379
2656	9:06:01	19.90	2.36777	0.8151275
2657	9:07:01	20.00	2.36777	0.8148174
2658	9:08:01	20.10	2.36741	0.8154254
2659	9:09:01	20.20	2.36741	0.8151153
2660	9:10:01	20.10	2.36705	0.8157228
2661	9:11:01	19.90	2.36741	0.8144959
2662	9:12:01	19.70	2.36777	0.81327
2663	9:13:01	19.70	2.36741	0.8138775
2664	9:14:01	19.70	2.36741	0.8135686
2665	9:15:01	19.80	2.36777	0.8123445
2666	9:16:01	19.90	2.36741	0.8129516
2667	9:17:01	20.10	2.36741	0.8126434
2668	9:18:01	20.20	2.36705	0.81325
2669	9:19:01	20.10	2.36741	0.8120278
2670	9:20:01	20.00	2.36705	0.8126341
2671	9:21:01	19.80	2.36741	0.8114131
2672	9:22:01	19.70	2.36705	0.8120192
2673	9:23:01	19.70	2.36705	0.8117121
2674	9:24:01	19.80	2.36705	0.8114052
2675	9:25:01	19.90	2.36705	0.8110985
2676	9:26:01	20.00	2.36705	0.8107921
2677	9:27:01	20.20	2.36705	0.8104859

2678	9:28:01	20.20	2.36633	0.8119995
2679	9:29:01	20.10	2.36741	0.8089635
2680	9:30:01	19.90	2.36669	0.8104765
2681	9:31:01	19.70	2.36741	0.8083534
2682	9:32:01	19.70	2.36741	0.8080487
2683	9:33:01	19.70	2.36669	0.8095604
2684	9:34:01	19.80	2.36705	0.808349
2685	9:35:01	20.00	2.36669	0.8089508
2686	9:36:01	20.10	2.36705	0.8077406
2687	9:37:01	20.20	2.36741	0.8065287
2688	9:38:01	20.10	2.36669	0.8080381
2689	9:39:01	20.00	2.36633	0.8086416
2690	9:40:01	19.80	2.36705	0.8065264
2691	9:41:01	19.70	2.36669	0.8071275
2692	9:42:01	19.70	2.36669	0.8068244
2693	9:43:01	19.80	2.36669	0.8065215
2694	9:44:01	19.90	2.36705	0.8053158
2695	9:45:01	20.10	2.36633	0.8068217
2696	9:46:01	20.20	2.36633	0.8065192
2697	9:47:01	20.20	2.36633	0.8062169
2698	9:48:01	20.00	2.36524	0.808625
2699	9:49:01	19.90	2.36669	0.8047091
2700	9:50:01	19.70	2.36633	0.8053114
2701	9:51:01	19.70	2.36596	0.8059132
2702	9:52:01	19.70	2.36669	0.803806
2703	9:53:01	19.90	2.36560	0.8062129
2704	9:54:01	20.00	2.36524	0.8068112
2705	9:55:01	20.20	2.36560	0.8056104
2706	9:56:01	20.20	2.36560	0.8053094
2707	9:57:01	20.10	2.36560	0.8050087
2708	9:58:01	20.00	2.36560	0.8047082
2709	9:59:01	19.80	2.36560	0.804408
2710	10:00:01	19.70	2.36524	0.8050056
2711	10:01:01	19.70	2.36560	0.8038081
2712	10:02:01	19.80	2.36560	0.8035085
2713	10:03:01	19.90	2.36560	0.8032091
2714	10:04:01	20.10	2.36560	0.80291
2715	10:05:01	20.20	2.36596	0.8017126
2716	10:06:01	20.20	2.36524	0.803208
2717	10:07:01	20.00	2.36524	0.8029092
2718	10:08:01	19.80	2.36669	0.7990232
2719	10:09:01	19.70	2.36488	0.8032094
2720	10:10:01	19.70	2.36524	0.8020141
2721	10:11:01	19.80	2.36524	0.8017162
2722	10:12:01	19.90	2.36596	0.7996287
2723	10:13:01	20.10	2.36560	0.8002277
2724	10:14:01	20.20	2.36560	0.7999307

2725	10:15:01	20.20	2.36524	0.8005267
2726	10:16:01	20.10	2.36488	0.8011247
2727	10:17:01	19.90	2.36633	0.7972523
2728	10:18:01	19.70	2.36488	0.8005311
2729	10:19:01	19.70	2.36524	0.7993407
2730	10:20:01	19.80	2.36488	0.7999383
2731	10:21:01	19.90	2.36488	0.7996422
2732	10:22:01	20.00	2.36524	0.7984536
2733	10:23:01	20.20	2.36524	0.7981583
2734	10:24:01	20.20	2.36488	0.7987554
2735	10:25:01	20.10	2.36524	0.7975684
2736	10:26:01	20.00	2.36524	0.7972737
2737	10:27:01	19.80	2.36488	0.7978705
2738	10:28:01	19.70	2.36488	0.797576
2739	10:29:01	19.70	2.36488	0.7972817
2740	10:30:01	19.90	2.36488	0.7969876
2741	10:31:01	20.00	2.36488	0.7966937
2742	10:32:01	20.10	2.36524	0.7955105
2743	10:33:01	20.20	2.36488	0.7961066
2744	10:34:01	20.20	2.36488	0.7958134
2745	10:35:01	20.00	2.36488	0.7955204
2746	10:36:01	19.80	2.36488	0.7952276
2747	10:37:01	19.70	2.36488	0.794935
2748	10:38:01	19.70	2.36488	0.7946426
2749	10:39:01	19.80	2.36488	0.7943505
2750	10:40:01	20.00	2.36488	0.7940586
2751	10:41:01	20.10	2.36452	0.7946534
2752	10:42:01	20.20	2.36488	0.7934753
2753	10:43:01	20.20	2.36560	0.7914146
2754	10:44:01	20.00	2.36488	0.792893
2755	10:45:01	19.80	2.36452	0.7934874
2756	10:46:01	19.70	2.36488	0.7923115
2757	10:47:01	19.70	2.36452	0.7929057
2758	10:48:01	19.80	2.36488	0.7917308
2759	10:49:01	20.00	2.36488	0.7914408
2760	10:50:01	20.10	2.36488	0.791151
2761	10:51:01	20.20	2.36488	0.7908614
2762	10:52:01	20.20	2.36452	0.7914551
2763	10:53:01	20.00	2.36452	0.7911656
2764	10:54:01	19.90	2.36452	0.7908763
2765	10:55:01	19.70	2.36452	0.7905872
2766	10:56:01	19.70	2.36488	0.7894166
2767	10:57:01	19.80	2.36452	0.7900097
2768	10:58:01	19.90	2.36488	0.7888402
2769	10:59:01	20.10	2.36488	0.7885523
2770	11:00:01	20.20	2.36488	0.7882646
2771	11:01:01	20.20	2.36488	0.7879771

2772	11:02:01	20.10	2.36488	0.7876899
2773	11:03:01	19.90	2.36488	0.7874028
2774	11:04:01	19.80	2.36416	0.7888719
2775	11:05:01	19.70	2.36488	0.7868293
2776	11:06:01	19.80	2.36416	0.7882975
2777	11:07:01	19.90	2.36452	0.7871349
2778	11:08:01	20.10	2.36452	0.7868486
2779	11:09:01	20.20	2.36452	0.7865624
2780	11:10:01	20.20	2.36488	0.7853992
2781	11:11:01	20.10	2.36488	0.7851139
2782	11:12:01	19.90	2.36452	0.7857053
2783	11:13:01	19.80	2.36416	0.7862939
2784	11:14:01	19.70	2.36416	0.7860085
2785	11:15:01	19.80	2.36379	0.7865989
2786	11:16:01	19.90	2.36452	0.7845653
2787	11:17:01	20.00	2.36452	0.7842809
2788	11:18:01	20.20	2.36416	0.7848689
2789	11:19:01	20.20	2.36452	0.7837126
2790	11:20:01	20.10	2.36379	0.7851745
2791	11:21:01	20.00	2.36379	0.7848902
2792	11:22:01	19.80	2.36452	0.7828616
2793	11:23:01	19.70	2.36452	0.7825784
2794	11:24:01	19.80	2.36379	0.7840386
2795	11:25:01	19.90	2.36416	0.7828826
2796	11:26:01	20.00	2.36379	0.7834719
2797	11:27:01	20.20	2.36271	0.785802
2798	11:28:01	20.20	2.36416	0.7820344
2799	11:29:01	20.20	2.36416	0.7817521
2800	11:30:01	20.00	2.36416	0.78147
2801	11:31:01	19.80	2.36379	0.7820587
2802	11:32:01	19.70	2.36416	0.7809064
2803	11:33:01	19.70	2.36416	0.7806248
2804	11:34:01	19.80	2.36343	0.7820829
2805	11:35:01	19.90	2.36307	0.7826705
2806	11:36:01	20.10	2.36307	0.7823887
2807	11:37:01	20.20	2.36343	0.7812383
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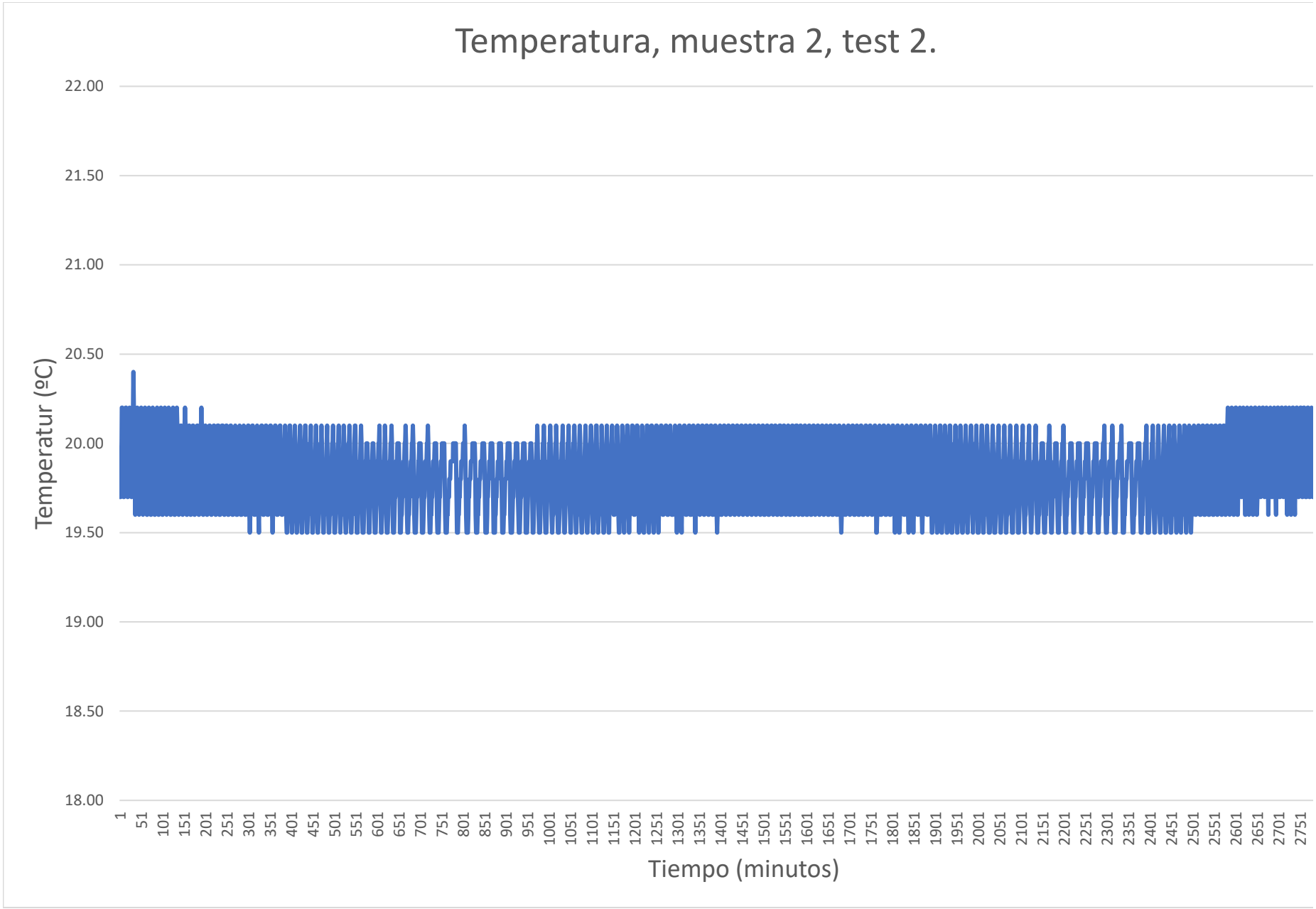
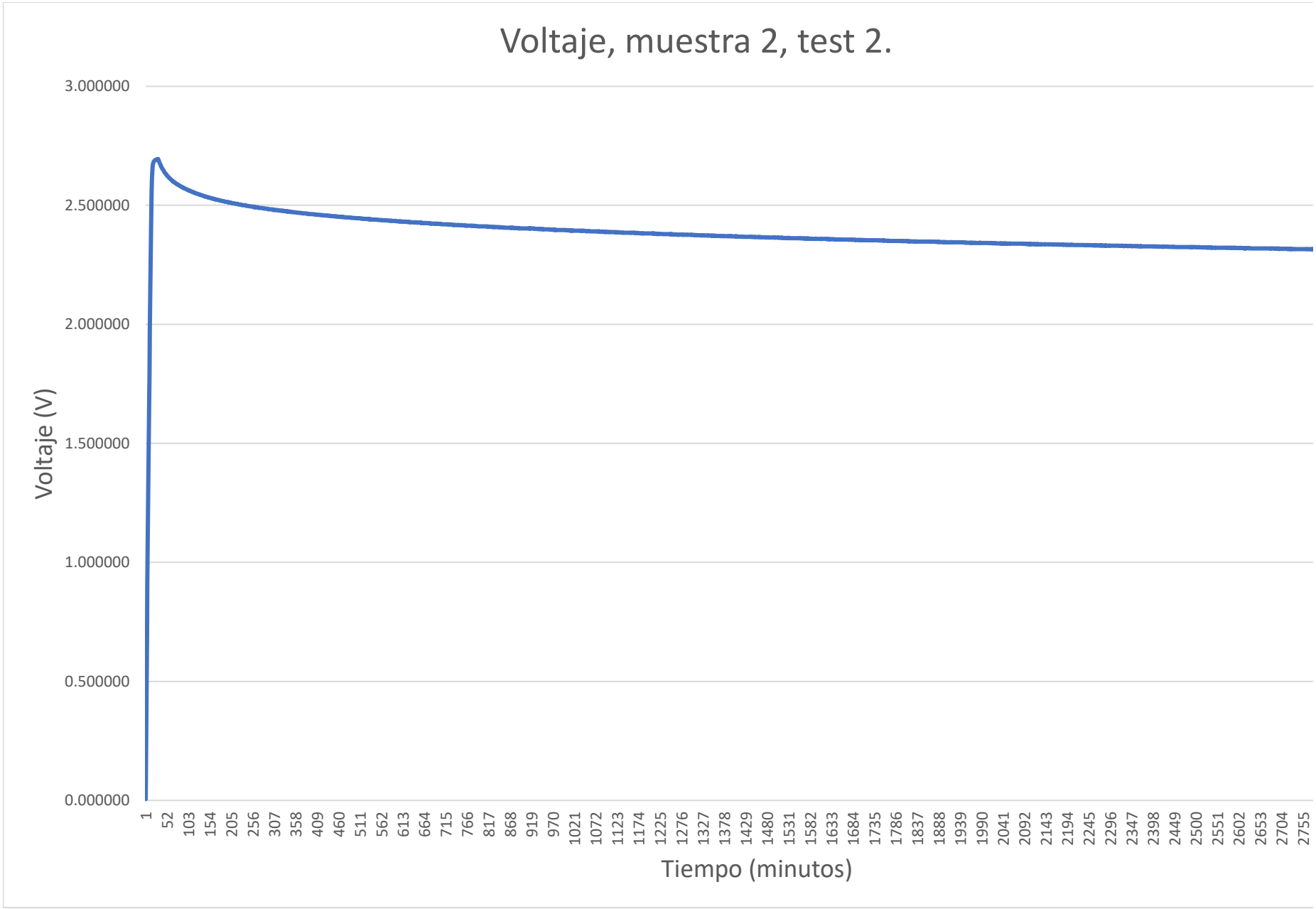
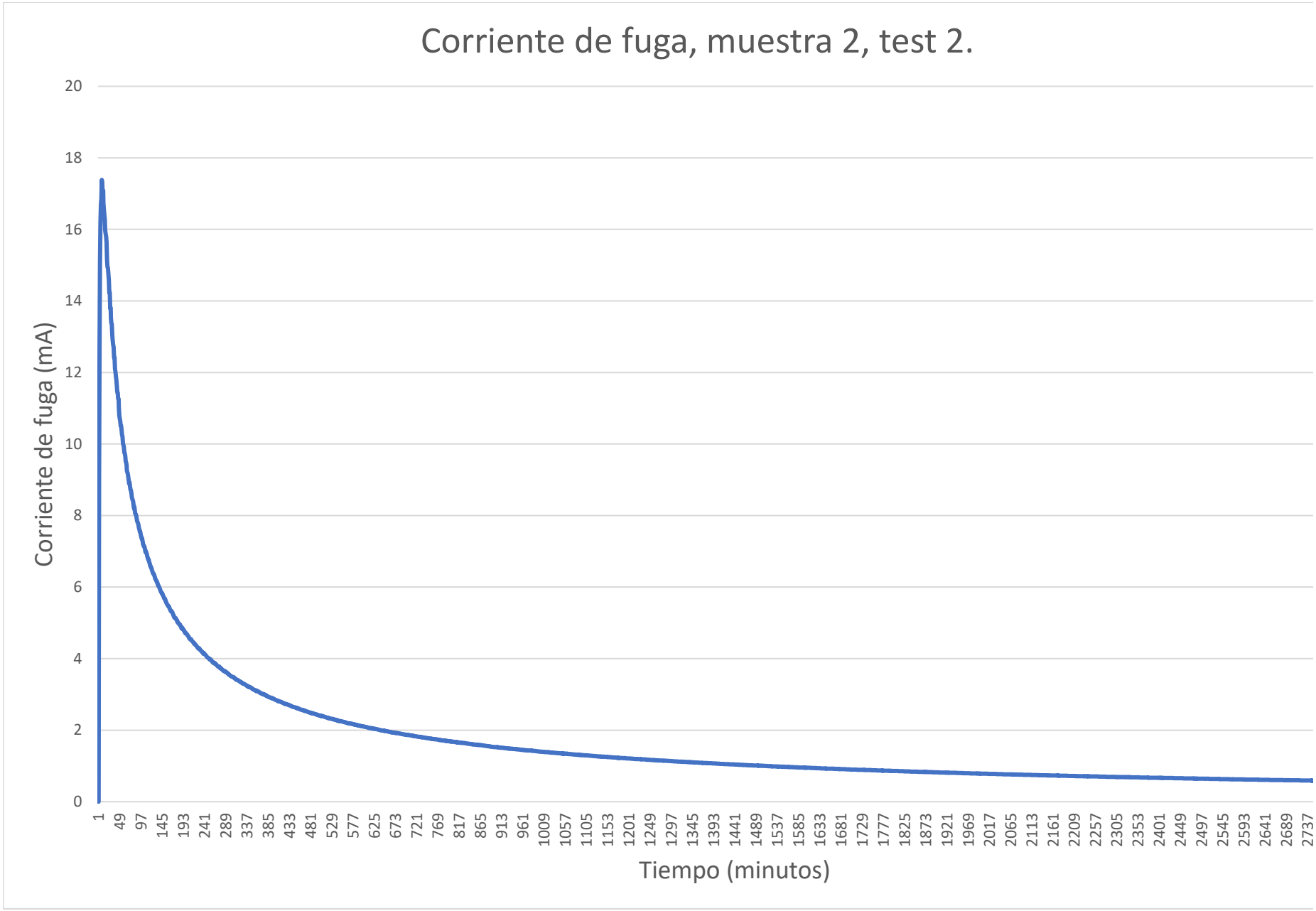
2809	11:39:01	20.00	2.36307	0.7815444
2810	11:40:01	19.90	2.36307	0.7812633
2811	11:41:01	19.70	2.36343	0.780115
2812	11:42:01	19.70	2.36307	0.7807019
2813	11:43:01	19.80	2.36307	0.7804215
2814	11:44:01	19.90	2.36307	0.7801412
2815	11:45:01	20.10	2.36271	0.7807251
2816	11:46:01	20.20	2.36379	0.7778495
2817	11:47:01	20.20	2.36343	0.7784362
2818	11:48:01	20.10	2.36271	0.7798853

2819	11:49:01	19.90	2.36343	0.7778781
2820	11:50:01	19.70	2.36307	0.7784641
2821	11:51:01	19.70	2.36271	0.7790473
2822	11:52:01	19.80	2.36235	0.7796324
2823	11:53:01	19.90	2.36343	0.7767645
2824	11:54:01	20.00	2.36271	0.7782111
2825	11:55:01	20.20	2.36235	0.7787959
2826	11:56:01	20.20	2.36307	0.7767942
2827	11:57:01	20.10	2.36271	0.7773767
2828	11:58:01	19.90	2.36271	0.777099
2829	11:59:01	19.80	2.36235	0.7776833
2830	12:00:01	19.70	2.36199	0.7782673
2831	12:01:01	19.80	2.36199	0.7779895
2832	12:02:01	19.90	2.36235	0.776851
2833	12:03:01	20.00	2.36235	0.7765739
2834	12:04:01	20.20	2.36271	0.7754367
2835	12:05:01	20.20	2.36199	0.7768805
2836	12:06:01	20.10	2.36271	0.7748842
2837	12:07:01	20.00	2.36271	0.7746083
2838	12:08:01	19.80	2.36235	0.7751916
2839	12:09:01	19.70	2.36235	0.7749158
2840	12:10:01	19.80	2.36199	0.7754986
2841	12:11:01	19.90	2.36271	0.7735064
2842	12:12:01	20.00	2.36199	0.7749473
2843	12:13:01	20.20	2.36235	0.7738143
2844	12:14:01	20.20	2.36199	0.7743967
2845	12:15:01	20.10	2.36199	0.7741217
2846	12:16:01	20.00	2.36199	0.7738469
2847	12:17:01	19.80	2.36271	0.7718595
2848	12:18:01	19.70	2.36199	0.7732979
2849	12:19:01	19.80	2.36199	0.7730236
2850	12:20:01	19.90	2.36235	0.7718941
2851	12:21:01	20.00	2.36199	0.7724758
2852	12:22:01	20.20	2.36199	0.7722021
2853	12:23:01	20.20	2.36199	0.7719287
2854	12:24:01	20.20	2.36199	0.7716555
2855	12:25:01	20.00	2.36199	0.7713824
2856	12:26:01	19.80	2.36199	0.7711095
2857	12:27:01	19.70	2.36199	0.7708369
2858	12:28:01	19.70	2.36199	0.7705644
2859	12:29:01	19.80	2.36199	0.7702921
2860	12:30:01	19.90	2.36199	0.77002
2861	12:31:01	20.10	2.36199	0.7697481
2862	12:32:01	20.20	2.36199	0.7694764
2863	12:33:01	20.20	2.36199	0.7692049
2864	12:34:01	20.10	2.36199	0.7689336
2865	12:35:01	19.90	2.36199	0.7686624

2866	12:36:01	19.70	2.36199	0.7683915	
2867	12:37:01	19.70	2.36199	0.7681207	
2868	12:38:01	19.80	2.36199	0.7678502	
2869	12:39:01	19.90	2.36199	0.7675798	
2870	12:40:01	20.10	2.36199	0.7673096	
2871	12:41:01	20.20	2.36199	0.7670396	
2872	12:42:01	20.20	2.36162	0.7676164	
2873	12:43:01	20.10	2.36199	0.7665002	
2874	12:44:01	19.90	2.36199	0.7662308	
2875	12:45:01	19.80	2.36162	0.7668072	
2876	12:46:01	19.70	2.36162	0.7665379	
2877	12:47:01	19.80	2.36199	0.7654237	
2878	12:48:01	19.90	2.36199	0.765155	
2879	12:49:01	20.00	2.36199	0.7648865	
2880	12:50:01	20.20	2.36199	0.7646183	
2881	12:51:01	20.20	2.36199	0.7643502	
2882	12:52:01	20.10	2.36199	0.7640823	
2883	12:53:01	20.00	2.36162	0.7646578	
2884	12:54:01	19.80	2.36162	0.76439	
2885	12:55:01	19.70	2.36199	0.7632796	
2886	12:56:01	19.80	2.36199	0.7630125	
2887	12:57:01	19.90	2.36199	0.7627455	
2888	12:58:01	20.00	2.36162	0.7633205	
2889	12:59:01	20.20	2.36199	0.7622121	
2890	13:00:01	20.20	2.36126	0.7636304	
2891	13:01:01	20.20	2.36126	0.7633636	
2892	13:02:01	20.00	2.36162	0.762254	
2893	13:03:01	19.80	2.36199	0.7611476	
2894	13:04:01	19.70	2.36090	0.7634066	
2895	13:05:01	19.70	2.36162	0.7614562	
2896	13:06:01	19.90	2.36126	0.7620323	
2897	13:07:01	20.00	2.36199	0.760086	
2898	13:08:01	20.20	2.36090	0.7623423	
2899	13:09:01	20.20	2.36199	0.7595563	
2900	13:10:01	20.20	2.36199	0.7592918	
2901	13:11:01	20.00	2.36199	0.7590274	
2902	13:12:01	19.90	2.36199	0.7587632	
2903	13:13:01	19.70	2.36162	0.7593366	
2904	13:14:01	19.70	2.36199	0.7582354	
2905	13:15:01	19.90	2.36126	0.7596477	
2906	13:16:01	20.00	2.36162	0.7585448	
2907	13:17:01	20.20	2.36162	0.7582812	
2908	13:18:01	20.20	2.36199	0.7571819	
2909	13:19:01	20.20	2.36054	0.7602685	
2910	13:20:01	20.00	2.361262	0.7583293	48 horas


Temperatura, muestra 2, test 2.
22.00
21.50
21.00
20.50
20.00
19.50
19.00
18.50
18.00
Temperatur (ºC)
1
51
101
151
201
251
301
351
401
451
501
551
601
651
701
751
801
851
901
951
1001
1051
1101
1151
1201
1251
1301
1351
1401
1451
1501
1551
1601
1651
1701
1751
1801
1851
1901
1951
2001
2051
2101
2151
2201
2251
2301
2351
2401
2451
2501
2551
2601
2651
2701
2751
Tiempo (minutos)


Voltaje, muestra 2, test 2.
3.000000
2.500000
2.000000
1.500000
1.000000
0.500000
0.000000
Voltaje (V)
1
52
103
154
205
256
307
358
409
460
511
562
613
664
715
766
817
868
919
970
1021
1072
1123
1174
1225
1276
1327
1378
1429
1480
1531
1582
1633
1684
1735
1786
1837
1888
1939
1990
2041
2092
2143
2194
2245
2296
2347
2398
2449
2500
2551
2602
2653
2704
2755
Tiempo (minutos)


Corriente de fuga, muestra 2, test 2.
Corriente de fuga (mA)
20
18
16
14
12
10
8
6
4
2
0
1
49
97
145
193
241
289
337
385
433
481
529
577
625
673
721
769
817
865
913
961
1009
1057
1105
1153
1201
1249
1297
1345
1393
1441
1489
1537
1585
1633
1681
1729
1777
1825
1873
1921
1969
2017
2065
2113
2161
2209
2257
2305
2353
2401
2449
2497
2545
2593
2641
2689
2737
Tiempo (minutos)

Numero	Hora	Temperatura	Tension (V)		
1	15:38:01	19.70	0.005426		
2	15:39:01	19.70	0.229326		
3	15:40:01	19.70	0.472759		
4	15:41:01	19.90	0.699915		
5	15:42:01	20.00	0.910070		
6	15:43:01	20.20	1.107927		
7	15:44:01	20.20	1.293124		
8	15:45:01	20.00	1.471448		
9	15:46:01	19.80	1.642538		
10	15:47:01	19.70	1.808926		
11	15:48:01	19.70	1.971697		
12	15:49:01	19.80	2.127957		
13	15:50:01	19.90	2.280962		
14	15:51:01	20.10	2.429987		
15	15:52:01	20.20	2.560927		
16	15:53:01	20.20	2.624951		
17	15:54:01	20.00	2.653888		
18	15:55:01	19.80	2.668356		
19	15:56:01	19.70	2.677037		
20	15:57:01	19.70	2.682463		
21	15:58:01	19.80	2.685357		
22	15:59:01	19.90	2.687527		
23	16:00:01	20.10	2.688250		
24	16:01:01	20.20	2.690421		
25	16:02:01	20.10	2.691144		
26	16:03:01	19.90	2.691144		
27	16:04:01	19.80	2.691868		
28	16:05:01	19.70	2.693314		
29	16:06:01	19.70	2.694399	Ifuga (mA)	
30	16:07:01	19.80	2.694038	0	30 minutos
31	16:08:01	20.00	2.694038	0	
32	16:09:01	20.30	2.688612	8.943333333	
33	16:10:01	20.40	2.683910	12.56	
34	16:11:01	20.20	2.678846	15.092	
35	16:12:01	20.00	2.674505	16.1775	
36	16:13:01	19.80	2.670526	16.69428571	
37	16:14:01	19.60	2.666909	16.855625	
38	16:15:01	19.70	2.662569	17.38277778	
39	16:16:01	19.80	2.659313	17.2625	
40	16:17:01	19.90	2.656420	16.99909091	
41	16:18:01	20.10	2.652803	17.08125	
42	16:19:01	20.20	2.650271	16.73346154	
43	16:20:01	20.10	2.647377	16.56464286	
44	16:21:01	19.90	2.644483	16.41833333	
45	16:22:01	19.70	2.641590	16.29	

U1 (V)	2.69404
U2 (V)	2.31098
tiempo (s)	172860
Capacidad (F)	300
I(A)	0.00056
I(mA)	0.56479

46	16:23:01	19.60	2.639419	15.96441176
47	16:24:01	19.70	2.636525	15.87583333
48	16:25:01	19.80	2.633632	15.79631579
49	16:26:01	20.00	2.631100	15.6345
50	16:27:01	20.10	2.630015	15.14357143
51	16:28:01	20.20	2.627844	14.94409091
52	16:29:01	20.10	2.624951	14.91891304
53	16:30:01	19.90	2.622780	14.74541667
54	16:31:01	19.70	2.620610	14.5856
55	16:32:01	19.60	2.619525	14.22942308
56	16:33:01	19.70	2.616631	14.23462963
57	16:34:01	19.80	2.616270	13.78714286
58	16:35:01	19.90	2.613376	13.80724138
59	16:36:01	20.10	2.612291	13.5245
60	16:37:01	20.20	2.610482	13.37677419
61	16:38:01	20.10	2.607950	13.35125
62	16:39:01	19.90	2.607227	13.05318182
63	16:40:01	19.70	2.605780	12.87911765
64	16:41:01	19.60	2.603971	12.76671429
65	16:42:01	19.60	2.601801	12.71069444
66	16:43:01	19.80	2.601439	12.41337838
67	16:44:01	19.90	2.598907	12.41723684
68	16:45:01	20.10	2.598907	12.09628205
69	16:46:01	20.20	2.597099	12.017375
70	16:47:01	20.10	2.595652	11.89829268
71	16:48:01	19.90	2.594205	11.78488095
72	16:49:01	19.70	2.593120	11.63465116
73	16:50:01	19.60	2.592396	11.45022727
74	16:51:01	19.60	2.590226	11.43466667
75	16:52:01	19.70	2.589503	11.2625
76	16:53:01	19.90	2.587332	11.25170213
77	16:54:01	20.00	2.587332	11.01520833
78	16:55:01	20.20	2.587332	10.78836735
79	16:56:01	20.10	2.585886	10.7152
80	16:57:01	20.00	2.584439	10.645
81	16:58:01	19.80	2.583715	10.50798077
82	16:59:01	19.60	2.581545	10.51254717
83	17:00:01	19.60	2.580822	10.38296296
84	17:01:01	19.70	2.580098	10.25818182
85	17:02:01	19.90	2.578651	10.20241071
86	17:03:01	20.00	2.578651	10.02166667
87	17:04:01	20.10	2.577204	9.971896552
88	17:05:01	20.20	2.575758	9.923728814
89	17:06:01	20.00	2.575758	9.756666667
90	17:07:01	19.80	2.573949	9.743360656
91	17:08:01	19.60	2.572864	9.672096774
92	17:09:01	19.60	2.572864	9.516984127

93	17:10:01	19.70	2.571417	9.479765625
94	17:11:01	19.80	2.570332	9.415846154
95	17:12:01	19.90	2.570332	9.271666667
96	17:13:01	20.10	2.569247	9.212761194
97	17:14:01	20.20	2.567800	9.182205882
98	17:15:01	20.00	2.567077	9.100072464
99	17:16:01	19.80	2.566715	8.9945
100	17:17:01	19.60	2.566353	8.891901408
101	17:18:01	19.60	2.564183	8.917708333
102	17:19:01	19.70	2.563821	8.818972603
103	17:20:01	19.80	2.563459	8.722905405
104	17:21:01	19.90	2.562013	8.701666667
105	17:22:01	20.10	2.561289	8.633486842
106	17:23:01	20.20	2.561289	8.520064935
107	17:24:01	20.10	2.560566	8.455897436
108	17:25:01	19.90	2.559119	8.439177215
109	17:26:01	19.70	2.558395	8.3776875
110	17:27:01	19.60	2.558395	8.273024691
111	17:28:01	19.70	2.558034	8.192926829
112	17:29:01	19.80	2.555502	8.245542169
113	17:30:01	19.90	2.555502	8.146190476
114	17:31:01	20.00	2.555502	8.049176471
115	17:32:01	20.20	2.554055	8.038546512
116	17:33:01	20.10	2.552970	8.007356322
117	17:34:01	19.90	2.552608	7.935795455
118	17:35:01	19.70	2.552608	7.845505618
119	17:36:01	19.60	2.551523	7.8175
120	17:37:01	19.60	2.550438	7.79010989
121	17:38:01	19.70	2.549714	7.743695652
122	17:39:01	19.90	2.549714	7.659354839
123	17:40:01	20.00	2.548991	7.615265957
124	17:41:01	20.10	2.548629	7.553105263
125	17:42:01	20.20	2.547182	7.54875
126	17:43:01	20.00	2.547182	7.469896907
127	17:44:01	19.80	2.546821	7.411071429
128	17:45:01	19.60	2.546459	7.353484848
129	17:46:01	19.60	2.544651	7.36935
130	17:47:01	19.60	2.543927	7.331237624
131	17:48:01	19.80	2.543927	7.258382353
132	17:49:01	19.90	2.543927	7.186941748
133	17:50:01	20.00	2.543203	7.151682692
134	17:51:01	20.20	2.541757	7.15147619
135	17:52:01	20.10	2.541033	7.117216981
136	17:53:01	19.90	2.541033	7.049766355
137	17:54:01	19.70	2.541033	6.983564815
138	17:55:01	19.60	2.539225	7.001513761
139	17:56:01	19.60	2.538863	6.953409091

140	17:57:01	19.70	2.538140	6.922432432
141	17:58:01	19.90	2.538140	6.859732143
142	17:59:01	20.00	2.537778	6.814159292
143	18:00:01	20.10	2.537416	6.769385965
144	18:01:01	20.10	2.535969	6.772565217
145	18:02:01	20.00	2.535969	6.713318966
146	18:03:01	19.80	2.535608	6.670512821
147	18:04:01	19.60	2.535246	6.628474576
148	18:05:01	19.60	2.534884	6.587142857
149	18:06:01	19.70	2.533799	6.576625
150	18:07:01	19.80	2.533437	6.536404959
151	18:08:01	19.90	2.532352	6.52647541
152	18:09:01	20.10	2.532714	6.457886179
153	18:10:01	20.20	2.531990	6.434193548
154	18:11:01	20.10	2.531990	6.38192
155	18:12:01	19.90	2.530905	6.373531746
156	18:13:01	19.70	2.529820	6.365275591
157	18:14:01	19.60	2.529459	6.328867187
158	18:15:01	19.60	2.529459	6.279031008
159	18:16:01	19.70	2.529459	6.229961538
160	18:17:01	19.90	2.528735	6.209274809
161	18:18:01	20.00	2.528012	6.188863636
162	18:19:01	20.10	2.527650	6.15518797
163	18:20:01	20.10	2.526565	6.148992537
164	18:21:01	20.00	2.526565	6.102703704
165	18:22:01	19.80	2.526203	6.070404412
166	18:23:01	19.60	2.525841	6.038576642
167	18:24:01	19.60	2.524756	6.033405797
168	18:25:01	19.70	2.524395	6.002266187
169	18:26:01	19.80	2.524033	5.971607143
170	18:27:01	19.90	2.523671	5.941382979
171	18:28:01	20.10	2.523671	5.898838028
172	18:29:01	20.10	2.523309	5.869545455
173	18:30:01	20.00	2.522586	5.853194444
174	18:31:01	19.80	2.522224	5.82462069
175	18:32:01	19.60	2.521139	5.82119863
176	18:33:01	19.60	2.521139	5.780918367
177	18:34:01	19.70	2.520777	5.753412162
178	18:35:01	19.80	2.520416	5.726241611
179	18:36:01	19.90	2.520416	5.6874
180	18:37:01	20.00	2.519331	5.685
181	18:38:01	20.10	2.518607	5.670756579
182	18:39:01	20.10	2.518607	5.633039216
183	18:40:01	19.90	2.518607	5.595811688
184	18:41:01	19.70	2.517884	5.582387097
185	18:42:01	19.60	2.517884	5.545961538
186	18:43:01	19.60	2.517522	5.521528662

187	18:44:01	19.70	2.516798	5.508860759
188	18:45:01	19.80	2.516798	5.473584906
189	18:46:01	19.90	2.516075	5.46134375
190	18:47:01	20.10	2.514990	5.460496894
191	18:48:01	20.20	2.514990	5.42617284
192	18:49:01	20.10	2.514990	5.392269939
193	18:50:01	19.90	2.514990	5.358780488
194	18:51:01	19.70	2.514628	5.336666667
195	18:52:01	19.60	2.514266	5.314819277
196	18:53:01	19.60	2.512820	5.325688623
197	18:54:01	19.70	2.512458	5.304166667
198	18:55:01	19.80	2.512096	5.282899408
199	18:56:01	20.00	2.512458	5.240588235
200	18:57:01	20.10	2.512096	5.21994152
201	18:58:01	20.10	2.511373	5.21002907
202	18:59:01	20.00	2.512096	5.158439306
203	19:00:01	19.80	2.511734	5.13862069
204	19:01:01	19.60	2.510649	5.139685714
205	19:02:01	19.60	2.509564	5.140738636
206	19:03:01	19.70	2.509202	5.121355932
207	19:04:01	19.80	2.509202	5.092022472
208	19:05:01	19.90	2.509202	5.06301676
209	19:06:01	20.00	2.508479	5.054416667
210	19:07:01	20.10	2.509202	5.005966851
211	19:08:01	20.10	2.508479	4.997774725
212	19:09:01	19.90	2.507756	4.989672131
213	19:10:01	19.70	2.507032	4.981684783
214	19:11:01	19.60	2.507394	4.944432432
215	19:12:01	19.60	2.506309	4.946478495
216	19:13:01	19.70	2.506309	4.919491979
217	19:14:01	19.80	2.506309	4.892792553
218	19:15:01	19.90	2.505947	4.875952381
219	19:16:01	20.00	2.506309	4.840236842
220	19:17:01	20.10	2.504138	4.871204188
221	19:18:01	20.10	2.504138	4.8453125
222	19:19:01	19.90	2.504138	4.819689119
223	19:20:01	19.70	2.503415	4.812963918
224	19:21:01	19.60	2.503415	4.787769231
225	19:22:01	19.60	2.503415	4.762831633
226	19:23:01	19.70	2.503415	4.738147208
227	19:24:01	19.80	2.503415	4.713712121
228	19:25:01	19.90	2.501968	4.725879397
229	19:26:01	20.10	2.501968	4.70175
230	19:27:01	20.10	2.501606	4.686865672
231	19:28:01	20.10	2.500883	4.681064356
232	19:29:01	19.80	2.500883	4.657512315
233	19:30:01	19.60	2.500883	4.634191176

234	19:31:01	19.60	2.500521	4.619926829
235	19:32:01	19.60	2.500521	4.597014563
236	19:33:01	19.70	2.500521	4.574323671
237	19:34:01	19.80	2.500160	4.560528846
238	19:35:01	19.90	2.500160	4.538229665
239	19:36:01	20.10	2.499436	4.533380952
240	19:37:01	20.10	2.497989	4.5457109
241	19:38:01	20.10	2.497989	4.52379717
242	19:39:01	19.90	2.497989	4.502089202
243	19:40:01	19.70	2.497628	4.489018692
244	19:41:01	19.60	2.497628	4.467674419
245	19:42:01	19.60	2.497266	4.454907407
246	19:43:01	19.70	2.496542	4.450599078
247	19:44:01	19.80	2.496904	4.421422018
248	19:45:01	19.90	2.496904	4.400776256
249	19:46:01	20.10	2.495819	4.404977273
250	19:47:01	20.10	2.495819	4.38459276
251	19:48:01	20.00	2.495457	4.372545045
252	19:49:01	19.80	2.495457	4.352488789
253	19:50:01	19.60	2.494734	4.34875
254	19:51:01	19.60	2.494734	4.328977778
255	19:52:01	19.60	2.494734	4.309380531
256	19:53:01	19.70	2.494734	4.289955947
257	19:54:01	19.80	2.494372	4.278640351
258	19:55:01	19.90	2.492925	4.291113537
259	19:56:01	20.10	2.492202	4.28773913
260	19:57:01	20.10	2.492925	4.253095238
261	19:58:01	20.00	2.492202	4.249913793
262	19:59:01	19.80	2.492564	4.223476395
263	20:00:01	19.60	2.492202	4.212735043
264	20:01:01	19.60	2.491840	4.202085106
265	20:02:01	19.60	2.491478	4.191525424
266	20:03:01	19.70	2.491840	4.165780591
267	20:04:01	19.80	2.491117	4.163046218
268	20:05:01	19.90	2.491840	4.130083682
269	20:06:01	20.00	2.489670	4.157666667
270	20:07:01	20.10	2.490032	4.132489627
271	20:08:01	20.00	2.489308	4.129958678
272	20:09:01	19.80	2.489308	4.11255144
273	20:10:01	19.60	2.488947	4.102684426
274	20:11:01	19.60	2.488947	4.085530612
275	20:12:01	19.60	2.488947	4.06851626
276	20:13:01	19.70	2.488947	4.051639676
277	20:14:01	19.80	2.488947	4.034899194
278	20:15:01	19.90	2.488585	4.025562249
279	20:16:01	20.00	2.488223	4.0163
280	20:17:01	20.10	2.487500	4.014302789

281	20:18:01	20.00	2.487138	4.00515873
282	20:19:01	19.90	2.487861	3.974644269
283	20:20:01	19.60	2.486776	3.97996063
284	20:21:01	19.60	2.486053	3.978137255
285	20:22:01	19.60	2.486415	3.955136719
286	20:23:01	19.70	2.486053	3.946400778
287	20:24:01	19.80	2.486053	3.930717054
288	20:25:01	19.90	2.486415	3.908166023
289	20:26:01	20.00	2.486053	3.899711538
290	20:27:01	20.10	2.485329	3.898256705
291	20:28:01	20.00	2.485329	3.882996183
292	20:29:01	19.80	2.485329	3.867851711
293	20:30:01	19.60	2.483521	3.887064394
294	20:31:01	19.60	2.483521	3.872018868
295	20:32:01	19.60	2.483159	3.863890977
296	20:33:01	19.70	2.483521	3.842265918
297	20:34:01	19.80	2.483159	3.834309701
298	20:35:01	19.90	2.483159	3.819684015
299	20:36:01	20.00	2.483159	3.805166667
300	20:37:01	20.10	2.483159	3.790756458
301	20:38:01	20.10	2.483159	3.776452206
302	20:39:01	19.90	2.482797	3.768882784
303	20:40:01	19.60	2.482436	3.761350365
304	20:41:01	19.50	2.480627	3.7802
305	20:42:01	19.60	2.482074	3.739927536
306	20:43:01	19.60	2.480989	3.745649819
307	20:44:01	19.80	2.480627	3.738327338
308	20:45:01	19.90	2.480989	3.718082437
309	20:46:01	20.00	2.480265	3.717375
310	20:47:01	20.10	2.480265	3.703790036
311	20:48:01	20.10	2.480265	3.690301418
312	20:49:01	20.00	2.480265	3.676908127
313	20:50:01	19.70	2.480265	3.663609155
314	20:51:01	19.60	2.479542	3.663087719
315	20:52:01	19.60	2.479542	3.64993007
316	20:53:01	19.60	2.478457	3.655766551
317	20:54:01	19.70	2.479180	3.630173611
318	20:55:01	19.80	2.478095	3.636038062
319	20:56:01	19.90	2.478095	3.623155172
320	20:57:01	20.00	2.478095	3.610360825
321	20:58:01	20.10	2.477372	3.610034247
322	20:59:01	20.00	2.477372	3.597372014
323	21:00:01	19.80	2.477372	3.584795918
324	21:01:01	19.60	2.477010	3.578440678
325	21:02:01	19.50	2.477372	3.559898649
326	21:03:01	19.60	2.476648	3.55976431
327	21:04:01	19.70	2.477010	3.541409396

328	21:05:01	19.80	2.476648	3.535284281
329	21:06:01	19.90	2.476648	3.523166667
330	21:07:01	20.00	2.476287	3.517126246
331	21:08:01	20.10	2.476287	3.505149007
332	21:09:01	20.10	2.475925	3.499224422
333	21:10:01	19.90	2.475201	3.499292763
334	21:11:01	19.70	2.474840	3.493409836
335	21:12:01	19.60	2.475201	3.475767974
336	21:13:01	19.60	2.474478	3.475895765
337	21:14:01	19.60	2.473755	3.476022727
338	21:15:01	19.70	2.474478	3.452750809
339	21:16:01	19.80	2.474116	3.447129032
340	21:17:01	19.90	2.473755	3.441527331
341	21:18:01	20.10	2.474478	3.418589744
342	21:19:01	20.10	2.473755	3.418897764
343	21:20:01	20.00	2.473755	3.407691083
344	21:21:01	19.80	2.473393	3.402301587
345	21:22:01	19.60	2.472308	3.408386076
346	21:23:01	19.60	2.471946	3.403028391
347	21:24:01	19.60	2.472308	3.386320755
348	21:25:01	19.70	2.471946	3.381065831
349	21:26:01	19.80	2.471946	3.3701875
350	21:27:01	19.90	2.471584	3.365015576
351	21:28:01	20.00	2.471584	3.354254658
352	21:29:01	20.10	2.471223	3.349148607
353	21:30:01	20.10	2.471223	3.338503086
354	21:31:01	19.90	2.470499	3.339061538
355	21:32:01	19.70	2.470499	3.32851227
356	21:33:01	19.60	2.471223	3.306957187
357	21:34:01	19.50	2.470861	3.302088415
358	21:35:01	19.60	2.469776	3.308237082
359	21:36:01	19.70	2.469414	3.303393939
360	21:37:01	19.80	2.469414	3.293111782
361	21:38:01	19.90	2.469052	3.288343373
362	21:39:01	20.00	2.468691	3.283588589
363	21:40:01	20.10	2.468691	3.273458084
364	21:41:01	20.10	2.468691	3.26338806
365	21:42:01	19.90	2.468691	3.253377976
366	21:43:01	19.70	2.468691	3.2434273
367	21:44:01	19.60	2.468691	3.233535503
368	21:45:01	19.60	2.468329	3.229041298
369	21:46:01	19.60	2.467606	3.229882353
370	21:47:01	19.70	2.468329	3.209516129
371	21:48:01	19.80	2.468329	3.199839181
372	21:49:01	19.90	2.466882	3.211311953
373	21:50:01	20.00	2.466520	3.206947674
374	21:51:01	20.10	2.466520	3.197362319

375	21:52:01	20.10	2.466159	3.193049133
376	21:53:01	19.90	2.466159	3.183559078
377	21:54:01	19.70	2.466159	3.174123563
378	21:55:01	19.60	2.466159	3.16474212
379	21:56:01	19.60	2.466159	3.155414286
380	21:57:01	19.60	2.465797	3.151296296
381	21:58:01	19.70	2.465797	3.142059659
382	21:59:01	19.80	2.465797	3.132875354
383	22:00:01	19.90	2.465797	3.123742938
384	22:01:01	19.90	2.465074	3.12484507
385	22:02:01	20.00	2.465074	3.115786517
386	22:03:01	20.10	2.465074	3.106778711
387	22:04:01	20.00	2.465435	3.09277933
388	22:05:01	19.80	2.463627	3.109066852
389	22:06:01	19.60	2.463265	3.105180556
390	22:07:01	19.50	2.463627	3.091288089
391	22:08:01	19.50	2.463627	3.082472376
392	22:09:01	19.60	2.463265	3.07869146
393	22:10:01	19.70	2.462903	3.074931319
394	22:11:01	19.80	2.463265	3.061273973
395	22:12:01	19.90	2.462903	3.057581967
396	22:13:01	20.00	2.462903	3.048978202
397	22:14:01	20.10	2.462903	3.040421196
398	22:15:01	20.10	2.462903	3.031910569
399	22:16:01	19.90	2.462542	3.028324324
400	22:17:01	19.70	2.462180	3.024770889
401	22:18:01	19.60	2.462180	3.016370968
402	22:19:01	19.50	2.461818	3.012868633
403	22:20:01	19.60	2.462180	2.999705882
404	22:21:01	19.70	2.461095	3.005906667
405	22:22:01	19.80	2.461456	2.992845745
406	22:23:01	19.90	2.461095	2.989429708
407	22:24:01	19.90	2.460010	2.995608466
408	22:25:01	20.00	2.460733	2.977902375
409	22:26:01	20.10	2.460010	2.979315789
410	22:27:01	20.00	2.460371	2.966496063
411	22:28:01	19.80	2.460010	2.963193717
412	22:29:01	19.60	2.460010	2.955195822
413	22:30:01	19.50	2.460010	2.947239583
414	22:31:01	19.50	2.460010	2.939324675
415	22:32:01	19.60	2.459286	2.940829016
416	22:33:01	19.70	2.459648	2.928294574
417	22:34:01	19.80	2.459648	2.920489691
418	22:35:01	19.90	2.459286	2.917377892
419	22:36:01	19.90	2.459286	2.909641026
420	22:37:01	20.00	2.458563	2.911189258
421	22:38:01	20.10	2.458201	2.908125

422	22:39:01	20.00	2.458563	2.89586514
423	22:40:01	19.90	2.458201	2.89285533
424	22:41:01	19.60	2.458201	2.885278481
425	22:42:01	19.50	2.457116	2.891439394
426	22:43:01	19.50	2.457116	2.883904282
427	22:44:01	19.60	2.457116	2.876407035
428	22:45:01	19.70	2.457478	2.864411028
429	22:46:01	19.70	2.457116	2.861525
430	22:47:01	19.80	2.457116	2.854139651
431	22:48:01	19.90	2.457116	2.846791045
432	22:49:01	20.00	2.457116	2.839478908
433	22:50:01	20.10	2.456754	2.836683168
434	22:51:01	20.10	2.456031	2.838358025
435	22:52:01	19.90	2.456031	2.83112069
436	22:53:01	19.70	2.456392	2.819484029
437	22:54:01	19.50	2.456031	2.816752451
438	22:55:01	19.50	2.456392	2.805207824
439	22:56:01	19.60	2.455669	2.806939024
440	22:57:01	19.60	2.454584	2.813065693
441	22:58:01	19.70	2.455307	2.797220874
442	22:59:01	19.80	2.455307	2.790205811
443	23:00:01	19.90	2.454584	2.791956522
444	23:01:01	20.00	2.454584	2.784987952
445	23:02:01	20.00	2.454222	2.782403846
446	23:03:01	20.10	2.454222	2.775491607
447	23:04:01	19.90	2.454222	2.76861244
448	23:05:01	19.70	2.454222	2.76176611
449	23:06:01	19.60	2.453860	2.759261905
450	23:07:01	19.50	2.453860	2.752470309
451	23:08:01	19.50	2.453499	2.749988152
452	23:09:01	19.60	2.454222	2.734704492
453	23:10:01	19.70	2.453860	2.732287736
454	23:11:01	19.80	2.453137	2.734129412
455	23:12:01	19.90	2.453860	2.71899061
456	23:13:01	19.90	2.452414	2.729320843
457	23:14:01	20.00	2.452052	2.726939252
458	23:15:01	20.10	2.451690	2.724568765
459	23:16:01	20.00	2.452052	2.713790698
460	23:17:01	19.80	2.452414	2.703062645
461	23:18:01	19.60	2.451690	2.704953704
462	23:19:01	19.50	2.451690	2.698475751
463	23:20:01	19.50	2.451329	2.696186636
464	23:21:01	19.60	2.451329	2.689758621
465	23:22:01	19.70	2.450967	2.687511468
466	23:23:01	19.80	2.450967	2.681132723
467	23:24:01	19.80	2.451329	2.670650685
468	23:25:01	19.90	2.451329	2.664339408

469	23:26:01	20.00	2.450967	2.662170455
470	23:27:01	20.00	2.451329	2.651802721
471	23:28:01	20.10	2.451329	2.645576923
472	23:29:01	20.00	2.450605	2.64755079
473	23:30:01	19.70	2.450243	2.645439189
474	23:31:01	19.60	2.449882	2.643325843
475	23:32:01	19.50	2.449882	2.637174888
476	23:33:01	19.50	2.449520	2.635100671
477	23:34:01	19.60	2.449882	2.624955357
478	23:35:01	19.60	2.449158	2.626948775
479	23:36:01	19.70	2.449520	2.616866667
480	23:37:01	19.80	2.448435	2.622871397
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485	23:42:01	20.00	2.448435	2.593015351
486	23:43:01	19.80	2.448435	2.587122538
487	23:44:01	19.60	2.448435	2.581255459
488	23:45:01	19.50	2.448435	2.575413943
489	23:46:01	19.50	2.448073	2.573532609
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493	23:50:01	19.80	2.447350	2.558275862
494	23:51:01	19.90	2.446626	2.560344086
495	23:52:01	19.90	2.446988	2.550751073
496	23:53:01	20.00	2.446626	2.548950749
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499	23:56:01	19.90	2.446626	2.532042553
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505	0:02:01	19.70	2.445903	2.506460084
506	0:03:01	19.80	2.445541	2.504790356
507	0:04:01	19.90	2.445179	2.503127615
508	0:05:01	19.90	2.445541	2.493914405
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525	0:22:01	19.80	2.443009	2.430534274
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527	0:24:01	19.50	2.442286	2.427630522
528	0:25:01	19.50	2.442286	2.42256513
529	0:26:01	19.60	2.442647	2.41391
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531	0:28:01	19.70	2.442647	2.403894422
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535	0:32:01	20.00	2.441924	2.391245059
536	0:33:01	20.10	2.440477	2.400601578
537	0:34:01	20.00	2.441200	2.388562992
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540	0:37:01	19.50	2.440115	2.384569472
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542	0:39:01	19.60	2.440115	2.374883041
543	0:40:01	19.60	2.440115	2.370068093
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546	0:43:01	19.90	2.439754	2.359226306
547	0:44:01	19.90	2.440115	2.350994208
548	0:45:01	20.00	2.439754	2.349749518
549	0:46:01	20.10	2.440115	2.341567308
550	0:47:01	20.10	2.439392	2.343819578
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552	0:49:01	19.70	2.440115	2.327562141
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554	0:51:01	19.50	2.439392	2.3252
555	0:52:01	19.50	2.438668	2.327471483
556	0:53:01	19.60	2.438668	2.322865275
557	0:54:01	19.70	2.438668	2.318276515
558	0:55:01	19.80	2.438668	2.313705104
559	0:56:01	19.80	2.437945	2.315971698
560	0:57:01	19.90	2.437945	2.311421846
561	0:58:01	19.90	2.437222	2.313684211
562	0:59:01	20.00	2.437945	2.302373358

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565	1:02:01	19.80	2.437583	2.292304104
566	1:03:01	19.60	2.437583	2.287849162
567	1:04:01	19.50	2.437222	2.286765799
568	1:05:01	19.50	2.437222	2.282337662
569	1:06:01	19.50	2.437222	2.277925926
570	1:07:01	19.60	2.436498	2.280221811
571	1:08:01	19.70	2.437222	2.269151292
572	1:09:01	19.80	2.437222	2.264788214
573	1:10:01	19.80	2.436860	2.263768382
574	1:11:01	19.90	2.437222	2.256110092
575	1:12:01	19.90	2.436136	2.261739927
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577	1:14:01	20.00	2.436860	2.246514599
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594	1:31:01	19.70	2.433966	2.201522124
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746	4:03:01	19.70	2.416966	1.832161785
747	4:04:01	19.70	2.416966	1.829470752
748	4:05:01	19.80	2.416604	1.82930459
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849	5:46:01	20.00	2.407561	1.646810976
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878	6:15:01	19.70	2.405029	1.602055359
879	6:16:01	19.70	2.404306	1.604305882
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1168	11:05:01	19.80	2.383688	1.26237928
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1171	11:08:01	20.00	2.384773	1.254049912
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1173	11:10:01	20.00	2.383327	1.258002622

1174	11:11:01	19.80	2.382965	1.25839738
1175	11:12:01	19.60	2.382603	1.258791449
1176	11:13:01	19.50	2.382965	1.256028771
1177	11:14:01	19.60	2.382965	1.254847561
1178	11:15:01	19.60	2.382603	1.25524369
1179	11:16:01	19.70	2.382241	1.25563913
1180	11:17:01	19.80	2.382241	1.254461338
1181	11:18:01	19.90	2.382241	1.25328559
1182	11:19:01	20.00	2.382965	1.248972246
1183	11:20:01	20.10	2.382241	1.250940208
1184	11:21:01	20.10	2.382241	1.249770563
1185	11:22:01	19.90	2.383327	1.243905709
1186	11:23:01	19.70	2.382241	1.247437338
1187	11:24:01	19.60	2.382241	1.246273748
1188	11:25:01	19.50	2.382241	1.245112166
1189	11:26:01	19.60	2.382241	1.243952586
1190	11:27:01	19.60	2.382241	1.242795004
1191	11:28:01	19.70	2.382241	1.241639415
1192	11:29:01	19.80	2.382241	1.240485813
1193	11:30:01	19.90	2.382241	1.239334192
1194	11:31:01	20.00	2.382241	1.238184549
1195	11:32:01	20.10	2.381880	1.238584906
1196	11:33:01	20.10	2.382241	1.235891174
1197	11:34:01	19.90	2.382241	1.234747432
1198	11:35:01	19.70	2.381518	1.236698033
1199	11:36:01	19.60	2.382241	1.232465812
1200	11:37:01	19.60	2.381880	1.232869342
1201	11:38:01	19.60	2.381518	1.233276451
1202	11:39:01	19.70	2.381518	1.232139812
1203	11:40:01	19.80	2.381880	1.229463373
1204	11:41:01	19.90	2.381518	1.22987234
1205	11:42:01	20.00	2.381518	1.228741497
1206	11:43:01	20.10	2.382241	1.224541206
1207	11:44:01	20.10	2.381156	1.228022071
1208	11:45:01	19.90	2.382241	1.222294317
1209	11:46:01	19.70	2.381156	1.225771186
1210	11:47:01	19.60	2.381518	1.223116003
1211	11:48:01	19.50	2.381518	1.221996616
1212	11:49:01	19.60	2.381156	1.222409129
1213	11:50:01	19.70	2.380795	1.222816723
1214	11:51:01	19.80	2.380433	1.223227848
1215	11:52:01	19.90	2.380795	1.220586003
1216	11:53:01	19.90	2.380071	1.222523168
1217	11:54:01	20.00	2.379348	1.224452862
1218	11:55:01	20.10	2.381156	1.215735913
1219	11:56:01	20.00	2.380433	1.217668067
1220	11:57:01	19.80	2.380795	1.215041982

1221	11:58:01	19.60	2.379348	1.220008389
1222	11:59:01	19.50	2.379348	1.218901928
1223	12:00:01	19.50	2.380071	1.214769682
1224	12:01:01	19.60	2.379709	1.2151841
1225	12:02:01	19.70	2.380433	1.211057692
1226	12:03:01	19.80	2.380071	1.21147452
1227	12:04:01	19.90	2.379709	1.211890651
1228	12:05:01	20.00	2.379709	1.210796497
1229	12:06:01	20.10	2.379348	1.211208333
1230	12:07:01	20.10	2.379348	1.21011657
1231	12:08:01	19.90	2.379348	1.209026622
1232	12:09:01	19.70	2.379348	1.207938487
1233	12:10:01	19.60	2.379348	1.206852159
1234	12:11:01	19.50	2.379348	1.205767635
1235	12:12:01	19.60	2.379348	1.204684909
1236	12:13:01	19.70	2.379348	1.203603977
1237	12:14:01	19.80	2.379348	1.202524834
1238	12:15:01	19.90	2.379348	1.201447477
1239	12:16:01	20.00	2.378986	1.201867769
1240	12:17:01	20.10	2.379348	1.199298101
1241	12:18:01	20.10	2.379348	1.198226073
1242	12:19:01	19.90	2.379348	1.197155812
1243	12:20:01	19.70	2.379348	1.196087315
1244	12:21:01	19.60	2.379348	1.195020576
1245	12:22:01	19.50	2.379348	1.193955592
1246	12:23:01	19.60	2.379348	1.192892358
1247	12:24:01	19.70	2.378624	1.194802956
1248	12:25:01	19.80	2.378986	1.192255947
1249	12:26:01	19.90	2.378262	1.194163934
1250	12:27:01	20.00	2.378986	1.19013923
1251	12:28:01	20.10	2.377539	1.195004092
1252	12:29:01	20.10	2.378624	1.189509403
1253	12:30:01	20.00	2.378624	1.188455882
1254	12:31:01	19.70	2.378624	1.187404082
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1256	12:33:01	19.50	2.377539	1.189726976
1257	12:34:01	19.60	2.377177	1.190150651
1258	12:35:01	19.70	2.377901	1.186155411
1259	12:36:01	19.80	2.377539	1.186581301
1260	12:37:01	19.90	2.377539	1.185536149
1261	12:38:01	20.00	2.377177	1.185961851
1262	12:39:01	20.10	2.377901	1.181982968
1263	12:40:01	20.10	2.377901	1.180944084
1264	12:41:01	19.90	2.377177	1.182838057
1265	12:42:01	19.70	2.377539	1.180335761
1266	12:43:01	19.60	2.376454	1.183686338
1267	12:44:01	19.60	2.376454	1.182649435

1268	12:45:01	19.60	2.376454	1.181614205
1269	12:46:01	19.70	2.376816	1.179120968
1270	12:47:01	19.80	2.376454	1.179548751
1271	12:48:01	19.90	2.377177	1.17560789
1272	12:49:01	20.00	2.377539	1.173125503
1273	12:50:01	20.10	2.377539	1.17210209
1274	12:51:01	20.10	2.376816	1.173983936
1275	12:52:01	19.90	2.376816	1.172961477
1276	12:53:01	19.70	2.376454	1.173392141
1277	12:54:01	19.60	2.376454	1.172371795
1278	12:55:01	19.60	2.377177	1.168458767
1279	12:56:01	19.60	2.376454	1.170336
1280	12:57:01	19.70	2.376454	1.169320544
1281	12:58:01	19.80	2.376816	1.166861022
1282	12:59:01	19.90	2.376454	1.167294493
1283	13:00:01	20.00	2.376454	1.166283892
1284	13:01:01	20.10	2.376454	1.1652749
1285	13:02:01	20.00	2.376454	1.164267516
1286	13:03:01	19.90	2.376454	1.163261734
1287	13:04:01	19.60	2.376454	1.162257552
1288	13:05:01	19.60	2.376816	1.159817315
1289	13:06:01	19.60	2.375731	1.163123016
1290	13:07:01	19.60	2.376092	1.160689929
1291	13:08:01	19.70	2.376454	1.158256735
1292	13:09:01	19.90	2.376092	1.158693587
1293	13:10:01	19.90	2.376454	1.156265823
1294	13:11:01	20.00	2.376092	1.156703557
1295	13:12:01	20.10	2.376454	1.154281201
1296	13:13:01	20.00	2.376454	1.153291239
1297	13:14:01	19.80	2.375731	1.155153785
1298	13:15:01	19.60	2.375731	1.154164697
1299	13:16:01	19.50	2.375369	1.154602362
1300	13:17:01	19.60	2.375731	1.152191188
1301	13:18:01	19.60	2.375731	1.151206761
1302	13:19:01	19.70	2.375731	1.150223881
1303	13:20:01	19.90	2.375731	1.149242543
1304	13:21:01	19.90	2.375369	1.149682353
1305	13:22:01	20.10	2.375369	1.148702978
1306	13:23:01	20.10	2.374645	1.150559906
1307	13:24:01	20.00	2.375369	1.146748826
1308	13:25:01	19.80	2.375007	1.14718921
1309	13:26:01	19.60	2.374645	1.147628906
1310	13:27:01	19.50	2.373922	1.149476971
1311	13:28:01	19.60	2.374645	1.145682527
1312	13:29:01	19.70	2.375007	1.143300857
1313	13:30:01	19.80	2.373922	1.146557632
1314	13:31:01	19.90	2.373922	1.145587549

1315	13:32:01	20.00	2.374284	1.143211509
1316	13:33:01	20.10	2.374284	1.142245532
1317	13:34:01	20.10	2.373922	1.142686335
1318	13:35:01	19.90	2.374645	1.138917766
1319	13:36:01	19.70	2.373922	1.14075969
1320	13:37:01	19.60	2.373922	1.139798606
1321	13:38:01	19.60	2.373560	1.140239938
1322	13:39:01	19.60	2.374284	1.136481052
1323	13:40:01	19.70	2.373560	1.138323029
1324	13:41:01	19.80	2.373560	1.137366795
1325	13:42:01	19.90	2.373560	1.136412037
1326	13:43:01	20.00	2.373922	1.134063223
1327	13:44:01	20.10	2.373922	1.133112481
1328	13:45:01	20.10	2.373560	1.133556582
1329	13:46:01	19.90	2.374284	1.129823077
1330	13:47:01	19.60	2.373560	1.131660261
1331	13:48:01	19.60	2.373560	1.130714286
1332	13:49:01	19.60	2.373560	1.129769762
1333	13:50:01	19.60	2.373560	1.128826687
1334	13:51:01	19.80	2.373560	1.127885057
1335	13:52:01	19.90	2.373560	1.12694487
1336	13:53:01	20.00	2.373560	1.126006121
1337	13:54:01	20.10	2.373560	1.125068807
1338	13:55:01	20.10	2.373560	1.124132926
1339	13:56:01	20.00	2.372837	1.125958015
1340	13:57:01	19.70	2.373199	1.123642258
1341	13:58:01	19.60	2.373560	1.121333841
1342	13:59:01	19.50	2.373560	1.120403656
1343	14:00:01	19.60	2.373199	1.120848554
1344	14:01:01	19.70	2.373199	1.119920152
1345	14:02:01	19.80	2.372837	1.120368541
1346	14:03:01	19.90	2.372837	1.119441913
1347	14:04:01	20.00	2.373199	1.117143399
1348	14:05:01	20.10	2.372837	1.117592873
1349	14:06:01	20.10	2.372837	1.116670455
1350	14:07:01	19.90	2.372837	1.115749432
1351	14:08:01	19.70	2.373199	1.113460666
1352	14:09:01	19.60	2.372113	1.11664777
1353	14:10:01	19.60	2.371752	1.117092145
1354	14:11:01	19.70	2.372113	1.114811321
1355	14:12:01	19.80	2.372113	1.113895173
1356	14:13:01	19.90	2.371390	1.115704597
1357	14:14:01	20.00	2.372113	1.112067018
1358	14:15:01	20.10	2.371752	1.112513168
1359	14:16:01	20.10	2.371752	1.111601504
1360	14:17:01	19.90	2.371028	1.113410969
1361	14:18:01	19.70	2.371390	1.111141141

1362	14:19:01	19.60	2.371390	1.110232558
1363	14:20:01	19.60	2.371752	1.107968516
1364	14:21:01	19.70	2.371752	1.10706367
1365	14:22:01	19.80	2.371752	1.10616018
1366	14:23:01	19.90	2.371028	1.107965595
1367	14:24:01	20.00	2.371390	1.105710015
1368	14:25:01	20.10	2.371752	1.103457804
1369	14:26:01	20.10	2.370667	1.106608209
1370	14:27:01	19.90	2.370667	1.105708427
1371	14:28:01	19.70	2.370667	1.104809985
1372	14:29:01	19.60	2.371028	1.102568876
1373	14:30:01	19.60	2.370667	1.103017113
1374	14:31:01	19.60	2.370305	1.103468401
1375	14:32:01	19.80	2.370667	1.101229569
1376	14:33:01	19.90	2.370667	1.100337788
1377	14:34:01	20.00	2.371390	1.096765579
1378	14:35:01	20.10	2.370667	1.098558191
1379	14:36:01	20.10	2.370667	1.09767037
1380	14:37:01	19.90	2.370667	1.096783864
1381	14:38:01	19.70	2.370305	1.097237426
1382	14:39:01	19.60	2.370667	1.095014782
1383	14:40:01	19.60	2.370305	1.095468981
1384	14:41:01	19.60	2.370667	1.093250923
1385	14:42:01	19.70	2.370305	1.093705752
1386	14:43:01	19.90	2.370667	1.091492262
1387	14:44:01	20.00	2.370305	1.091947717
1388	14:45:01	20.10	2.369943	1.092402502
1389	14:46:01	20.10	2.370667	1.088863971
1390	14:47:01	20.00	2.370667	1.087990448
1391	14:48:01	19.80	2.370305	1.088447137
1392	14:49:01	19.60	2.370667	1.086247249
1393	14:50:01	19.50	2.370667	1.085377566
1394	14:51:01	19.60	2.369581	1.088487179
1395	14:52:01	19.70	2.370305	1.084967057
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1397	14:54:01	19.90	2.369943	1.084557749
1398	14:55:01	20.00	2.369220	1.08633309
1399	14:56:01	20.10	2.369943	1.082828467
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1401	14:58:01	19.90	2.369943	1.081104227
1402	14:59:01	19.60	2.369943	1.080243991
1403	15:00:01	19.60	2.369943	1.079385007
1404	15:01:01	19.60	2.368858	1.082472727
1405	15:02:01	19.70	2.370305	1.076355378
1406	15:03:01	19.80	2.369220	1.079440813
1407	15:04:01	19.90	2.368858	1.079898403
1408	15:05:01	20.00	2.369581	1.07642132

1409	15:06:01	20.10	2.369220	1.076876812
1410	15:07:01	20.10	2.368496	1.078645909
1411	15:08:01	19.90	2.368496	1.077793054
1412	15:09:01	19.70	2.368496	1.076941432
1413	15:10:01	19.60	2.368134	1.077398844
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1415	15:12:01	19.70	2.368858	1.073088023
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1417	15:14:01	19.90	2.368496	1.072701729
1418	15:15:01	20.00	2.368134	1.073160547
1419	15:16:01	20.10	2.367773	1.073615108
1420	15:17:01	20.10	2.368496	1.070172538
1421	15:18:01	19.90	2.368496	1.069331897
1422	15:19:01	19.70	2.367773	1.071087581
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1424	15:21:01	19.60	2.367773	1.069408602
1425	15:22:01	19.70	2.367773	1.068570917
1426	15:23:01	19.80	2.367773	1.067734431
1427	15:24:01	19.90	2.367773	1.066899142
1428	15:25:01	20.00	2.367773	1.066065046
1429	15:26:01	20.10	2.367773	1.065232143
1430	15:27:01	20.10	2.367411	1.065692363
1431	15:28:01	19.90	2.367411	1.064860913
1432	15:29:01	19.70	2.367773	1.062740556
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1435	15:32:01	19.70	2.367773	1.060259602
1436	15:33:01	19.80	2.367773	1.059434968
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1438	15:35:01	20.00	2.367773	1.057789212
1439	15:36:01	20.10	2.367773	1.056968085
1440	15:37:01	20.10	2.367773	1.056148122
1441	15:38:01	19.90	2.368134	1.054050992
1442	15:39:01	19.70	2.367773	1.054511677
1443	15:40:01	19.60	2.367773	1.053695191
1444	15:41:01	19.60	2.366688	1.056713781
1445	15:42:01	19.70	2.367049	1.054622175
1446	15:43:01	19.80	2.367411	1.052529993
1447	15:44:01	19.90	2.367773	1.050440762
1448	15:45:01	20.00	2.367773	1.049630021
1449	15:46:01	20.10	2.367049	1.051369718
1450	15:47:01	20.10	2.367049	1.050559465
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1454	15:51:01	19.60	2.366688	1.048596491
1455	15:52:01	19.70	2.366688	1.047791024

1456	15:53:01	19.80	2.366326	1.048255081	
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1458	15:55:01	20.00	2.366688	1.045381386	
1459	15:56:01	20.10	2.367411	1.042052448	
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1462	15:59:01	19.70	2.366688	1.042184229	
1463	16:00:01	19.60	2.365602	1.045174338	
1464	16:01:01	19.60	2.365602	1.044376307	
1465	16:02:01	19.70	2.366326	1.041058496	
1466	16:03:01	19.80	2.365964	1.041524008	
1467	16:04:01	19.90	2.365964	1.040730181	
1468	16:05:01	20.00	2.365241	1.042449618	
1469	16:06:01	20.10	2.365241	1.04165625	
1470	16:07:01	20.10	2.365964	1.038355309	24 horas
1471	16:08:01	19.90	2.365602	1.038821082	
1472	16:09:01	19.70	2.365241	1.039282744	
1473	16:10:01	19.60	2.365241	1.038493767	
1474	16:11:01	19.60	2.365241	1.037705882	
1475	16:12:01	19.70	2.365241	1.036919087	
1476	16:13:01	19.80	2.364879	1.037384243	
1477	16:14:01	19.90	2.364879	1.036598757	
1478	16:15:01	20.00	2.364879	1.035814355	
1479	16:16:01	20.10	2.365241	1.033782759	
1480	16:17:01	20.10	2.364879	1.034248794	
1481	16:18:01	19.90	2.365241	1.032221074	
1482	16:19:01	19.70	2.364879	1.032687543	
1483	16:20:01	19.60	2.364879	1.031908528	
1484	16:21:01	19.60	2.364879	1.031130584	
1485	16:22:01	19.70	2.364879	1.030353709	
1486	16:23:01	19.80	2.364879	1.0295779	
1487	16:24:01	19.90	2.364879	1.028803155	
1488	16:25:01	20.00	2.364879	1.028029472	
1489	16:26:01	20.10	2.364879	1.027256849	
1490	16:27:01	20.10	2.364879	1.026485284	
1491	16:28:01	19.90	2.364517	1.026952804	
1492	16:29:01	19.70	2.364879	1.024945318	
1493	16:30:01	19.60	2.364879	1.024176913	
1494	16:31:01	19.60	2.364879	1.023409556	
1495	16:32:01	19.70	2.365241	1.021408595	
1496	16:33:01	19.80	2.364517	1.023111793	
1497	16:34:01	19.90	2.364517	1.02234673	
1498	16:35:01	20.00	2.364156	1.022811436	
1499	16:36:01	20.10	2.364879	1.019588435	
1500	16:37:01	20.10	2.364879	1.018827328	
1501	16:38:01	19.90	2.364517	1.019296875	
1502	16:39:01	19.60	2.364879	1.017308215	

1503	16:40:01	19.60	2.364879	1.016550204
1504	16:41:01	19.60	2.364517	1.017020339
1505	16:42:01	19.70	2.364517	1.01626355
1506	16:43:01	19.80	2.364156	1.016729858
1507	16:44:01	19.90	2.364879	1.013528417
1508	16:45:01	20.00	2.364156	1.015219743
1509	16:46:01	20.10	2.363794	1.015689189
1510	16:47:01	20.10	2.363794	1.014935854
1511	16:48:01	19.90	2.364156	1.012962213
1512	16:49:01	19.60	2.364879	1.009774107
1513	16:50:01	19.60	2.363432	1.013901617
1514	16:51:01	19.60	2.363794	1.01193266
1515	16:52:01	19.70	2.363432	1.012402423
1516	16:53:01	19.80	2.363070	1.012871553
1517	16:54:01	19.90	2.363794	1.00969086
1518	16:55:01	20.00	2.362709	1.012588986
1519	16:56:01	20.10	2.362347	1.013057047
1520	16:57:01	20.10	2.363070	1.009885983
1521	16:58:01	19.90	2.362709	1.010351877
1522	16:59:01	19.70	2.363070	1.008399196
1523	17:00:01	19.60	2.362347	1.010076975
1524	17:01:01	19.60	2.362709	1.008123746
1525	17:02:01	19.70	2.361985	1.009802807
1526	17:03:01	19.80	2.362709	1.006643287
1527	17:04:01	19.90	2.362709	1.005904539
1528	17:05:01	20.10	2.362347	1.006374249
1529	17:06:01	20.10	2.361985	1.006843333
1530	17:07:01	20.00	2.363432	1.001285809
1531	17:08:01	19.80	2.361985	1.005369507
1532	17:09:01	19.60	2.362709	1.002225549
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1535	17:12:01	19.70	2.361985	1.002433599
1536	17:13:01	19.80	2.361985	1.001702057
1537	17:14:01	19.90	2.362347	0.99977122
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1539	17:16:01	20.10	2.361985	0.999513245
1540	17:17:01	20.10	2.361985	0.998785572
1541	17:18:01	19.90	2.361985	0.998058862
1542	17:19:01	19.60	2.361985	0.997333113
1543	17:20:01	19.60	2.361985	0.996608322
1544	17:21:01	19.60	2.361985	0.995884488
1545	17:22:01	19.70	2.362347	0.993967678
1546	17:23:01	19.80	2.361624	0.995629532
1547	17:24:01	19.90	2.361624	0.994907773
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1555	17:32:01	19.70	2.361624	0.989167759
1556	17:33:01	19.90	2.361985	0.98727243
1557	17:34:01	20.00	2.361985	0.986560864
1558	17:35:01	20.10	2.361262	0.988214519
1559	17:36:01	20.10	2.361624	0.986320261
1560	17:37:01	20.00	2.361985	0.984431744
1561	17:38:01	19.80	2.361985	0.98372389
1562	17:39:01	19.60	2.360900	0.986555773
1563	17:40:01	19.60	2.360900	0.985847458
1564	17:41:01	19.60	2.360900	0.985140065
1565	17:42:01	19.80	2.360900	0.984433594
1566	17:43:01	19.90	2.361985	0.980198439
1567	17:44:01	20.00	2.360900	0.983023407
1568	17:45:01	20.10	2.361262	0.9811436
1569	17:46:01	20.10	2.360177	0.983964286
1570	17:47:01	19.90	2.360538	0.982089552
1571	17:48:01	19.70	2.360538	0.981387808
1572	17:49:01	19.60	2.360177	0.981856773
1573	17:50:01	19.60	2.360177	0.981156088
1574	17:51:01	19.70	2.360538	0.979288026
1575	17:52:01	19.80	2.360177	0.979757439
1576	17:53:01	19.90	2.360538	0.977892696
1577	17:54:01	20.10	2.359815	0.979531654
1578	17:55:01	20.10	2.360900	0.975332473
1579	17:56:01	20.10	2.360538	0.975806452
1580	17:57:01	19.90	2.360177	0.976276596
1581	17:58:01	19.70	2.359092	0.979078608
1582	17:59:01	19.60	2.359453	0.977221507
1583	18:00:01	19.60	2.359815	0.975363578
1584	18:01:01	19.70	2.360177	0.973508039
1585	18:02:01	19.80	2.359815	0.973981362
1586	18:03:01	19.90	2.359453	0.974454078
1587	18:04:01	20.10	2.359092	0.974922978
1588	18:05:01	20.10	2.359453	0.97307569
1589	18:06:01	20.00	2.359092	0.973544872
1590	18:07:01	19.80	2.359453	0.971700833
1591	18:08:01	19.60	2.359453	0.971014725
1592	18:09:01	19.60	2.359453	0.970329495
1593	18:10:01	19.60	2.359092	0.970799233
1594	18:11:01	19.70	2.359453	0.968961661
1595	18:12:01	19.90	2.359815	0.967123244
1596	18:13:01	20.00	2.359092	0.968749202

1597	18:14:01	20.10	2.359453	0.966916454
1598	18:15:01	20.10	2.359092	0.967386871
1599	18:16:01	20.00	2.359092	0.966707006
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1601	18:18:01	19.60	2.359092	0.965349873
1602	18:19:01	19.60	2.359092	0.9646726
1603	18:20:01	19.60	2.358730	0.965146125
1604	18:21:01	19.80	2.359092	0.963320635
1605	18:22:01	19.90	2.359092	0.962645939
1606	18:23:01	20.00	2.359092	0.961972099
1607	18:24:01	20.10	2.359092	0.961299113
1608	18:25:01	20.10	2.358368	0.962919569
1609	18:26:01	20.00	2.359092	0.959955696
1610	18:27:01	19.70	2.358730	0.960430108
1611	18:28:01	19.60	2.359092	0.958615676
1612	18:29:01	19.60	2.359092	0.957946936
1613	18:30:01	19.60	2.359092	0.95727904
1614	18:31:01	19.70	2.358730	0.957753943
1615	18:32:01	19.90	2.358730	0.957087011
1616	18:33:01	20.00	2.359092	0.955280403
1617	18:34:01	20.10	2.358730	0.955755668
1618	18:35:01	20.10	2.358730	0.955091252
1619	18:36:01	19.90	2.358730	0.954427673
1620	18:37:01	19.70	2.358730	0.953764928
1621	18:38:01	19.60	2.358368	0.95423995
1622	18:39:01	19.60	2.358730	0.952441933
1623	18:40:01	19.70	2.358368	0.952917189
1624	18:41:01	19.80	2.357283	0.955658307
1625	18:42:01	19.90	2.358006	0.95273183
1626	18:43:01	20.00	2.358006	0.952072636
1627	18:44:01	20.10	2.358368	0.950281602
1628	18:45:01	20.10	2.357283	0.953017511
1629	18:46:01	19.90	2.357645	0.951228125
1630	18:47:01	19.70	2.357283	0.951702061
1631	18:48:01	19.60	2.357283	0.951045568
1632	18:49:01	19.60	2.356921	0.951519027
1633	18:50:01	19.70	2.357645	0.948606608
1634	18:51:01	19.80	2.358368	0.945700935
1635	18:52:01	19.90	2.357645	0.947300747
1636	18:53:01	20.00	2.357645	0.946649035
1637	18:54:01	20.10	2.357283	0.947123756
1638	18:55:01	20.10	2.357283	0.946472965
1639	18:56:01	19.90	2.357283	0.945822981
1640	18:57:01	19.70	2.356560	0.947417753
1641	18:58:01	19.60	2.356921	0.945648263
1642	18:59:01	19.60	2.356560	0.946119033
1643	19:00:01	19.70	2.356921	0.94435254

1644	19:01:01	19.80	2.356560	0.944823529
1645	19:02:01	19.90	2.357283	0.941939975
1646	19:03:01	20.00	2.356198	0.944650588
1647	19:04:01	20.10	2.356560	0.942886279
1648	19:05:01	20.10	2.356921	0.941127239
1649	19:06:01	19.90	2.356921	0.940484568
1650	19:07:01	19.70	2.356198	0.942072795
1651	19:08:01	19.60	2.356198	0.941430333
1652	19:09:01	19.60	2.356198	0.940788663
1653	19:10:01	19.60	2.356198	0.940147783
1654	19:11:01	19.80	2.356921	0.937283077
1655	19:12:01	19.90	2.356198	0.938868389
1656	19:13:01	20.00	2.356198	0.938229871
1657	19:14:01	20.10	2.356198	0.937592138
1658	19:15:01	20.10	2.356198	0.936955187
1659	19:16:01	20.00	2.356198	0.936319018
1660	19:17:01	19.70	2.356198	0.93568363
1661	19:18:01	19.60	2.356198	0.93504902
1662	19:19:01	19.60	2.356198	0.934415187
1663	19:20:01	19.60	2.356198	0.93378213
1664	19:21:01	19.70	2.356198	0.933149847
1665	19:22:01	19.90	2.355836	0.933624694
1666	19:23:01	20.00	2.356198	0.931887599
1667	19:24:01	20.10	2.356198	0.931257631
1668	19:25:01	20.10	2.356198	0.930628432
1669	19:26:01	20.00	2.356198	0.93
1670	19:27:01	19.70	2.355836	0.93047532
1671	19:28:01	19.60	2.356198	0.928745432
1672	19:29:01	19.60	2.355836	0.929220937
1673	19:30:01	19.60	2.355474	0.929695864
1674	19:31:01	19.70	2.355474	0.929069909
1675	19:32:01	19.80	2.355113	0.929541312
1676	19:33:01	19.90	2.356198	0.925622344
1677	19:34:01	20.10	2.355836	0.926098301
1678	19:35:01	20.10	2.356198	0.924378411
1679	19:36:01	20.00	2.355836	0.924854545
1680	19:37:01	19.80	2.355474	0.925330103
1681	19:38:01	19.60	2.355474	0.924709443
1682	19:39:01	19.50	2.356198	0.921899577
1683	19:40:01	19.60	2.355836	0.922376058
1684	19:41:01	19.70	2.355113	0.923942598
1685	19:42:01	19.80	2.355474	0.9222343
1686	19:43:01	19.90	2.354751	0.923799034
1687	19:44:01	20.00	2.355113	0.922089867
1688	19:45:01	20.10	2.355113	0.921473779
1689	19:46:01	20.00	2.354389	0.923039157
1690	19:47:01	19.80	2.354751	0.921333534

1691	19:48:01	19.60	2.354389	0.921808063
1692	19:49:01	19.60	2.354389	0.921193626
1693	19:50:01	19.60	2.354389	0.920579928
1694	19:51:01	19.70	2.354389	0.919966967
1695	19:52:01	19.80	2.354389	0.919354742
1696	19:53:01	19.90	2.354028	0.919826035
1697	19:54:01	20.00	2.354028	0.919214628
1698	19:55:01	20.10	2.355113	0.915353505
1699	19:56:01	20.10	2.355113	0.914745509
1700	19:57:01	19.90	2.353666	0.918467983
1701	19:58:01	19.70	2.353666	0.917858852
1702	19:59:01	19.60	2.353666	0.917250448
1703	20:00:01	19.60	2.353666	0.916642772
1704	20:01:01	19.70	2.354751	0.912797015
1705	20:02:01	19.80	2.353666	0.915429594
1706	20:03:01	19.90	2.354028	0.913744782
1707	20:04:01	20.00	2.354028	0.913140644
1708	20:05:01	20.10	2.353666	0.913615247
1709	20:06:01	20.10	2.354028	0.911934524
1710	20:07:01	19.90	2.353666	0.91240928
1711	20:08:01	19.70	2.353304	0.912883472
1712	20:09:01	19.60	2.353666	0.911206179
1713	20:10:01	19.60	2.354028	0.909530879
1714	20:11:01	19.60	2.353304	0.911080119
1715	20:12:01	19.70	2.353304	0.910480427
1716	20:13:01	19.90	2.353666	0.908808536
1717	20:14:01	20.00	2.353304	0.909283175
1718	20:15:01	20.10	2.353304	0.908685613
1719	20:16:01	20.10	2.353304	0.908088757
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1721	20:18:01	19.80	2.353304	0.906897163
1722	20:19:01	19.60	2.353666	0.905233314
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1728	20:25:01	20.10	2.353304	0.902748676
1729	20:26:01	20.10	2.352942	0.903223529
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1735	20:32:01	19.70	2.353304	0.898634232
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1740	20:37:01	20.10	2.353304	0.895715956
1741	20:38:01	19.90	2.353304	0.895134346
1742	20:39:01	19.70	2.352942	0.895610041
1743	20:40:01	19.60	2.352942	0.895029172
1744	20:41:01	19.60	2.352581	0.895501458
1745	20:42:01	19.70	2.352581	0.894921329
1746	20:43:01	19.70	2.352219	0.89539604
1747	20:44:01	19.90	2.352942	0.892712456
1748	20:45:01	20.00	2.352581	0.893184991
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1750	20:47:01	20.10	2.351857	0.894134224
1751	20:48:01	20.00	2.352581	0.891454704
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1761	20:58:01	20.10	2.351134	0.889907621
1762	20:59:01	19.90	2.351134	0.889336411
1763	21:00:01	19.70	2.351496	0.88772203
1764	21:01:01	19.50	2.351134	0.888195965
1765	21:02:01	19.50	2.350772	0.888669355
1766	21:03:01	19.60	2.351134	0.887058146
1767	21:04:01	19.70	2.351496	0.885448792
1768	21:05:01	19.80	2.351496	0.884882116
1769	21:06:01	19.90	2.350772	0.886396552
1770	21:07:01	20.00	2.351496	0.883750718
1771	21:08:01	20.10	2.350772	0.885264064
1772	21:09:01	20.00	2.350772	0.884698795
1773	21:10:01	19.80	2.350410	0.885172018
1774	21:11:01	19.60	2.350410	0.88460745
1775	21:12:01	19.60	2.350410	0.884043528
1776	21:13:01	19.60	2.350772	0.88244419
1777	21:14:01	19.70	2.350410	0.88291762
1778	21:15:01	19.80	2.350410	0.882355632
1779	21:16:01	19.90	2.350410	0.881794286
1780	21:17:01	20.00	2.350410	0.881233581
1781	21:18:01	20.10	2.350772	0.879640411
1782	21:19:01	20.10	2.350410	0.88011409
1783	21:20:01	19.90	2.350772	0.878523375
1784	21:21:01	19.70	2.350410	0.878997151

1785	21:22:01	19.60	2.350410	0.878439636
1786	21:23:01	19.60	2.350410	0.877882755
1787	21:24:01	19.60	2.350772	0.876296928
1788	21:25:01	19.70	2.350410	0.876770893
1789	21:26:01	19.80	2.350410	0.876215909
1790	21:27:01	19.90	2.350410	0.875661556
1791	21:28:01	20.00	2.350410	0.875107832
1792	21:29:01	20.10	2.350410	0.874554736
1793	21:30:01	20.00	2.350410	0.874002268
1794	21:31:01	19.80	2.350410	0.873450425
1795	21:32:01	19.60	2.349687	0.874946206
1796	21:33:01	19.60	2.350410	0.872348613
1797	21:34:01	19.60	2.350049	0.87281957
1798	21:35:01	19.70	2.350049	0.872269644
1799	21:36:01	19.80	2.350049	0.871720339
1800	21:37:01	19.90	2.349687	0.872193676
1801	21:38:01	20.00	2.350410	0.869604966
1802	21:39:01	20.10	2.349687	0.871097011
1803	21:40:01	20.10	2.350410	0.868511838
1804	21:41:01	20.00	2.349325	0.871022535
1805	21:42:01	19.70	2.350410	0.867421171
1806	21:43:01	19.60	2.349325	0.869929657
1807	21:44:01	19.50	2.349687	0.868366142
1808	21:45:01	19.60	2.349687	0.86782181
1809	21:46:01	19.70	2.349325	0.868294944
1810	21:47:01	19.80	2.350049	0.865718697
1811	21:48:01	19.90	2.349325	0.867208193
1812	21:49:01	20.00	2.349325	0.866665732
1813	21:50:01	20.10	2.350049	0.864094731
1814	21:51:01	20.10	2.348964	0.866593838
1815	21:52:01	19.90	2.348602	0.867066069
1816	21:53:01	19.70	2.348602	0.866524902
1817	21:54:01	19.50	2.349325	0.863962528
1818	21:55:01	19.50	2.348964	0.864432644
1819	21:56:01	19.60	2.348964	0.863893855
1820	21:57:01	19.70	2.349325	0.86234785
1821	21:58:01	19.80	2.348602	0.863828125
1822	21:59:01	19.90	2.348964	0.862281093
1823	22:00:01	20.00	2.348964	0.861744705
1824	22:01:01	20.10	2.348602	0.86221727
1825	22:02:01	20.00	2.348240	0.86268931
1826	22:03:01	19.90	2.348240	0.862153589
1827	22:04:01	19.70	2.348602	0.860611791
1828	22:05:01	19.60	2.347878	0.86209005
1829	22:06:01	19.60	2.348240	0.86055
1830	22:07:01	19.60	2.347878	0.861021655
1831	22:08:01	19.70	2.347878	0.860488346

1832	22:09:01	19.90	2.348240	0.858951747
1833	22:10:01	19.90	2.348602	0.857416851
1834	22:11:01	20.00	2.347878	0.858891967
1835	22:12:01	20.10	2.347878	0.858361019
1836	22:13:01	20.00	2.348240	0.856828998
1837	22:14:01	19.80	2.347878	0.857300885
1838	22:15:01	19.60	2.347878	0.856771697
1839	22:16:01	19.50	2.347878	0.856243094
1840	22:17:01	19.60	2.347517	0.856711761
1841	22:18:01	19.70	2.347878	0.855187638
1842	22:19:01	19.80	2.347517	0.855656371
1843	22:20:01	19.90	2.347517	0.855129548
1844	22:21:01	20.00	2.347517	0.854603306
1845	22:22:01	20.10	2.347517	0.854077643
1846	22:23:01	20.10	2.347517	0.853552559
1847	22:24:01	20.00	2.347517	0.853028053
1848	22:25:01	19.70	2.347517	0.852504123
1849	22:26:01	19.60	2.347517	0.851980769
1850	22:27:01	19.50	2.347517	0.85145799
1851	22:28:01	19.60	2.347517	0.850935785
1852	22:29:01	19.70	2.347517	0.850414152
1853	22:30:01	19.80	2.347517	0.849893092
1854	22:31:01	19.90	2.347517	0.849372603
1855	22:32:01	20.00	2.347517	0.848852683
1856	22:33:01	20.10	2.347517	0.848333333
1857	22:34:01	20.10	2.347517	0.847814551
1858	22:35:01	19.90	2.347155	0.848285949
1859	22:36:01	19.70	2.347517	0.846778689
1860	22:37:01	19.60	2.347517	0.846261606
1861	22:38:01	19.60	2.347517	0.845745087
1862	22:39:01	19.60	2.347517	0.845229133
1863	22:40:01	19.70	2.347155	0.845700654
1864	22:41:01	19.80	2.347517	0.84419891
1865	22:42:01	19.90	2.347517	0.843684641
1866	22:43:01	20.00	2.347155	0.844156233
1867	22:44:01	20.10	2.347155	0.843642546
1868	22:45:01	20.10	2.347517	0.842145188
1869	22:46:01	19.90	2.347155	0.842616848
1870	22:47:01	19.60	2.346793	0.843087996
1871	22:48:01	19.50	2.347517	0.840610749
1872	22:49:01	19.60	2.347155	0.841082474
1873	22:50:01	19.60	2.347155	0.840572126
1874	22:51:01	19.70	2.347155	0.840062331
1875	22:52:01	19.80	2.346793	0.840533586
1876	22:53:01	19.90	2.347155	0.839044396
1877	22:54:01	20.00	2.347155	0.838536255
1878	22:55:01	20.10	2.347517	0.837049757

1879	22:56:01	20.10	2.346432	0.839475676
1880	22:57:01	19.90	2.346793	0.837992977
1881	22:58:01	19.70	2.346432	0.838461123
1882	22:59:01	19.60	2.346793	0.836980572
1883	23:00:01	19.60	2.346432	0.837448759
1884	23:01:01	19.60	2.346070	0.837919137
1885	23:02:01	19.70	2.346432	0.836438578
1886	23:03:01	19.80	2.347155	0.833987614
1887	23:04:01	19.90	2.346432	0.835430571
1888	23:05:01	20.00	2.346070	0.835901022
1889	23:06:01	20.10	2.346070	0.835397849
1890	23:07:01	20.10	2.346432	0.833922622
1891	23:08:01	19.90	2.346070	0.834393126
1892	23:09:01	19.70	2.345347	0.835831991
1893	23:10:01	19.50	2.346070	0.833390558
1894	23:11:01	19.50	2.346070	0.83289008
1895	23:12:01	19.60	2.345347	0.834327438
1896	23:13:01	19.70	2.345347	0.833826995
1897	23:14:01	19.80	2.344985	0.834296039
1898	23:15:01	19.90	2.346070	0.830893526
1899	23:16:01	19.90	2.346070	0.830395722
1900	23:17:01	20.00	2.344985	0.832797969
1901	23:18:01	20.10	2.345347	0.831332799
1902	23:19:01	20.00	2.344623	0.832768286
1903	23:20:01	19.80	2.345708	0.829375667
1904	23:21:01	19.60	2.344985	0.830808
1905	23:22:01	19.50	2.344623	0.831276652
1906	23:23:01	19.50	2.344623	0.830780501
1907	23:24:01	19.60	2.345347	0.828357295
1908	23:25:01	19.70	2.344985	0.828826503
1909	23:26:01	19.80	2.344623	0.829295213
1910	23:27:01	19.90	2.344623	0.82880117
1911	23:28:01	20.00	2.344985	0.827345909
1912	23:29:01	20.10	2.344623	0.827814657
1913	23:30:01	20.10	2.344623	0.827322187
1914	23:31:01	19.90	2.345347	0.824909814
1915	23:32:01	19.70	2.344623	0.826338812
1916	23:33:01	19.50	2.344985	0.824888712
1917	23:34:01	19.50	2.344623	0.825357521
1918	23:35:01	19.60	2.344623	0.824867655
1919	23:36:01	19.70	2.345347	0.822462963
1920	23:37:01	19.80	2.344623	0.823889476
1921	23:38:01	19.90	2.344623	0.823401163
1922	23:39:01	20.00	2.344623	0.822913365
1923	23:40:01	20.00	2.344623	0.822426082
1924	23:41:01	20.10	2.344623	0.821939314
1925	23:42:01	20.00	2.344623	0.821453059

1926	23:43:01	19.70	2.344623	0.820967317
1927	23:44:01	19.60	2.344261	0.821435722
1928	23:45:01	19.50	2.344623	0.819997367
1929	23:46:01	19.50	2.344261	0.820465789
1930	23:47:01	19.60	2.344261	0.819981589
1931	23:48:01	19.70	2.344623	0.818546267
1932	23:49:01	19.80	2.344623	0.818063584
1933	23:50:01	19.90	2.344623	0.817581408
1934	23:51:01	20.00	2.344623	0.817099738
1935	23:52:01	20.10	2.344261	0.817568206
1936	23:53:01	20.10	2.344623	0.816137913
1937	23:54:01	19.90	2.344623	0.815657757
1938	23:55:01	19.70	2.344623	0.815178104
1939	23:56:01	19.50	2.344623	0.814698953
1940	23:57:01	19.50	2.344261	0.815167452
1941	23:58:01	19.50	2.344261	0.814688808
1942	23:59:01	19.60	2.344623	0.813264506
1943	0:00:01	19.70	2.344261	0.81373302
1944	0:01:01	19.80	2.344623	0.812310705
1945	0:02:01	19.90	2.343538	0.814665971
1946	0:03:01	20.00	2.344261	0.812303078
1947	0:04:01	20.00	2.344261	0.811827424
1948	0:05:01	20.10	2.344261	0.811352267
1949	0:06:01	20.00	2.344261	0.810877604
1950	0:07:01	19.70	2.343538	0.812285268
1951	0:08:01	19.60	2.342815	0.813691467
1952	0:09:01	19.50	2.343176	0.812277691
1953	0:10:01	19.50	2.343538	0.810862786
1954	0:11:01	19.60	2.343900	0.809449351
1955	0:12:01	19.70	2.342815	0.811793873
1956	0:13:01	19.80	2.343176	0.810384017
1957	0:14:01	19.90	2.343176	0.809911826
1958	0:15:01	19.90	2.342815	0.810375842
1959	0:16:01	20.00	2.343176	0.808968912
1960	0:17:01	20.10	2.342815	0.809432936
1961	0:18:01	20.00	2.342453	0.809899068
1962	0:19:01	19.80	2.342453	0.80942835
1963	0:20:01	19.60	2.341729	0.810829886
1964	0:21:01	19.50	2.342815	0.807552972
1965	0:22:01	19.50	2.342091	0.808954029
1966	0:23:01	19.60	2.342453	0.807550336
1967	0:24:01	19.70	2.342453	0.807082043
1968	0:25:01	19.80	2.342091	0.807547705
1969	0:26:01	19.90	2.342815	0.805213918
1970	0:27:01	19.90	2.342453	0.805680062
1971	0:28:01	20.00	2.342091	0.806145726
1972	0:29:01	20.10	2.341729	0.806610911

1973	0:30:01	20.00	2.342453	0.804282407
1974	0:31:01	19.90	2.342453	0.803817481
1975	0:32:01	19.60	2.342815	0.802422919
1976	0:33:01	19.50	2.341729	0.804748331
1977	0:34:01	19.50	2.341729	0.804283881
1978	0:35:01	19.60	2.341729	0.803819908
1979	0:36:01	19.70	2.341729	0.80335641
1980	0:37:01	19.80	2.341729	0.802893388
1981	0:38:01	19.90	2.341729	0.80243084
1982	0:39:01	19.90	2.341729	0.801968766
1983	0:40:01	20.00	2.341729	0.801507165
1984	0:41:01	20.10	2.341729	0.801046036
1985	0:42:01	20.10	2.342815	0.797809305
1986	0:43:01	19.90	2.341729	0.800125192
1987	0:44:01	19.70	2.342453	0.79781665
1988	0:45:01	19.60	2.341729	0.799206228
1989	0:46:01	19.50	2.342091	0.79782398
1990	0:47:01	19.60	2.341729	0.798289138
1991	0:48:01	19.60	2.341729	0.797831295
1992	0:49:01	19.70	2.341729	0.797373917
1993	0:50:01	19.80	2.341729	0.796917006
1994	0:51:01	19.90	2.341729	0.79646056
1995	0:52:01	20.00	2.341729	0.796004578
1996	0:53:01	20.00	2.341729	0.795549059
1997	0:54:01	20.10	2.341729	0.795094004
1998	0:55:01	19.90	2.341729	0.794639411
1999	0:56:01	19.70	2.341729	0.794185279
2000	0:57:01	19.50	2.341729	0.793731608
2001	0:58:01	19.50	2.341368	0.794193712
2002	0:59:01	19.50	2.341729	0.792825646
2003	1:00:01	19.60	2.341729	0.792373354
2004	1:01:01	19.70	2.341729	0.791921519
2005	1:02:01	19.80	2.341729	0.791470142
2006	1:03:01	19.90	2.341729	0.791019221
2007	1:04:01	19.90	2.341729	0.790568756
2008	1:05:01	20.00	2.341368	0.791030824
2009	1:06:01	20.10	2.340644	0.792409091
2010	1:07:01	20.10	2.341006	0.791044927
2011	1:08:01	19.90	2.341368	0.789682139
2012	1:09:01	19.70	2.341368	0.789233485
2013	1:10:01	19.50	2.341006	0.789697581
2014	1:11:01	19.50	2.341729	0.787428212
2015	1:12:01	19.60	2.341729	0.78698137
2016	1:13:01	19.60	2.340282	0.790176145
2017	1:14:01	19.70	2.340644	0.788817907
2018	1:15:01	19.80	2.341006	0.787461036
2019	1:16:01	19.90	2.341729	0.785198492

2020	1:17:01	19.90	2.340644	0.787478654
2021	1:18:01	20.00	2.340644	0.787033133
2022	1:19:01	20.10	2.339921	0.788401907
2023	1:20:01	20.00	2.341006	0.785235707
2024	1:21:01	19.90	2.340644	0.785699248
2025	1:22:01	19.60	2.340644	0.785255511
2026	1:23:01	19.50	2.339921	0.786622434
2027	1:24:01	19.50	2.340282	0.785275275
2028	1:25:01	19.50	2.340282	0.784832416
2029	1:26:01	19.60	2.339921	0.7852925
2030	1:27:01	19.70	2.340282	0.783948026
2031	1:28:01	19.80	2.340282	0.783506494
2032	1:29:01	19.90	2.340282	0.783065402
2033	1:30:01	19.90	2.339921	0.783525449
2034	1:31:01	20.00	2.339559	0.783987531
2035	1:32:01	20.10	2.340644	0.780842473
2036	1:33:01	20.00	2.338836	0.784907823
2037	1:34:01	19.90	2.339921	0.781765438
2038	1:35:01	19.70	2.339559	0.782227476
2039	1:36:01	19.50	2.340282	0.77999005
2040	1:37:01	19.50	2.339197	0.782250124
2041	1:38:01	19.50	2.338836	0.782708748
2042	1:39:01	19.60	2.339559	0.780474416
2043	1:40:01	19.70	2.338836	0.781832175
2044	1:41:01	19.80	2.339559	0.779600496
2045	1:42:01	19.80	2.339559	0.779164187
2046	1:43:01	19.90	2.339197	0.779625682
2047	1:44:01	20.00	2.339559	0.778292864
2048	1:45:01	20.00	2.339197	0.778754334
2049	1:46:01	20.10	2.339197	0.778319307
2050	1:47:01	19.90	2.339559	0.776989114
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2054	1:51:01	19.50	2.338836	0.777041975
2055	1:52:01	19.60	2.338836	0.776609082
2056	1:53:01	19.70	2.338836	0.776176616
2057	1:54:01	19.80	2.339559	0.773962032
2058	1:55:01	19.80	2.338836	0.775312962
2059	1:56:01	19.90	2.338836	0.774881773
2060	1:57:01	19.90	2.338836	0.774451009
2061	1:58:01	20.00	2.338836	0.774020669
2062	1:59:01	20.10	2.338836	0.773590753
2063	2:00:01	20.00	2.339197	0.772273845
2064	2:01:01	19.90	2.338836	0.772732187
2065	2:02:01	19.70	2.338836	0.772303536
2066	2:03:01	19.50	2.338836	0.771875307

2067	2:04:01	19.50	2.338836	0.771447498
2068	2:05:01	19.60	2.338836	0.771020108
2069	2:06:01	19.60	2.338836	0.770593137
2070	2:07:01	19.70	2.338836	0.770166585
2071	2:08:01	19.80	2.338836	0.769740451
2072	2:09:01	19.80	2.338836	0.769314733
2073	2:10:01	19.90	2.338836	0.768889432
2074	2:11:01	19.90	2.338836	0.768464548
2075	2:12:01	20.00	2.338836	0.768040078
2076	2:13:01	20.10	2.338836	0.767616023
2077	2:14:01	20.00	2.338836	0.767192383
2078	2:15:01	19.90	2.338836	0.766769156
2079	2:16:01	19.60	2.338836	0.766346341
2080	2:17:01	19.50	2.338836	0.76592394
2081	2:18:01	19.50	2.338836	0.765501949
2082	2:19:01	19.50	2.338836	0.76508037
2083	2:20:01	19.60	2.338474	0.765540409
2084	2:21:01	19.70	2.338836	0.764238443
2085	2:22:01	19.80	2.338836	0.763818093
2086	2:23:01	19.80	2.338474	0.764278075
2087	2:24:01	19.90	2.338836	0.76297862
2088	2:25:01	19.90	2.338474	0.763438562
2089	2:26:01	20.00	2.338112	0.763898058
2090	2:27:01	20.10	2.338836	0.761722465
2091	2:28:01	20.00	2.338112	0.763060136
2092	2:29:01	19.90	2.338474	0.761764421
2093	2:30:01	19.70	2.338474	0.761346899
2094	2:31:01	19.50	2.338112	0.761806295
2095	2:32:01	19.50	2.337389	0.763138916
2096	2:33:01	19.50	2.338112	0.760972424
2097	2:34:01	19.60	2.338112	0.760556093
2098	2:35:01	19.70	2.337750	0.761014983
2099	2:36:01	19.80	2.337389	0.761471014
2100	2:37:01	19.80	2.338112	0.759309512
2101	2:38:01	19.90	2.337750	0.75976834
2102	2:39:01	19.90	2.336304	0.762841293
2103	2:40:01	20.00	2.338112	0.758066538
2104	2:41:01	20.00	2.337027	0.76026747
2105	2:42:01	20.10	2.338474	0.756368015
2106	2:43:01	19.90	2.337027	0.759439095
2107	2:44:01	19.70	2.336304	0.760765159
2108	2:45:01	19.60	2.337750	0.756873497
2109	2:46:01	19.50	2.336665	0.759069712
2110	2:47:01	19.50	2.336665	0.758656896
2111	2:48:01	19.60	2.337027	0.75737512
2112	2:49:01	19.60	2.337389	0.756094575
2113	2:50:01	19.70	2.336304	0.758286948

2114	2:51:01	19.80	2.337389	0.755273381
2115	2:52:01	19.80	2.336665	0.756598754
2116	2:53:01	19.90	2.337750	0.753588884
2117	2:54:01	19.90	2.336665	0.755778257
2118	2:55:01	20.00	2.336304	0.756232647
2119	2:56:01	20.00	2.336304	0.755822967
2120	2:57:01	20.10	2.336665	0.754550454
2121	2:58:01	19.90	2.336304	0.75500478
2122	2:59:01	19.70	2.336665	0.753733875
2123	3:00:01	19.60	2.336665	0.75332617
2124	3:01:01	19.50	2.336665	0.752918854
2125	3:02:01	19.50	2.335942	0.754236641
2126	3:03:01	19.60	2.337027	0.751242251
2127	3:04:01	19.60	2.336304	0.752559581
2128	3:05:01	19.70	2.335942	0.753015722
2129	3:06:01	19.80	2.335942	0.752609524
2130	3:07:01	19.80	2.336304	0.751342218
2131	3:08:01	19.90	2.335942	0.751798287
2132	3:09:01	19.90	2.336665	0.749674275
2133	3:10:01	20.00	2.336304	0.750128327
2134	3:11:01	20.00	2.335942	0.750584323
2135	3:12:01	20.10	2.335942	0.750180437
2136	3:13:01	20.00	2.336304	0.748917893
2137	3:14:01	19.90	2.335942	0.749373814
2138	3:15:01	19.60	2.335942	0.748971076
2139	3:16:01	19.50	2.335942	0.74856872
2140	3:17:01	19.50	2.335942	0.748166746
2141	3:18:01	19.50	2.336665	0.746053504
2142	3:19:01	19.60	2.335942	0.747363938
2143	3:20:01	19.60	2.335942	0.746963103
2144	3:21:01	19.70	2.335942	0.746562648
2145	3:22:01	19.80	2.335942	0.746162571
2146	3:23:01	19.80	2.335942	0.745762872
2147	3:24:01	19.90	2.335942	0.745363551
2148	3:25:01	19.90	2.335942	0.744964606
2149	3:26:01	20.00	2.335580	0.745419811
2150	3:27:01	20.00	2.335942	0.744167845
2151	3:28:01	20.00	2.335942	0.743770028
2152	3:29:01	20.00	2.335942	0.743372586
2153	3:30:01	19.80	2.335942	0.742975518
2154	3:31:01	19.60	2.335942	0.742578824
2155	3:32:01	19.50	2.335942	0.742182502
2156	3:33:01	19.50	2.335942	0.741786554
2157	3:34:01	19.50	2.335942	0.741390977
2158	3:35:01	19.60	2.335942	0.740995773
2159	3:36:01	19.60	2.335580	0.741450704
2160	3:37:01	19.70	2.335942	0.740206476

2161	3:38:01	19.80	2.334857	0.742356942
2162	3:39:01	19.90	2.335942	0.739418659
2163	3:40:01	19.90	2.335219	0.740719306
2164	3:41:01	19.90	2.335580	0.739480094
2165	3:42:01	20.00	2.335942	0.7382397
2166	3:43:01	20.00	2.335580	0.738694431
2167	3:44:01	20.10	2.335219	0.739146399
2168	3:45:01	20.00	2.334857	0.739600281
2169	3:46:01	19.90	2.335219	0.73836215
2170	3:47:01	19.60	2.335942	0.736282111
2171	3:48:01	19.50	2.335219	0.737579365
2172	3:49:01	19.50	2.335942	0.735501633
2173	3:50:01	19.50	2.335219	0.736798041
2174	3:51:01	19.60	2.335219	0.736407925
2175	3:52:01	19.70	2.334134	0.738546132
2176	3:53:01	19.70	2.335580	0.734788076
2177	3:54:01	19.80	2.334857	0.736082402
2178	3:55:01	19.80	2.334857	0.735693346
2179	3:56:01	19.90	2.335219	0.734462791
2180	3:57:01	19.90	2.335219	0.734074849
2181	3:58:01	20.00	2.334857	0.734528346
2182	3:59:01	20.00	2.334857	0.734140734
2183	4:00:01	20.00	2.333772	0.736272052
2184	4:01:01	20.00	2.335580	0.731689095
2185	4:02:01	19.80	2.334495	0.733819573
2186	4:03:01	19.60	2.334857	0.73259388
2187	4:04:01	19.50	2.334495	0.733046803
2188	4:05:01	19.50	2.334134	0.733496989
2189	4:06:01	19.50	2.334495	0.732275463
2190	4:07:01	19.60	2.334134	0.73272559
2191	4:08:01	19.60	2.334495	0.73150555
2192	4:09:01	19.70	2.333410	0.733629219
2193	4:10:01	19.80	2.334134	0.731571165
2194	4:11:01	19.80	2.334495	0.730353349
2195	4:12:01	19.90	2.333772	0.731638966
2196	4:13:01	19.90	2.333410	0.732090448
2197	4:14:01	20.00	2.333410	0.731706642
2198	4:15:01	20.00	2.333772	0.730488704
2199	4:16:01	20.00	2.334134	0.729271889
2200	4:17:01	20.10	2.334495	0.728058498
2201	4:18:01	20.00	2.333772	0.729341621
2202	4:19:01	19.80	2.333772	0.728959963
2203	4:20:01	19.60	2.334134	0.72774609
2204	4:21:01	19.50	2.333410	0.729029885
2205	4:22:01	19.50	2.334134	0.726985294
2206	4:23:01	19.50	2.333772	0.72743684
2207	4:24:01	19.60	2.333772	0.727056933

2208	4:25:01	19.60	2.333048	0.728338687
2209	4:26:01	19.70	2.333048	0.727958716
2210	4:27:01	19.70	2.333048	0.727579092
2211	4:28:01	19.80	2.333410	0.726370302
2212	4:29:01	19.80	2.333048	0.726820889
2213	4:30:01	19.90	2.333048	0.726442308
2214	4:31:01	19.90	2.333048	0.726064073
2215	4:32:01	19.90	2.333048	0.725686185
2216	4:33:01	20.00	2.333048	0.725308642
2217	4:34:01	20.00	2.333048	0.724931444
2218	4:35:01	20.00	2.333048	0.724554591
2219	4:36:01	20.00	2.333410	0.723351598
2220	4:37:01	19.90	2.333410	0.72297581
2221	4:38:01	19.80	2.333048	0.723426095
2222	4:39:01	19.60	2.333048	0.723050616
2223	4:40:01	19.50	2.333048	0.722675479
2224	4:41:01	19.50	2.333048	0.722300683
2225	4:42:01	19.50	2.333048	0.72192623
2226	4:43:01	19.60	2.333048	0.721552117
2227	4:44:01	19.70	2.333048	0.721178344
2228	4:45:01	19.70	2.333048	0.720804911
2229	4:46:01	19.80	2.333048	0.720431818
2230	4:47:01	19.80	2.333048	0.720059064
2231	4:48:01	19.90	2.333048	0.719686649
2232	4:49:01	19.90	2.333048	0.719314571
2233	4:50:01	19.90	2.333048	0.718942831
2234	4:51:01	20.00	2.333048	0.718571429
2235	4:52:01	20.00	2.332687	0.719018586
2236	4:53:01	20.00	2.332325	0.719467603
2237	4:54:01	20.00	2.332325	0.719096467
2238	4:55:01	20.00	2.332325	0.718725668
2239	4:56:01	19.80	2.333048	0.716719457
2240	4:57:01	19.60	2.333048	0.716350068
2241	4:58:01	19.50	2.333048	0.715981013
2242	4:59:01	19.50	2.332687	0.716427926
2243	5:00:01	19.50	2.332687	0.716059169
2244	5:01:01	19.60	2.332325	0.716507901
2245	5:02:01	19.60	2.332687	0.715322653
2246	5:03:01	19.70	2.333048	0.714140731
2247	5:04:01	19.70	2.333048	0.71377367
2248	5:05:01	19.80	2.332687	0.71422037
2249	5:06:01	19.80	2.332687	0.713853604
2250	5:07:01	19.90	2.332687	0.713487168
2251	5:08:01	19.90	2.331963	0.714750225
2252	5:09:01	19.90	2.331963	0.714383716
2253	5:10:01	20.00	2.331963	0.714017536
2254	5:11:01	20.00	2.332325	0.712838202

2255	5:12:01	20.00	2.331601	0.714099281
2256	5:13:01	20.00	2.331963	0.71292097
2257	5:14:01	20.00	2.332687	0.710931329
2258	5:15:01	19.90	2.331601	0.713003589
2259	5:16:01	19.70	2.332687	0.710204036
2260	5:17:01	19.50	2.331601	0.712274765
2261	5:18:01	19.50	2.333048	0.708669355
2262	5:19:01	19.50	2.331240	0.712355575
2263	5:20:01	19.50	2.331240	0.711991943
2264	5:21:01	19.60	2.331601	0.710821029
2265	5:22:01	19.60	2.331601	0.710458408
2266	5:23:01	19.70	2.330878	0.711712114
2267	5:24:01	19.70	2.331601	0.709734138
2268	5:25:01	19.80	2.331963	0.708564091
2269	5:26:01	19.80	2.330878	0.710625
2270	5:27:01	19.90	2.331601	0.708650156
2271	5:28:01	19.90	2.330878	0.709901873
2272	5:29:01	19.90	2.330516	0.710347749
2273	5:30:01	20.00	2.331240	0.70837344
2274	5:31:01	20.00	2.331601	0.707209354
2275	5:32:01	20.00	2.331963	0.706044078
2276	5:33:01	20.00	2.330516	0.708905207
2277	5:34:01	20.00	2.330878	0.707740214
2278	5:35:01	19.80	2.330878	0.707381058
2279	5:36:01	19.60	2.330878	0.707022222
2280	5:37:01	19.50	2.330516	0.707467792
2281	5:38:01	19.50	2.330516	0.707109236
2282	5:39:01	19.50	2.330155	0.707552153
2283	5:40:01	19.60	2.331240	0.704787045
2284	5:41:01	19.60	2.330516	0.706035477
2285	5:42:01	19.70	2.330878	0.704875887
2286	5:43:01	19.70	2.330155	0.706120957
2287	5:44:01	19.80	2.330878	0.704162976
2288	5:45:01	19.90	2.330155	0.70540726
2289	5:46:01	19.90	2.330155	0.705050885
2290	5:47:01	19.90	2.330155	0.704694825
2291	5:48:01	19.90	2.330155	0.70433908
2292	5:49:01	20.00	2.330155	0.70398365
2293	5:50:01	20.00	2.330155	0.703628534
2294	5:51:01	20.00	2.330878	0.701677704
2295	5:52:01	20.10	2.330516	0.702122683
2296	5:53:01	20.00	2.330516	0.701768858
2297	5:54:01	19.80	2.330155	0.702211199
2298	5:55:01	19.60	2.330155	0.701857647
2299	5:56:01	19.50	2.330155	0.701504405
2300	5:57:01	19.50	2.330155	0.701151475
2301	5:58:01	19.50	2.330155	0.700798856

2302	5:59:01	19.60	2.330155	0.700446546
2303	6:00:01	19.60	2.330155	0.700094547
2304	6:01:01	19.70	2.330155	0.699742857
2305	6:02:01	19.80	2.330155	0.699391476
2306	6:03:01	19.80	2.330155	0.699040404
2307	6:04:01	19.90	2.330155	0.69868964
2308	6:05:01	19.90	2.330155	0.698339184
2309	6:06:01	19.90	2.330155	0.697989035
2310	6:07:01	19.90	2.330155	0.697639193
2311	6:08:01	20.00	2.330516	0.696498685
2312	6:09:01	20.00	2.330155	0.696940429
2313	6:10:01	20.00	2.330155	0.696591506
2314	6:11:01	20.10	2.330155	0.696242888
2315	6:12:01	20.00	2.330155	0.695894576
2316	6:13:01	19.80	2.330155	0.695546568
2317	6:14:01	19.60	2.330155	0.695198864
2318	6:15:01	19.50	2.329793	0.695642202
2319	6:16:01	19.50	2.329793	0.69529476
2320	6:17:01	19.50	2.329431	0.695737669
2321	6:18:01	19.50	2.330155	0.693811082
2322	6:19:01	19.60	2.330155	0.693464893
2323	6:20:01	19.70	2.329793	0.693908021
2324	6:21:01	19.70	2.330155	0.69277342
2325	6:22:01	19.80	2.329431	0.694004791
2326	6:23:01	19.80	2.330155	0.692083152
2327	6:24:01	19.90	2.329793	0.69252611
2328	6:25:01	19.90	2.328708	0.694541105
2329	6:26:01	19.90	2.329793	0.691836957
2330	6:27:01	19.90	2.328708	0.6938505
2331	6:28:01	20.00	2.329793	0.691149001
2332	6:29:01	20.00	2.330155	0.69001954
2333	6:30:01	20.00	2.330155	0.689676649
2334	6:31:01	20.00	2.329793	0.690119306
2335	6:32:01	20.10	2.329793	0.68977667
2336	6:33:01	19.90	2.329793	0.68943433
2337	6:34:01	19.70	2.328708	0.691442808
2338	6:35:01	19.50	2.329793	0.688750541
2339	6:36:01	19.50	2.329069	0.68997619
2340	6:37:01	19.50	2.328708	0.690415405
2341	6:38:01	19.50	2.329793	0.687727076
2342	6:39:01	19.60	2.329431	0.688169045
2343	6:40:01	19.60	2.329431	0.687828436
2344	6:41:01	19.70	2.329069	0.688269978
2345	6:42:01	19.70	2.329793	0.68636658
2346	6:43:01	19.80	2.329069	0.687589555
2347	6:44:01	19.80	2.327623	0.690368852
2348	6:45:01	19.90	2.328708	0.687688659

2349	6:46:01	19.90	2.328708	0.687349138
2350	6:47:01	19.90	2.328346	0.687789746
2351	6:48:01	19.90	2.328346	0.687450474
2352	6:49:01	19.90	2.328346	0.687111494
2353	6:50:01	20.00	2.327984	0.687551635
2354	6:51:01	20.00	2.328346	0.686434409
2355	6:52:01	20.00	2.327984	0.686874463
2356	6:53:01	20.00	2.329069	0.684204985
2357	6:54:01	20.00	2.328708	0.684643471
2358	6:55:01	20.00	2.328346	0.685083727
2359	6:56:01	19.80	2.327984	0.685523605
2360	6:57:01	19.60	2.327984	0.685186615
2361	6:58:01	19.50	2.327623	0.685623928
2362	6:59:01	19.50	2.327984	0.684513502
2363	7:00:01	19.50	2.327984	0.684177378
2364	7:01:01	19.60	2.327261	0.685389722
2365	7:02:01	19.60	2.327261	0.68505351
2366	7:03:01	19.70	2.327623	0.683943089
2367	7:04:01	19.70	2.327984	0.682835757
2368	7:05:01	19.80	2.327984	0.682501069
2369	7:06:01	19.80	2.327261	0.683711538
2370	7:07:01	19.90	2.327984	0.68183255
2371	7:08:01	19.90	2.327623	0.682269428
2372	7:09:01	19.90	2.327261	0.682708067
2373	7:10:01	20.00	2.327623	0.681601962
2374	7:11:01	20.00	2.327261	0.682040512
2375	7:12:01	20.00	2.327261	0.681707161
2376	7:13:01	20.00	2.327623	0.680602897
2377	7:14:01	20.00	2.327623	0.680270443
2378	7:15:01	19.80	2.327623	0.679938272
2379	7:16:01	19.60	2.327261	0.680376596
2380	7:17:01	19.50	2.327261	0.680044662
2381	7:18:01	19.50	2.327261	0.67971301
2382	7:19:01	19.50	2.327261	0.67938164
2383	7:20:01	19.60	2.327261	0.679050552
2384	7:21:01	19.60	2.327261	0.678719745
2385	7:22:01	19.70	2.327261	0.678389219
2386	7:23:01	19.80	2.327261	0.678058973
2387	7:24:01	19.80	2.327261	0.677729008
2388	7:25:01	19.90	2.327623	0.676632047
2389	7:26:01	19.90	2.327261	0.677069915
2390	7:27:01	20.00	2.327261	0.676740788
2391	7:28:01	20.00	2.327261	0.676411939
2392	7:29:01	20.00	2.327623	0.675317393
2393	7:30:01	20.10	2.327261	0.675755076
2394	7:31:01	20.00	2.327261	0.675427061
2395	7:32:01	19.70	2.327261	0.675099324

2396	7:33:01	19.50	2.327261	0.674771863
2397	7:34:01	19.50	2.327261	0.674444679
2398	7:35:01	19.50	2.327261	0.674117771
2399	7:36:01	19.50	2.327261	0.673791139
2400	7:37:01	19.60	2.327261	0.673464783
2401	7:38:01	19.70	2.327261	0.673138702
2402	7:39:01	19.80	2.326537	0.67433839
2403	7:40:01	19.80	2.327261	0.672487363
2404	7:41:01	19.90	2.327261	0.672162105
2405	7:42:01	19.90	2.327261	0.671837121
2406	7:43:01	20.00	2.327261	0.671512411
2407	7:44:01	20.00	2.326537	0.672710261
2408	7:45:01	20.10	2.326899	0.671624632
2409	7:46:01	19.90	2.326899	0.67130042
2410	7:47:01	19.70	2.327261	0.670216296
2411	7:48:01	19.60	2.326537	0.671412678
2412	7:49:01	19.50	2.326899	0.670329417
2413	7:50:01	19.50	2.326537	0.67076552
2414	7:51:01	19.60	2.326176	0.671199161
2415	7:52:01	19.70	2.326899	0.669360855
2416	7:53:01	19.70	2.326537	0.669796816
2417	7:54:01	19.80	2.326899	0.668716499
2418	7:55:01	19.90	2.326176	0.669907911
2419	7:56:01	19.90	2.325452	0.671100418
2420	7:57:01	20.00	2.326176	0.669263906
2421	7:58:01	20.10	2.325452	0.670455686
2422	7:59:01	20.00	2.327261	0.666353949
2423	8:00:01	19.80	2.326176	0.668299916
2424	8:01:01	19.60	2.325452	0.669490605
2425	8:02:01	19.50	2.325814	0.668414023
2426	8:03:01	19.50	2.326176	0.66733834
2427	8:04:01	19.60	2.326537	0.666265638
2428	8:05:01	19.60	2.326537	0.665946228
2429	8:06:01	19.70	2.326176	0.666379167
2430	8:07:01	19.80	2.326176	0.666059975
2431	8:08:01	19.90	2.326537	0.664989592
2432	8:09:01	19.90	2.325452	0.666928839
2433	8:10:01	20.00	2.325452	0.666609817
2434	8:11:01	20.10	2.325814	0.665538462
2435	8:12:01	20.00	2.326176	0.664467997
2436	8:13:01	19.80	2.325091	0.666404238
2437	8:14:01	19.60	2.325814	0.664584718
2438	8:15:01	19.50	2.325452	0.66501868
2439	8:16:01	19.50	2.325091	0.665450207
2440	8:17:01	19.60	2.325452	0.664384073
2441	8:18:01	19.70	2.325814	0.66331675
2442	8:19:01	19.80	2.325452	0.663750518

2443	8:20:01	19.80	2.325814	0.662684341
2444	8:21:01	19.90	2.325091	0.663865424
2445	8:22:01	20.00	2.324367	0.665047599
2446	8:23:01	20.10	2.325452	0.662486554
2447	8:24:01	20.10	2.325814	0.661422663
2448	8:25:01	19.90	2.325452	0.661856139
2449	8:26:01	19.60	2.325091	0.66228719
2450	8:27:01	19.50	2.325814	0.660479141
2451	8:28:01	19.50	2.324729	0.662405037
2452	8:29:01	19.60	2.324729	0.662090384
2453	8:30:01	19.60	2.324367	0.66252269
2454	8:31:01	19.70	2.324729	0.661461856
2455	8:32:01	19.80	2.324729	0.66114798
2456	8:33:01	19.90	2.324367	0.66158014
2457	8:34:01	20.00	2.324729	0.660521005
2458	8:35:01	20.10	2.324367	0.660953067
2459	8:36:01	20.00	2.324729	0.659895062
2460	8:37:01	19.90	2.324367	0.660327026
2461	8:38:01	19.70	2.324729	0.659270148
2462	8:39:01	19.60	2.324367	0.659702014
2463	8:40:01	19.50	2.324367	0.659389893
2464	8:41:01	19.60	2.324729	0.658334702
2465	8:42:01	19.70	2.324729	0.658023399
2466	8:43:01	19.80	2.324367	0.658455068
2467	8:44:01	19.90	2.324367	0.65814397
2468	8:45:01	19.90	2.324729	0.657091021
2469	8:46:01	20.00	2.324367	0.657522541
2470	8:47:01	20.10	2.324367	0.657212208
2471	8:48:01	20.00	2.324367	0.656902129
2472	8:49:01	19.80	2.324367	0.656592305
2473	8:50:01	19.60	2.324367	0.656282733
2474	8:51:01	19.50	2.324367	0.655973415
2475	8:52:01	19.60	2.324367	0.65566435
2476	8:53:01	19.60	2.324367	0.655355537
2477	8:54:01	19.70	2.324367	0.655046977
2478	8:55:01	19.80	2.324367	0.654738669
2479	8:56:01	19.90	2.324367	0.654430612
2480	8:57:01	20.00	2.324367	0.654122807
2481	8:58:01	20.10	2.324367	0.653815253
2482	8:59:01	20.10	2.324367	0.653507949
2483	9:00:01	20.00	2.324367	0.653200896
2484	9:01:01	19.70	2.324367	0.652894094
2485	9:02:01	19.60	2.324367	0.652587541
2486	9:03:01	19.50	2.324367	0.652281237
2487	9:04:01	19.60	2.324367	0.651975183
2488	9:05:01	19.60	2.324006	0.652403416
2489	9:06:01	19.70	2.324367	0.651363821

2490	9:07:01	19.90	2.323644	0.652527428
2491	9:08:01	19.90	2.324367	0.650753452
2492	9:09:01	20.00	2.324367	0.65044864
2493	9:10:01	20.10	2.324367	0.650144075
2494	9:11:01	20.00	2.323282	0.652040568
2495	9:12:01	19.80	2.324367	0.649535685
2496	9:13:01	19.60	2.324367	0.649231861
2497	9:14:01	19.50	2.324367	0.648928282
2498	9:15:01	19.60	2.324367	0.648624949
2499	9:16:01	19.60	2.324367	0.648321862
2500	9:17:01	19.70	2.323644	0.649481991
2501	9:18:01	19.90	2.323644	0.649178803
2502	9:19:01	19.90	2.324367	0.647414072
2503	9:20:01	20.00	2.324006	0.647841552
2504	9:21:01	20.10	2.323644	0.648270707
2505	9:22:01	20.00	2.323644	0.647968498
2506	9:23:01	19.80	2.324367	0.646207105
2507	9:24:01	19.60	2.323644	0.64736481
2508	9:25:01	19.60	2.324367	0.645605083
2509	9:26:01	19.60	2.323644	0.646762097
2510	9:27:01	19.70	2.323282	0.647190649
2511	9:28:01	19.80	2.323644	0.646160355
2512	9:29:01	19.90	2.323644	0.645859847
2513	9:30:01	20.00	2.322920	0.647016908
2514	9:31:01	20.10	2.323282	0.645987928
2515	9:32:01	20.10	2.323282	0.645687852
2516	9:33:01	19.90	2.323282	0.645388018
2517	9:34:01	19.70	2.322559	0.646541399
2518	9:35:01	19.60	2.324006	0.643334673
2519	9:36:01	19.60	2.323282	0.64448996
2520	9:37:01	19.60	2.322920	0.644917704
2521	9:38:01	19.70	2.322559	0.645343098
2522	9:39:01	19.90	2.322920	0.644320096
2523	9:40:01	20.00	2.323282	0.64329591
2524	9:41:01	20.10	2.323282	0.642997996
2525	9:42:01	20.10	2.322920	0.643425481
2526	9:43:01	20.00	2.322197	0.644575491
2527	9:44:01	19.80	2.322920	0.642830264
2528	9:45:01	19.60	2.323282	0.641808723
2529	9:46:01	19.60	2.322920	0.642236
2530	9:47:01	19.60	2.322197	0.643384646
2531	9:48:01	19.70	2.322920	0.641642686
2532	9:49:01	19.80	2.322559	0.642067519
2533	9:50:01	19.90	2.322559	0.641771166
2534	9:51:01	20.10	2.322559	0.64147505
2535	9:52:01	20.10	2.321835	0.642623703
2536	9:53:01	20.00	2.323282	0.639441564

2537	9:54:01	19.80	2.321835	0.642031499
2538	9:55:01	19.60	2.322559	0.640292945
2539	9:56:01	19.60	2.322197	0.640719124
2540	9:57:01	19.60	2.322197	0.640424134
2541	9:58:01	19.70	2.321835	0.64084992
2542	9:59:01	19.80	2.321474	0.641273378
2543	10:00:01	19.90	2.321835	0.640260541
2544	10:01:01	20.10	2.322197	0.639246521
2545	10:02:01	20.10	2.322197	0.638952703
2546	10:03:01	20.00	2.322559	0.637940008
2547	10:04:01	19.80	2.322197	0.638365766
2548	10:05:01	19.60	2.321835	0.638791187
2549	10:06:01	19.60	2.321835	0.638498016
2550	10:07:01	19.60	2.321474	0.638921063
2551	10:08:01	19.70	2.321474	0.638628073
2552	10:09:01	19.90	2.321474	0.638335315
2553	10:10:01	20.00	2.322197	0.636610539
2554	10:11:01	20.10	2.321835	0.637035644
2555	10:12:01	20.10	2.321474	0.637458432
2556	10:13:01	20.00	2.321474	0.637166601
2557	10:14:01	19.80	2.322197	0.635445016
2558	10:15:01	19.60	2.321474	0.63658363
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2561	10:18:01	19.80	2.321474	0.6357109
2562	10:19:01	19.90	2.321835	0.634707856
2563	10:20:01	20.00	2.321835	0.634417916
2564	10:21:01	20.10	2.321474	0.634840237
2565	10:22:01	20.10	2.321474	0.634550473
2566	10:23:01	19.90	2.321474	0.634260938
2567	10:24:01	19.70	2.321835	0.633260441
2568	10:25:01	19.60	2.321474	0.633682552
2569	10:26:01	19.60	2.321474	0.633393701
2570	10:27:01	19.70	2.321474	0.633105077
2571	10:28:01	19.80	2.321474	0.63281668
2572	10:29:01	20.00	2.321112	0.633240267
2573	10:30:01	20.10	2.321474	0.632240566
2574	10:31:01	20.10	2.321474	0.631952849
2575	10:32:01	20.00	2.321474	0.631665357
2576	10:33:01	19.80	2.321474	0.631378092
2577	10:34:01	19.60	2.321474	0.631091052
2578	10:35:01	19.60	2.321474	0.630804237
2579	10:36:01	19.70	2.321112	0.631227451
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2581	10:38:01	19.90	2.321474	0.629945141
2582	10:39:01	20.10	2.321474	0.629659224
2583	10:40:01	20.20	2.321474	0.629373532

2584	10:41:01	20.10	2.321112	0.629796477
2585	10:42:01	19.90	2.321474	0.628802817
2586	10:43:01	19.70	2.320750	0.629933516
2587	10:44:01	19.60	2.321112	0.628940579
2588	10:45:01	19.70	2.321474	0.627948417
2589	10:46:01	19.80	2.321474	0.627664063
2590	10:47:01	19.90	2.320750	0.62879344
2591	10:48:01	20.00	2.321474	0.627096019
2592	10:49:01	20.20	2.321474	0.626812329
2593	10:50:01	20.10	2.321474	0.626528861
2594	10:51:01	19.90	2.321112	0.626951267
2595	10:52:01	19.70	2.321474	0.625962588
2596	10:53:01	19.60	2.321112	0.626384885
2597	10:54:01	19.60	2.320388	0.627511682
2598	10:55:01	19.70	2.320388	0.627228494
2599	10:56:01	19.90	2.320750	0.626241245
2600	10:57:01	20.00	2.321112	0.625254765
2601	10:58:01	20.20	2.320750	0.625676516
2602	10:59:01	20.20	2.321112	0.624691022
2603	11:00:01	20.00	2.320750	0.625112665
2604	11:01:01	19.80	2.319665	0.626937864
2605	11:02:01	19.60	2.321474	0.62314441
2606	11:03:01	19.60	2.320750	0.624268529
2607	11:04:01	19.70	2.320388	0.624689682
2608	11:05:01	19.80	2.320388	0.624408686
2609	11:06:01	20.00	2.320027	0.624827519
2610	11:07:01	20.10	2.320750	0.623146067
2611	11:08:01	20.20	2.319665	0.62496708
2612	11:09:01	20.00	2.320388	0.623286876
2613	11:10:01	19.80	2.320027	0.623705495
2614	11:11:01	19.70	2.321112	0.621326886
2615	11:12:01	19.70	2.319303	0.62454563
2616	11:13:01	19.70	2.320388	0.622168535
2617	11:14:01	19.90	2.319303	0.623985703
2618	11:15:01	20.00	2.319303	0.623706064
2619	11:16:01	20.20	2.320388	0.621332046
2620	11:17:01	20.10	2.319303	0.623147433
2621	11:18:01	20.00	2.320027	0.621471836
2622	11:19:01	19.80	2.320388	0.620497493
2623	11:20:01	19.60	2.320388	0.620219738
2624	11:21:01	19.60	2.319665	0.62133526
2625	11:22:01	19.80	2.319303	0.621754622
2626	11:23:01	19.90	2.320027	0.620082788
2627	11:24:01	20.00	2.320388	0.619110855
2628	11:25:01	20.20	2.319665	0.620225087
2629	11:26:01	20.10	2.320027	0.619251923
2630	11:27:01	20.00	2.319303	0.620367166

2631	11:28:01	19.80	2.319303	0.620090315
2632	11:29:01	19.60	2.319303	0.619813677
2633	11:30:01	19.70	2.319303	0.61953725
2634	11:31:01	19.80	2.319303	0.619261036
2635	11:32:01	19.90	2.319303	0.618985035
2636	11:33:01	20.00	2.318941	0.619403529
2637	11:34:01	20.20	2.319303	0.618433666
2638	11:35:01	20.10	2.319303	0.618158298
2639	11:36:01	20.00	2.318580	0.619268199
2640	11:37:01	19.80	2.319303	0.617608196
2641	11:38:01	19.60	2.318941	0.618026417
2642	11:39:01	19.60	2.318941	0.617751626
2643	11:40:01	19.70	2.319303	0.616784621
2644	11:41:01	19.90	2.318941	0.617202677
2645	11:42:01	20.00	2.319303	0.616236621
2646	11:43:01	20.20	2.318580	0.617344287
2647	11:44:01	20.20	2.318580	0.617070283
2648	11:45:01	20.00	2.318941	0.616107293
2649	11:46:01	19.80	2.318941	0.615833969
2650	11:47:01	19.60	2.318580	0.616249523
2651	11:48:01	19.60	2.318580	0.615976354
2652	11:49:01	19.70	2.318580	0.615703393
2653	11:50:01	19.90	2.318580	0.61543064
2654	11:51:01	20.00	2.318580	0.615158095
2655	11:52:01	20.10	2.318941	0.614198401
2656	11:53:01	20.20	2.318580	0.614613628
2657	11:54:01	20.00	2.318580	0.614341705
2658	11:55:01	19.80	2.318580	0.614069989
2659	11:56:01	19.70	2.318580	0.613798479
2660	11:57:01	19.70	2.318580	0.613527176
2661	11:58:01	19.80	2.318580	0.613256079
2662	11:59:01	19.90	2.318580	0.612985188
2663	12:00:01	20.00	2.318580	0.612714503
2664	12:01:01	20.20	2.318580	0.612444023
2665	12:02:01	20.20	2.318580	0.612173748
2666	12:03:01	20.00	2.318580	0.611903678
2667	12:04:01	19.80	2.318580	0.611633813
2668	12:05:01	19.70	2.318580	0.611364153
2669	12:06:01	19.70	2.318580	0.611094697
2670	12:07:01	19.80	2.318580	0.610825445
2671	12:08:01	19.90	2.318580	0.610556397
2672	12:09:01	20.00	2.318580	0.610287552
2673	12:10:01	20.20	2.318580	0.610018911
2674	12:11:01	20.10	2.318580	0.609750473
2675	12:12:01	20.00	2.318580	0.609482237
2676	12:13:01	19.80	2.318218	0.609897998
2677	12:14:01	19.60	2.318218	0.609629909

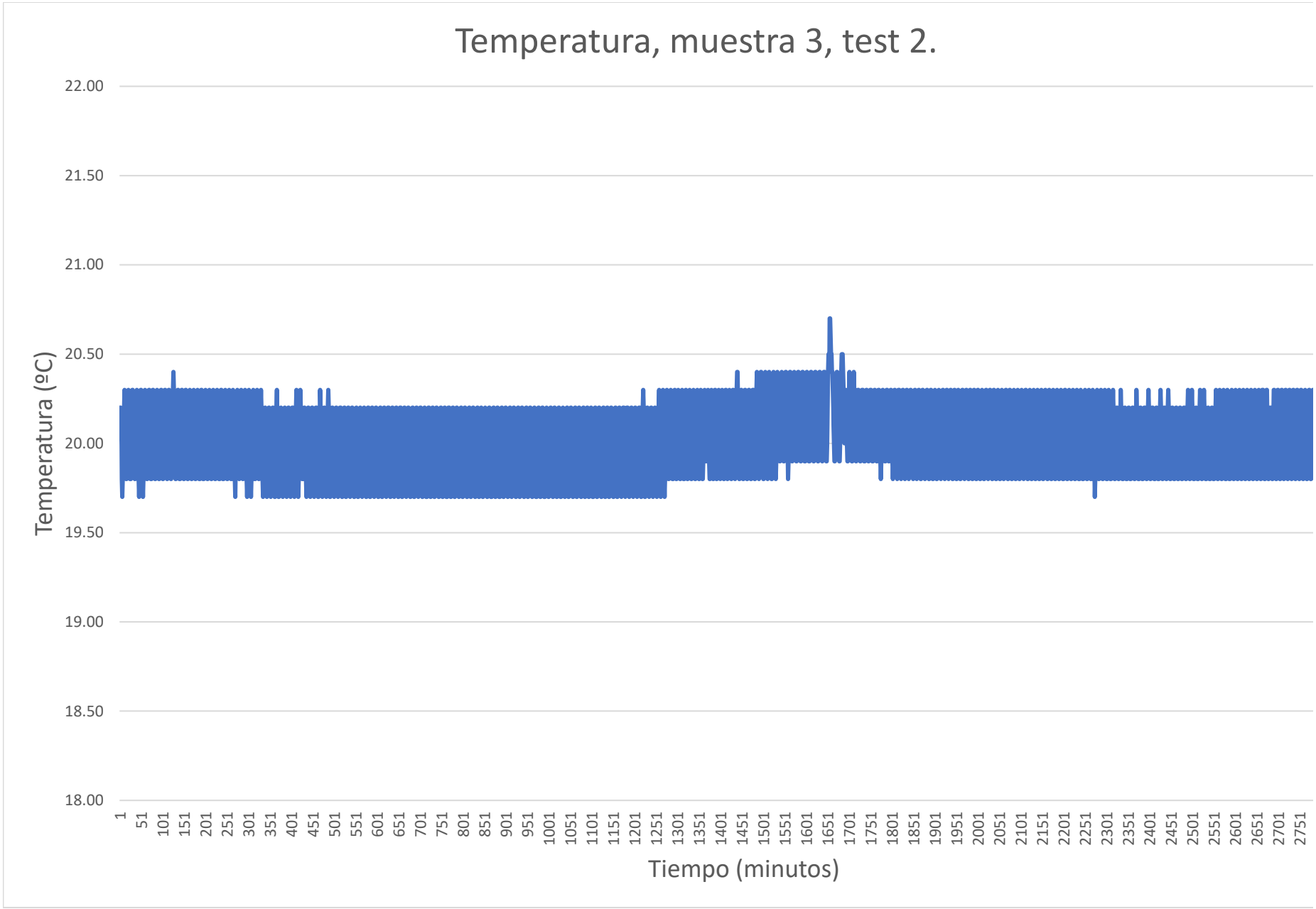
2678	12:15:01	19.70	2.318580	0.608678747
2679	12:16:01	19.80	2.317856	0.609777358
2680	12:17:01	19.90	2.318580	0.608144097
2681	12:18:01	20.10	2.318580	0.607877074
2682	12:19:01	20.20	2.318580	0.607610253
2683	12:20:01	20.10	2.318580	0.607343632
2684	12:21:01	19.90	2.318580	0.607077213
2685	12:22:01	19.70	2.318580	0.606810994
2686	12:23:01	19.70	2.318218	0.607226195
2687	12:24:01	19.70	2.318218	0.60696012
2688	12:25:01	19.80	2.318218	0.606694246
2689	12:26:01	20.00	2.318580	0.60574812
2690	12:27:01	20.10	2.317856	0.606843292
2691	12:28:01	20.20	2.318218	0.605897821
2692	12:29:01	20.10	2.317495	0.606990237
2693	12:30:01	19.90	2.318580	0.604688438
2694	12:31:01	19.70	2.318580	0.604424015
2695	12:32:01	19.60	2.317856	0.605517629
2696	12:33:01	19.70	2.317133	0.606608549
2697	12:34:01	19.80	2.316410	0.607698651
2698	12:35:01	20.00	2.318580	0.603368303
2699	12:36:01	20.20	2.318218	0.603782772
2700	12:37:01	20.20	2.317856	0.60419693
2701	12:38:01	20.10	2.316771	0.605963698
2702	12:39:01	19.90	2.317495	0.604345305
2703	12:40:01	19.70	2.317133	0.604758788
2704	12:41:01	19.70	2.317856	0.603143925
2705	12:42:01	19.70	2.317133	0.604232063
2706	12:43:01	19.90	2.317856	0.602618603
2707	12:44:01	20.00	2.317856	0.602356236
2708	12:45:01	20.20	2.317133	0.603443449
2709	12:46:01	20.20	2.316771	0.603856343
2710	12:47:01	20.00	2.317133	0.602918687
2711	12:48:01	19.80	2.317133	0.6026566
2712	12:49:01	19.70	2.317495	0.601720089
2713	12:50:01	19.70	2.317856	0.60078614
2714	12:51:01	19.80	2.317495	0.601197393
2715	12:52:01	19.90	2.317133	0.601610201
2716	12:53:01	20.10	2.317133	0.601349088
2717	12:54:01	20.20	2.317133	0.60108817
2718	12:55:01	20.20	2.316771	0.601500558
2719	12:56:01	20.00	2.316048	0.602583643
2720	12:57:01	19.70	2.316771	0.60097919
2721	12:58:01	19.60	2.316410	0.601389302
2722	12:59:01	19.70	2.316771	0.600458596
2723	13:00:01	19.80	2.316771	0.600198589
2724	13:01:01	19.90	2.315686	0.601951763

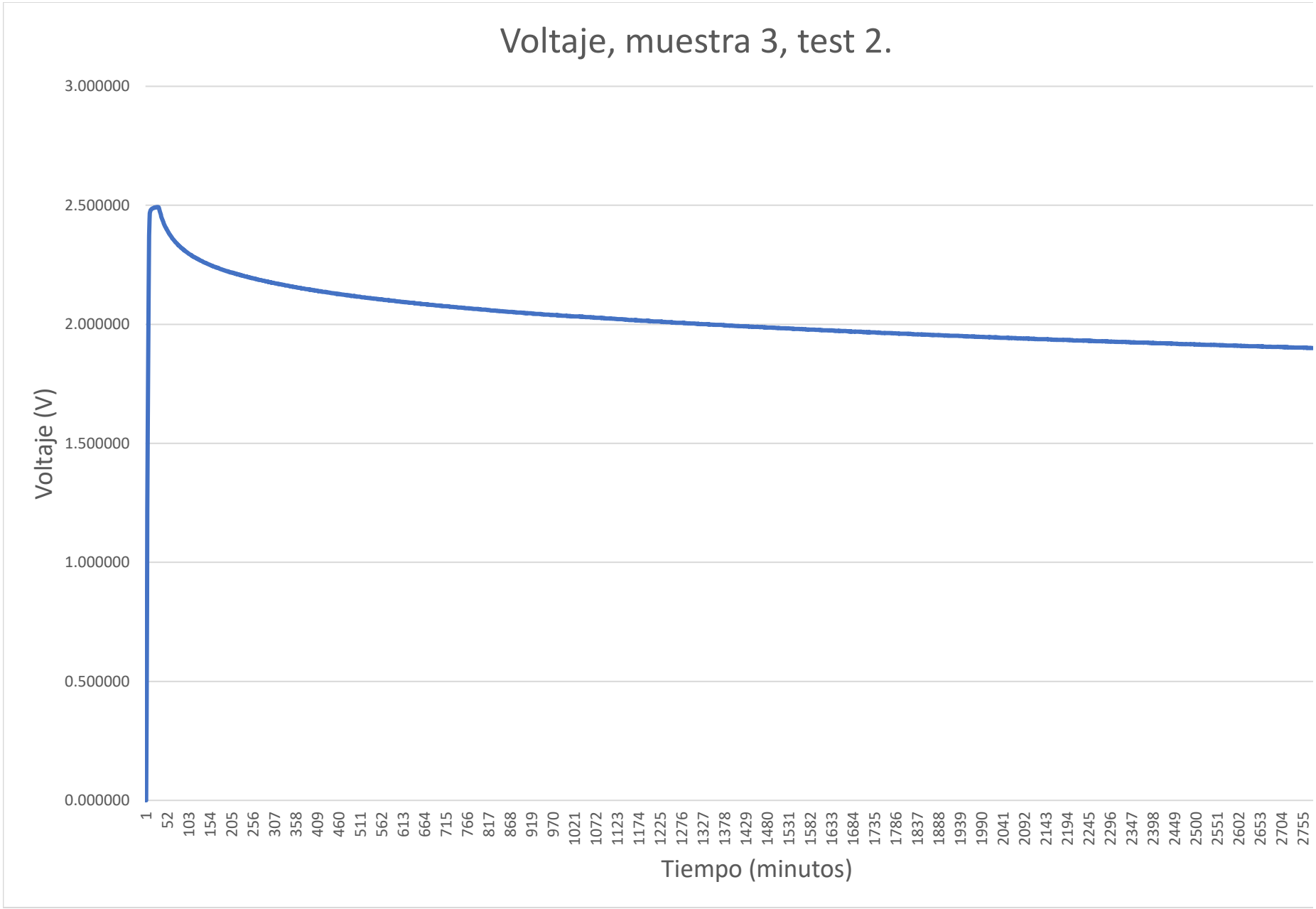
2725	13:02:01	20.10	2.316771	0.599679154
2726	13:03:01	20.20	2.316410	0.600088988
2727	13:04:01	20.10	2.316771	0.599160489
2728	13:05:01	19.90	2.316410	0.599570211
2729	13:06:01	19.70	2.316771	0.598642593
2730	13:07:01	19.60	2.316410	0.599052203
2731	13:08:01	19.70	2.316410	0.598793486
2732	13:09:01	19.90	2.315686	0.599874214
2733	13:10:01	20.00	2.316410	0.598276627
2734	13:11:01	20.20	2.315686	0.599356747
2735	13:12:01	20.20	2.317133	0.596424612
2736	13:13:01	20.10	2.316048	0.598171407
2737	13:14:01	19.90	2.316410	0.597245199
2738	13:15:01	19.70	2.316048	0.597655962
2739	13:16:01	19.60	2.315686	0.598066421
2740	13:17:01	19.70	2.316048	0.597141276
2741	13:18:01	19.90	2.316410	0.596216814
2742	13:19:01	20.00	2.316048	0.59662735
2743	13:20:01	20.20	2.316048	0.596370671
2744	13:21:01	20.20	2.315686	0.596780847
2745	13:22:01	20.00	2.315686	0.5965243
2746	13:23:01	19.80	2.315686	0.596267943
2747	13:24:01	19.70	2.315686	0.596011773
2748	13:25:01	19.70	2.315686	0.595755793
2749	13:26:01	19.80	2.315686	0.5955
2750	13:27:01	19.90	2.315686	0.595244395
2751	13:28:01	20.10	2.315686	0.594988979
2752	13:29:01	20.20	2.315686	0.59473375
2753	13:30:01	20.20	2.315686	0.594478708
2754	13:31:01	20.00	2.315686	0.594223853
2755	13:32:01	19.80	2.315686	0.593969186
2756	13:33:01	19.70	2.315686	0.593714705
2757	13:34:01	19.70	2.315686	0.593460411
2758	13:35:01	19.80	2.315686	0.593206303
2759	13:36:01	20.00	2.315686	0.592952381
2760	13:37:01	20.20	2.315686	0.592698645
2761	13:38:01	20.20	2.315686	0.592445095
2762	13:39:01	20.10	2.315686	0.592191731
2763	13:40:01	19.90	2.315686	0.591938552
2764	13:41:01	19.70	2.315325	0.592345521
2765	13:42:01	19.70	2.315686	0.591432749
2766	13:43:01	19.70	2.315686	0.591180124
2767	13:44:01	19.90	2.315686	0.590927684
2768	13:45:01	20.00	2.315686	0.590675429
2769	13:46:01	20.20	2.315686	0.590423358
2770	13:47:01	20.20	2.315686	0.59017147
2771	13:48:01	20.00	2.314963	0.591238147

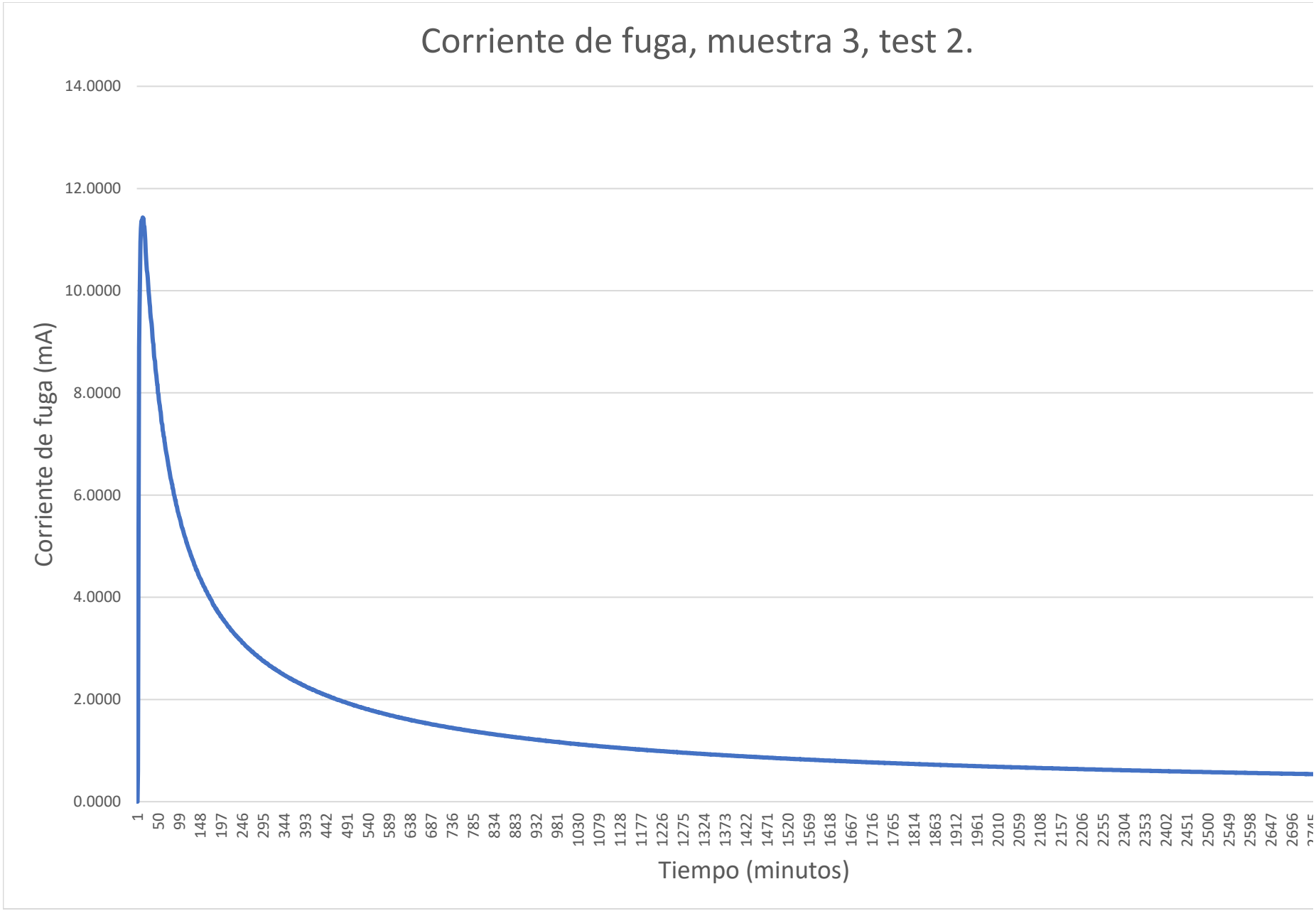
2772	13:49:01	19.80	2.315325	0.590326285
2773	13:50:01	19.70	2.315686	0.58941691
2774	13:51:01	19.70	2.315686	0.589165756
2775	13:52:01	19.80	2.315686	0.588914785
2776	13:53:01	19.90	2.315325	0.589321078
2777	13:54:01	20.10	2.315686	0.588413392
2778	13:55:01	20.20	2.314963	0.589477992
2779	13:56:01	20.10	2.315686	0.587912727
2780	13:57:01	20.00	2.315686	0.587662668
2781	13:58:01	19.70	2.315325	0.588068677
2782	13:59:01	19.70	2.315325	0.587818743
2783	14:00:01	19.70	2.315686	0.58691358
2784	14:01:01	19.90	2.315325	0.587319419
2785	14:02:01	20.00	2.315325	0.587070029
2786	14:03:01	20.20	2.315686	0.586166123
2787	14:04:01	20.20	2.314963	0.587228064
2788	14:05:01	20.10	2.315325	0.586322943
2789	14:06:01	19.90	2.314963	0.586730072
2790	14:07:01	19.70	2.315325	0.585825788
2791	14:08:01	19.70	2.314239	0.587543447
2792	14:09:01	19.80	2.315686	0.584676077
2793	14:10:01	19.90	2.315325	0.585081404
2794	14:11:01	20.10	2.314963	0.585488246
2795	14:12:01	20.20	2.314963	0.585240419
2796	14:13:01	20.20	2.314601	0.58564691
2797	14:14:01	20.00	2.314601	0.585399205
2798	14:15:01	19.80	2.315325	0.583844348
2799	14:16:01	19.70	2.314963	0.584250903
2800	14:17:01	19.70	2.314963	0.58400397
2801	14:18:01	19.90	2.314601	0.584410173
2802	14:19:01	20.00	2.314239	0.584816084
2803	14:20:01	20.20	2.314239	0.584569214
2804	14:21:01	20.20	2.314601	0.58367027
2805	14:22:01	20.10	2.314963	0.582771974
2806	14:23:01	19.90	2.314239	0.583829672
2807	14:24:01	19.70	2.314963	0.582280418
2808	14:25:01	19.70	2.314601	0.582686218
2809	14:26:01	19.80	2.314601	0.582440647
2810	14:27:01	19.90	2.314239	0.582846099
2811	14:28:01	20.10	2.314963	0.581299425
2812	14:29:01	20.20	2.314601	0.581704995
2813	14:30:01	20.20	2.314239	0.582110273
2814	14:31:01	20.00	2.313878	0.582513465
2815	14:32:01	19.80	2.314239	0.581620603
2816	14:33:01	19.70	2.313516	0.582673125
2817	14:34:01	19.70	2.313516	0.582428264
2818	14:35:01	19.80	2.314239	0.580887415

2819	14:36:01	20.00	2.313878	0.581290323
2820	14:37:01	20.10	2.313516	0.581694733
2821	14:38:01	20.20	2.313516	0.581450573
2822	14:39:01	20.10	2.314239	0.579912281
2823	14:40:01	19.90	2.313516	0.580962777
2824	14:41:01	19.70	2.313516	0.580719141
2825	14:42:01	19.70	2.314601	0.578535408
2826	14:43:01	19.80	2.313878	0.57958527
2827	14:44:01	19.90	2.313878	0.579342387
2828	14:45:01	20.10	2.313154	0.580392997
2829	14:46:01	20.20	2.313516	0.579503571
2830	14:47:01	20.20	2.312792	0.580553374
2831	14:48:01	20.10	2.313154	0.579664525
2832	14:49:01	19.90	2.312792	0.580067785
2833	14:50:01	19.70	2.313154	0.579179743
2834	14:51:01	19.70	2.312792	0.579582888
2835	14:52:01	19.80	2.312792	0.579340699
2836	14:53:01	20.00	2.312792	0.579098682
2837	14:54:01	20.20	2.312792	0.578856838
2838	14:55:01	20.30	2.312792	0.578615166
2839	14:56:01	20.10	2.312792	0.578373665
2840	14:57:01	19.90	2.313516	0.576844539
2841	14:58:01	19.70	2.312792	0.577891181
2842	14:59:01	19.70	2.313154	0.577006754
2843	15:00:01	19.80	2.313516	0.576122957
2844	15:01:01	19.90	2.312792	0.577168739
2845	15:02:01	20.10	2.312792	0.576928267
2846	15:03:01	20.20	2.313154	0.576045438
2847	15:04:01	20.20	2.312792	0.576447835
2848	15:05:01	20.00	2.312792	0.576207875
2849	15:06:01	19.80	2.312792	0.575968085
2850	15:07:01	19.70	2.312792	0.575728465
2851	15:08:01	19.70	2.312792	0.575489015
2852	15:09:01	19.90	2.312792	0.575249734
2853	15:10:01	20.00	2.312792	0.575010623
2854	15:11:01	20.20	2.312792	0.574771681
2855	15:12:01	20.20	2.312792	0.574532909
2856	15:13:01	20.10	2.312792	0.574294305
2857	15:14:01	19.90	2.312792	0.57405587
2858	15:15:01	19.70	2.312792	0.573817603
2859	15:16:01	19.70	2.312792	0.573579505
2860	15:17:01	19.80	2.312792	0.573341575
2861	15:18:01	19.90	2.312792	0.573103814
2862	15:19:01	20.10	2.312431	0.573503353
2863	15:20:01	20.30	2.312792	0.572628793
2864	15:21:01	20.20	2.312792	0.572391534
2865	15:22:01	20.10	2.312792	0.572154443

2866	15:23:01	19.90	2.312792	0.571917519	
2867	15:24:01	19.70	2.312792	0.571680761	
2868	15:25:01	19.70	2.313154	0.570806622	
2869	15:26:01	19.80	2.312792	0.571207746	
2870	15:27:01	20.00	2.312792	0.570971489	
2871	15:28:01	20.20	2.312431	0.571370514	
2872	15:29:01	20.30	2.312792	0.570499472	
2873	15:30:01	20.20	2.312792	0.570263713	
2874	15:31:01	20.00	2.312792	0.57002812	
2875	15:32:01	19.80	2.312792	0.569792691	
2876	15:33:01	19.70	2.312792	0.569557429	
2877	15:34:01	19.80	2.312792	0.569322331	
2878	15:35:01	19.90	2.312069	0.570356265	
2879	15:36:01	20.10	2.312431	0.569485965	
2880	15:37:01	20.20	2.312069	0.569886005	
2881	15:38:01	20.20	2.312792	0.56838359	
2882	15:39:01	20.10	2.312069	0.569416404	
2883	15:40:01	19.90	2.312792	0.567915207	
2884	15:41:01	19.70	2.312431	0.568313485	
2885	15:42:01	19.70	2.312792	0.567447479	
2886	15:43:01	19.80	2.312431	0.567845642	
2887	15:44:01	20.00	2.311707	0.568878586	
2888	15:45:01	20.20	2.312069	0.568011542	
2889	15:46:01	20.30	2.312431	0.567145105	
2890	15:47:01	20.20	2.312792	0.566281021	
2891	15:48:01	20.00	2.311707	0.567943746	
2892	15:49:01	19.80	2.312792	0.565815578	
2893	15:50:01	19.70	2.312431	0.566213338	
2894	15:51:01	19.80	2.311707	0.567244328	
2895	15:52:01	19.90	2.311707	0.567011514	
2896	15:53:01	20.10	2.311707	0.566778863	
2897	15:54:01	20.30	2.311707	0.566546374	
2898	15:55:01	20.20	2.311707	0.566314047	
2899	15:56:01	20.10	2.311346	0.566710801	
2900	15:57:01	19.90	2.312069	0.565219436	
2901	15:58:01	19.70	2.311707	0.565618036	
2902	15:59:01	19.70	2.311346	0.566014619	
2903	16:00:01	19.90	2.310984	0.566412665	
2904	16:01:01	20.00	2.312431	0.563664348	
2905	16:02:01	20.20	2.310622	0.566578581	
2906	16:03:01	20.30	2.312431	0.563202989	
2907	16:04:01	20.20	2.311346	0.56485754	
2908	16:05:01	20.00	2.312069	0.563370962	
2909	16:06:01	19.80	2.311346	0.564395833	
2910	16:07:01	19.70	2.3109840	0.564793474	48 horas


Temperatura, muestra 3, test 2.
Temperatura (ºC)
22.00
21.50
21.00
20.50
20.00
19.50
19.00
18.50
18.00
1
51
101
151
201
251
301
351
401
451
501
551
601
651
701
751
801
851
901
951
1001
1051
1101
1151
1201
1251
1301
1351
1401
1451
1501
1551
1601
1651
1701
1751
1801
1851
1901
1951
2001
2051
2101
2151
2201
2251
2301
2351
2401
2451
2501
2551
2601
2651
2701
2751
Tiempo (minutos)


Voltaje, muestra 3, test 2.
3.000000
2.500000
2.000000
1.500000
1.000000
0.500000
0.000000
Voltaje (V)
1
52
103
154
205
256
307
358
409
460
511
562
613
664
715
766
817
868
919
970
1021
1072
1123
1174
1225
1276
1327
1378
1429
1480
1531
1582
1633
1684
1735
1786
1837
1888
1939
1990
2041
2092
2143
2194
2245
2296
2347
2398
2449
2500
2551
2602
2653
2704
2755
Tiempo (minutos)


Corriente de fuga, muestra 3, test 2.
14.0000
12.0000
10.0000
8.0000
6.0000
4.0000
2.0000
0.0000
Corriente de fuga (mA)
1
50
99
148
197
246
295
344
393
442
491
540
589
638
687
736
785
834
883
932
981
1030
1079
1128
1177
1226
1275
1324
1373
1422
1471
1520
1569
1618
1667
1716
1765
1814
1863
1912
1961
2010
2059
2108
2157
2206
2255
2304
2353
2402
2451
2500
2549
2598
2647
2696
Tiempo (minutos)

Numero	Hora	Temperatura	Voltaje		
1	14:00:01	20.20	0.000000		
2	14:01:01	20.20	0.000362		
3	14:02:01	20.20	0.352670		
4	14:03:01	20.10	0.822174		
5	14:04:01	20.00	1.219334		
6	14:05:01	19.80	1.555365		
7	14:06:01	19.70	1.854864		
8	14:07:01	19.80	2.138085		
9	14:08:01	19.90	2.372113		
10	14:09:01	20.10	2.443371		
11	14:10:01	20.20	2.466520		
12	14:11:01	20.30	2.474840		
13	14:12:01	20.20	2.480265		
14	14:13:01	20.00	2.482436		
15	14:14:01	19.90	2.484244		
16	14:15:01	19.80	2.485691		
17	14:16:01	19.80	2.487500		
18	14:17:01	19.90	2.487138		
19	14:18:01	20.00	2.488223		
20	14:19:01	20.20	2.489308		
21	14:20:01	20.30	2.489308		
22	14:21:01	20.20	2.490393		
23	14:22:01	20.10	2.491117		
24	14:23:01	19.90	2.491478		
25	14:24:01	19.80	2.491117		
26	14:25:01	19.80	2.491840		
27	14:26:01	19.80	2.492202		
28	14:27:01	19.90	2.492202		
29	14:28:01	20.10	2.493287	Ifuga (mA)	
30	14:29:01	20.30	2.492925	0.0000	30 minutos
31	14:30:01	20.30	2.492925	0.0000	
32	14:31:01	20.20	2.492202	0.6025	
33	14:32:01	20.10	2.486053	4.2950	
34	14:33:01	20.00	2.478095	7.4150	
35	14:34:01	19.90	2.471584	8.8921	
36	14:35:01	19.80	2.465797	9.6886	
37	14:36:01	19.80	2.460010	10.2859	
38	14:37:01	19.90	2.453499	10.9517	
39	14:38:01	20.00	2.448073	11.2130	
40	14:39:01	20.20	2.443009	11.3445	
41	14:40:01	20.30	2.438307	11.3788	
42	14:41:01	20.20	2.433966	11.3383	
43	14:42:01	20.10	2.428902	11.4327	
44	14:43:01	19.90	2.424923	11.3337	
45	14:44:01	19.80	2.419859	11.4166	
46	14:45:01	19.70	2.416242	11.2769	
47	14:46:01	19.80	2.411902	11.2532	
48	14:47:01	20.00	2.408285	11.1368	
49	14:48:01	20.10	2.405029	10.9870	

U1 (V)	2.492925
U2 (V)	1.893929
tiempo (s)	172860
Capacidad (F)	150
I(A)	0.00051978
I(mA)	0.51978133

50	14:49:01	20.30	2.402497	10.7652
51	14:50:01	20.30	2.399604	10.6047
52	14:51:01	20.20	2.395986	10.5368
53	14:52:01	20.00	2.393093	10.3992
54	14:53:01	19.80	2.389476	10.3449
55	14:54:01	19.70	2.386220	10.2601
56	14:55:01	19.80	2.383688	10.1145
57	14:56:01	19.90	2.381156	9.9794
58	14:57:01	20.10	2.378262	9.8847
59	14:58:01	20.20	2.375731	9.7662
60	14:59:01	20.30	2.372837	9.6845
61	15:00:01	20.20	2.370305	9.5797
62	15:01:01	20.10	2.367773	9.4812
63	15:02:01	19.90	2.364879	9.4151
64	15:03:01	19.80	2.361985	9.3529
65	15:04:01	19.80	2.359815	9.2437
66	15:05:01	19.90	2.358368	9.0917
67	15:06:01	20.00	2.356198	8.9952
68	15:07:01	20.20	2.353304	8.9501
69	15:08:01	20.30	2.351134	8.8619
70	15:09:01	20.30	2.350049	8.7120
71	15:10:01	20.10	2.347517	8.6552
72	15:11:01	20.00	2.344623	8.6222
73	15:12:01	19.80	2.343900	8.4673
74	15:13:01	19.80	2.341729	8.3998
75	15:14:01	19.80	2.339559	8.3351
76	15:15:01	19.90	2.338112	8.2347
77	15:16:01	20.10	2.336304	8.1573
78	15:17:01	20.30	2.333048	8.1570
79	15:18:01	20.30	2.333048	7.9939
80	15:19:01	20.20	2.330155	7.9789
81	15:20:01	20.00	2.329431	7.8603
82	15:21:01	19.90	2.327623	7.7973
83	15:22:01	19.80	2.325452	7.7534
84	15:23:01	19.80	2.324367	7.6617
85	15:24:01	19.90	2.322197	7.6218
86	15:25:01	20.10	2.321474	7.5198
87	15:26:01	20.20	2.320027	7.4525
88	15:27:01	20.30	2.318218	7.4028
89	15:28:01	20.20	2.315686	7.3850
90	15:29:01	20.10	2.315686	7.2639
91	15:30:01	19.90	2.313516	7.2342
92	15:31:01	19.80	2.312792	7.1481
93	15:32:01	19.80	2.310260	7.1354
94	15:33:01	19.90	2.309899	7.0395
95	15:34:01	20.00	2.307367	7.0287
96	15:35:01	20.20	2.306643	6.9508
97	15:36:01	20.30	2.305558	6.8885
98	15:37:01	20.30	2.304111	6.8411
99	15:38:01	20.10	2.302665	6.7950

100	15:39:01	19.90	2.301218	6.7502
101	15:40:01	19.80	2.300132	6.6942
102	15:41:01	19.80	2.299047	6.6397
103	15:42:01	19.90	2.298324	6.5744
104	15:43:01	20.00	2.296154	6.5590
105	15:44:01	20.20	2.295430	6.4965
106	15:45:01	20.30	2.293983	6.4592
107	15:46:01	20.30	2.293260	6.3995
108	15:47:01	20.20	2.292536	6.3414
109	15:48:01	20.00	2.291090	6.3073
110	15:49:01	19.90	2.289643	6.2741
111	15:50:01	19.80	2.288919	6.2197
112	15:51:01	19.80	2.286749	6.2101
113	15:52:01	19.90	2.286749	6.1362
114	15:53:01	20.10	2.284579	6.1278
115	15:54:01	20.30	2.283855	6.0776
116	15:55:01	20.30	2.283855	6.0078
117	15:56:01	20.20	2.282047	5.9909
118	15:57:01	20.10	2.281323	5.9439
119	15:58:01	19.90	2.280600	5.8979
120	15:59:01	19.80	2.278430	5.8927
121	16:00:01	19.80	2.278068	5.8385
122	16:01:01	19.90	2.277344	5.7952
123	16:02:01	20.00	2.275536	5.7816
124	16:03:01	20.20	2.275174	5.7303
125	16:04:01	20.30	2.274812	5.6800
126	16:05:01	20.40	2.273366	5.6587
127	16:06:01	20.30	2.272642	5.6195
128	16:07:01	20.20	2.271919	5.5810
129	16:08:01	20.10	2.270472	5.5613
130	16:09:01	19.90	2.269025	5.5421
131	16:10:01	19.80	2.267940	5.5143
132	16:11:01	19.80	2.267217	5.4783
133	16:12:01	19.90	2.267217	5.4257
134	16:13:01	20.00	2.266493	5.3912
135	16:14:01	20.20	2.265770	5.3574
136	16:15:01	20.30	2.263961	5.3496
137	16:16:01	20.30	2.263599	5.3085
138	16:17:01	20.10	2.261791	5.3012
139	16:18:01	20.00	2.261429	5.2613
140	16:19:01	19.80	2.260706	5.2302
141	16:20:01	19.80	2.259982	5.1996
142	16:21:01	19.80	2.258897	5.1776
143	16:22:01	20.00	2.257812	5.1560
144	16:23:01	20.10	2.257450	5.1190
145	16:24:01	20.30	2.257450	5.0749
146	16:25:01	20.30	2.255642	5.0701
147	16:26:01	20.20	2.254918	5.0425
148	16:27:01	20.00	2.254195	5.0153
149	16:28:01	19.90	2.253471	4.9886

150	16:29:01	19.80	2.252748	4.9623
151	16:30:01	19.80	2.252025	4.9365
152	16:31:01	19.90	2.251301	4.9111
153	16:32:01	20.10	2.249854	4.9006
154	16:33:01	20.30	2.249854	4.8614
155	16:34:01	20.30	2.249131	4.8372
156	16:35:01	20.20	2.248408	4.8133
157	16:36:01	20.00	2.246961	4.8040
158	16:37:01	19.90	2.246599	4.7738
159	16:38:01	19.80	2.246237	4.7440
160	16:39:01	19.80	2.244790	4.7354
161	16:40:01	19.90	2.244429	4.7064
162	16:41:01	20.00	2.243705	4.6846
163	16:42:01	20.20	2.243705	4.6496
164	16:43:01	20.30	2.242620	4.6353
165	16:44:01	20.20	2.241535	4.6211
166	16:45:01	20.10	2.240812	4.6006
167	16:46:01	19.90	2.240812	4.5673
168	16:47:01	19.80	2.240812	4.5344
169	16:48:01	19.80	2.238641	4.5408
170	16:49:01	19.90	2.237918	4.5214
171	16:50:01	20.00	2.237918	4.4896
172	16:51:01	20.20	2.237195	4.4708
173	16:52:01	20.30	2.237195	4.4398
174	16:53:01	20.20	2.235748	4.4341
175	16:54:01	20.10	2.235386	4.4099
176	16:55:01	19.90	2.235024	4.3861
177	16:56:01	19.80	2.233939	4.3748
178	16:57:01	19.80	2.233216	4.3575
179	16:58:01	19.90	2.232130	4.3466
180	16:59:01	20.00	2.232130	4.3178
181	17:00:01	20.20	2.231407	4.3013
182	17:01:01	20.30	2.231045	4.2791
183	17:02:01	20.20	2.229960	4.2689
184	17:03:01	20.10	2.229237	4.2530
185	17:04:01	20.00	2.229237	4.2258
186	17:05:01	19.80	2.228513	4.2104
187	17:06:01	19.80	2.227428	4.2009
188	17:07:01	19.80	2.226705	4.1858
189	17:08:01	20.00	2.226343	4.1653
190	17:09:01	20.10	2.226343	4.1395
191	17:10:01	20.30	2.225620	4.1251
192	17:11:01	20.30	2.224173	4.1220
193	17:12:01	20.20	2.223449	4.1079
194	17:13:01	20.00	2.223449	4.0830
195	17:14:01	19.80	2.223449	4.0584
196	17:15:01	19.80	2.223088	4.0395
197	17:16:01	19.80	2.222003	4.0316
198	17:17:01	19.90	2.220556	4.0291
199	17:18:01	20.10	2.220556	4.0054

200	17:19:01	20.20	2.220556	3.9820
201	17:20:01	20.30	2.219109	3.9799
202	17:21:01	20.20	2.219109	3.9569
203	17:22:01	20.00	2.218024	3.9497
204	17:23:01	19.90	2.217662	3.9323
205	17:24:01	19.80	2.217662	3.9100
206	17:25:01	19.80	2.217662	3.8879
207	17:26:01	19.90	2.217662	3.8661
208	17:27:01	20.10	2.216577	3.8596
209	17:28:01	20.20	2.216577	3.8382
210	17:29:01	20.30	2.215130	3.8369
211	17:30:01	20.20	2.214768	3.8208
212	17:31:01	20.00	2.214768	3.8000
213	17:32:01	19.90	2.214768	3.7793
214	17:33:01	19.80	2.212960	3.7833
215	17:34:01	19.80	2.212236	3.7727
216	17:35:01	19.90	2.212598	3.7477
217	17:36:01	20.00	2.211513	3.7422
218	17:37:01	20.20	2.211874	3.7176
219	17:38:01	20.30	2.210428	3.7171
220	17:39:01	20.20	2.210789	3.6929
221	17:40:01	20.10	2.209342	3.6925
222	17:41:01	19.90	2.208981	3.6780
223	17:42:01	19.80	2.208981	3.6591
224	17:43:01	19.80	2.208619	3.6449
225	17:44:01	19.90	2.208619	3.6264
226	17:45:01	20.00	2.206449	3.6355
227	17:46:01	20.20	2.206810	3.6126
228	17:47:01	20.30	2.206087	3.6035
229	17:48:01	20.20	2.206087	3.5855
230	17:49:01	20.10	2.206087	3.5676
231	17:50:01	19.90	2.204640	3.5679
232	17:51:01	19.80	2.203917	3.5592
233	17:52:01	19.80	2.203917	3.5418
234	17:53:01	19.80	2.203193	3.5333
235	17:54:01	20.00	2.203193	3.5162
236	17:55:01	20.10	2.202108	3.5123
237	17:56:01	20.30	2.201385	3.5041
238	17:57:01	20.30	2.201023	3.4917
239	17:58:01	20.20	2.200661	3.4793
240	17:59:01	20.00	2.201023	3.4586
241	18:00:01	19.80	2.200300	3.4508
242	18:01:01	19.80	2.199938	3.4388
243	18:02:01	19.80	2.199938	3.4227
244	18:03:01	19.90	2.198491	3.4237
245	18:04:01	20.10	2.197768	3.4162
246	18:05:01	20.20	2.197406	3.4046
247	18:06:01	20.30	2.197406	3.3890
248	18:07:01	20.20	2.197044	3.3776
249	18:08:01	20.00	2.197406	3.3582

250	18:09:01	19.90	2.197044	3.3471
251	18:10:01	19.80	2.195236	3.3524
252	18:11:01	19.80	2.194874	3.3414
253	18:12:01	19.90	2.194512	3.3305
254	18:13:01	20.00	2.194150	3.3197
255	18:14:01	20.20	2.194150	3.3050
256	18:15:01	20.30	2.193789	3.2944
257	18:16:01	20.20	2.193427	3.2840
258	18:17:01	20.10	2.192342	3.2815
259	18:18:01	19.90	2.191980	3.2711
260	18:19:01	19.80	2.191619	3.2609
261	18:20:01	19.80	2.191619	3.2468
262	18:21:01	19.80	2.190533	3.2445
263	18:22:01	20.00	2.190172	3.2345
264	18:23:01	20.20	2.190533	3.2169
265	18:24:01	20.30	2.189448	3.2148
266	18:25:01	20.20	2.188725	3.2089
267	18:26:01	20.10	2.188725	3.1954
268	18:27:01	20.00	2.188725	3.1820
269	18:28:01	19.80	2.187278	3.1838
270	18:29:01	19.70	2.186916	3.1744
271	18:30:01	19.80	2.186916	3.1613
272	18:31:01	19.90	2.185831	3.1594
273	18:32:01	20.10	2.185831	3.1465
274	18:33:01	20.20	2.185831	3.1336
275	18:34:01	20.30	2.185831	3.1209
276	18:35:01	20.20	2.185831	3.1082
277	18:36:01	20.00	2.184746	3.1066
278	18:37:01	19.90	2.184022	3.1014
279	18:38:01	19.80	2.183299	3.0963
280	18:39:01	19.80	2.183299	3.0839
281	18:40:01	19.90	2.182937	3.0753
282	18:41:01	20.00	2.182937	3.0631
283	18:42:01	20.20	2.182937	3.0511
284	18:43:01	20.30	2.182214	3.0462
285	18:44:01	20.20	2.181491	3.0413
286	18:45:01	20.00	2.181491	3.0295
287	18:46:01	19.90	2.180406	3.0283
288	18:47:01	19.80	2.180044	3.0201
289	18:48:01	19.80	2.180406	3.0050
290	18:49:01	19.90	2.180044	2.9969
291	18:50:01	20.00	2.178959	2.9959
292	18:51:01	20.20	2.178959	2.9845
293	18:52:01	20.30	2.177873	2.9834
294	18:53:01	20.20	2.178235	2.9688
295	18:54:01	20.10	2.177512	2.9644
296	18:55:01	19.90	2.177150	2.9567
297	18:56:01	19.80	2.176788	2.9490
298	18:57:01	19.70	2.177150	2.9347
299	18:58:01	19.80	2.176788	2.9272

300	18:59:01	20.00	2.174980	2.9331
301	19:00:01	20.10	2.175341	2.9190
302	19:01:01	20.30	2.174618	2.9149
303	19:02:01	20.20	2.174256	2.9076
304	19:03:01	20.10	2.174256	2.8970
305	19:04:01	20.00	2.174256	2.8865
306	19:05:01	19.80	2.174256	2.8761
307	19:06:01	19.70	2.173171	2.8755
308	19:07:01	19.80	2.172448	2.8717
309	19:08:01	19.90	2.172086	2.8646
310	19:09:01	20.10	2.171363	2.8609
311	19:10:01	20.20	2.171363	2.8507
312	19:11:01	20.30	2.171363	2.8407
313	19:12:01	20.20	2.171724	2.8275
314	19:13:01	20.00	2.171001	2.8239
315	19:14:01	19.80	2.170278	2.8203
316	19:15:01	19.80	2.169554	2.8168
317	19:16:01	19.80	2.168831	2.8133
318	19:17:01	19.90	2.169916	2.7942
319	19:18:01	20.00	2.168831	2.7939
320	19:19:01	20.20	2.168469	2.7874
321	19:20:01	20.30	2.168469	2.7779
322	19:21:01	20.20	2.168107	2.7715
323	19:22:01	20.00	2.168107	2.7621
324	19:23:01	19.90	2.168107	2.7527
325	19:24:01	19.80	2.167022	2.7526
326	19:25:01	19.80	2.166299	2.7494
327	19:26:01	19.90	2.165575	2.7462
328	19:27:01	20.00	2.165575	2.7370
329	19:28:01	20.20	2.165575	2.7279
330	19:29:01	20.30	2.165575	2.7189
331	19:30:01	20.20	2.165213	2.7128
332	19:31:01	20.10	2.164490	2.7099
333	19:32:01	19.90	2.163405	2.7099
334	19:33:01	19.80	2.163043	2.7040
335	19:34:01	19.70	2.162682	2.6981
336	19:35:01	19.80	2.163405	2.6834
337	19:36:01	19.90	2.162682	2.6805
338	19:37:01	20.10	2.162682	2.6719
339	19:38:01	20.20	2.162682	2.6633
340	19:39:01	20.20	2.161958	2.6605
341	19:40:01	20.10	2.161958	2.6520
342	19:41:01	19.90	2.161235	2.6493
343	19:42:01	19.80	2.160511	2.6466
344	19:43:01	19.70	2.160150	2.6411
345	19:44:01	19.80	2.160511	2.6299
346	19:45:01	19.90	2.159788	2.6273
347	19:46:01	20.10	2.159788	2.6190
348	19:47:01	20.20	2.159788	2.6108
349	19:48:01	20.20	2.158703	2.6111

350	19:49:01	20.10	2.159065	2.6002
351	19:50:01	20.00	2.157618	2.6033
352	19:51:01	19.80	2.157256	2.5981
353	19:52:01	19.70	2.157256	2.5900
354	19:53:01	19.80	2.157618	2.5793
355	19:54:01	19.90	2.156894	2.5769
356	19:55:01	20.00	2.156171	2.5746
357	19:56:01	20.20	2.156532	2.5640
358	19:57:01	20.20	2.156171	2.5589
359	19:58:01	20.20	2.155809	2.5539
360	19:59:01	20.00	2.155086	2.5517
361	20:00:01	19.80	2.154362	2.5494
362	20:01:01	19.70	2.154724	2.5390
363	20:02:01	19.70	2.154000	2.5369
364	20:03:01	19.90	2.154000	2.5293
365	20:04:01	20.00	2.154000	2.5218
366	20:05:01	20.20	2.154000	2.5143
367	20:06:01	20.30	2.153277	2.5122
368	20:07:01	20.20	2.152915	2.5074
369	20:08:01	20.10	2.152915	2.5001
370	20:09:01	19.90	2.152915	2.4927
371	20:10:01	19.70	2.151107	2.4987
372	20:11:01	19.70	2.151469	2.4887
373	20:12:01	19.80	2.151107	2.4841
374	20:13:01	20.00	2.151107	2.4769
375	20:14:01	20.10	2.150745	2.4724
376	20:15:01	20.20	2.150745	2.4653
377	20:16:01	20.20	2.150745	2.4582
378	20:17:01	20.10	2.150022	2.4563
379	20:18:01	19.90	2.149660	2.4519
380	20:19:01	19.80	2.148937	2.4501
381	20:20:01	19.70	2.148937	2.4431
382	20:21:01	19.80	2.148213	2.4413
383	20:22:01	19.90	2.148213	2.4344
384	20:23:01	20.10	2.148213	2.4275
385	20:24:01	20.20	2.148213	2.4207
386	20:25:01	20.20	2.148213	2.4139
387	20:26:01	20.10	2.147490	2.4123
388	20:27:01	19.90	2.147128	2.4081
389	20:28:01	19.80	2.145681	2.4114
390	20:29:01	19.70	2.146043	2.4022
391	20:30:01	19.80	2.146766	2.3906
392	20:31:01	19.90	2.145319	2.3940
393	20:32:01	20.10	2.145681	2.3849
394	20:33:01	20.20	2.145319	2.3809
395	20:34:01	20.20	2.145319	2.3744
396	20:35:01	20.10	2.144596	2.3728
397	20:36:01	20.00	2.144958	2.3639
398	20:37:01	19.80	2.144234	2.3624
399	20:38:01	19.70	2.142787	2.3658

400	20:39:01	19.80	2.143511	2.3545
401	20:40:01	19.90	2.142787	2.3531
402	20:41:01	20.00	2.142426	2.3492
403	20:42:01	20.20	2.142787	2.3405
404	20:43:01	20.20	2.142426	2.3367
405	20:44:01	20.20	2.142426	2.3304
406	20:45:01	20.00	2.141702	2.3291
407	20:46:01	19.90	2.141702	2.3229
408	20:47:01	19.70	2.140979	2.3215
409	20:48:01	19.80	2.141340	2.3131
410	20:49:01	19.90	2.140255	2.3141
411	20:50:01	20.00	2.139532	2.3128
412	20:51:01	20.20	2.140255	2.3020
413	20:52:01	20.30	2.139532	2.3007
414	20:53:01	20.20	2.139532	2.2948
415	20:54:01	20.00	2.139170	2.2912
416	20:55:01	19.90	2.139532	2.2829
417	20:56:01	19.70	2.139532	2.2770
418	20:57:01	19.80	2.139170	2.2735
419	20:58:01	19.90	2.137362	2.2793
420	20:59:01	20.00	2.138085	2.2688
421	21:00:01	20.20	2.137000	2.2699
422	21:01:01	20.30	2.136638	2.2665
423	21:02:01	20.20	2.136638	2.2607
424	21:03:01	20.10	2.136638	2.2550
425	21:04:01	19.90	2.136638	2.2493
426	21:05:01	19.80	2.136638	2.2436
427	21:06:01	19.80	2.136276	2.2403
428	21:07:01	19.80	2.136276	2.2346
429	21:08:01	20.00	2.135553	2.2336
430	21:09:01	20.10	2.135915	2.2257
431	21:10:01	20.20	2.134468	2.2292
432	21:11:01	20.20	2.134106	2.2259
433	21:12:01	20.10	2.135191	2.2137
434	21:13:01	19.90	2.134106	2.2149
435	21:14:01	19.80	2.133744	2.2117
436	21:15:01	19.70	2.133383	2.2085
437	21:16:01	19.80	2.133383	2.2031
438	21:17:01	19.90	2.133744	2.1955
439	21:18:01	20.10	2.133383	2.1923
440	21:19:01	20.20	2.132659	2.1914
441	21:20:01	20.20	2.131574	2.1927
442	21:21:01	20.10	2.131574	2.1874
443	21:22:01	19.90	2.131212	2.1843
444	21:23:01	19.80	2.131212	2.1790
445	21:24:01	19.70	2.130851	2.1759
446	21:25:01	19.80	2.130851	2.1707
447	21:26:01	19.90	2.130851	2.1655
448	21:27:01	20.10	2.130851	2.1603
449	21:28:01	20.20	2.130851	2.1552

450	21:29:01	20.20	2.130127	2.1544
451	21:30:01	20.10	2.130127	2.1493
452	21:31:01	20.00	2.129766	2.1463
453	21:32:01	19.80	2.129766	2.1413
454	21:33:01	19.70	2.127957	2.1469
455	21:34:01	19.80	2.127957	2.1418
456	21:35:01	19.90	2.129042	2.1305
457	21:36:01	20.00	2.127957	2.1318
458	21:37:01	20.20	2.127957	2.1269
459	21:38:01	20.20	2.127234	2.1261
460	21:39:01	20.20	2.127957	2.1170
461	21:40:01	20.00	2.127595	2.1142
462	21:41:01	19.80	2.127595	2.1093
463	21:42:01	19.70	2.126148	2.1128
464	21:43:01	19.70	2.126872	2.1038
465	21:44:01	19.80	2.126148	2.1031
466	21:45:01	20.00	2.125425	2.1024
467	21:46:01	20.10	2.125787	2.0955
468	21:47:01	20.30	2.125063	2.0949
469	21:48:01	20.20	2.125063	2.0901
470	21:49:01	20.10	2.125063	2.0854
471	21:50:01	19.90	2.124702	2.0827
472	21:51:01	19.80	2.124702	2.0780
473	21:52:01	19.70	2.124340	2.0754
474	21:53:01	19.80	2.123978	2.0727
475	21:54:01	19.90	2.123616	2.0701
476	21:55:01	20.10	2.122893	2.0695
477	21:56:01	20.20	2.122893	2.0649
478	21:57:01	20.20	2.122170	2.0643
479	21:58:01	20.10	2.122531	2.0577
480	21:59:01	20.00	2.122531	2.0532
481	22:00:01	19.80	2.122170	2.0506
482	22:01:01	19.70	2.121446	2.0501
483	22:02:01	19.80	2.121808	2.0436
484	22:03:01	19.90	2.121808	2.0391
485	22:04:01	20.00	2.121808	2.0346
486	22:05:01	20.20	2.121808	2.0302
487	22:06:01	20.30	2.121085	2.0297
488	22:07:01	20.20	2.121446	2.0233
489	22:08:01	20.00	2.119638	2.0287
490	22:09:01	19.90	2.119999	2.0224
491	22:10:01	19.70	2.119638	2.0200
492	22:11:01	19.70	2.119276	2.0175
493	22:12:01	19.80	2.119638	2.0112
494	22:13:01	20.00	2.119276	2.0089
495	22:14:01	20.10	2.119276	2.0046
496	22:15:01	20.20	2.119276	2.0003
497	22:16:01	20.20	2.118552	1.9999
498	22:17:01	20.10	2.118914	1.9937
499	22:18:01	19.90	2.118914	1.9894

500	22:19:01	19.80	2.117106	1.9948
501	22:20:01	19.70	2.117467	1.9887
502	22:21:01	19.80	2.117467	1.9845
503	22:22:01	19.90	2.116744	1.9841
504	22:23:01	20.10	2.116744	1.9799
505	22:24:01	20.20	2.116382	1.9776
506	22:25:01	20.20	2.116020	1.9754
507	22:26:01	20.10	2.116020	1.9713
508	22:27:01	19.90	2.116382	1.9653
509	22:28:01	19.80	2.116020	1.9630
510	22:29:01	19.70	2.116020	1.9590
511	22:30:01	19.80	2.116382	1.9530
512	22:31:01	19.90	2.115297	1.9546
513	22:32:01	20.00	2.114574	1.9543
514	22:33:01	20.20	2.114212	1.9521
515	22:34:01	20.20	2.113850	1.9500
516	22:35:01	20.20	2.113850	1.9460
517	22:36:01	20.00	2.113489	1.9438
518	22:37:01	19.80	2.113489	1.9399
519	22:38:01	19.70	2.113489	1.9359
520	22:39:01	19.70	2.113127	1.9338
521	22:40:01	19.80	2.113127	1.9299
522	22:41:01	20.00	2.113127	1.9260
523	22:42:01	20.10	2.112765	1.9239
524	22:43:01	20.20	2.112765	1.9200
525	22:44:01	20.20	2.111680	1.9216
526	22:45:01	20.10	2.111680	1.9177
527	22:46:01	19.90	2.111680	1.9139
528	22:47:01	19.70	2.111318	1.9119
529	22:48:01	19.70	2.111318	1.9080
530	22:49:01	19.80	2.110957	1.9060
531	22:50:01	19.90	2.110595	1.9040
532	22:51:01	20.10	2.110595	1.9002
533	22:52:01	20.20	2.110595	1.8965
534	22:53:01	20.20	2.110233	1.8945
535	22:54:01	20.10	2.110595	1.8890
536	22:55:01	19.90	2.109510	1.8906
537	22:56:01	19.80	2.109871	1.8851
538	22:57:01	19.70	2.109871	1.8814
539	22:58:01	19.80	2.109148	1.8813
540	22:59:01	19.90	2.108425	1.8811
541	23:00:01	20.00	2.108786	1.8757
542	23:01:01	20.20	2.108425	1.8738
543	23:02:01	20.20	2.108063	1.8719
544	23:03:01	20.10	2.107701	1.8700
545	23:04:01	20.00	2.107701	1.8664
546	23:05:01	19.80	2.107701	1.8628
547	23:06:01	19.70	2.107701	1.8592
548	23:07:01	19.70	2.107339	1.8574
549	23:08:01	19.90	2.107701	1.8520

550	23:09:01	20.00	2.107339	1.8502
551	23:10:01	20.10	2.106616	1.8501
552	23:11:01	20.20	2.106254	1.8483
553	23:12:01	20.20	2.105893	1.8465
554	23:13:01	20.00	2.106616	1.8396
555	23:14:01	19.90	2.105169	1.8429
556	23:15:01	19.70	2.105531	1.8377
557	23:16:01	19.70	2.104807	1.8377
558	23:17:01	19.80	2.104807	1.8342
559	23:18:01	19.90	2.104807	1.8307
560	23:19:01	20.10	2.104807	1.8273
561	23:20:01	20.20	2.104807	1.8239
562	23:21:01	20.20	2.104084	1.8238
563	23:22:01	20.10	2.104446	1.8187
564	23:23:01	19.90	2.104807	1.8136
565	23:24:01	19.80	2.104446	1.8119
566	23:25:01	19.70	2.104084	1.8102
567	23:26:01	19.80	2.102999	1.8119
568	23:27:01	19.90	2.103361	1.8069
569	23:28:01	20.10	2.101914	1.8102
570	23:29:01	20.20	2.102999	1.8019
571	23:30:01	20.20	2.102276	1.8019
572	23:31:01	20.10	2.101914	1.8002
573	23:32:01	20.00	2.102276	1.7953
574	23:33:01	19.80	2.101914	1.7936
575	23:34:01	19.70	2.101914	1.7903
576	23:35:01	19.70	2.101552	1.7887
577	23:36:01	19.90	2.101914	1.7838
578	23:37:01	20.00	2.100829	1.7855
579	23:38:01	20.20	2.100467	1.7839
580	23:39:01	20.20	2.101552	1.7757
581	23:40:01	20.20	2.100467	1.7774
582	23:41:01	20.00	2.100105	1.7759
583	23:42:01	19.80	2.100105	1.7727
584	23:43:01	19.70	2.099743	1.7711
585	23:44:01	19.70	2.099743	1.7679
586	23:45:01	19.80	2.099020	1.7680
587	23:46:01	19.90	2.099020	1.7648
588	23:47:01	20.10	2.099020	1.7617
589	23:48:01	20.20	2.099020	1.7585
590	23:49:01	20.20	2.099020	1.7554
591	23:50:01	20.10	2.098658	1.7539
592	23:51:01	19.90	2.098658	1.7507
593	23:52:01	19.80	2.098658	1.7476
594	23:53:01	19.70	2.098297	1.7461
595	23:54:01	19.80	2.097211	1.7479
596	23:55:01	19.90	2.097211	1.7448
597	23:56:01	20.00	2.097211	1.7417
598	23:57:01	20.20	2.096850	1.7402
599	23:58:01	20.20	2.096488	1.7388

600	23:59:01	20.10	2.096126	1.7373
601	0:00:01	20.00	2.096126	1.7343
602	0:01:01	19.80	2.096126	1.7312
603	0:02:01	19.70	2.096126	1.7282
604	0:03:01	19.70	2.096126	1.7252
605	0:04:01	19.90	2.096126	1.7222
606	0:05:01	20.00	2.095403	1.7224
607	0:06:01	20.10	2.095403	1.7194
608	0:07:01	20.20	2.095041	1.7180
609	0:08:01	20.20	2.094680	1.7166
610	0:09:01	20.00	2.094318	1.7152
611	0:10:01	19.90	2.094680	1.7107
612	0:11:01	19.70	2.093956	1.7108
613	0:12:01	19.70	2.094318	1.7064
614	0:13:01	19.80	2.093956	1.7050
615	0:14:01	19.90	2.093594	1.7036
616	0:15:01	20.10	2.093594	1.7007
617	0:16:01	20.20	2.093233	1.6994
618	0:17:01	20.20	2.092871	1.6980
619	0:18:01	20.10	2.093233	1.6936
620	0:19:01	19.90	2.093233	1.6907
621	0:20:01	19.80	2.093233	1.6879
622	0:21:01	19.70	2.092509	1.6881
623	0:22:01	19.80	2.092509	1.6853
624	0:23:01	19.90	2.092509	1.6824
625	0:24:01	20.00	2.092148	1.6811
626	0:25:01	20.20	2.091424	1.6813
627	0:26:01	20.20	2.090701	1.6815
628	0:27:01	20.20	2.091062	1.6772
629	0:28:01	20.00	2.091062	1.6744
630	0:29:01	19.80	2.090339	1.6747
631	0:30:01	19.70	2.090701	1.6704
632	0:31:01	19.70	2.090339	1.6691
633	0:32:01	19.80	2.090339	1.6663
634	0:33:01	19.90	2.090339	1.6636
635	0:34:01	20.10	2.090339	1.6608
636	0:35:01	20.20	2.090339	1.6581
637	0:36:01	20.20	2.090339	1.6554
638	0:37:01	20.10	2.089977	1.6541
639	0:38:01	19.90	2.089616	1.6529
640	0:39:01	19.80	2.088892	1.6532
641	0:40:01	19.70	2.089254	1.6490
642	0:41:01	19.80	2.088169	1.6507
643	0:42:01	19.90	2.088169	1.6480
644	0:43:01	20.10	2.088530	1.6439
645	0:44:01	20.20	2.087807	1.6441
646	0:45:01	20.20	2.087445	1.6429
647	0:46:01	20.10	2.087807	1.6388
648	0:47:01	19.90	2.087445	1.6376
649	0:48:01	19.80	2.086722	1.6379

650	0:49:01	19.70	2.087445	1.6324
651	0:50:01	19.70	2.087445	1.6297
652	0:51:01	19.90	2.086360	1.6315
653	0:52:01	20.00	2.087084	1.6260
654	0:53:01	20.20	2.086360	1.6263
655	0:54:01	20.20	2.085998	1.6251
656	0:55:01	20.20	2.086360	1.6211
657	0:56:01	20.00	2.085998	1.6199
658	0:57:01	19.90	2.085275	1.6202
659	0:58:01	19.70	2.085275	1.6177
660	0:59:01	19.70	2.084913	1.6165
661	1:00:01	19.80	2.084913	1.6140
662	1:01:01	19.90	2.084552	1.6128
663	1:02:01	20.10	2.084552	1.6103
664	1:03:01	20.20	2.084552	1.6078
665	1:04:01	20.20	2.084552	1.6052
666	1:05:01	20.10	2.084552	1.6027
667	1:06:01	19.90	2.084552	1.6002
668	1:07:01	19.80	2.084190	1.5991
669	1:08:01	19.70	2.084552	1.5952
670	1:09:01	19.80	2.083105	1.5984
671	1:10:01	19.90	2.083467	1.5945
672	1:11:01	20.00	2.083105	1.5934
673	1:12:01	20.20	2.083828	1.5881
674	1:13:01	20.20	2.083467	1.5870
675	1:14:01	20.10	2.083105	1.5860
676	1:15:01	20.00	2.082020	1.5877
677	1:16:01	19.80	2.082020	1.5853
678	1:17:01	19.70	2.081658	1.5842
679	1:18:01	19.70	2.082381	1.5790
680	1:19:01	19.80	2.082020	1.5780
681	1:20:01	20.00	2.081658	1.5769
682	1:21:01	20.10	2.081296	1.5759
683	1:22:01	20.20	2.081658	1.5721
684	1:23:01	20.20	2.081658	1.5697
685	1:24:01	20.00	2.081296	1.5687
686	1:25:01	19.90	2.080934	1.5677
687	1:26:01	19.70	2.080934	1.5653
688	1:27:01	19.70	2.080573	1.5643
689	1:28:01	19.80	2.080211	1.5633
690	1:29:01	19.90	2.080211	1.5609
691	1:30:01	20.00	2.080211	1.5586
692	1:31:01	20.20	2.079126	1.5603
693	1:32:01	20.20	2.079488	1.5566
694	1:33:01	20.10	2.079488	1.5543
695	1:34:01	19.90	2.078764	1.5547
696	1:35:01	19.80	2.078764	1.5523
697	1:36:01	19.70	2.078764	1.5500
698	1:37:01	19.80	2.078764	1.5477
699	1:38:01	19.90	2.079126	1.5440

700	1:39:01	20.00	2.078764	1.5431
701	1:40:01	20.20	2.078764	1.5408
702	1:41:01	20.20	2.077317	1.5439
703	1:42:01	20.20	2.078764	1.5362
704	1:43:01	20.00	2.077679	1.5379
705	1:44:01	19.80	2.078041	1.5343
706	1:45:01	19.70	2.077679	1.5334
707	1:46:01	19.70	2.076594	1.5351
708	1:47:01	19.80	2.076232	1.5342
709	1:48:01	19.90	2.076594	1.5306
710	1:49:01	20.10	2.076594	1.5284
711	1:50:01	20.20	2.075871	1.5288
712	1:51:01	20.20	2.076232	1.5252
713	1:52:01	20.10	2.076232	1.5230
714	1:53:01	19.90	2.075871	1.5221
715	1:54:01	19.70	2.075871	1.5199
716	1:55:01	19.70	2.075871	1.5177
717	1:56:01	19.70	2.075871	1.5155
718	1:57:01	19.90	2.075871	1.5133
719	1:58:01	20.00	2.075871	1.5111
720	1:59:01	20.20	2.075509	1.5102
721	2:00:01	20.20	2.075871	1.5067
722	2:01:01	20.20	2.075147	1.5071
723	2:02:01	20.00	2.074424	1.5076
724	2:03:01	19.80	2.075147	1.5028
725	2:04:01	19.70	2.074424	1.5032
726	2:05:01	19.70	2.074062	1.5024
727	2:06:01	19.80	2.072977	1.5041
728	2:07:01	19.90	2.073339	1.5007
729	2:08:01	20.10	2.073339	1.4985
730	2:09:01	20.20	2.072977	1.4977
731	2:10:01	20.20	2.072977	1.4955
732	2:11:01	20.10	2.072977	1.4934
733	2:12:01	19.90	2.072977	1.4913
734	2:13:01	19.70	2.072977	1.4892
735	2:14:01	19.70	2.072615	1.4883
736	2:15:01	19.80	2.072615	1.4862
737	2:16:01	19.90	2.072615	1.4841
738	2:17:01	20.00	2.071892	1.4846
739	2:18:01	20.20	2.072253	1.4812
740	2:19:01	20.20	2.072253	1.4792
741	2:20:01	20.10	2.071892	1.4783
742	2:21:01	19.90	2.071168	1.4788
743	2:22:01	19.80	2.071168	1.4767
744	2:23:01	19.70	2.070807	1.4759
745	2:24:01	19.70	2.070445	1.4751
746	2:25:01	19.90	2.070083	1.4743
747	2:26:01	20.00	2.070083	1.4723
748	2:27:01	20.10	2.070083	1.4702
749	2:28:01	20.20	2.070083	1.4682

750	2:29:01	20.20	2.070083	1.4662
751	2:30:01	20.00	2.070083	1.4641
752	2:31:01	19.80	2.070083	1.4621
753	2:32:01	19.70	2.070083	1.4601
754	2:33:01	19.70	2.069721	1.4593
755	2:34:01	19.80	2.069360	1.4586
756	2:35:01	19.90	2.069360	1.4566
757	2:36:01	20.10	2.069721	1.4533
758	2:37:01	20.20	2.069360	1.4526
759	2:38:01	20.20	2.068636	1.4530
760	2:39:01	20.10	2.068636	1.4511
761	2:40:01	19.90	2.068636	1.4491
762	2:41:01	19.70	2.067913	1.4496
763	2:42:01	19.70	2.067551	1.4488
764	2:43:01	19.70	2.067913	1.4456
765	2:44:01	19.90	2.067551	1.4449
766	2:45:01	20.00	2.067551	1.4429
767	2:46:01	20.20	2.067551	1.4410
768	2:47:01	20.20	2.067189	1.4402
769	2:48:01	20.20	2.067189	1.4383
770	2:49:01	20.00	2.067189	1.4364
771	2:50:01	19.80	2.067189	1.4344
772	2:51:01	19.70	2.066466	1.4349
773	2:52:01	19.70	2.066828	1.4318
774	2:53:01	19.80	2.066466	1.4311
775	2:54:01	19.90	2.066828	1.4279
776	2:55:01	20.10	2.066466	1.4272
777	2:56:01	20.20	2.066104	1.4265
778	2:57:01	20.20	2.065742	1.4258
779	2:58:01	20.10	2.065381	1.4251
780	2:59:01	19.90	2.065742	1.4220
781	3:00:01	19.70	2.064657	1.4238
782	3:01:01	19.70	2.064296	1.4231
783	3:02:01	19.80	2.065019	1.4188
784	3:03:01	19.90	2.064296	1.4193
785	3:04:01	20.00	2.064657	1.4162
786	3:05:01	20.20	2.064657	1.4144
787	3:06:01	20.20	2.064296	1.4137
788	3:07:01	20.10	2.064296	1.4118
789	3:08:01	19.90	2.064296	1.4100
790	3:09:01	19.80	2.064296	1.4081
791	3:10:01	19.70	2.064296	1.4063
792	3:11:01	19.70	2.064296	1.4044
793	3:12:01	19.80	2.064296	1.4026
794	3:13:01	20.00	2.062849	1.4055
795	3:14:01	20.10	2.063572	1.4013
796	3:15:01	20.20	2.062849	1.4018
797	3:16:01	20.20	2.063572	1.3976
798	3:17:01	20.00	2.063210	1.3970
799	3:18:01	19.90	2.062487	1.3975

800	3:19:01	19.70	2.062125	1.3969
801	3:20:01	19.70	2.062125	1.3951
802	3:21:01	19.80	2.061402	1.3956
803	3:22:01	19.90	2.061402	1.3938
804	3:23:01	20.00	2.061402	1.3920
805	3:24:01	20.20	2.061402	1.3902
806	3:25:01	20.20	2.061402	1.3884
807	3:26:01	20.10	2.061402	1.3866
808	3:27:01	19.90	2.061402	1.3849
809	3:28:01	19.80	2.061402	1.3831
810	3:29:01	19.70	2.061402	1.3813
811	3:30:01	19.70	2.061402	1.3795
812	3:31:01	19.80	2.061040	1.3789
813	3:32:01	19.90	2.061040	1.3772
814	3:33:01	20.10	2.059955	1.3789
815	3:34:01	20.20	2.061040	1.3737
816	3:35:01	20.20	2.059955	1.3754
817	3:36:01	20.10	2.059955	1.3736
818	3:37:01	19.90	2.059593	1.3730
819	3:38:01	19.70	2.059593	1.3713
820	3:39:01	19.70	2.059955	1.3684
821	3:40:01	19.80	2.058870	1.3701
822	3:41:01	19.90	2.058508	1.3695
823	3:42:01	20.00	2.058508	1.3678
824	3:43:01	20.20	2.058508	1.3661
825	3:44:01	20.20	2.058508	1.3644
826	3:45:01	20.10	2.058508	1.3627
827	3:46:01	20.00	2.058508	1.3610
828	3:47:01	19.80	2.058508	1.3593
829	3:48:01	19.70	2.058508	1.3576
830	3:49:01	19.70	2.058146	1.3570
831	3:50:01	19.80	2.057061	1.3587
832	3:51:01	20.00	2.058508	1.3525
833	3:52:01	20.10	2.057785	1.3530
834	3:53:01	20.20	2.057423	1.3525
835	3:54:01	20.20	2.056700	1.3531
836	3:55:01	20.00	2.057423	1.3491
837	3:56:01	19.80	2.056700	1.3497
838	3:57:01	19.70	2.056338	1.3492
839	3:58:01	19.70	2.055976	1.3486
840	3:59:01	19.80	2.055976	1.3469
841	4:00:01	19.90	2.056338	1.3442
842	4:01:01	20.10	2.055976	1.3436
843	4:02:01	20.20	2.056338	1.3409
844	4:03:01	20.20	2.055614	1.3414
845	4:04:01	20.10	2.055614	1.3398
846	4:05:01	19.90	2.055614	1.3382
847	4:06:01	19.70	2.055614	1.3365
848	4:07:01	19.70	2.055614	1.3349
849	4:08:01	19.80	2.054891	1.3355

850	4:09:01	19.90	2.055253	1.3327
851	4:10:01	20.00	2.055614	1.3300
852	4:11:01	20.10	2.054529	1.3317
853	4:12:01	20.20	2.054529	1.3301
854	4:13:01	20.10	2.054529	1.3285
855	4:14:01	20.00	2.054529	1.3269
856	4:15:01	19.80	2.054168	1.3264
857	4:16:01	19.70	2.054168	1.3247
858	4:17:01	19.70	2.053444	1.3253
859	4:18:01	19.80	2.053444	1.3237
860	4:19:01	19.90	2.053082	1.3232
861	4:20:01	20.10	2.053082	1.3216
862	4:21:01	20.20	2.053082	1.3201
863	4:22:01	20.20	2.052721	1.3196
864	4:23:01	20.10	2.052721	1.3180
865	4:24:01	19.90	2.052721	1.3164
866	4:25:01	19.70	2.052721	1.3148
867	4:26:01	19.70	2.052721	1.3133
868	4:27:01	19.70	2.052721	1.3117
869	4:28:01	19.80	2.052721	1.3101
870	4:29:01	20.00	2.052359	1.3096
871	4:30:01	20.10	2.052721	1.3070
872	4:31:01	20.20	2.052359	1.3065
873	4:32:01	20.20	2.051997	1.3061
874	4:33:01	20.00	2.051997	1.3045
875	4:34:01	19.80	2.051636	1.3040
876	4:35:01	19.70	2.051636	1.3025
877	4:36:01	19.70	2.050189	1.3052
878	4:37:01	19.80	2.051274	1.3005
879	4:38:01	19.90	2.050912	1.3000
880	4:39:01	20.10	2.050189	1.3006
881	4:40:01	20.20	2.050550	1.2980
882	4:41:01	20.20	2.050189	1.2976
883	4:42:01	20.10	2.050189	1.2961
884	4:43:01	19.90	2.049827	1.2956
885	4:44:01	19.70	2.049827	1.2941
886	4:45:01	19.70	2.049827	1.2926
887	4:46:01	19.70	2.049827	1.2911
888	4:47:01	19.80	2.049827	1.2896
889	4:48:01	20.00	2.049827	1.2881
890	4:49:01	20.10	2.049827	1.2866
891	4:50:01	20.20	2.049103	1.2872
892	4:51:01	20.20	2.049465	1.2846
893	4:52:01	20.00	2.049465	1.2832
894	4:53:01	19.90	2.049465	1.2817
895	4:54:01	19.70	2.049103	1.2812
896	4:55:01	19.70	2.048380	1.2818
897	4:56:01	19.80	2.048018	1.2814
898	4:57:01	19.90	2.048018	1.2799
899	4:58:01	20.00	2.048018	1.2785

900	4:59:01	20.20	2.047657	1.2780
901	5:00:01	20.20	2.048018	1.2755
902	5:01:01	20.10	2.048018	1.2741
903	5:02:01	20.00	2.047657	1.2736
904	5:03:01	19.80	2.046933	1.2743
905	5:04:01	19.70	2.046933	1.2728
906	5:05:01	19.70	2.047657	1.2693
907	5:06:01	19.80	2.046933	1.2699
908	5:07:01	19.90	2.046933	1.2685
909	5:08:01	20.10	2.047295	1.2660
910	5:09:01	20.20	2.046933	1.2656
911	5:10:01	20.20	2.046572	1.2652
912	5:11:01	20.00	2.046572	1.2637
913	5:12:01	19.90	2.046210	1.2633
914	5:13:01	19.70	2.046933	1.2599
915	5:14:01	19.70	2.046572	1.2595
916	5:15:01	19.80	2.046572	1.2580
917	5:16:01	19.90	2.046933	1.2556
918	5:17:01	20.00	2.046210	1.2562
919	5:18:01	20.20	2.046210	1.2548
920	5:19:01	20.20	2.045848	1.2544
921	5:20:01	20.10	2.045125	1.2550
922	5:21:01	19.90	2.044401	1.2557
923	5:22:01	19.80	2.044763	1.2532
924	5:23:01	19.70	2.044040	1.2539
925	5:24:01	19.70	2.044763	1.2505
926	5:25:01	19.80	2.044763	1.2491
927	5:26:01	20.00	2.044763	1.2477
928	5:27:01	20.10	2.044040	1.2483
929	5:28:01	20.20	2.044040	1.2469
930	5:29:01	20.20	2.044040	1.2455
931	5:30:01	20.00	2.044040	1.2441
932	5:31:01	19.90	2.044040	1.2428
933	5:32:01	19.70	2.044040	1.2414
934	5:33:01	19.70	2.044040	1.2400
935	5:34:01	19.80	2.043678	1.2396
936	5:35:01	19.90	2.043678	1.2383
937	5:36:01	20.00	2.043678	1.2369
938	5:37:01	20.20	2.043678	1.2356
939	5:38:01	20.20	2.043316	1.2352
940	5:39:01	20.10	2.043316	1.2338
941	5:40:01	20.00	2.042593	1.2345
942	5:41:01	19.80	2.043316	1.2311
943	5:42:01	19.70	2.042231	1.2328
944	5:43:01	19.70	2.042593	1.2304
945	5:44:01	19.80	2.041508	1.2320
946	5:45:01	19.90	2.041869	1.2297
947	5:46:01	20.10	2.041508	1.2293
948	5:47:01	20.20	2.041508	1.2280
949	5:48:01	20.20	2.041146	1.2277

950	5:49:01	20.00	2.041146	1.2263
951	5:50:01	19.90	2.041146	1.2250
952	5:51:01	19.70	2.041146	1.2237
953	5:52:01	19.70	2.041146	1.2223
954	5:53:01	19.80	2.041146	1.2210
955	5:54:01	19.90	2.041146	1.2197
956	5:55:01	20.00	2.041146	1.2184
957	5:56:01	20.20	2.041146	1.2171
958	5:57:01	20.20	2.041146	1.2158
959	5:58:01	20.10	2.041146	1.2145
960	5:59:01	20.00	2.040784	1.2141
961	6:00:01	19.80	2.040784	1.2128
962	6:01:01	19.70	2.040422	1.2125
963	6:02:01	19.70	2.040061	1.2122
964	6:03:01	19.80	2.039337	1.2128
965	6:04:01	19.90	2.038614	1.2134
966	6:05:01	20.10	2.040061	1.2083
967	6:06:01	20.20	2.038976	1.2099
968	6:07:01	20.20	2.038976	1.2086
969	6:08:01	20.10	2.039337	1.2064
970	6:09:01	19.90	2.039699	1.2041
971	6:10:01	19.70	2.038614	1.2057
972	6:11:01	19.70	2.038614	1.2044
973	6:12:01	19.70	2.039337	1.2012
974	6:13:01	19.90	2.038614	1.2019
975	6:14:01	20.00	2.038614	1.2006
976	6:15:01	20.10	2.038614	1.1993
977	6:16:01	20.20	2.038614	1.1981
978	6:17:01	20.20	2.038614	1.1968
979	6:18:01	20.00	2.037891	1.1975
980	6:19:01	19.80	2.038614	1.1943
981	6:20:01	19.70	2.038252	1.1940
982	6:21:01	19.70	2.038614	1.1918
983	6:22:01	19.80	2.037891	1.1924
984	6:23:01	19.90	2.038252	1.1902
985	6:24:01	20.10	2.036444	1.1937
986	6:25:01	20.20	2.038252	1.1878
987	6:26:01	20.20	2.037891	1.1875
988	6:27:01	20.10	2.037167	1.1881
989	6:28:01	19.90	2.036444	1.1888
990	6:29:01	19.70	2.036805	1.1866
991	6:30:01	19.70	2.035720	1.1882
992	6:31:01	19.70	2.036444	1.1850
993	6:32:01	19.90	2.036082	1.1848
994	6:33:01	20.00	2.035720	1.1845
995	6:34:01	20.10	2.035720	1.1832
996	6:35:01	20.20	2.035720	1.1820
997	6:36:01	20.10	2.035720	1.1808
998	6:37:01	20.00	2.035720	1.1796
999	6:38:01	19.80	2.036082	1.1774

1000	6:39:01	19.70	2.035720	1.1771
1001	6:40:01	19.70	2.035720	1.1759
1002	6:41:01	19.80	2.035720	1.1747
1003	6:42:01	19.90	2.035359	1.1745
1004	6:43:01	20.10	2.035720	1.1723
1005	6:44:01	20.20	2.035359	1.1720
1006	6:45:01	20.20	2.035359	1.1708
1007	6:46:01	20.10	2.035359	1.1696
1008	6:47:01	19.90	2.034635	1.1703
1009	6:48:01	19.80	2.034273	1.1700
1010	6:49:01	19.70	2.034635	1.1679
1011	6:50:01	19.70	2.033188	1.1704
1012	6:51:01	19.90	2.034997	1.1646
1013	6:52:01	20.00	2.033550	1.1671
1014	6:53:01	20.20	2.033188	1.1668
1015	6:54:01	20.20	2.033912	1.1638
1016	6:55:01	20.10	2.033188	1.1645
1017	6:56:01	20.00	2.033188	1.1633
1018	6:57:01	19.80	2.033912	1.1603
1019	6:58:01	19.70	2.033188	1.1610
1020	6:59:01	19.70	2.032827	1.1607
1021	7:00:01	19.80	2.032827	1.1595
1022	7:01:01	19.90	2.032827	1.1584
1023	7:02:01	20.10	2.032827	1.1572
1024	7:03:01	20.20	2.032827	1.1560
1025	7:04:01	20.20	2.032827	1.1549
1026	7:05:01	20.10	2.032827	1.1537
1027	7:06:01	19.90	2.032827	1.1526
1028	7:07:01	19.70	2.032827	1.1514
1029	7:08:01	19.70	2.032827	1.1502
1030	7:09:01	19.70	2.032827	1.1491
1031	7:10:01	19.90	2.032827	1.1479
1032	7:11:01	20.00	2.032827	1.1468
1033	7:12:01	20.10	2.032827	1.1457
1034	7:13:01	20.20	2.032465	1.1454
1035	7:14:01	20.10	2.032827	1.1434
1036	7:15:01	20.00	2.032465	1.1431
1037	7:16:01	19.80	2.031741	1.1438
1038	7:17:01	19.70	2.032103	1.1418
1039	7:18:01	19.70	2.032103	1.1406
1040	7:19:01	19.80	2.031741	1.1404
1041	7:20:01	19.90	2.032827	1.1366
1042	7:21:01	20.10	2.031380	1.1391
1043	7:22:01	20.20	2.031741	1.1370
1044	7:23:01	20.20	2.031741	1.1359
1045	7:24:01	20.10	2.031741	1.1348
1046	7:25:01	19.90	2.031018	1.1355
1047	7:26:01	19.70	2.030656	1.1352
1048	7:27:01	19.70	2.030656	1.1341
1049	7:28:01	19.80	2.030294	1.1339

1050	7:29:01	19.90	2.029933	1.1337
1051	7:30:01	20.00	2.029933	1.1326
1052	7:31:01	20.20	2.029933	1.1315
1053	7:32:01	20.20	2.029933	1.1304
1054	7:33:01	20.10	2.029933	1.1292
1055	7:34:01	20.00	2.029933	1.1281
1056	7:35:01	19.80	2.029933	1.1270
1057	7:36:01	19.70	2.029933	1.1260
1058	7:37:01	19.70	2.029933	1.1249
1059	7:38:01	19.80	2.029933	1.1238
1060	7:39:01	19.90	2.029209	1.1244
1061	7:40:01	20.10	2.028848	1.1242
1062	7:41:01	20.20	2.029571	1.1214
1063	7:42:01	20.20	2.029571	1.1203
1064	7:43:01	20.00	2.029209	1.1201
1065	7:44:01	19.90	2.029209	1.1190
1066	7:45:01	19.70	2.029571	1.1171
1067	7:46:01	19.70	2.028486	1.1186
1068	7:47:01	19.80	2.029209	1.1158
1069	7:48:01	19.90	2.027763	1.1182
1070	7:49:01	20.00	2.027763	1.1171
1071	7:50:01	20.20	2.028124	1.1152
1072	7:51:01	20.20	2.027763	1.1150
1073	7:52:01	20.10	2.027039	1.1156
1074	7:53:01	19.90	2.027763	1.1128
1075	7:54:01	19.80	2.027039	1.1135
1076	7:55:01	19.70	2.027039	1.1124
1077	7:56:01	19.70	2.027039	1.1114
1078	7:57:01	19.80	2.027039	1.1103
1079	7:58:01	20.00	2.027039	1.1093
1080	7:59:01	20.10	2.027039	1.1082
1081	8:00:01	20.20	2.027039	1.1071
1082	8:01:01	20.20	2.027039	1.1061
1083	8:02:01	20.00	2.027039	1.1050
1084	8:03:01	19.80	2.026678	1.1049
1085	8:04:01	19.70	2.027039	1.1029
1086	8:05:01	19.70	2.026678	1.1028
1087	8:06:01	19.80	2.027039	1.1009
1088	8:07:01	19.90	2.026678	1.1007
1089	8:08:01	20.10	2.026316	1.1005
1090	8:09:01	20.20	2.026316	1.0995
1091	8:10:01	20.20	2.025592	1.1001
1092	8:11:01	20.00	2.026316	1.0974
1093	8:12:01	19.90	2.025231	1.0989
1094	8:13:01	19.70	2.025954	1.0962
1095	8:14:01	19.70	2.025592	1.0960
1096	8:15:01	19.80	2.024507	1.0975
1097	8:16:01	19.90	2.024507	1.0965
1098	8:17:01	20.00	2.024146	1.0963
1099	8:18:01	20.20	2.024507	1.0944

1100	8:19:01	20.20	2.024146	1.0943
1101	8:20:01	20.10	2.024146	1.0932
1102	8:21:01	19.90	2.024146	1.0922
1103	8:22:01	19.70	2.024146	1.0912
1104	8:23:01	19.70	2.024146	1.0902
1105	8:24:01	19.70	2.024146	1.0892
1106	8:25:01	19.80	2.024146	1.0882
1107	8:26:01	20.00	2.023784	1.0880
1108	8:27:01	20.10	2.024146	1.0861
1109	8:28:01	20.20	2.024146	1.0851
1110	8:29:01	20.20	2.024146	1.0841
1111	8:30:01	20.00	2.023784	1.0840
1112	8:31:01	19.90	2.023784	1.0830
1113	8:32:01	19.70	2.023784	1.0820
1114	8:33:01	19.70	2.023422	1.0818
1115	8:34:01	19.80	2.023422	1.0808
1116	8:35:01	19.90	2.023422	1.0798
1117	8:36:01	20.00	2.023784	1.0780
1118	8:37:01	20.20	2.022699	1.0795
1119	8:38:01	20.20	2.022337	1.0793
1120	8:39:01	20.10	2.022337	1.0783
1121	8:40:01	19.90	2.022337	1.0774
1122	8:41:01	19.80	2.022337	1.0764
1123	8:42:01	19.70	2.021613	1.0770
1124	8:43:01	19.70	2.021975	1.0752
1125	8:44:01	19.80	2.021613	1.0751
1126	8:45:01	20.00	2.021252	1.0749
1127	8:46:01	20.10	2.021613	1.0731
1128	8:47:01	20.20	2.021613	1.0721
1129	8:48:01	20.20	2.021252	1.0720
1130	8:49:01	20.00	2.021252	1.0710
1131	8:50:01	19.80	2.021252	1.0700
1132	8:51:01	19.70	2.021252	1.0691
1133	8:52:01	19.70	2.021252	1.0681
1134	8:53:01	19.80	2.021252	1.0671
1135	8:54:01	19.90	2.021252	1.0662
1136	8:55:01	20.10	2.021613	1.0644
1137	8:56:01	20.20	2.020528	1.0659
1138	8:57:01	20.20	2.020528	1.0649
1139	8:58:01	20.10	2.020890	1.0631
1140	8:59:01	19.90	2.020890	1.0622
1141	9:00:01	19.70	2.020167	1.0629
1142	9:01:01	19.70	2.019443	1.0635
1143	9:02:01	19.80	2.020890	1.0593
1144	9:03:01	19.90	2.019805	1.0608
1145	9:04:01	20.00	2.019443	1.0607
1146	9:05:01	20.20	2.020167	1.0581
1147	9:06:01	20.20	2.019443	1.0588
1148	9:07:01	20.10	2.019081	1.0586
1149	9:08:01	20.00	2.019081	1.0577

1150	9:09:01	19.80	2.018720	1.0575
1151	9:10:01	19.70	2.018358	1.0574
1152	9:11:01	19.70	2.018358	1.0565
1153	9:12:01	19.80	2.018358	1.0555
1154	9:13:01	20.00	2.018358	1.0546
1155	9:14:01	20.10	2.018358	1.0537
1156	9:15:01	20.20	2.018358	1.0527
1157	9:16:01	20.20	2.018720	1.0510
1158	9:17:01	20.00	2.018358	1.0509
1159	9:18:01	19.90	2.017996	1.0507
1160	9:19:01	19.70	2.018358	1.0490
1161	9:20:01	19.70	2.018358	1.0481
1162	9:21:01	19.80	2.017996	1.0479
1163	9:22:01	19.90	2.017996	1.0470
1164	9:23:01	20.10	2.017996	1.0461
1165	9:24:01	20.20	2.017273	1.0468
1166	9:25:01	20.20	2.017996	1.0443
1167	9:26:01	20.10	2.017273	1.0449
1168	9:27:01	19.90	2.017635	1.0432
1169	9:28:01	19.80	2.016188	1.0455
1170	9:29:01	19.70	2.017635	1.0414
1171	9:30:01	19.80	2.016911	1.0421
1172	9:31:01	19.90	2.016911	1.0412
1173	9:32:01	20.00	2.016911	1.0402
1174	9:33:01	20.20	2.015826	1.0417
1175	9:34:01	20.20	2.016188	1.0400
1176	9:35:01	20.20	2.016550	1.0383
1177	9:36:01	20.00	2.016188	1.0382
1178	9:37:01	19.80	2.016188	1.0373
1179	9:38:01	19.70	2.015464	1.0380
1180	9:39:01	19.80	2.015464	1.0371
1181	9:40:01	19.90	2.016188	1.0346
1182	9:41:01	20.00	2.015464	1.0353
1183	9:42:01	20.20	2.015464	1.0344
1184	9:43:01	20.20	2.015464	1.0335
1185	9:44:01	20.20	2.015464	1.0326
1186	9:45:01	20.00	2.015464	1.0317
1187	9:46:01	19.90	2.015103	1.0316
1188	9:47:01	19.70	2.015464	1.0299
1189	9:48:01	19.70	2.015464	1.0290
1190	9:49:01	19.80	2.015103	1.0289
1191	9:50:01	19.90	2.014741	1.0288
1192	9:51:01	20.10	2.015103	1.0271
1193	9:52:01	20.20	2.015464	1.0255
1194	9:53:01	20.20	2.013656	1.0285
1195	9:54:01	20.10	2.014741	1.0253
1196	9:55:01	19.90	2.014741	1.0244
1197	9:56:01	19.80	2.014741	1.0235
1198	9:57:01	19.70	2.014379	1.0234
1199	9:58:01	19.80	2.015103	1.0210

1200	9:59:01	19.90	2.014379	1.0217
1201	10:00:01	20.10	2.012571	1.0246
1202	10:01:01	20.20	2.014018	1.0207
1203	10:02:01	20.20	2.012571	1.0229
1204	10:03:01	20.10	2.012932	1.0213
1205	10:04:01	19.90	2.013294	1.0196
1206	10:05:01	19.80	2.012932	1.0195
1207	10:06:01	19.70	2.012932	1.0187
1208	10:07:01	19.80	2.012571	1.0186
1209	10:08:01	19.90	2.012571	1.0177
1210	10:09:01	20.00	2.012571	1.0168
1211	10:10:01	20.20	2.012571	1.0160
1212	10:11:01	20.20	2.012571	1.0151
1213	10:12:01	20.20	2.012571	1.0143
1214	10:13:01	20.00	2.012571	1.0134
1215	10:14:01	19.80	2.012571	1.0126
1216	10:15:01	19.70	2.012571	1.0117
1217	10:16:01	19.70	2.012571	1.0108
1218	10:17:01	19.90	2.011847	1.0115
1219	10:18:01	20.00	2.012209	1.0099
1220	10:19:01	20.20	2.012571	1.0083
1221	10:20:01	20.30	2.011847	1.0090
1222	10:21:01	20.20	2.012209	1.0074
1223	10:22:01	20.10	2.011847	1.0073
1224	10:23:01	19.90	2.011847	1.0064
1225	10:24:01	19.70	2.011847	1.0056
1226	10:25:01	19.70	2.011124	1.0063
1227	10:26:01	19.80	2.011124	1.0054
1228	10:27:01	20.00	2.010039	1.0069
1229	10:28:01	20.10	2.011847	1.0022
1230	10:29:01	20.20	2.010039	1.0052
1231	10:30:01	20.20	2.010762	1.0028
1232	10:31:01	20.10	2.010400	1.0028
1233	10:32:01	19.90	2.010039	1.0027
1234	10:33:01	19.80	2.009677	1.0026
1235	10:34:01	19.70	2.010039	1.0010
1236	10:35:01	19.80	2.010039	1.0002
1237	10:36:01	19.90	2.010039	0.9994
1238	10:37:01	20.10	2.010039	0.9985
1239	10:38:01	20.20	2.009677	0.9984
1240	10:39:01	20.20	2.009677	0.9976
1241	10:40:01	20.10	2.008954	0.9983
1242	10:41:01	19.90	2.009677	0.9960
1243	10:42:01	19.80	2.009677	0.9952
1244	10:43:01	19.70	2.009677	0.9943
1245	10:44:01	19.80	2.009315	0.9943
1246	10:45:01	19.90	2.008954	0.9942
1247	10:46:01	20.10	2.009677	0.9919
1248	10:47:01	20.20	2.008954	0.9926
1249	10:48:01	20.20	2.009315	0.9910

1250	10:49:01	20.10	2.008954	0.9909
1251	10:50:01	20.00	2.008230	0.9916
1252	10:51:01	19.80	2.008230	0.9908
1253	10:52:01	19.70	2.009315	0.9878
1254	10:53:01	19.80	2.007507	0.9906
1255	10:54:01	19.90	2.008592	0.9876
1256	10:55:01	20.10	2.007869	0.9883
1257	10:56:01	20.20	2.007145	0.9890
1258	10:57:01	20.30	2.007507	0.9874
1259	10:58:01	20.20	2.007507	0.9866
1260	10:59:01	20.00	2.007145	0.9866
1261	11:00:01	19.80	2.007869	0.9843
1262	11:01:01	19.70	2.006783	0.9857
1263	11:02:01	19.80	2.006783	0.9849
1264	11:03:01	19.90	2.006783	0.9841
1265	11:04:01	20.00	2.006783	0.9833
1266	11:05:01	20.20	2.006783	0.9825
1267	11:06:01	20.30	2.006783	0.9817
1268	11:07:01	20.20	2.006783	0.9809
1269	11:08:01	20.00	2.006783	0.9801
1270	11:09:01	19.80	2.006783	0.9793
1271	11:10:01	19.70	2.006783	0.9785
1272	11:11:01	19.80	2.006422	0.9785
1273	11:12:01	19.90	2.006422	0.9777
1274	11:13:01	20.00	2.006783	0.9762
1275	11:14:01	20.20	2.006422	0.9761
1276	11:15:01	20.30	2.006060	0.9761
1277	11:16:01	20.20	2.006422	0.9746
1278	11:17:01	20.00	2.006060	0.9745
1279	11:18:01	19.90	2.006422	0.9730
1280	11:19:01	19.80	2.005698	0.9737
1281	11:20:01	19.80	2.006060	0.9722
1282	11:21:01	19.90	2.006060	0.9714
1283	11:22:01	20.00	2.004613	0.9735
1284	11:23:01	20.20	2.005337	0.9713
1285	11:24:01	20.30	2.005337	0.9705
1286	11:25:01	20.20	2.005337	0.9697
1287	11:26:01	20.10	2.004613	0.9704
1288	11:27:01	19.90	2.004251	0.9704
1289	11:28:01	19.80	2.004251	0.9696
1290	11:29:01	19.80	2.004613	0.9681
1291	11:30:01	19.80	2.003890	0.9688
1292	11:31:01	20.00	2.004251	0.9673
1293	11:32:01	20.20	2.003890	0.9672
1294	11:33:01	20.30	2.003890	0.9665
1295	11:34:01	20.30	2.004251	0.9650
1296	11:35:01	20.10	2.003890	0.9649
1297	11:36:01	20.00	2.003890	0.9642
1298	11:37:01	19.80	2.003890	0.9634
1299	11:38:01	19.80	2.003890	0.9627

1300	11:39:01	19.90	2.003890	0.9619
1301	11:40:01	20.00	2.003890	0.9612
1302	11:41:01	20.20	2.003890	0.9604
1303	11:42:01	20.30	2.003890	0.9596
1304	11:43:01	20.20	2.003890	0.9589
1305	11:44:01	20.10	2.003528	0.9588
1306	11:45:01	19.90	2.003890	0.9574
1307	11:46:01	19.80	2.003890	0.9566
1308	11:47:01	19.80	2.003528	0.9566
1309	11:48:01	19.90	2.002804	0.9573
1310	11:49:01	20.10	2.002804	0.9565
1311	11:50:01	20.20	2.002804	0.9558
1312	11:51:01	20.30	2.002443	0.9557
1313	11:52:01	20.20	2.001719	0.9564
1314	11:53:01	20.00	2.002081	0.9549
1315	11:54:01	19.80	2.002443	0.9535
1316	11:55:01	19.80	2.001358	0.9549
1317	11:56:01	19.80	2.002443	0.9520
1318	11:57:01	19.90	2.000996	0.9541
1319	11:58:01	20.10	2.001719	0.9519
1320	11:59:01	20.30	2.000996	0.9526
1321	12:00:01	20.30	2.000996	0.9519
1322	12:01:01	20.10	2.001358	0.9504
1323	12:02:01	20.00	2.000996	0.9504
1324	12:03:01	19.80	2.000996	0.9497
1325	12:04:01	19.80	2.001358	0.9482
1326	12:05:01	19.90	2.000996	0.9482
1327	12:06:01	20.00	2.000996	0.9475
1328	12:07:01	20.20	2.000996	0.9467
1329	12:08:01	20.30	2.000996	0.9460
1330	12:09:01	20.20	2.000996	0.9453
1331	12:10:01	20.10	2.000996	0.9446
1332	12:11:01	19.90	2.000996	0.9438
1333	12:12:01	19.80	2.000634	0.9438
1334	12:13:01	19.80	2.000996	0.9424
1335	12:14:01	19.90	2.000272	0.9431
1336	12:15:01	20.00	2.000634	0.9416
1337	12:16:01	20.20	2.000996	0.9402
1338	12:17:01	20.30	1.999911	0.9416
1339	12:18:01	20.20	2.000996	0.9388
1340	12:19:01	20.10	1.999911	0.9401
1341	12:20:01	19.90	2.000272	0.9387
1342	12:21:01	19.80	1.999187	0.9401
1343	12:22:01	19.80	1.999549	0.9387
1344	12:23:01	19.90	1.999549	0.9380
1345	12:24:01	20.10	1.998826	0.9386
1346	12:25:01	20.20	1.998826	0.9379
1347	12:26:01	20.30	1.999187	0.9365
1348	12:27:01	20.20	1.998464	0.9372
1349	12:28:01	20.00	1.998826	0.9358

1350	12:29:01	19.90	1.998464	0.9358
1351	12:30:01	19.80	1.998464	0.9351
1352	12:31:01	19.80	1.998102	0.9350
1353	12:32:01	20.00	1.998102	0.9343
1354	12:33:01	20.20	1.998464	0.9329
1355	12:34:01	20.30	1.998102	0.9329
1356	12:35:01	20.20	1.998102	0.9322
1357	12:36:01	20.10	1.998102	0.9315
1358	12:37:01	19.90	1.998102	0.9308
1359	12:38:01	19.80	1.998102	0.9301
1360	12:39:01	19.80	1.997740	0.9301
1361	12:40:01	19.90	1.998102	0.9287
1362	12:41:01	20.00	1.998102	0.9280
1363	12:42:01	20.20	1.997740	0.9280
1364	12:43:01	20.30	1.998102	0.9266
1365	12:44:01	20.20	1.998102	0.9259
1366	12:45:01	20.10	1.998102	0.9252
1367	12:46:01	19.90	1.997740	0.9252
1368	12:47:01	19.90	1.998102	0.9239
1369	12:48:01	19.90	1.997379	0.9245
1370	12:49:01	20.00	1.997379	0.9238
1371	12:50:01	20.20	1.997379	0.9231
1372	12:51:01	20.30	1.997740	0.9218
1373	12:52:01	20.20	1.997017	0.9224
1374	12:53:01	20.00	1.996655	0.9224
1375	12:54:01	19.90	1.997017	0.9211
1376	12:55:01	19.80	1.997017	0.9204
1377	12:56:01	19.80	1.995932	0.9217
1378	12:57:01	20.00	1.996655	0.9197
1379	12:58:01	20.20	1.996294	0.9197
1380	12:59:01	20.30	1.995932	0.9197
1381	13:00:01	20.20	1.995209	0.9203
1382	13:01:01	20.10	1.995932	0.9183
1383	13:02:01	19.90	1.995209	0.9190
1384	13:03:01	19.80	1.995932	0.9170
1385	13:04:01	19.80	1.995209	0.9176
1386	13:05:01	19.90	1.995209	0.9169
1387	13:06:01	20.10	1.995209	0.9163
1388	13:07:01	20.30	1.995209	0.9156
1389	13:08:01	20.30	1.994847	0.9156
1390	13:09:01	20.10	1.994485	0.9156
1391	13:10:01	20.00	1.995209	0.9136
1392	13:11:01	19.80	1.994485	0.9142
1393	13:12:01	19.80	1.995209	0.9122
1394	13:13:01	19.90	1.995209	0.9116
1395	13:14:01	20.10	1.994847	0.9116
1396	13:15:01	20.20	1.994485	0.9116
1397	13:16:01	20.30	1.994847	0.9102
1398	13:17:01	20.20	1.994485	0.9102
1399	13:18:01	20.00	1.994485	0.9096

1400	13:19:01	19.90	1.993762	0.9102
1401	13:20:01	19.80	1.994123	0.9089
1402	13:21:01	19.90	1.993762	0.9089
1403	13:22:01	20.00	1.993400	0.9089
1404	13:23:01	20.20	1.993400	0.9082
1405	13:24:01	20.30	1.993038	0.9082
1406	13:25:01	20.20	1.993038	0.9076
1407	13:26:01	20.10	1.993038	0.9069
1408	13:27:01	19.90	1.993038	0.9062
1409	13:28:01	19.80	1.993400	0.9049
1410	13:29:01	19.80	1.992315	0.9062
1411	13:30:01	19.90	1.993038	0.9043
1412	13:31:01	20.10	1.992676	0.9043
1413	13:32:01	20.30	1.992676	0.9036
1414	13:33:01	20.30	1.992315	0.9036
1415	13:34:01	20.20	1.992315	0.9030
1416	13:35:01	20.00	1.992315	0.9023
1417	13:36:01	19.80	1.992315	0.9017
1418	13:37:01	19.80	1.992315	0.9010
1419	13:38:01	19.90	1.992315	0.9004
1420	13:39:01	20.00	1.992315	0.8997
1421	13:40:01	20.20	1.992315	0.8991
1422	13:41:01	20.30	1.992315	0.8984
1423	13:42:01	20.20	1.992315	0.8978
1424	13:43:01	20.10	1.991230	0.8991
1425	13:44:01	19.90	1.991953	0.8972
1426	13:45:01	19.80	1.992315	0.8959
1427	13:46:01	19.80	1.991230	0.8972
1428	13:47:01	19.90	1.992315	0.8946
1429	13:48:01	20.10	1.991953	0.8946
1430	13:49:01	20.30	1.991230	0.8952
1431	13:50:01	20.30	1.992315	0.8927
1432	13:51:01	20.10	1.991230	0.8940
1433	13:52:01	20.00	1.991230	0.8933
1434	13:53:01	19.90	1.991230	0.8927
1435	13:54:01	19.80	1.990868	0.8927
1436	13:55:01	19.90	1.990506	0.8927
1437	13:56:01	20.10	1.991230	0.8908
1438	13:57:01	20.20	1.990506	0.8914
1439	13:58:01	20.30	1.989783	0.8921
1440	13:59:01	20.40	1.990506	0.8902
1441	14:00:01	20.40	1.990506	0.8896
1442	14:01:01	20.20	1.990506	0.8889
1443	14:02:01	20.00	1.989421	0.8902
1444	14:03:01	19.90	1.989783	0.8889
1445	14:04:01	19.80	1.989421	0.8890
1446	14:05:01	19.80	1.989783	0.8877
1447	14:06:01	20.00	1.989783	0.8871
1448	14:07:01	20.20	1.989421	0.8871
1449	14:08:01	20.30	1.989421	0.8865

1450	14:09:01	20.30	1.989421	0.8858	
1451	14:10:01	20.20	1.989421	0.8852	
1452	14:11:01	20.10	1.989421	0.8846	
1453	14:12:01	19.90	1.989421	0.8840	
1454	14:13:01	19.80	1.989059	0.8840	
1455	14:14:01	19.80	1.989421	0.8827	
1456	14:15:01	19.90	1.989421	0.8821	
1457	14:16:01	20.20	1.989783	0.8809	
1458	14:17:01	20.30	1.989421	0.8809	
1459	14:18:01	20.30	1.989421	0.8803	
1460	14:19:01	20.20	1.989059	0.8803	
1461	14:20:01	20.10	1.989421	0.8790	
1462	14:21:01	19.90	1.988698	0.8797	
1463	14:22:01	19.80	1.988698	0.8791	
1464	14:23:01	19.80	1.987974	0.8797	
1465	14:24:01	20.00	1.988698	0.8778	
1466	14:25:01	20.20	1.989059	0.8766	
1467	14:26:01	20.30	1.987974	0.8779	
1468	14:27:01	20.30	1.989059	0.8754	
1469	14:28:01	20.20	1.988698	0.8754	
1470	14:29:01	20.10	1.987974	0.8760	24 horas
1471	14:30:01	19.90	1.988336	0.8748	
1472	14:31:01	19.80	1.986889	0.8767	
1473	14:32:01	19.80	1.987251	0.8755	
1474	14:33:01	19.90	1.986527	0.8761	
1475	14:34:01	20.10	1.987974	0.8730	
1476	14:35:01	20.30	1.986889	0.8743	
1477	14:36:01	20.30	1.987251	0.8731	
1478	14:37:01	20.30	1.986527	0.8737	
1479	14:38:01	20.10	1.987251	0.8719	
1480	14:39:01	20.00	1.986527	0.8725	
1481	14:40:01	19.80	1.986166	0.8725	
1482	14:41:01	19.80	1.986527	0.8713	
1483	14:42:01	19.90	1.986527	0.8707	
1484	14:43:01	20.10	1.986527	0.8701	
1485	14:44:01	20.30	1.986527	0.8695	
1486	14:45:01	20.40	1.986166	0.8695	
1487	14:46:01	20.30	1.986527	0.8683	
1488	14:47:01	20.20	1.986527	0.8677	
1489	14:48:01	20.10	1.986527	0.8671	
1490	14:49:01	19.90	1.986527	0.8665	
1491	14:50:01	19.80	1.986527	0.8659	
1492	14:51:01	19.90	1.986527	0.8653	
1493	14:52:01	20.00	1.986527	0.8648	
1494	14:53:01	20.20	1.985804	0.8654	
1495	14:54:01	20.40	1.985080	0.8660	
1496	14:55:01	20.40	1.985442	0.8648	
1497	14:56:01	20.30	1.986527	0.8624	
1498	14:57:01	20.20	1.985080	0.8643	
1499	14:58:01	20.10	1.985804	0.8625	

1500	14:59:01	19.90	1.985804	0.8619
1501	15:00:01	19.80	1.985442	0.8619
1502	15:01:01	19.80	1.984719	0.8625
1503	15:02:01	20.00	1.984719	0.8620
1504	15:03:01	20.20	1.984719	0.8614
1505	15:04:01	20.30	1.984357	0.8614
1506	15:05:01	20.40	1.985804	0.8584
1507	15:06:01	20.30	1.984357	0.8602
1508	15:07:01	20.20	1.984357	0.8596
1509	15:08:01	20.00	1.983995	0.8597
1510	15:09:01	19.90	1.983995	0.8591
1511	15:10:01	19.80	1.983634	0.8591
1512	15:11:01	19.90	1.983634	0.8585
1513	15:12:01	20.10	1.983634	0.8580
1514	15:13:01	20.30	1.983634	0.8574
1515	15:14:01	20.40	1.983634	0.8568
1516	15:15:01	20.30	1.983634	0.8562
1517	15:16:01	20.20	1.983634	0.8557
1518	15:17:01	20.10	1.983634	0.8551
1519	15:18:01	20.00	1.983634	0.8545
1520	15:19:01	19.80	1.983634	0.8539
1521	15:20:01	19.80	1.983634	0.8534
1522	15:21:01	19.90	1.983634	0.8528
1523	15:22:01	20.20	1.983272	0.8528
1524	15:23:01	20.30	1.983634	0.8517
1525	15:24:01	20.40	1.983272	0.8517
1526	15:25:01	20.30	1.982910	0.8517
1527	15:26:01	20.20	1.982910	0.8512
1528	15:27:01	20.00	1.983272	0.8500
1529	15:28:01	19.90	1.982910	0.8500
1530	15:29:01	19.80	1.983272	0.8489
1531	15:30:01	19.90	1.983272	0.8483
1532	15:31:01	20.10	1.982187	0.8495
1533	15:32:01	20.30	1.982910	0.8478
1534	15:33:01	20.40	1.982910	0.8472
1535	15:34:01	20.30	1.982548	0.8472
1536	15:35:01	20.30	1.982548	0.8467
1537	15:36:01	20.10	1.982910	0.8455
1538	15:37:01	20.00	1.981825	0.8468
1539	15:38:01	19.90	1.981463	0.8468
1540	15:39:01	19.90	1.981463	0.8462
1541	15:40:01	20.00	1.980740	0.8469
1542	15:41:01	20.20	1.981463	0.8451
1543	15:42:01	20.30	1.980740	0.8457
1544	15:43:01	20.40	1.981463	0.8440
1545	15:44:01	20.30	1.981102	0.8440
1546	15:45:01	20.20	1.980740	0.8441
1547	15:46:01	20.10	1.981102	0.8429
1548	15:47:01	19.90	1.980740	0.8430
1549	15:48:01	19.90	1.981102	0.8418

1550	15:49:01	19.90	1.980740	0.8419
1551	15:50:01	20.00	1.981102	0.8407
1552	15:51:01	20.30	1.980740	0.8408
1553	15:52:01	20.40	1.980740	0.8402
1554	15:53:01	20.40	1.980740	0.8396
1555	15:54:01	20.30	1.980740	0.8391
1556	15:55:01	20.20	1.980740	0.8385
1557	15:56:01	20.00	1.980740	0.8380
1558	15:57:01	19.90	1.979655	0.8392
1559	15:58:01	19.80	1.980740	0.8369
1560	15:59:01	19.90	1.980017	0.8375
1561	16:00:01	20.10	1.980017	0.8370
1562	16:01:01	20.30	1.980378	0.8359
1563	16:02:01	20.40	1.980740	0.8347
1564	16:03:01	20.40	1.979655	0.8359
1565	16:04:01	20.30	1.978931	0.8366
1566	16:05:01	20.10	1.980017	0.8343
1567	16:06:01	20.00	1.979293	0.8349
1568	16:07:01	19.90	1.980017	0.8332
1569	16:08:01	19.90	1.979293	0.8338
1570	16:09:01	20.00	1.980017	0.8321
1571	16:10:01	20.20	1.978931	0.8333
1572	16:11:01	20.30	1.978208	0.8340
1573	16:12:01	20.40	1.978931	0.8322
1574	16:13:01	20.30	1.978931	0.8317
1575	16:14:01	20.20	1.977846	0.8329
1576	16:15:01	20.10	1.978208	0.8318
1577	16:16:01	20.00	1.978208	0.8313
1578	16:17:01	19.90	1.978570	0.8301
1579	16:18:01	19.90	1.977846	0.8308
1580	16:19:01	20.00	1.977846	0.8302
1581	16:20:01	20.20	1.977846	0.8297
1582	16:21:01	20.40	1.977846	0.8292
1583	16:22:01	20.40	1.978208	0.8281
1584	16:23:01	20.30	1.977846	0.8281
1585	16:24:01	20.20	1.977846	0.8276
1586	16:25:01	20.10	1.977846	0.8270
1587	16:26:01	20.00	1.977846	0.8265
1588	16:27:01	19.90	1.977846	0.8260
1589	16:28:01	19.90	1.977846	0.8254
1590	16:29:01	20.00	1.977846	0.8249
1591	16:30:01	20.30	1.977846	0.8244
1592	16:31:01	20.40	1.977484	0.8244
1593	16:32:01	20.40	1.977484	0.8239
1594	16:33:01	20.30	1.977846	0.8228
1595	16:34:01	20.20	1.977123	0.8234
1596	16:35:01	20.10	1.977123	0.8229
1597	16:36:01	19.90	1.977123	0.8224
1598	16:37:01	19.90	1.977123	0.8219
1599	16:38:01	19.90	1.976761	0.8219

1600	16:39:01	20.10	1.976399	0.8220
1601	16:40:01	20.30	1.977123	0.8203
1602	16:41:01	20.40	1.976761	0.8203
1603	16:42:01	20.40	1.976399	0.8204
1604	16:43:01	20.30	1.976038	0.8205
1605	16:44:01	20.20	1.976761	0.8188
1606	16:45:01	20.10	1.976761	0.8183
1607	16:46:01	19.90	1.975676	0.8195
1608	16:47:01	19.90	1.975314	0.8195
1609	16:48:01	19.90	1.975676	0.8184
1610	16:49:01	20.10	1.975676	0.8179
1611	16:50:01	20.30	1.975676	0.8174
1612	16:51:01	20.40	1.975314	0.8175
1613	16:52:01	20.40	1.975314	0.8169
1614	16:53:01	20.30	1.974952	0.8170
1615	16:54:01	20.20	1.975314	0.8159
1616	16:55:01	20.10	1.975314	0.8154
1617	16:56:01	20.00	1.974952	0.8154
1618	16:57:01	19.90	1.975314	0.8144
1619	16:58:01	19.90	1.974952	0.8144
1620	16:59:01	20.10	1.975314	0.8133
1621	17:00:01	20.30	1.974952	0.8134
1622	17:01:01	20.40	1.974952	0.8129
1623	17:02:01	20.40	1.974952	0.8124
1624	17:03:01	20.30	1.974952	0.8119
1625	17:04:01	20.20	1.974952	0.8114
1626	17:05:01	20.10	1.974229	0.8120
1627	17:06:01	20.00	1.974591	0.8109
1628	17:07:01	19.90	1.974591	0.8104
1629	17:08:01	19.90	1.974952	0.8093
1630	17:09:01	20.00	1.974952	0.8088
1631	17:10:01	20.20	1.974229	0.8095
1632	17:11:01	20.40	1.973867	0.8095
1633	17:12:01	20.40	1.974591	0.8079
1634	17:13:01	20.30	1.974591	0.8074
1635	17:14:01	20.20	1.974591	0.8069
1636	17:15:01	20.10	1.973506	0.8081
1637	17:16:01	20.00	1.973867	0.8070
1638	17:17:01	19.90	1.974229	0.8059
1639	17:18:01	19.90	1.973144	0.8071
1640	17:19:01	20.00	1.973867	0.8055
1641	17:20:01	20.20	1.972782	0.8067
1642	17:21:01	20.40	1.973144	0.8056
1643	17:22:01	20.40	1.972782	0.8057
1644	17:23:01	20.40	1.972421	0.8057
1645	17:24:01	20.30	1.972059	0.8058
1646	17:25:01	20.10	1.972421	0.8047
1647	17:26:01	20.00	1.973144	0.8031
1648	17:27:01	19.90	1.972782	0.8032
1649	17:28:01	19.90	1.973144	0.8021

1650	17:29:01	20.00	1.972059	0.8033
1651	17:30:01	20.20	1.973144	0.8011
1652	17:31:01	20.40	1.972059	0.8023
1653	17:32:01	20.50	1.972059	0.8018
1654	17:33:01	20.50	1.972782	0.8002
1655	17:34:01	20.50	1.972059	0.8008
1656	17:35:01	20.70	1.972059	0.8003
1657	17:36:01	20.70	1.971697	0.8004
1658	17:37:01	20.60	1.971697	0.7999
1659	17:38:01	20.50	1.972059	0.7989
1660	17:39:01	20.50	1.971335	0.7995
1661	17:40:01	20.40	1.972059	0.7979
1662	17:41:01	20.40	1.972059	0.7974
1663	17:42:01	20.30	1.972059	0.7969
1664	17:43:01	20.20	1.972059	0.7964
1665	17:44:01	20.10	1.972059	0.7959
1666	17:45:01	20.00	1.971697	0.7960
1667	17:46:01	19.90	1.971697	0.7955
1668	17:47:01	19.90	1.971697	0.7950
1669	17:48:01	20.00	1.971335	0.7951
1670	17:49:01	20.20	1.970974	0.7952
1671	17:50:01	20.30	1.971335	0.7941
1672	17:51:01	20.40	1.971335	0.7937
1673	17:52:01	20.40	1.969889	0.7954
1674	17:53:01	20.30	1.970612	0.7938
1675	17:54:01	20.20	1.970250	0.7939
1676	17:55:01	20.10	1.969527	0.7945
1677	17:56:01	20.00	1.970612	0.7923
1678	17:57:01	19.90	1.970250	0.7924
1679	17:58:01	19.90	1.970974	0.7908
1680	17:59:01	20.00	1.969527	0.7925
1681	18:00:01	20.20	1.970250	0.7910
1682	18:01:01	20.40	1.969165	0.7921
1683	18:02:01	20.40	1.969165	0.7917
1684	18:03:01	20.50	1.969165	0.7912
1685	18:04:01	20.50	1.969165	0.7907
1686	18:05:01	20.50	1.969165	0.7902
1687	18:06:01	20.40	1.969165	0.7897
1688	18:07:01	20.30	1.969165	0.7893
1689	18:08:01	20.20	1.969889	0.7877
1690	18:09:01	20.00	1.969165	0.7883
1691	18:10:01	20.30	1.969165	0.7878
1692	18:11:01	20.30	1.969165	0.7874
1693	18:12:01	20.30	1.969165	0.7869
1694	18:13:01	20.20	1.969165	0.7864
1695	18:14:01	20.10	1.969165	0.7860
1696	18:15:01	20.00	1.969165	0.7855
1697	18:16:01	19.90	1.969165	0.7850
1698	18:17:01	19.90	1.969165	0.7845
1699	18:18:01	20.00	1.969165	0.7841

1700	18:19:01	20.20	1.968442	0.7847
1701	18:20:01	20.30	1.969165	0.7831
1702	18:21:01	20.40	1.968803	0.7832
1703	18:22:01	20.30	1.968803	0.7827
1704	18:23:01	20.30	1.968442	0.7828
1705	18:24:01	20.10	1.968803	0.7818
1706	18:25:01	20.00	1.968442	0.7819
1707	18:26:01	19.90	1.967718	0.7825
1708	18:27:01	19.90	1.968080	0.7815
1709	18:28:01	19.90	1.967718	0.7816
1710	18:29:01	20.10	1.966995	0.7822
1711	18:30:01	20.30	1.966633	0.7822
1712	18:31:01	20.40	1.966995	0.7812
1713	18:32:01	20.30	1.967718	0.7797
1714	18:33:01	20.30	1.967718	0.7792
1715	18:34:01	20.10	1.966995	0.7798
1716	18:35:01	20.00	1.966995	0.7794
1717	18:36:01	19.90	1.966633	0.7795
1718	18:37:01	19.90	1.967357	0.7779
1719	18:38:01	20.00	1.966271	0.7791
1720	18:39:01	20.20	1.966271	0.7786
1721	18:40:01	20.30	1.967357	0.7765
1722	18:41:01	20.30	1.966633	0.7772
1723	18:42:01	20.30	1.966995	0.7762
1724	18:43:01	20.20	1.966633	0.7762
1725	18:44:01	20.10	1.966995	0.7753
1726	18:45:01	20.00	1.966271	0.7759
1727	18:46:01	19.90	1.966271	0.7754
1728	18:47:01	19.90	1.966271	0.7749
1729	18:48:01	20.00	1.966271	0.7745
1730	18:49:01	20.20	1.965910	0.7746
1731	18:50:01	20.30	1.966271	0.7736
1732	18:51:01	20.30	1.965910	0.7737
1733	18:52:01	20.30	1.966271	0.7727
1734	18:53:01	20.20	1.966271	0.7722
1735	18:54:01	20.10	1.965910	0.7723
1736	18:55:01	19.90	1.966271	0.7713
1737	18:56:01	19.90	1.965910	0.7714
1738	18:57:01	19.90	1.965910	0.7709
1739	18:58:01	20.10	1.965548	0.7710
1740	18:59:01	20.20	1.965548	0.7706
1741	19:00:01	20.30	1.965548	0.7701
1742	19:01:01	20.30	1.964824	0.7707
1743	19:02:01	20.20	1.965548	0.7692
1744	19:03:01	20.10	1.964824	0.7698
1745	19:04:01	20.00	1.965910	0.7678
1746	19:05:01	19.90	1.964824	0.7689
1747	19:06:01	19.90	1.964463	0.7690
1748	19:07:01	20.00	1.965548	0.7670
1749	19:08:01	20.10	1.965186	0.7671

1750	19:09:01	20.30	1.964463	0.7677
1751	19:10:01	20.30	1.964463	0.7672
1752	19:11:01	20.30	1.963739	0.7678
1753	19:12:01	20.20	1.963739	0.7674
1754	19:13:01	20.10	1.963739	0.7669
1755	19:14:01	19.90	1.963739	0.7665
1756	19:15:01	19.90	1.963378	0.7666
1757	19:16:01	19.90	1.963739	0.7656
1758	19:17:01	20.00	1.963378	0.7657
1759	19:18:01	20.20	1.963378	0.7652
1760	19:19:01	20.30	1.964101	0.7638
1761	19:20:01	20.30	1.963739	0.7638
1762	19:21:01	20.20	1.963378	0.7639
1763	19:22:01	20.10	1.963739	0.7630
1764	19:23:01	20.00	1.963378	0.7630
1765	19:24:01	19.90	1.963378	0.7626
1766	19:25:01	19.90	1.963378	0.7622
1767	19:26:01	19.90	1.963378	0.7617
1768	19:27:01	20.10	1.963739	0.7608
1769	19:28:01	20.30	1.963378	0.7608
1770	19:29:01	20.30	1.963016	0.7609
1771	19:30:01	20.30	1.963016	0.7605
1772	19:31:01	20.20	1.963378	0.7595
1773	19:32:01	20.00	1.963378	0.7591
1774	19:33:01	19.90	1.963378	0.7587
1775	19:34:01	19.80	1.962293	0.7598
1776	19:35:01	19.90	1.962654	0.7588
1777	19:36:01	20.00	1.962654	0.7584
1778	19:37:01	20.20	1.963016	0.7574
1779	19:38:01	20.30	1.962293	0.7580
1780	19:39:01	20.30	1.962654	0.7571
1781	19:40:01	20.20	1.962293	0.7572
1782	19:41:01	20.10	1.961931	0.7573
1783	19:42:01	20.00	1.962654	0.7558
1784	19:43:01	19.90	1.962654	0.7554
1785	19:44:01	19.90	1.962293	0.7555
1786	19:45:01	19.90	1.962293	0.7550
1787	19:46:01	20.10	1.961931	0.7551
1788	19:47:01	20.30	1.961208	0.7557
1789	19:48:01	20.30	1.961931	0.7543
1790	19:49:01	20.30	1.961208	0.7549
1791	19:50:01	20.20	1.961931	0.7534
1792	19:51:01	20.00	1.961208	0.7540
1793	19:52:01	19.90	1.960846	0.7541
1794	19:53:01	19.90	1.961208	0.7531
1795	19:54:01	19.90	1.960484	0.7537
1796	19:55:01	20.00	1.960484	0.7533
1797	19:56:01	20.20	1.960484	0.7529
1798	19:57:01	20.30	1.960846	0.7519
1799	19:58:01	20.30	1.960846	0.7515

1800	19:59:01	20.20	1.960484	0.7516
1801	20:00:01	20.10	1.960484	0.7512
1802	20:01:01	19.90	1.960484	0.7508
1803	20:02:01	19.80	1.960484	0.7503
1804	20:03:01	19.90	1.960484	0.7499
1805	20:04:01	20.00	1.960484	0.7495
1806	20:05:01	20.20	1.960484	0.7491
1807	20:06:01	20.30	1.960484	0.7487
1808	20:07:01	20.30	1.960484	0.7482
1809	20:08:01	20.20	1.960122	0.7483
1810	20:09:01	20.10	1.960484	0.7474
1811	20:10:01	20.00	1.960484	0.7470
1812	20:11:01	19.90	1.960484	0.7466
1813	20:12:01	19.80	1.960122	0.7466
1814	20:13:01	19.90	1.959399	0.7472
1815	20:14:01	20.10	1.959761	0.7463
1816	20:15:01	20.30	1.960484	0.7449
1817	20:16:01	20.30	1.959761	0.7455
1818	20:17:01	20.30	1.960122	0.7446
1819	20:18:01	20.20	1.959761	0.7446
1820	20:19:01	20.00	1.959761	0.7442
1821	20:20:01	19.90	1.959399	0.7443
1822	20:21:01	19.80	1.960122	0.7429
1823	20:22:01	19.90	1.959399	0.7435
1824	20:23:01	20.10	1.958676	0.7441
1825	20:24:01	20.20	1.958676	0.7437
1826	20:25:01	20.30	1.958676	0.7433
1827	20:26:01	20.30	1.957952	0.7438
1828	20:27:01	20.20	1.958676	0.7424
1829	20:28:01	20.00	1.959037	0.7415
1830	20:29:01	19.90	1.958676	0.7416
1831	20:30:01	19.80	1.957952	0.7422
1832	20:31:01	19.90	1.957590	0.7423
1833	20:32:01	20.00	1.957952	0.7414
1834	20:33:01	20.20	1.957952	0.7410
1835	20:34:01	20.30	1.957952	0.7405
1836	20:35:01	20.30	1.957590	0.7406
1837	20:36:01	20.20	1.957590	0.7402
1838	20:37:01	20.10	1.957952	0.7393
1839	20:38:01	19.90	1.958314	0.7384
1840	20:39:01	19.80	1.957590	0.7390
1841	20:40:01	19.90	1.957590	0.7386
1842	20:41:01	20.00	1.957590	0.7382
1843	20:42:01	20.10	1.957590	0.7378
1844	20:43:01	20.30	1.957590	0.7374
1845	20:44:01	20.30	1.957590	0.7370
1846	20:45:01	20.20	1.957590	0.7366
1847	20:46:01	20.10	1.957590	0.7362
1848	20:47:01	20.00	1.957229	0.7363
1849	20:48:01	19.90	1.957590	0.7354

1850	20:49:01	19.80	1.957229	0.7354
1851	20:50:01	19.90	1.957229	0.7350
1852	20:51:01	20.10	1.957590	0.7341
1853	20:52:01	20.20	1.957229	0.7342
1854	20:53:01	20.30	1.957229	0.7338
1855	20:54:01	20.30	1.957229	0.7334
1856	20:55:01	20.20	1.957590	0.7325
1857	20:56:01	20.00	1.956143	0.7341
1858	20:57:01	19.90	1.956505	0.7332
1859	20:58:01	19.80	1.956505	0.7328
1860	20:59:01	19.90	1.956867	0.7319
1861	21:00:01	20.00	1.956867	0.7315
1862	21:01:01	20.20	1.956505	0.7316
1863	21:02:01	20.30	1.956505	0.7312
1864	21:03:01	20.30	1.956505	0.7308
1865	21:04:01	20.20	1.956143	0.7309
1866	21:05:01	20.10	1.956505	0.7300
1867	21:06:01	19.90	1.955420	0.7311
1868	21:07:01	19.80	1.955782	0.7302
1869	21:08:01	19.80	1.956143	0.7293
1870	21:09:01	19.90	1.955058	0.7304
1871	21:10:01	20.10	1.954697	0.7305
1872	21:11:01	20.30	1.954697	0.7301
1873	21:12:01	20.30	1.955058	0.7292
1874	21:13:01	20.20	1.955420	0.7283
1875	21:14:01	20.10	1.954697	0.7289
1876	21:15:01	20.00	1.954697	0.7285
1877	21:16:01	19.90	1.955420	0.7271
1878	21:17:01	19.80	1.954697	0.7277
1879	21:18:01	19.90	1.954697	0.7273
1880	21:19:01	20.00	1.955058	0.7265
1881	21:20:01	20.20	1.954697	0.7265
1882	21:21:01	20.30	1.954697	0.7262
1883	21:22:01	20.30	1.954697	0.7258
1884	21:23:01	20.20	1.954697	0.7254
1885	21:24:01	20.00	1.954697	0.7250
1886	21:25:01	19.90	1.954697	0.7246
1887	21:26:01	19.80	1.954697	0.7242
1888	21:27:01	19.80	1.954335	0.7243
1889	21:28:01	19.90	1.954697	0.7234
1890	21:29:01	20.10	1.954697	0.7230
1891	21:30:01	20.30	1.954697	0.7226
1892	21:31:01	20.30	1.954697	0.7223
1893	21:32:01	20.20	1.953611	0.7233
1894	21:33:01	20.10	1.953973	0.7225
1895	21:34:01	19.90	1.954335	0.7216
1896	21:35:01	19.80	1.953973	0.7217
1897	21:36:01	19.80	1.953611	0.7218
1898	21:37:01	19.90	1.953611	0.7214
1899	21:38:01	20.10	1.953611	0.7210

1900	21:39:01	20.20	1.953973	0.7201
1901	21:40:01	20.30	1.953250	0.7207
1902	21:41:01	20.20	1.952888	0.7208
1903	21:42:01	20.10	1.952165	0.7214
1904	21:43:01	20.00	1.953611	0.7191
1905	21:44:01	19.80	1.953611	0.7187
1906	21:45:01	19.80	1.952526	0.7198
1907	21:46:01	19.90	1.952888	0.7189
1908	21:47:01	20.10	1.952526	0.7190
1909	21:48:01	20.20	1.952165	0.7191
1910	21:49:01	20.30	1.953250	0.7173
1911	21:50:01	20.20	1.952888	0.7174
1912	21:51:01	20.10	1.952888	0.7170
1913	21:52:01	20.00	1.951803	0.7180
1914	21:53:01	19.90	1.952165	0.7172
1915	21:54:01	19.80	1.951803	0.7173
1916	21:55:01	19.90	1.951803	0.7169
1917	21:56:01	20.00	1.951803	0.7165
1918	21:57:01	20.20	1.951803	0.7161
1919	21:58:01	20.30	1.951803	0.7158
1920	21:59:01	20.30	1.952165	0.7149
1921	22:00:01	20.10	1.951803	0.7150
1922	22:01:01	20.00	1.951803	0.7146
1923	22:02:01	19.90	1.951803	0.7143
1924	22:03:01	19.80	1.951803	0.7139
1925	22:04:01	19.90	1.951803	0.7135
1926	22:05:01	20.00	1.951803	0.7131
1927	22:06:01	20.20	1.951803	0.7128
1928	22:07:01	20.30	1.951803	0.7124
1929	22:08:01	20.30	1.951803	0.7120
1930	22:09:01	20.20	1.951803	0.7116
1931	22:10:01	20.00	1.951803	0.7113
1932	22:11:01	19.90	1.951803	0.7109
1933	22:12:01	19.80	1.951803	0.7105
1934	22:13:01	19.90	1.951803	0.7101
1935	22:14:01	20.00	1.951803	0.7098
1936	22:15:01	20.20	1.951803	0.7094
1937	22:16:01	20.30	1.950718	0.7104
1938	22:17:01	20.30	1.951079	0.7096
1939	22:18:01	20.20	1.951079	0.7092
1940	22:19:01	20.00	1.951079	0.7089
1941	22:20:01	19.90	1.951441	0.7080
1942	22:21:01	19.80	1.951079	0.7081
1943	22:22:01	19.80	1.950718	0.7082
1944	22:23:01	19.90	1.951079	0.7074
1945	22:24:01	20.10	1.950718	0.7075
1946	22:25:01	20.30	1.950718	0.7071
1947	22:26:01	20.30	1.950356	0.7072
1948	22:27:01	20.20	1.950356	0.7068
1949	22:28:01	20.10	1.949271	0.7079

1950	22:29:01	19.90	1.949994	0.7066
1951	22:30:01	19.80	1.949633	0.7067
1952	22:31:01	19.80	1.949633	0.7063
1953	22:32:01	19.90	1.949271	0.7064
1954	22:33:01	20.10	1.949271	0.7060
1955	22:34:01	20.30	1.949994	0.7047
1956	22:35:01	20.30	1.949271	0.7053
1957	22:36:01	20.20	1.949271	0.7049
1958	22:37:01	20.10	1.949271	0.7046
1959	22:38:01	19.90	1.949633	0.7037
1960	22:39:01	19.80	1.948909	0.7043
1961	22:40:01	19.80	1.948909	0.7040
1962	22:41:01	19.90	1.948909	0.7036
1963	22:42:01	20.00	1.948909	0.7032
1964	22:43:01	20.20	1.948909	0.7029
1965	22:44:01	20.30	1.948909	0.7025
1966	22:45:01	20.30	1.949271	0.7017
1967	22:46:01	20.10	1.948909	0.7018
1968	22:47:01	20.00	1.948547	0.7019
1969	22:48:01	19.90	1.948909	0.7011
1970	22:49:01	19.80	1.948909	0.7007
1971	22:50:01	19.90	1.948909	0.7003
1972	22:51:01	20.00	1.948909	0.7000
1973	22:52:01	20.20	1.948547	0.7001
1974	22:53:01	20.30	1.948909	0.6992
1975	22:54:01	20.30	1.948547	0.6994
1976	22:55:01	20.20	1.948547	0.6990
1977	22:56:01	20.00	1.948547	0.6986
1978	22:57:01	19.90	1.947462	0.6997
1979	22:58:01	19.80	1.948186	0.6984
1980	22:59:01	19.80	1.948186	0.6980
1981	23:00:01	20.00	1.947101	0.6991
1982	23:01:01	20.20	1.947462	0.6982
1983	23:02:01	20.30	1.948186	0.6970
1984	23:03:01	20.30	1.947824	0.6971
1985	23:04:01	20.20	1.947462	0.6972
1986	23:05:01	20.00	1.947101	0.6973
1987	23:06:01	19.90	1.947462	0.6965
1988	23:07:01	19.80	1.946739	0.6970
1989	23:08:01	19.80	1.947101	0.6962
1990	23:09:01	19.90	1.947462	0.6954
1991	23:10:01	20.10	1.946739	0.6960
1992	23:11:01	20.30	1.946739	0.6956
1993	23:12:01	20.30	1.946739	0.6952
1994	23:13:01	20.20	1.946016	0.6958
1995	23:14:01	20.00	1.946739	0.6945
1996	23:15:01	19.90	1.947101	0.6937
1997	23:16:01	19.80	1.946739	0.6938
1998	23:17:01	19.80	1.946377	0.6939
1999	23:18:01	19.90	1.946016	0.6940

2000	23:19:01	20.10	1.946016	0.6937
2001	23:20:01	20.30	1.946016	0.6933
2002	23:21:01	20.30	1.946377	0.6925
2003	23:22:01	20.20	1.946377	0.6922
2004	23:23:01	20.10	1.946016	0.6923
2005	23:24:01	19.90	1.946016	0.6919
2006	23:25:01	19.80	1.946016	0.6916
2007	23:26:01	19.80	1.946016	0.6912
2008	23:27:01	19.90	1.945654	0.6913
2009	23:28:01	20.00	1.946016	0.6905
2010	23:29:01	20.20	1.945654	0.6906
2011	23:30:01	20.30	1.946016	0.6898
2012	23:31:01	20.20	1.946016	0.6895
2013	23:32:01	20.10	1.946016	0.6891
2014	23:33:01	20.00	1.946016	0.6888
2015	23:34:01	19.80	1.945654	0.6889
2016	23:35:01	19.80	1.945654	0.6886
2017	23:36:01	19.90	1.945292	0.6887
2018	23:37:01	20.00	1.945654	0.6879
2019	23:38:01	20.20	1.945654	0.6875
2020	23:39:01	20.30	1.945654	0.6872
2021	23:40:01	20.30	1.946016	0.6864
2022	23:41:01	20.20	1.945654	0.6865
2023	23:42:01	20.00	1.945654	0.6861
2024	23:43:01	19.90	1.946016	0.6853
2025	23:44:01	19.80	1.944569	0.6868
2026	23:45:01	19.90	1.944930	0.6860
2027	23:46:01	20.00	1.944569	0.6861
2028	23:47:01	20.20	1.945292	0.6849
2029	23:48:01	20.30	1.944930	0.6850
2030	23:49:01	20.30	1.943845	0.6860
2031	23:50:01	20.20	1.944569	0.6848
2032	23:51:01	20.00	1.944569	0.6844
2033	23:52:01	19.90	1.944569	0.6841
2034	23:53:01	19.80	1.943845	0.6846
2035	23:54:01	19.80	1.943845	0.6843
2036	23:55:01	19.90	1.943845	0.6840
2037	23:56:01	20.10	1.943845	0.6836
2038	23:57:01	20.30	1.943483	0.6837
2039	23:58:01	20.30	1.943845	0.6829
2040	23:59:01	20.20	1.943483	0.6830
2041	0:00:01	20.10	1.943483	0.6827
2042	0:01:01	19.90	1.943483	0.6824
2043	0:02:01	19.80	1.943122	0.6825
2044	0:03:01	19.80	1.943122	0.6821
2045	0:04:01	19.90	1.943122	0.6818
2046	0:05:01	20.10	1.943845	0.6806
2047	0:06:01	20.20	1.943483	0.6807
2048	0:07:01	20.30	1.943845	0.6799
2049	0:08:01	20.20	1.943122	0.6804

2050	0:09:01	20.10	1.943122	0.6801
2051	0:10:01	19.90	1.943122	0.6798
2052	0:11:01	19.80	1.942760	0.6799
2053	0:12:01	19.80	1.943122	0.6791
2054	0:13:01	19.90	1.943122	0.6788
2055	0:14:01	20.00	1.942760	0.6789
2056	0:15:01	20.20	1.943122	0.6781
2057	0:16:01	20.30	1.942760	0.6782
2058	0:17:01	20.20	1.942760	0.6779
2059	0:18:01	20.10	1.942760	0.6775
2060	0:19:01	20.00	1.942760	0.6772
2061	0:20:01	19.80	1.942760	0.6769
2062	0:21:01	19.80	1.943122	0.6761
2063	0:22:01	19.90	1.942760	0.6762
2064	0:23:01	20.00	1.942037	0.6768
2065	0:24:01	20.20	1.942760	0.6755
2066	0:25:01	20.30	1.942398	0.6757
2067	0:26:01	20.30	1.942037	0.6758
2068	0:27:01	20.20	1.942037	0.6754
2069	0:28:01	20.00	1.942398	0.6747
2070	0:29:01	19.90	1.942398	0.6743
2071	0:30:01	19.80	1.941313	0.6753
2072	0:31:01	19.80	1.941675	0.6746
2073	0:32:01	19.90	1.942398	0.6733
2074	0:33:01	20.10	1.941313	0.6743
2075	0:34:01	20.30	1.940951	0.6745
2076	0:35:01	20.30	1.940951	0.6741
2077	0:36:01	20.20	1.941313	0.6734
2078	0:37:01	20.10	1.940951	0.6735
2079	0:38:01	19.90	1.940590	0.6736
2080	0:39:01	19.80	1.941675	0.6719
2081	0:40:01	19.80	1.941675	0.6716
2082	0:41:01	19.90	1.940590	0.6726
2083	0:42:01	20.00	1.941313	0.6714
2084	0:43:01	20.20	1.940951	0.6715
2085	0:44:01	20.30	1.940590	0.6716
2086	0:45:01	20.20	1.940228	0.6717
2087	0:46:01	20.10	1.940228	0.6714
2088	0:47:01	19.90	1.940228	0.6711
2089	0:48:01	19.80	1.940228	0.6707
2090	0:49:01	19.80	1.940228	0.6704
2091	0:50:01	19.90	1.939866	0.6705
2092	0:51:01	20.00	1.940228	0.6698
2093	0:52:01	20.20	1.940228	0.6694
2094	0:53:01	20.30	1.940228	0.6691
2095	0:54:01	20.20	1.940590	0.6684
2096	0:55:01	20.10	1.940228	0.6685
2097	0:56:01	20.00	1.939866	0.6686
2098	0:57:01	19.80	1.940228	0.6678
2099	0:58:01	19.80	1.940228	0.6675

2100	0:59:01	19.90	1.940228	0.6672
2101	1:00:01	20.00	1.939866	0.6673
2102	1:01:01	20.20	1.940228	0.6665
2103	1:02:01	20.30	1.939866	0.6667
2104	1:03:01	20.20	1.940228	0.6659
2105	1:04:01	20.10	1.939505	0.6664
2106	1:05:01	20.00	1.939866	0.6657
2107	1:06:01	19.90	1.939505	0.6658
2108	1:07:01	19.80	1.939505	0.6655
2109	1:08:01	19.90	1.938781	0.6660
2110	1:09:01	20.00	1.939505	0.6648
2111	1:10:01	20.10	1.939505	0.6645
2112	1:11:01	20.30	1.939505	0.6642
2113	1:12:01	20.30	1.939143	0.6643
2114	1:13:01	20.20	1.938420	0.6649
2115	1:14:01	20.00	1.939143	0.6637
2116	1:15:01	19.90	1.938420	0.6642
2117	1:16:01	19.80	1.939143	0.6631
2118	1:17:01	19.80	1.938058	0.6640
2119	1:18:01	19.90	1.937696	0.6641
2120	1:19:01	20.10	1.938420	0.6630
2121	1:20:01	20.20	1.938420	0.6626
2122	1:21:01	20.30	1.938058	0.6628
2123	1:22:01	20.20	1.938058	0.6624
2124	1:23:01	20.00	1.937334	0.6630
2125	1:24:01	19.90	1.937334	0.6627
2126	1:25:01	19.80	1.937696	0.6619
2127	1:26:01	19.80	1.937334	0.6620
2128	1:27:01	19.90	1.937696	0.6613
2129	1:28:01	20.10	1.937334	0.6614
2130	1:29:01	20.20	1.937334	0.6611
2131	1:30:01	20.30	1.937696	0.6604
2132	1:31:01	20.20	1.938058	0.6596
2133	1:32:01	20.00	1.937334	0.6602
2134	1:33:01	19.90	1.937334	0.6598
2135	1:34:01	19.80	1.937334	0.6595
2136	1:35:01	19.80	1.937334	0.6592
2137	1:36:01	19.90	1.937696	0.6585
2138	1:37:01	20.00	1.937334	0.6586
2139	1:38:01	20.20	1.937334	0.6583
2140	1:39:01	20.30	1.937334	0.6580
2141	1:40:01	20.20	1.937334	0.6577
2142	1:41:01	20.10	1.937334	0.6573
2143	1:42:01	19.90	1.937334	0.6570
2144	1:43:01	19.80	1.937334	0.6567
2145	1:44:01	19.80	1.937334	0.6564
2146	1:45:01	19.90	1.937334	0.6561
2147	1:46:01	20.00	1.937334	0.6558
2148	1:47:01	20.20	1.936611	0.6563
2149	1:48:01	20.30	1.937334	0.6552

2150	1:49:01	20.20	1.936249	0.6561
2151	1:50:01	20.10	1.936973	0.6550
2152	1:51:01	20.00	1.936611	0.6551
2153	1:52:01	19.80	1.936611	0.6548
2154	1:53:01	19.80	1.936249	0.6549
2155	1:54:01	19.90	1.936973	0.6538
2156	1:55:01	20.00	1.936249	0.6543
2157	1:56:01	20.10	1.936249	0.6540
2158	1:57:01	20.30	1.935164	0.6550
2159	1:58:01	20.30	1.935526	0.6542
2160	1:59:01	20.10	1.935888	0.6535
2161	2:00:01	20.00	1.935888	0.6532
2162	2:01:01	19.90	1.935164	0.6537
2163	2:02:01	19.80	1.935164	0.6534
2164	2:03:01	19.80	1.935526	0.6527
2165	2:04:01	19.90	1.934802	0.6532
2166	2:05:01	20.10	1.935526	0.6521
2167	2:06:01	20.30	1.934802	0.6526
2168	2:07:01	20.30	1.935526	0.6515
2169	2:08:01	20.20	1.934802	0.6520
2170	2:09:01	20.00	1.934802	0.6517
2171	2:10:01	19.90	1.934441	0.6518
2172	2:11:01	19.80	1.935164	0.6507
2173	2:12:01	19.80	1.934802	0.6508
2174	2:13:01	19.90	1.934441	0.6509
2175	2:14:01	20.10	1.934802	0.6502
2176	2:15:01	20.20	1.934441	0.6503
2177	2:16:01	20.30	1.934802	0.6496
2178	2:17:01	20.20	1.934802	0.6493
2179	2:18:01	20.00	1.934802	0.6490
2180	2:19:01	19.90	1.934441	0.6491
2181	2:20:01	19.80	1.934441	0.6488
2182	2:21:01	19.80	1.934441	0.6485
2183	2:22:01	19.90	1.934441	0.6482
2184	2:23:01	20.00	1.934441	0.6479
2185	2:24:01	20.20	1.934079	0.6480
2186	2:25:01	20.30	1.934441	0.6473
2187	2:26:01	20.20	1.934441	0.6470
2188	2:27:01	20.10	1.934441	0.6467
2189	2:28:01	19.90	1.934441	0.6464
2190	2:29:01	19.80	1.934441	0.6461
2191	2:30:01	19.80	1.934441	0.6458
2192	2:31:01	19.90	1.934441	0.6455
2193	2:32:01	20.00	1.934441	0.6452
2194	2:33:01	20.20	1.934441	0.6449
2195	2:34:01	20.30	1.934079	0.6450
2196	2:35:01	20.20	1.934079	0.6447
2197	2:36:01	20.10	1.933356	0.6453
2198	2:37:01	20.00	1.934079	0.6441
2199	2:38:01	19.80	1.934441	0.6434

2200	2:39:01	19.80	1.933356	0.6444
2201	2:40:01	19.80	1.932994	0.6445
2202	2:41:01	19.90	1.933356	0.6438
2203	2:42:01	20.10	1.933356	0.6435
2204	2:43:01	20.30	1.933356	0.6432
2205	2:44:01	20.30	1.933356	0.6429
2206	2:45:01	20.20	1.933356	0.6426
2207	2:46:01	20.00	1.933717	0.6419
2208	2:47:01	19.90	1.932632	0.6428
2209	2:48:01	19.80	1.932270	0.6430
2210	2:49:01	19.80	1.931909	0.6431
2211	2:50:01	19.90	1.932270	0.6424
2212	2:51:01	20.10	1.932270	0.6421
2213	2:52:01	20.20	1.932270	0.6418
2214	2:53:01	20.30	1.931547	0.6423
2215	2:54:01	20.20	1.931547	0.6420
2216	2:55:01	20.00	1.932270	0.6409
2217	2:56:01	19.90	1.931909	0.6410
2218	2:57:01	19.80	1.932632	0.6399
2219	2:58:01	19.80	1.931547	0.6408
2220	2:59:01	19.90	1.931547	0.6405
2221	3:00:01	20.10	1.931547	0.6403
2222	3:01:01	20.20	1.931547	0.6400
2223	3:02:01	20.30	1.931547	0.6397
2224	3:03:01	20.20	1.931547	0.6394
2225	3:04:01	20.10	1.931909	0.6387
2226	3:05:01	19.90	1.931547	0.6388
2227	3:06:01	19.80	1.931547	0.6385
2228	3:07:01	19.80	1.931547	0.6382
2229	3:08:01	19.90	1.931547	0.6379
2230	3:09:01	20.00	1.931547	0.6376
2231	3:10:01	20.20	1.931547	0.6374
2232	3:11:01	20.30	1.931185	0.6375
2233	3:12:01	20.20	1.931547	0.6368
2234	3:13:01	20.10	1.931547	0.6365
2235	3:14:01	19.90	1.930823	0.6370
2236	3:15:01	19.80	1.931547	0.6359
2237	3:16:01	19.80	1.931547	0.6356
2238	3:17:01	19.80	1.931547	0.6353
2239	3:18:01	20.00	1.931547	0.6350
2240	3:19:01	20.10	1.931185	0.6352
2241	3:20:01	20.30	1.931547	0.6345
2242	3:21:01	20.20	1.931547	0.6342
2243	3:22:01	20.10	1.931547	0.6339
2244	3:23:01	20.00	1.930823	0.6344
2245	3:24:01	19.80	1.930462	0.6345
2246	3:25:01	19.80	1.931547	0.6330
2247	3:26:01	19.80	1.930462	0.6340
2248	3:27:01	19.90	1.930823	0.6333
2249	3:28:01	20.10	1.930100	0.6338

2250	3:29:01	20.20	1.930823	0.6327
2251	3:30:01	20.30	1.930100	0.6332
2252	3:31:01	20.20	1.930823	0.6321
2253	3:32:01	20.00	1.931185	0.6315
2254	3:33:01	19.90	1.930100	0.6324
2255	3:34:01	19.80	1.930100	0.6321
2256	3:35:01	19.80	1.929738	0.6322
2257	3:36:01	19.90	1.929738	0.6319
2258	3:37:01	20.00	1.929377	0.6321
2259	3:38:01	20.20	1.930100	0.6310
2260	3:39:01	20.30	1.929377	0.6315
2261	3:40:01	20.20	1.929738	0.6308
2262	3:41:01	20.10	1.929015	0.6313
2263	3:42:01	19.90	1.929377	0.6306
2264	3:43:01	19.80	1.928653	0.6312
2265	3:44:01	19.80	1.929015	0.6305
2266	3:45:01	19.80	1.928653	0.6306
2267	3:46:01	20.00	1.928653	0.6303
2268	3:47:01	20.10	1.928653	0.6300
2269	3:48:01	20.30	1.928653	0.6298
2270	3:49:01	20.20	1.929015	0.6291
2271	3:50:01	20.10	1.929377	0.6284
2272	3:51:01	20.00	1.929377	0.6281
2273	3:52:01	19.80	1.928653	0.6286
2274	3:53:01	19.70	1.928653	0.6284
2275	3:54:01	19.80	1.928653	0.6281
2276	3:55:01	19.90	1.928653	0.6278
2277	3:56:01	20.10	1.929015	0.6271
2278	3:57:01	20.20	1.928292	0.6276
2279	3:58:01	20.30	1.928653	0.6270
2280	3:59:01	20.20	1.928653	0.6267
2281	4:00:01	20.00	1.928653	0.6264
2282	4:01:01	19.90	1.928653	0.6261
2283	4:02:01	19.80	1.928653	0.6259
2284	4:03:01	19.80	1.928653	0.6256
2285	4:04:01	19.90	1.928292	0.6257
2286	4:05:01	20.00	1.928653	0.6250
2287	4:06:01	20.20	1.928292	0.6251
2288	4:07:01	20.30	1.928292	0.6249
2289	4:08:01	20.20	1.928653	0.6242
2290	4:09:01	20.10	1.928292	0.6243
2291	4:10:01	19.90	1.928653	0.6236
2292	4:11:01	19.80	1.927930	0.6242
2293	4:12:01	19.80	1.927568	0.6243
2294	4:13:01	19.90	1.927568	0.6240
2295	4:14:01	20.00	1.927568	0.6237
2296	4:15:01	20.20	1.927568	0.6235
2297	4:16:01	20.30	1.926845	0.6240
2298	4:17:01	20.20	1.927930	0.6225
2299	4:18:01	20.10	1.927930	0.6222

2300	4:19:01	19.90	1.927568	0.6224
2301	4:20:01	19.80	1.927207	0.6225
2302	4:21:01	19.80	1.927568	0.6218
2303	4:22:01	19.80	1.927207	0.6219
2304	4:23:01	20.00	1.927207	0.6217
2305	4:24:01	20.10	1.926845	0.6218
2306	4:25:01	20.30	1.926845	0.6215
2307	4:26:01	20.20	1.927207	0.6208
2308	4:27:01	20.10	1.926483	0.6214
2309	4:28:01	20.00	1.926845	0.6207
2310	4:29:01	19.80	1.926483	0.6208
2311	4:30:01	19.80	1.925760	0.6213
2312	4:31:01	19.80	1.926483	0.6203
2313	4:32:01	19.90	1.926845	0.6196
2314	4:33:01	20.10	1.926483	0.6197
2315	4:34:01	20.20	1.925760	0.6203
2316	4:35:01	20.30	1.925760	0.6200
2317	4:36:01	20.20	1.926483	0.6189
2318	4:37:01	20.00	1.926121	0.6191
2319	4:38:01	19.90	1.926121	0.6188
2320	4:39:01	19.80	1.925760	0.6189
2321	4:40:01	19.80	1.926121	0.6182
2322	4:41:01	19.90	1.926121	0.6180
2323	4:42:01	20.00	1.925760	0.6181
2324	4:43:01	20.20	1.925760	0.6178
2325	4:44:01	20.20	1.925760	0.6176
2326	4:45:01	20.20	1.925398	0.6177
2327	4:46:01	20.10	1.925760	0.6170
2328	4:47:01	19.90	1.925760	0.6168
2329	4:48:01	19.80	1.925760	0.6165
2330	4:49:01	19.80	1.925760	0.6162
2331	4:50:01	19.90	1.925760	0.6159
2332	4:51:01	20.00	1.925760	0.6157
2333	4:52:01	20.10	1.925760	0.6154
2334	4:53:01	20.30	1.925398	0.6155
2335	4:54:01	20.20	1.925760	0.6149
2336	4:55:01	20.10	1.925398	0.6150
2337	4:56:01	19.90	1.925036	0.6151
2338	4:57:01	19.80	1.925398	0.6145
2339	4:58:01	19.80	1.925398	0.6142
2340	4:59:01	19.80	1.925398	0.6139
2341	5:00:01	19.90	1.925760	0.6133
2342	5:01:01	20.10	1.925398	0.6134
2343	5:02:01	20.20	1.924313	0.6143
2344	5:03:01	20.20	1.924674	0.6137
2345	5:04:01	20.10	1.924674	0.6134
2346	5:05:01	20.00	1.925036	0.6127
2347	5:06:01	19.80	1.924313	0.6133
2348	5:07:01	19.80	1.923589	0.6138
2349	5:08:01	19.80	1.924313	0.6127

2350	5:09:01	19.90	1.924313	0.6125
2351	5:10:01	20.10	1.924674	0.6118
2352	5:11:01	20.20	1.923951	0.6123
2353	5:12:01	20.20	1.925036	0.6109
2354	5:13:01	20.10	1.923951	0.6118
2355	5:14:01	20.00	1.923951	0.6115
2356	5:15:01	19.80	1.923228	0.6121
2357	5:16:01	19.80	1.923951	0.6110
2358	5:17:01	19.80	1.923228	0.6115
2359	5:18:01	19.90	1.923228	0.6113
2360	5:19:01	20.10	1.923589	0.6106
2361	5:20:01	20.20	1.923589	0.6104
2362	5:21:01	20.20	1.923589	0.6101
2363	5:22:01	20.20	1.923589	0.6098
2364	5:23:01	20.00	1.922866	0.6103
2365	5:24:01	19.90	1.923228	0.6097
2366	5:25:01	19.80	1.922866	0.6098
2367	5:26:01	19.80	1.922866	0.6096
2368	5:27:01	19.90	1.923228	0.6089
2369	5:28:01	20.00	1.922866	0.6090
2370	5:29:01	20.20	1.922866	0.6088
2371	5:30:01	20.30	1.922866	0.6085
2372	5:31:01	20.20	1.922866	0.6083
2373	5:32:01	20.10	1.922866	0.6080
2374	5:33:01	19.90	1.922866	0.6077
2375	5:34:01	19.80	1.922866	0.6075
2376	5:35:01	19.80	1.922504	0.6076
2377	5:36:01	19.80	1.922866	0.6070
2378	5:37:01	20.00	1.922866	0.6067
2379	5:38:01	20.10	1.922866	0.6064
2380	5:39:01	20.20	1.922866	0.6062
2381	5:40:01	20.20	1.922866	0.6059
2382	5:41:01	20.10	1.922866	0.6057
2383	5:42:01	20.00	1.922866	0.6054
2384	5:43:01	19.80	1.922866	0.6052
2385	5:44:01	19.80	1.922866	0.6049
2386	5:45:01	19.80	1.922504	0.6050
2387	5:46:01	19.90	1.922504	0.6048
2388	5:47:01	20.10	1.922866	0.6041
2389	5:48:01	20.20	1.922504	0.6043
2390	5:49:01	20.20	1.922142	0.6044
2391	5:50:01	20.20	1.922504	0.6037
2392	5:51:01	20.00	1.921419	0.6046
2393	5:52:01	19.90	1.921419	0.6044
2394	5:53:01	19.80	1.921781	0.6037
2395	5:54:01	19.80	1.922142	0.6031
2396	5:55:01	19.90	1.921781	0.6032
2397	5:56:01	20.00	1.921057	0.6037
2398	5:57:01	20.20	1.922504	0.6020
2399	5:58:01	20.30	1.921419	0.6029

2400	5:59:01	20.20	1.922142	0.6018
2401	6:00:01	20.00	1.921781	0.6020
2402	6:01:01	19.90	1.921057	0.6025
2403	6:02:01	19.80	1.921781	0.6015
2404	6:03:01	19.80	1.921419	0.6016
2405	6:04:01	19.90	1.920696	0.6021
2406	6:05:01	20.00	1.920334	0.6022
2407	6:06:01	20.20	1.921419	0.6008
2408	6:07:01	20.20	1.920696	0.6013
2409	6:08:01	20.20	1.920696	0.6011
2410	6:09:01	20.10	1.919972	0.6016
2411	6:10:01	19.90	1.920334	0.6010
2412	6:11:01	19.80	1.920334	0.6007
2413	6:12:01	19.80	1.919972	0.6008
2414	6:13:01	19.80	1.920696	0.5998
2415	6:14:01	20.00	1.919972	0.6003
2416	6:15:01	20.10	1.921057	0.5989
2417	6:16:01	20.20	1.920334	0.5994
2418	6:17:01	20.20	1.919972	0.5996
2419	6:18:01	20.10	1.919972	0.5993
2420	6:19:01	19.90	1.919972	0.5991
2421	6:20:01	19.80	1.919972	0.5988
2422	6:21:01	19.80	1.919972	0.5986
2423	6:22:01	19.80	1.919972	0.5983
2424	6:23:01	19.90	1.919972	0.5981
2425	6:24:01	20.10	1.919972	0.5978
2426	6:25:01	20.20	1.919972	0.5976
2427	6:26:01	20.30	1.919972	0.5973
2428	6:27:01	20.20	1.919611	0.5975
2429	6:28:01	20.00	1.919972	0.5968
2430	6:29:01	19.90	1.919972	0.5966
2431	6:30:01	19.80	1.919611	0.5967
2432	6:31:01	19.80	1.919611	0.5965
2433	6:32:01	19.90	1.918887	0.5970
2434	6:33:01	20.00	1.919972	0.5956
2435	6:34:01	20.20	1.919249	0.5961
2436	6:35:01	20.20	1.919972	0.5951
2437	6:36:01	20.20	1.919611	0.5952
2438	6:37:01	20.00	1.919972	0.5946
2439	6:38:01	19.90	1.919611	0.5947
2440	6:39:01	19.80	1.919249	0.5949
2441	6:40:01	19.80	1.918525	0.5954
2442	6:41:01	19.90	1.919611	0.5940
2443	6:42:01	20.00	1.918887	0.5945
2444	6:43:01	20.20	1.919611	0.5935
2445	6:44:01	20.30	1.919249	0.5936
2446	6:45:01	20.20	1.919249	0.5934
2447	6:46:01	20.10	1.918887	0.5935
2448	6:47:01	19.90	1.918164	0.5940
2449	6:48:01	19.80	1.918164	0.5938

2450	6:49:01	19.80	1.918525	0.5931
2451	6:50:01	19.80	1.918525	0.5929
2452	6:51:01	19.90	1.918164	0.5930
2453	6:52:01	20.10	1.918164	0.5928
2454	6:53:01	20.20	1.918525	0.5922
2455	6:54:01	20.20	1.917802	0.5927
2456	6:55:01	20.10	1.918887	0.5913
2457	6:56:01	19.90	1.918164	0.5918
2458	6:57:01	19.80	1.917802	0.5919
2459	6:58:01	19.80	1.917802	0.5917
2460	6:59:01	19.80	1.917802	0.5914
2461	7:00:01	19.90	1.917078	0.5919
2462	7:01:01	20.10	1.917078	0.5917
2463	7:02:01	20.20	1.917440	0.5911
2464	7:03:01	20.20	1.917440	0.5908
2465	7:04:01	20.10	1.917078	0.5910
2466	7:05:01	20.00	1.917440	0.5904
2467	7:06:01	19.80	1.917078	0.5905
2468	7:07:01	19.80	1.917078	0.5902
2469	7:08:01	19.80	1.917440	0.5896
2470	7:09:01	19.90	1.917078	0.5898
2471	7:10:01	20.10	1.917078	0.5895
2472	7:11:01	20.20	1.917078	0.5893
2473	7:12:01	20.20	1.917078	0.5890
2474	7:13:01	20.10	1.917078	0.5888
2475	7:14:01	20.00	1.917078	0.5886
2476	7:15:01	19.80	1.917440	0.5879
2477	7:16:01	19.80	1.917078	0.5881
2478	7:17:01	19.80	1.917078	0.5878
2479	7:18:01	19.90	1.917078	0.5876
2480	7:19:01	20.10	1.917078	0.5874
2481	7:20:01	20.20	1.917078	0.5871
2482	7:21:01	20.20	1.917078	0.5869
2483	7:22:01	20.20	1.917078	0.5866
2484	7:23:01	20.00	1.916717	0.5868
2485	7:24:01	19.90	1.917078	0.5862
2486	7:25:01	19.80	1.916355	0.5867
2487	7:26:01	19.80	1.916717	0.5861
2488	7:27:01	19.90	1.915993	0.5866
2489	7:28:01	20.00	1.916717	0.5856
2490	7:29:01	20.20	1.916717	0.5853
2491	7:30:01	20.30	1.916355	0.5855
2492	7:31:01	20.20	1.916717	0.5849
2493	7:32:01	20.10	1.916355	0.5850
2494	7:33:01	19.90	1.916717	0.5844
2495	7:34:01	19.80	1.917078	0.5838
2496	7:35:01	19.80	1.915993	0.5846
2497	7:36:01	19.90	1.914908	0.5855
2498	7:37:01	20.00	1.916717	0.5834
2499	7:38:01	20.20	1.915993	0.5839

2500	7:39:01	20.30	1.915270	0.5844
2501	7:40:01	20.20	1.915270	0.5842
2502	7:41:01	20.10	1.915632	0.5836
2503	7:42:01	19.90	1.915632	0.5834
2504	7:43:01	19.80	1.914908	0.5839
2505	7:44:01	19.80	1.914908	0.5836
2506	7:45:01	19.80	1.914546	0.5837
2507	7:46:01	19.90	1.915270	0.5828
2508	7:47:01	20.10	1.915632	0.5822
2509	7:48:01	20.20	1.915270	0.5823
2510	7:49:01	20.20	1.914546	0.5828
2511	7:50:01	20.10	1.915270	0.5818
2512	7:51:01	20.00	1.914546	0.5823
2513	7:52:01	19.80	1.914546	0.5821
2514	7:53:01	19.80	1.914185	0.5822
2515	7:54:01	19.80	1.914185	0.5820
2516	7:55:01	19.90	1.914546	0.5814
2517	7:56:01	20.10	1.914546	0.5812
2518	7:57:01	20.20	1.914185	0.5813
2519	7:58:01	20.30	1.914185	0.5811
2520	7:59:01	20.20	1.914185	0.5808
2521	8:00:01	20.00	1.914546	0.5802
2522	8:01:01	19.90	1.914185	0.5804
2523	8:02:01	19.80	1.914185	0.5801
2524	8:03:01	19.80	1.914185	0.5799
2525	8:04:01	19.90	1.914185	0.5797
2526	8:05:01	20.00	1.914185	0.5794
2527	8:06:01	20.20	1.914185	0.5792
2528	8:07:01	20.30	1.914185	0.5790
2529	8:08:01	20.20	1.914185	0.5787
2530	8:09:01	20.10	1.914185	0.5785
2531	8:10:01	19.90	1.914185	0.5783
2532	8:11:01	19.80	1.914185	0.5780
2533	8:12:01	19.80	1.914185	0.5778
2534	8:13:01	19.80	1.913823	0.5779
2535	8:14:01	19.90	1.914185	0.5774
2536	8:15:01	20.10	1.914185	0.5771
2537	8:16:01	20.20	1.913100	0.5780
2538	8:17:01	20.20	1.914185	0.5767
2539	8:18:01	20.10	1.913823	0.5768
2540	8:19:01	20.00	1.913461	0.5769
2541	8:20:01	19.80	1.913823	0.5763
2542	8:21:01	19.80	1.913823	0.5761
2543	8:22:01	19.80	1.913461	0.5762
2544	8:23:01	19.90	1.913100	0.5764
2545	8:24:01	20.10	1.913461	0.5758
2546	8:25:01	20.20	1.913823	0.5752
2547	8:26:01	20.20	1.913461	0.5753
2548	8:27:01	20.10	1.913461	0.5751
2549	8:28:01	20.00	1.914185	0.5741

2550	8:29:01	19.80	1.913100	0.5750
2551	8:30:01	19.80	1.913100	0.5748
2552	8:31:01	19.80	1.912738	0.5749
2553	8:32:01	19.90	1.913100	0.5743
2554	8:33:01	20.10	1.913100	0.5741
2555	8:34:01	20.20	1.912376	0.5746
2556	8:35:01	20.30	1.912376	0.5743
2557	8:36:01	20.20	1.912738	0.5738
2558	8:37:01	20.00	1.911653	0.5746
2559	8:38:01	19.90	1.912738	0.5733
2560	8:39:01	19.80	1.911653	0.5742
2561	8:40:01	19.80	1.912014	0.5736
2562	8:41:01	19.90	1.912376	0.5730
2563	8:42:01	20.00	1.912376	0.5728
2564	8:43:01	20.20	1.911653	0.5732
2565	8:44:01	20.30	1.911653	0.5730
2566	8:45:01	20.20	1.912738	0.5717
2567	8:46:01	20.10	1.911653	0.5726
2568	8:47:01	19.90	1.912014	0.5720
2569	8:48:01	19.80	1.911653	0.5721
2570	8:49:01	19.80	1.911653	0.5719
2571	8:50:01	19.90	1.911291	0.5720
2572	8:51:01	20.00	1.911653	0.5714
2573	8:52:01	20.20	1.911291	0.5716
2574	8:53:01	20.30	1.911291	0.5713
2575	8:54:01	20.20	1.911291	0.5711
2576	8:55:01	20.10	1.911291	0.5709
2577	8:56:01	19.90	1.911291	0.5707
2578	8:57:01	19.80	1.911291	0.5705
2579	8:58:01	19.80	1.911291	0.5702
2580	8:59:01	19.80	1.911291	0.5700
2581	9:00:01	20.00	1.911291	0.5698
2582	9:01:01	20.10	1.910929	0.5699
2583	9:02:01	20.30	1.911291	0.5693
2584	9:03:01	20.20	1.911291	0.5691
2585	9:04:01	20.10	1.910929	0.5692
2586	9:05:01	20.00	1.911291	0.5687
2587	9:06:01	19.80	1.910929	0.5688
2588	9:07:01	19.80	1.911291	0.5682
2589	9:08:01	19.80	1.910929	0.5684
2590	9:09:01	19.90	1.910568	0.5685
2591	9:10:01	20.10	1.909844	0.5690
2592	9:11:01	20.20	1.911291	0.5673
2593	9:12:01	20.30	1.911291	0.5671
2594	9:13:01	20.20	1.911291	0.5669
2595	9:14:01	20.00	1.909844	0.5681
2596	9:15:01	19.90	1.910929	0.5668
2597	9:16:01	19.80	1.910568	0.5669
2598	9:17:01	19.80	1.910206	0.5671
2599	9:18:01	19.90	1.909844	0.5672

2600	9:19:01	20.10	1.910568	0.5663
2601	9:20:01	20.20	1.909482	0.5671
2602	9:21:01	20.30	1.909482	0.5669
2603	9:22:01	20.20	1.910206	0.5660
2604	9:23:01	20.00	1.909844	0.5661
2605	9:24:01	19.90	1.909482	0.5662
2606	9:25:01	19.80	1.909482	0.5660
2607	9:26:01	19.80	1.909482	0.5658
2608	9:27:01	19.90	1.908759	0.5663
2609	9:28:01	20.00	1.909482	0.5654
2610	9:29:01	20.20	1.909844	0.5648
2611	9:30:01	20.30	1.908397	0.5660
2612	9:31:01	20.20	1.908759	0.5654
2613	9:32:01	20.10	1.908759	0.5652
2614	9:33:01	19.90	1.909121	0.5646
2615	9:34:01	19.80	1.909121	0.5644
2616	9:35:01	19.80	1.909844	0.5635
2617	9:36:01	19.90	1.909121	0.5640
2618	9:37:01	20.00	1.908759	0.5641
2619	9:38:01	20.20	1.908759	0.5639
2620	9:39:01	20.30	1.908397	0.5640
2621	9:40:01	20.20	1.909121	0.5631
2622	9:41:01	20.10	1.908759	0.5632
2623	9:42:01	19.90	1.908759	0.5630
2624	9:43:01	19.80	1.908759	0.5628
2625	9:44:01	19.80	1.908036	0.5633
2626	9:45:01	19.90	1.908397	0.5627
2627	9:46:01	20.00	1.908397	0.5625
2628	9:47:01	20.20	1.908397	0.5623
2629	9:48:01	20.30	1.908397	0.5620
2630	9:49:01	20.20	1.908397	0.5618
2631	9:50:01	20.10	1.908397	0.5616
2632	9:51:01	19.90	1.908397	0.5614
2633	9:52:01	19.80	1.908036	0.5615
2634	9:53:01	19.80	1.908397	0.5610
2635	9:54:01	19.90	1.908397	0.5608
2636	9:55:01	20.00	1.907674	0.5612
2637	9:56:01	20.20	1.908397	0.5603
2638	9:57:01	20.30	1.908397	0.5601
2639	9:58:01	20.20	1.908397	0.5599
2640	9:59:01	20.10	1.908036	0.5600
2641	10:00:01	19.90	1.908036	0.5598
2642	10:01:01	19.80	1.908397	0.5592
2643	10:02:01	19.80	1.907674	0.5597
2644	10:03:01	19.90	1.907674	0.5595
2645	10:04:01	20.00	1.907674	0.5593
2646	10:05:01	20.20	1.908397	0.5584
2647	10:06:01	20.30	1.908036	0.5585
2648	10:07:01	20.20	1.907312	0.5590
2649	10:08:01	20.10	1.908036	0.5581

2650	10:09:01	19.90	1.907674	0.5582
2651	10:10:01	19.80	1.906950	0.5587
2652	10:11:01	19.80	1.906950	0.5585
2653	10:12:01	19.90	1.906950	0.5583
2654	10:13:01	20.00	1.907674	0.5574
2655	10:14:01	20.20	1.906950	0.5579
2656	10:15:01	20.30	1.906950	0.5576
2657	10:16:01	20.20	1.906227	0.5581
2658	10:17:01	20.10	1.908036	0.5562
2659	10:18:01	19.90	1.906227	0.5577
2660	10:19:01	19.80	1.908036	0.5558
2661	10:20:01	19.80	1.906227	0.5573
2662	10:21:01	19.90	1.906589	0.5567
2663	10:22:01	20.10	1.906589	0.5565
2664	10:23:01	20.30	1.906589	0.5563
2665	10:24:01	20.30	1.906227	0.5564
2666	10:25:01	20.30	1.906227	0.5562
2667	10:26:01	20.10	1.906227	0.5560
2668	10:27:01	19.90	1.906227	0.5558
2669	10:28:01	19.80	1.905504	0.5563
2670	10:29:01	19.80	1.905504	0.5561
2671	10:30:01	19.80	1.906227	0.5552
2672	10:31:01	20.00	1.905504	0.5556
2673	10:32:01	20.20	1.905504	0.5554
2674	10:33:01	20.30	1.905865	0.5549
2675	10:34:01	20.30	1.906227	0.5543
2676	10:35:01	20.10	1.905865	0.5545
2677	10:36:01	20.00	1.905504	0.5546
2678	10:37:01	19.80	1.905865	0.5540
2679	10:38:01	19.80	1.905865	0.5538
2680	10:39:01	19.90	1.905504	0.5540
2681	10:40:01	20.10	1.905504	0.5538
2682	10:41:01	20.20	1.905142	0.5539
2683	10:42:01	20.20	1.905504	0.5533
2684	10:43:01	20.20	1.905504	0.5531
2685	10:44:01	20.00	1.905504	0.5529
2686	10:45:01	19.90	1.905504	0.5527
2687	10:46:01	19.80	1.905504	0.5525
2688	10:47:01	19.80	1.905504	0.5523
2689	10:48:01	19.90	1.905142	0.5524
2690	10:49:01	20.10	1.905504	0.5519
2691	10:50:01	20.30	1.905504	0.5517
2692	10:51:01	20.30	1.905504	0.5515
2693	10:52:01	20.20	1.905504	0.5513
2694	10:53:01	20.00	1.905142	0.5514
2695	10:54:01	19.90	1.905504	0.5508
2696	10:55:01	19.80	1.905865	0.5503
2697	10:56:01	19.80	1.905504	0.5504
2698	10:57:01	19.90	1.905504	0.5502
2699	10:58:01	20.10	1.905504	0.5500

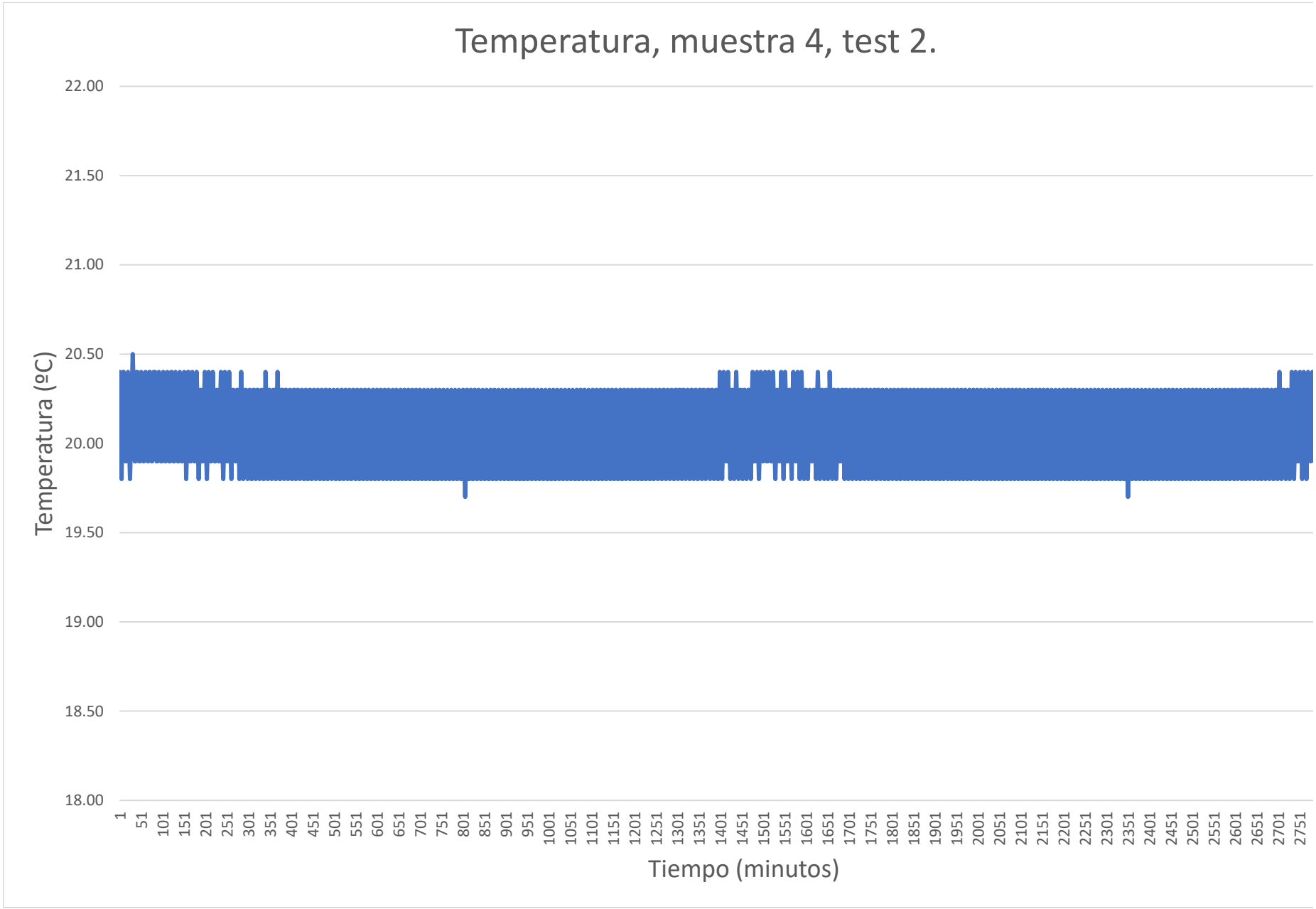
2700	10:59:01	20.30	1.905142	0.5502
2701	11:00:01	20.30	1.905142	0.5499
2702	11:01:01	20.20	1.904419	0.5504
2703	11:02:01	20.10	1.905142	0.5495
2704	11:03:01	19.90	1.905142	0.5493
2705	11:04:01	19.80	1.904780	0.5495
2706	11:05:01	19.80	1.904419	0.5496
2707	11:06:01	19.90	1.904057	0.5497
2708	11:07:01	20.10	1.904780	0.5488
2709	11:08:01	20.30	1.904419	0.5490
2710	11:09:01	20.30	1.903695	0.5494
2711	11:10:01	20.20	1.904419	0.5486
2712	11:11:01	20.00	1.904057	0.5487
2713	11:12:01	19.90	1.903333	0.5492
2714	11:13:01	19.80	1.904780	0.5476
2715	11:14:01	19.80	1.904057	0.5481
2716	11:15:01	19.90	1.903695	0.5482
2717	11:16:01	20.10	1.904419	0.5473
2718	11:17:01	20.30	1.904057	0.5475
2719	11:18:01	20.30	1.903695	0.5476
2720	11:19:01	20.20	1.904057	0.5471
2721	11:20:01	20.00	1.902610	0.5482
2722	11:21:01	19.90	1.903333	0.5473
2723	11:22:01	19.80	1.903333	0.5471
2724	11:23:01	19.80	1.903333	0.5469
2725	11:24:01	19.90	1.902972	0.5471
2726	11:25:01	20.10	1.902610	0.5472
2727	11:26:01	20.30	1.902972	0.5467
2728	11:27:01	20.30	1.902972	0.5465
2729	11:28:01	20.20	1.903695	0.5456
2730	11:29:01	20.10	1.902610	0.5464
2731	11:30:01	19.90	1.902610	0.5462
2732	11:31:01	19.80	1.903333	0.5453
2733	11:32:01	19.80	1.902972	0.5454
2734	11:33:01	19.90	1.902610	0.5456
2735	11:34:01	20.10	1.902610	0.5454
2736	11:35:01	20.30	1.902610	0.5452
2737	11:36:01	20.30	1.902610	0.5450
2738	11:37:01	20.20	1.902248	0.5451
2739	11:38:01	20.10	1.902610	0.5446
2740	11:39:01	19.90	1.902610	0.5444
2741	11:40:01	19.80	1.902610	0.5442
2742	11:41:01	19.80	1.902610	0.5440
2743	11:42:01	19.90	1.902248	0.5441
2744	11:43:01	20.10	1.902610	0.5436
2745	11:44:01	20.30	1.901887	0.5440
2746	11:45:01	20.30	1.902610	0.5432
2747	11:46:01	20.20	1.902610	0.5430
2748	11:47:01	20.10	1.902248	0.5431
2749	11:48:01	19.90	1.902610	0.5426

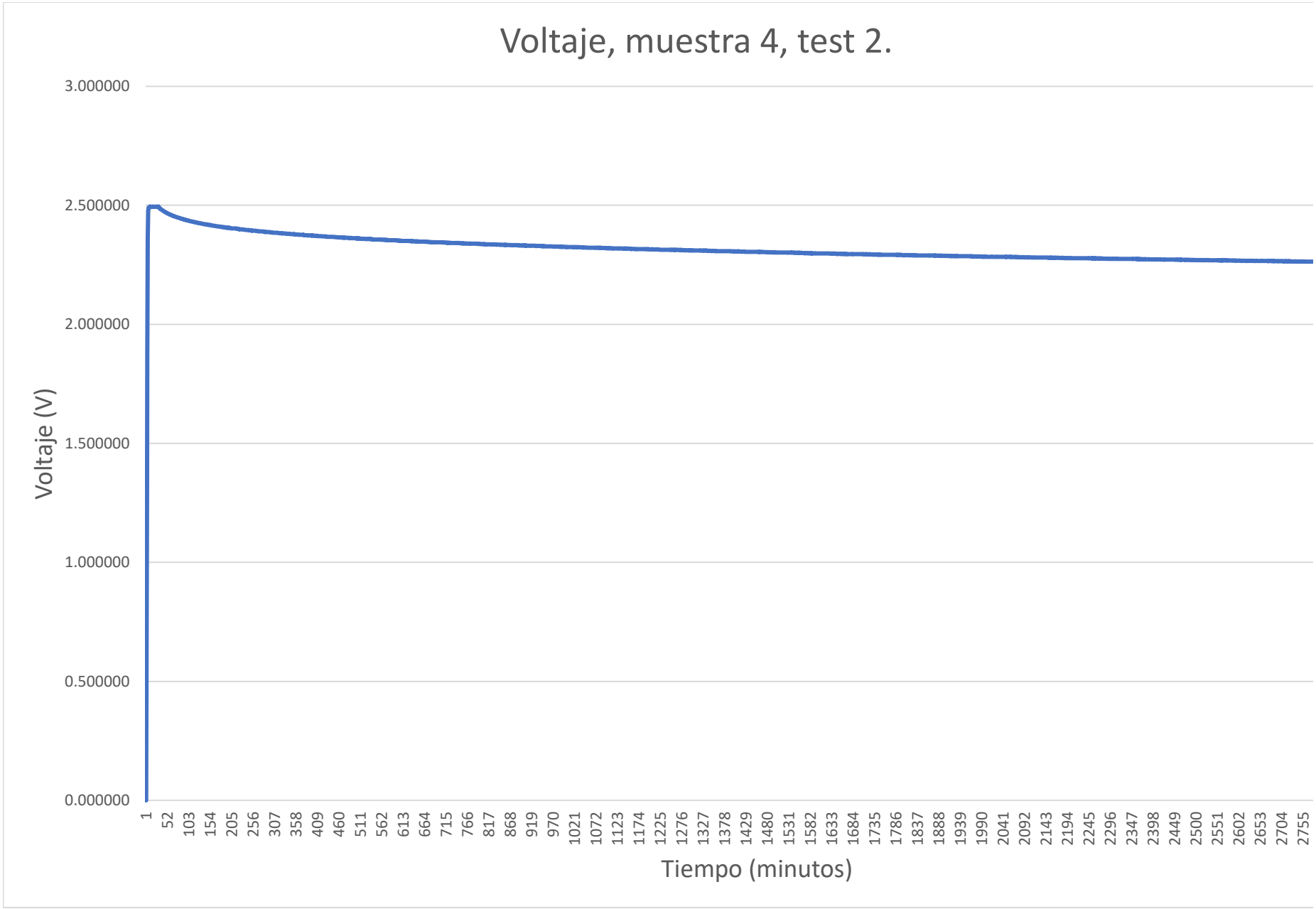
2750	11:49:01	19.80	1.902610	0.5424
2751	11:50:01	19.80	1.902610	0.5422
2752	11:51:01	19.90	1.902610	0.5420
2753	11:52:01	20.10	1.902248	0.5421
2754	11:53:01	20.30	1.902248	0.5419
2755	11:54:01	20.30	1.902248	0.5417
2756	11:55:01	20.20	1.902610	0.5412
2757	11:56:01	20.10	1.901525	0.5420
2758	11:57:01	19.90	1.902610	0.5408
2759	11:58:01	19.80	1.901525	0.5416
2760	11:59:01	19.80	1.901887	0.5410
2761	12:00:01	19.90	1.901887	0.5408
2762	12:01:01	20.10	1.901887	0.5406
2763	12:02:01	20.20	1.901163	0.5411
2764	12:03:01	20.30	1.900440	0.5416
2765	12:04:01	20.20	1.901525	0.5404
2766	12:05:01	20.10	1.902610	0.5392
2767	12:06:01	19.90	1.901163	0.5403
2768	12:07:01	19.80	1.901163	0.5401
2769	12:08:01	19.80	1.900440	0.5406
2770	12:09:01	19.90	1.900440	0.5404
2771	12:10:01	20.00	1.900440	0.5402
2772	12:11:01	20.20	1.900078	0.5403
2773	12:12:01	20.30	1.901163	0.5391
2774	12:13:01	20.30	1.901525	0.5386
2775	12:14:01	20.10	1.900078	0.5397
2776	12:15:01	20.00	1.900801	0.5389
2777	12:16:01	19.80	1.900801	0.5387
2778	12:17:01	19.80	1.900440	0.5388
2779	12:18:01	19.90	1.900078	0.5390
2780	12:19:01	20.00	1.900078	0.5388
2781	12:20:01	20.20	1.900078	0.5386
2782	12:21:01	20.30	1.900078	0.5384
2783	12:22:01	20.30	1.900440	0.5378
2784	12:23:01	20.20	1.899716	0.5383
2785	12:24:01	20.00	1.900078	0.5378
2786	12:25:01	19.90	1.900440	0.5373
2787	12:26:01	19.80	1.900078	0.5374
2788	12:27:01	19.80	1.899716	0.5375
2789	12:28:01	20.00	1.899716	0.5373
2790	12:29:01	20.20	1.899716	0.5371
2791	12:30:01	20.30	1.899716	0.5369
2792	12:31:01	20.30	1.899716	0.5367
2793	12:32:01	20.20	1.900078	0.5362
2794	12:33:01	20.10	1.899716	0.5364
2795	12:34:01	19.90	1.899716	0.5362
2796	12:35:01	19.80	1.899716	0.5360
2797	12:36:01	19.80	1.899716	0.5358
2798	12:37:01	19.90	1.899716	0.5356
2799	12:38:01	20.10	1.899716	0.5354

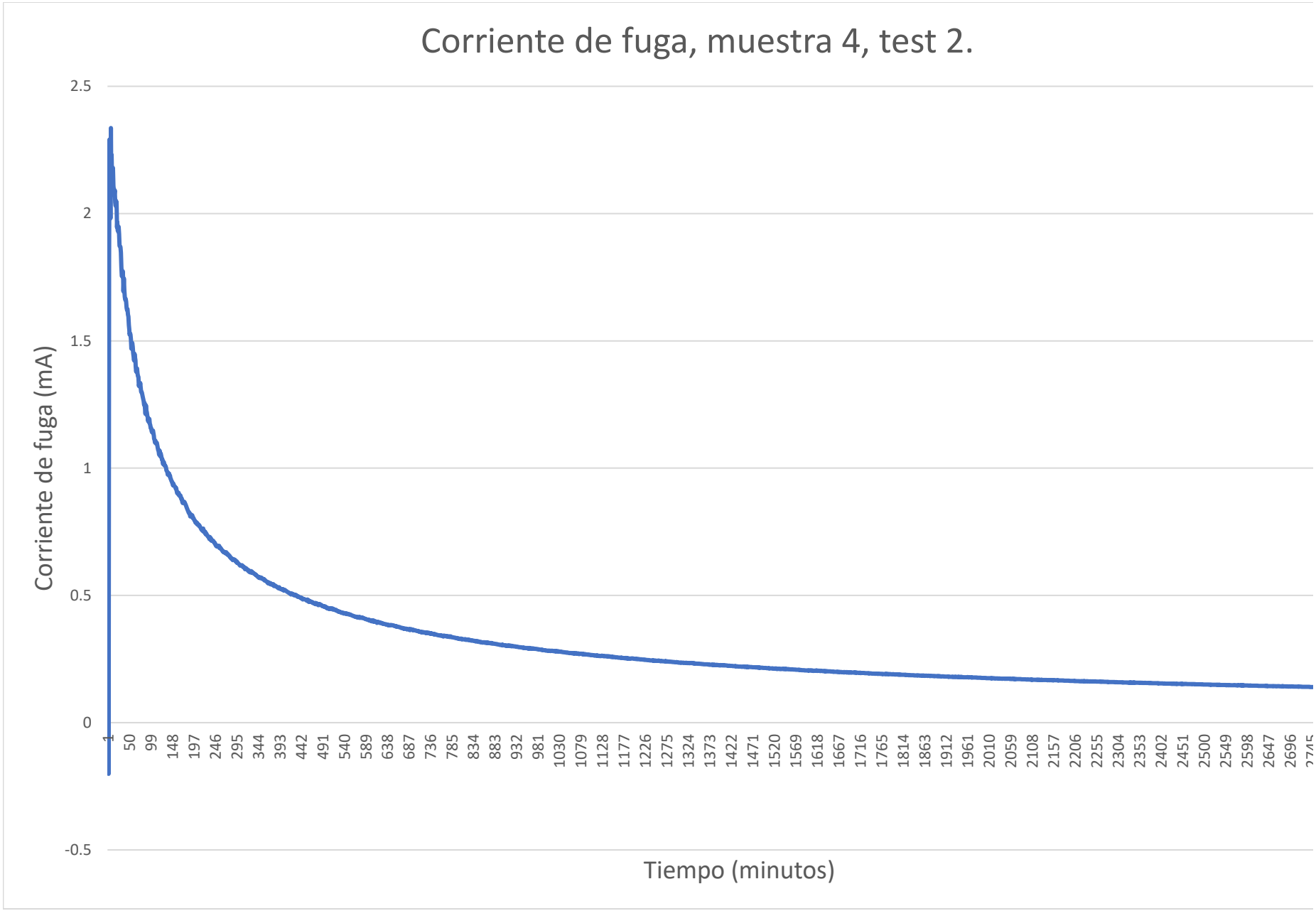
2800	12:39:01	20.30	1.899716	0.5352
2801	12:40:01	20.30	1.899716	0.5350
2802	12:41:01	20.20	1.899716	0.5348
2803	12:42:01	20.10	1.899716	0.5346
2804	12:43:01	19.90	1.899354	0.5347
2805	12:44:01	19.80	1.899354	0.5346
2806	12:45:01	19.80	1.899354	0.5344
2807	12:46:01	19.90	1.899716	0.5338
2808	12:47:01	20.10	1.899354	0.5340
2809	12:48:01	20.30	1.899354	0.5338
2810	12:49:01	20.30	1.898993	0.5339
2811	12:50:01	20.20	1.899716	0.5331
2812	12:51:01	20.10	1.899716	0.5329
2813	12:52:01	19.90	1.898993	0.5333
2814	12:53:01	19.80	1.898631	0.5335
2815	12:54:01	19.80	1.899354	0.5326
2816	12:55:01	19.90	1.899354	0.5324
2817	12:56:01	20.10	1.898631	0.5329
2818	12:57:01	20.30	1.898993	0.5324
2819	12:58:01	20.30	1.898631	0.5325
2820	12:59:01	20.20	1.898993	0.5320
2821	13:00:01	20.10	1.898269	0.5325
2822	13:01:01	19.90	1.898993	0.5316
2823	13:02:01	19.80	1.898631	0.5318
2824	13:03:01	19.80	1.898269	0.5319
2825	13:04:01	19.90	1.898631	0.5314
2826	13:05:01	20.10	1.897908	0.5318
2827	13:06:01	20.30	1.897184	0.5323
2828	13:07:01	20.30	1.897908	0.5315
2829	13:08:01	20.20	1.898269	0.5309
2830	13:09:01	20.10	1.897546	0.5314
2831	13:10:01	20.00	1.897184	0.5315
2832	13:11:01	19.80	1.897546	0.5310
2833	13:12:01	19.80	1.897546	0.5308
2834	13:13:01	19.90	1.897546	0.5306
2835	13:14:01	20.10	1.897184	0.5308
2836	13:15:01	20.30	1.898269	0.5296
2837	13:16:01	20.30	1.897184	0.5304
2838	13:17:01	20.30	1.896822	0.5305
2839	13:18:01	20.10	1.897184	0.5300
2840	13:19:01	20.00	1.896822	0.5302
2841	13:20:01	19.90	1.897184	0.5296
2842	13:21:01	19.80	1.896822	0.5298
2843	13:22:01	19.90	1.896822	0.5296
2844	13:23:01	20.10	1.897546	0.5288
2845	13:24:01	20.20	1.896822	0.5292
2846	13:25:01	20.30	1.896822	0.5290
2847	13:26:01	20.30	1.896822	0.5288
2848	13:27:01	20.10	1.897546	0.5280
2849	13:28:01	20.00	1.896822	0.5285

2850	13:29:01	19.90	1.896822	0.5283
2851	13:30:01	19.80	1.896822	0.5281
2852	13:31:01	19.90	1.896822	0.5279
2853	13:32:01	20.00	1.896822	0.5277
2854	13:33:01	20.20	1.896822	0.5275
2855	13:34:01	20.30	1.896822	0.5273
2856	13:35:01	20.30	1.896822	0.5272
2857	13:36:01	20.20	1.896822	0.5270
2858	13:37:01	20.00	1.896822	0.5268
2859	13:38:01	19.90	1.896822	0.5266
2860	13:39:01	19.80	1.896822	0.5264
2861	13:40:01	19.90	1.896822	0.5262
2862	13:41:01	20.00	1.896822	0.5260
2863	13:42:01	20.20	1.896461	0.5262
2864	13:43:01	20.30	1.896822	0.5257
2865	13:44:01	20.30	1.896461	0.5258
2866	13:45:01	20.20	1.896822	0.5253
2867	13:46:01	20.00	1.896099	0.5257
2868	13:47:01	19.90	1.896822	0.5249
2869	13:48:01	19.80	1.896461	0.5251
2870	13:49:01	19.90	1.896822	0.5246
2871	13:50:01	20.00	1.896822	0.5244
2872	13:51:01	20.20	1.896461	0.5245
2873	13:52:01	20.30	1.895737	0.5250
2874	13:53:01	20.30	1.896099	0.5245
2875	13:54:01	20.20	1.896461	0.5239
2876	13:55:01	20.10	1.896461	0.5238
2877	13:56:01	19.90	1.896099	0.5239
2878	13:57:01	19.80	1.895014	0.5247
2879	13:58:01	19.90	1.895376	0.5242
2880	13:59:01	20.00	1.895737	0.5237
2881	14:00:01	20.20	1.896099	0.5232
2882	14:01:01	20.30	1.895376	0.5236
2883	14:02:01	20.30	1.894652	0.5241
2884	14:03:01	20.20	1.894652	0.5239
2885	14:04:01	20.10	1.895014	0.5234
2886	14:05:01	19.90	1.894291	0.5238
2887	14:06:01	19.80	1.895737	0.5224
2888	14:07:01	19.80	1.894291	0.5235
2889	14:08:01	19.90	1.893929	0.5236
2890	14:09:01	20.10	1.895376	0.5222
2891	14:10:01	20.30	1.893929	0.5232
2892	14:11:01	20.30	1.894652	0.5224
2893	14:12:01	20.30	1.893929	0.5229
2894	14:13:01	20.10	1.894652	0.5221
2895	14:14:01	20.00	1.894652	0.5219
2896	14:15:01	19.90	1.894291	0.5220
2897	14:16:01	19.80	1.893929	0.5221
2898	14:17:01	19.90	1.895014	0.5210
2899	14:18:01	20.10	1.893929	0.5218

2900	14:19:01	20.30	1.894291	0.5213	
2901	14:20:01	20.30	1.893929	0.5214	
2902	14:21:01	20.30	1.894291	0.5209	
2903	14:22:01	20.20	1.894652	0.5204	
2904	14:23:01	20.00	1.893929	0.5209	
2905	14:24:01	19.90	1.893929	0.5207	
2906	14:25:01	19.80	1.893929	0.5205	
2907	14:26:01	19.90	1.893929	0.5203	
2908	14:27:01	20.00	1.893929	0.5201	
2909	14:28:01	20.20	1.893929	0.5200	
2910	14:29:01	20.30	1.893929	0.5198	48 horas


Temperatura, muestra 4, test 2.
22.00
21.50
21.00
20.50
20.00
19.50
19.00
18.50
18.00
Temperatura (ºC)
1
51
101
151
201
251
301
351
401
451
501
551
601
651
701
751
801
851
901
951
1001
1051
1101
1151
1201
1251
1301
1351
1401
1451
1501
1551
1601
1651
1701
1751
1801
1851
1901
1951
2001
2051
2101
2151
2201
2251
2301
2351
2401
2451
2501
2551
2601
2651
2701
2751
Tiempo (minutos)


Voltaje, muestra 4, test 2.
3.000000
2.500000
2.000000
1.500000
1.000000
0.500000
0.000000
Voltaje (V)
1
52
103
154
205
256
307
358
409
460
511
562
613
664
715
766
817
868
919
970
1021
1072
1123
1174
1225
1276
1327
1378
1429
1480
1531
1582
1633
1684
1735
1786
1837
1888
1939
1990
2041
2092
2143
2194
2245
2296
2347
2398
2449
2500
2551
2602
2653
2704
2755
Tiempo (minutos)


Corriente de fuga, muestra 4, test 2.
Corriente de fuga (mA)
2.5
2
1.5
1
0.5
0
-0.5
1
50
99
148
197
246
295
344
393
442
491
540
589
638
687
736
785
834
883
932
981
1030
1079
1128
1177
1226
1275
1324
1373
1422
1471
1520
1569
1618
1667
1716
1765
1814
1863
1912
1961
2010
2059
2108
2157
2206
2255
2304
2353
2402
2451
2500
2549
2598
2647
2696
Tiempo (minutos)

Numero	Hora	Temp.	Voltaje		
1	15:58:01	20.40	0.000000		
2	15:59:01	20.20	0.000362		
3	16:00:01	20.10	0.660488		
4	16:01:01	19.90	1.313741		
5	16:02:01	19.80	1.874035		
6	16:03:01	19.90	2.362709		
7	16:04:01	20.00	2.476648		
8	16:05:01	20.20	2.490393		
9	16:06:01	20.40	2.491840		
10	16:07:01	20.40	2.493287		
11	16:08:01	20.30	2.494734		
12	16:09:01	20.20	2.494734		
13	16:10:01	20.10	2.494372		
14	16:11:01	19.90	2.492925		
15	16:12:01	19.90	2.494010		
16	16:13:01	19.90	2.493649		
17	16:14:01	20.00	2.494734		
18	16:15:01	20.20	2.494734		
19	16:16:01	20.30	2.494372		
20	16:17:01	20.40	2.494010		
21	16:18:01	20.30	2.494010		
22	16:19:01	20.20	2.494010		
23	16:20:01	20.10	2.494372		
24	16:21:01	19.90	2.493649		
25	16:22:01	19.80	2.494010		
26	16:23:01	19.90	2.493649		
27	16:24:01	20.00	2.494734		
28	16:25:01	20.20	2.494010		
29	16:26:01	20.30	2.494372	Ifuga (mA)	
30	16:27:01	20.40	2.494372	0	30 minutos
31	16:28:01	20.50	2.493649	0.6025	
32	16:29:01	20.40	2.494734	-0.20111111	
33	16:30:01	20.30	2.490032	1.80833333	
34	16:31:01	20.20	2.487500	2.29066667	
35	16:32:01	20.00	2.486415	2.21027778	
36	16:33:01	19.90	2.486053	1.98071429	
37	16:34:01	19.90	2.483159	2.33604167	
38	16:35:01	19.90	2.482436	2.21037037	
39	16:36:01	20.10	2.480989	2.2305	
40	16:37:01	20.30	2.480265	2.13742424	
41	16:38:01	20.40	2.479180	2.11	
42	16:39:01	20.40	2.477372	2.17948718	
43	16:40:01	20.30	2.476648	2.11	
44	16:41:01	20.10	2.475563	2.08988889	
45	16:42:01	20.00	2.474478	2.07229167	
46	16:43:01	19.90	2.473031	2.0922549	
47	16:44:01	19.90	2.472308	2.04296296	
48	16:45:01	19.90	2.471223	2.03061404	
49	16:46:01	20.10	2.469776	2.04966667	

U1 (V)	2.494372
U2 (V)	2.260706
tiempo (s)	172860
Capacidad (F)	100
I(A)	0.00013518
I(mA)	0.13517644

50	16:47:01	20.30	2.468691	2.0381746
51	16:48:01	20.40	2.468691	1.9455303
52	16:49:01	20.30	2.467244	1.9657971
53	16:50:01	20.20	2.466520	1.93416667
54	16:51:01	20.10	2.465435	1.92913333
55	16:52:01	20.00	2.463988	1.94769231
56	16:53:01	19.90	2.463265	1.92018519
57	16:54:01	19.90	2.462903	1.87315476
58	16:55:01	20.00	2.461818	1.87091954
59	16:56:01	20.20	2.460733	1.86883333
60	16:57:01	20.30	2.460010	1.84741935
61	16:58:01	20.40	2.460010	1.7896875
62	16:59:01	20.30	2.459648	1.75373737
63	17:00:01	20.20	2.458563	1.75534314
64	17:01:01	20.10	2.457116	1.77409524
65	17:02:01	20.00	2.456754	1.74157407
66	17:03:01	19.90	2.456754	1.6945045
67	17:04:01	19.90	2.454584	1.74508772
68	17:05:01	20.00	2.454584	1.70034188
69	17:06:01	20.20	2.454222	1.67291667
70	17:07:01	20.40	2.453499	1.66150407
71	17:08:01	20.40	2.452414	1.665
72	17:09:01	20.30	2.451690	1.65434109
73	17:10:01	20.20	2.451329	1.63041667
74	17:11:01	20.10	2.450605	1.621
75	17:12:01	19.90	2.449520	1.62507246
76	17:13:01	19.90	2.449158	1.60333333
77	17:14:01	19.90	2.448435	1.59503472
78	17:15:01	20.00	2.448435	1.56248299
79	17:16:01	20.30	2.448073	1.5433
80	17:17:01	20.40	2.447711	1.52486928
81	17:18:01	20.40	2.446626	1.53032051
82	17:19:01	20.40	2.445903	1.52418239
83	17:20:01	20.40	2.445541	1.50712963
84	17:21:01	20.30	2.445903	1.46875758
85	17:22:01	20.20	2.444456	1.48559524
86	17:23:01	20.00	2.443371	1.49125731
87	17:24:01	19.90	2.443009	1.47594828
88	17:25:01	19.90	2.443009	1.4509322
89	17:26:01	19.90	2.442647	1.43680556
90	17:27:01	20.10	2.442286	1.42311475
91	17:28:01	20.30	2.440477	1.44879032
92	17:29:01	20.40	2.440115	1.43537037
93	17:30:01	20.30	2.439754	1.42234375
94	17:31:01	20.30	2.439754	1.40046154
95	17:32:01	20.10	2.439754	1.37924242
96	17:33:01	20.00	2.438668	1.38567164
97	17:34:01	19.90	2.437583	1.39188725
98	17:35:01	19.90	2.437583	1.37171498
99	17:36:01	19.90	2.437222	1.36071429

100	17:37:01	20.10	2.436498	1.3585446
101	17:38:01	20.30	2.437222	1.32291667
102	17:39:01	20.40	2.436136	1.32958904
103	17:40:01	20.30	2.435775	1.31975225
104	17:41:01	20.30	2.434328	1.33431111
105	17:42:01	20.10	2.434328	1.31675439
106	17:43:01	20.00	2.434328	1.29965368
107	17:44:01	19.90	2.433604	1.29846154
108	17:45:01	19.90	2.432881	1.29727848
109	17:46:01	20.00	2.432519	1.28860417
110	17:47:01	20.20	2.432158	1.28012346
111	17:48:01	20.30	2.431796	1.27186992
112	17:49:01	20.40	2.431434	1.26381526
113	17:50:01	20.30	2.431434	1.24876984
114	17:51:01	20.20	2.430349	1.25535294
115	17:52:01	20.10	2.430711	1.23374031
116	17:53:01	19.90	2.431072	1.21264368
117	17:54:01	19.90	2.428540	1.24681818
118	17:55:01	19.90	2.428902	1.22602996
119	17:56:01	20.00	2.428540	1.21911111
120	17:57:01	20.20	2.428540	1.20571429
121	17:58:01	20.40	2.428179	1.19914855
122	17:59:01	20.40	2.428179	1.18625448
123	18:00:01	20.30	2.427094	1.19287234
124	18:01:01	20.20	2.427094	1.18031579
125	18:02:01	20.00	2.425647	1.19314236
126	18:03:01	19.90	2.426008	1.17463918
127	18:04:01	19.90	2.425647	1.16879252
128	18:05:01	19.90	2.425647	1.15698653
129	18:06:01	20.10	2.424923	1.15748333
130	18:07:01	20.30	2.424923	1.1460231
131	18:08:01	20.40	2.424562	1.14068627
132	18:09:01	20.30	2.423838	1.14132686
133	18:10:01	20.20	2.422753	1.14774038
134	18:11:01	20.10	2.422753	1.13680952
135	18:12:01	20.00	2.422753	1.12608491
136	18:13:01	19.90	2.422753	1.11556075
137	18:14:01	19.90	2.422391	1.1108179
138	18:15:01	19.90	2.422391	1.10062691
139	18:16:01	20.20	2.421306	1.10706061
140	18:17:01	20.30	2.421306	1.09708709
141	18:18:01	20.40	2.420583	1.0980506
142	18:19:01	20.30	2.419859	1.0990118
143	18:20:01	20.20	2.419859	1.08937135
144	18:21:01	20.10	2.419859	1.07989855
145	18:22:01	19.90	2.419859	1.07058908
146	18:23:01	19.90	2.419498	1.0665812
147	18:24:01	19.90	2.419859	1.0524435
148	18:25:01	20.00	2.418051	1.06892157
149	18:26:01	20.20	2.418051	1.06001389

150	18:27:01	20.30	2.418412	1.04628099
151	18:28:01	20.40	2.416966	1.05745902
152	18:29:01	20.30	2.416966	1.04886179
153	18:30:01	20.20	2.416966	1.04040323
154	18:31:01	20.00	2.416966	1.03208
155	18:32:01	19.90	2.416242	1.03346561
156	18:33:01	19.80	2.416966	1.01582677
157	18:34:01	19.90	2.415880	1.02203125
158	18:35:01	20.00	2.415157	1.02344961
159	18:36:01	20.20	2.415519	1.0109359
160	18:37:01	20.40	2.414795	1.01243003
161	18:38:01	20.40	2.414434	1.00931818
162	18:39:01	20.30	2.414072	1.00626566
163	18:40:01	20.10	2.414072	0.99875622
164	18:41:01	20.00	2.414072	0.99135802
165	18:42:01	19.90	2.413710	0.9885049
166	18:43:01	19.90	2.413349	0.98568127
167	18:44:01	19.90	2.413710	0.97417874
168	18:45:01	20.10	2.412625	0.98017986
169	18:46:01	20.30	2.412625	0.97317857
170	18:47:01	20.40	2.411540	0.97910165
171	18:48:01	20.30	2.411902	0.96795775
172	18:49:01	20.20	2.411178	0.96962704
173	18:50:01	20.10	2.411540	0.9587037
174	18:51:01	20.00	2.411178	0.95625287
175	18:52:01	19.90	2.411178	0.9497032
176	18:53:01	19.90	2.410817	0.9473356
177	18:54:01	20.00	2.410817	0.94093468
178	18:55:01	20.20	2.410093	0.94271812
179	18:56:01	20.30	2.410455	0.93241111
180	18:57:01	20.40	2.409370	0.93821192
181	18:58:01	20.30	2.409370	0.93203947
182	18:59:01	20.20	2.409008	0.92989107
183	19:00:01	20.00	2.408646	0.92777056
184	19:01:01	19.90	2.408285	0.92566667
185	19:02:01	19.80	2.408285	0.91973291
186	19:03:01	19.90	2.407561	0.92156051
187	19:04:01	20.10	2.407923	0.91190928
188	19:05:01	20.30	2.408285	0.90237945
189	19:06:01	20.30	2.407923	0.90051042
190	19:07:01	20.30	2.407199	0.90241201
191	19:08:01	20.20	2.407199	0.89684156
192	19:09:01	20.10	2.406114	0.90243354
193	19:10:01	19.90	2.406476	0.89325203
194	19:11:01	19.90	2.406114	0.89149495
195	19:12:01	19.90	2.405391	0.89338353
196	19:13:01	20.00	2.405029	0.89164671
197	19:14:01	20.20	2.405391	0.88274802
198	19:15:01	20.30	2.405391	0.87752465
199	19:16:01	20.40	2.404667	0.87946078

200	19:17:01	20.30	2.405391	0.86726121
201	19:18:01	20.20	2.405391	0.86221899
202	19:19:01	20.00	2.404306	0.86768786
203	19:20:01	19.90	2.403944	0.86616858
204	19:21:01	19.80	2.403221	0.86810476
205	19:22:01	19.90	2.402859	0.86660038
206	19:23:01	20.10	2.402859	0.86170433
207	19:24:01	20.30	2.402497	0.86025281
208	19:25:01	20.40	2.402497	0.85544693
209	19:26:01	20.30	2.402497	0.85069444
210	19:27:01	20.30	2.402497	0.84599448
211	19:28:01	20.10	2.402497	0.84134615
212	19:29:01	20.00	2.402497	0.83674863
213	19:30:01	19.90	2.402497	0.83220109
214	19:31:01	19.90	2.402497	0.8277027
215	19:32:01	20.00	2.402497	0.82325269
216	19:33:01	20.20	2.401774	0.82529412
217	19:34:01	20.30	2.401774	0.82090426
218	19:35:01	20.40	2.402497	0.81018519
219	19:36:01	20.30	2.401050	0.81861404
220	19:37:01	20.20	2.400689	0.81747818
221	19:38:01	20.10	2.400689	0.81322049
222	19:39:01	19.90	2.400327	0.81213299
223	19:40:01	19.90	2.399604	0.81415808
224	19:41:01	19.90	2.400327	0.80380342
225	19:42:01	20.00	2.399604	0.80585034
226	19:43:01	20.30	2.399604	0.80175973
227	19:44:01	20.30	2.399604	0.79771044
228	19:45:01	20.30	2.399604	0.79370184
229	19:46:01	20.20	2.399242	0.79275
230	19:47:01	20.10	2.399604	0.78580431
231	19:48:01	20.00	2.398880	0.78788779
232	19:49:01	19.90	2.398518	0.78697865
233	19:50:01	19.90	2.398157	0.78607026
234	19:51:01	20.00	2.398518	0.77930081
235	19:52:01	20.20	2.398157	0.77843851
236	19:53:01	20.30	2.397433	0.78050725
237	19:54:01	20.40	2.397433	0.77675481
238	19:55:01	20.30	2.397433	0.77303828
239	19:56:01	20.20	2.396710	0.77509524
240	19:57:01	20.00	2.396710	0.7714218
241	19:58:01	19.90	2.396710	0.76778302
242	19:59:01	19.80	2.396710	0.7641784
243	20:00:01	19.90	2.396710	0.76060748
244	20:01:01	20.10	2.396710	0.75706977
245	20:02:01	20.30	2.396348	0.75635802
246	20:03:01	20.40	2.395986	0.75565284
247	20:04:01	20.30	2.395986	0.75218654
248	20:05:01	20.20	2.394178	0.76251142
249	20:06:01	20.10	2.395263	0.75082576

250	20:07:01	20.00	2.394901	0.75015837
251	20:08:01	19.90	2.394178	0.75220721
252	20:09:01	19.90	2.394901	0.74343049
253	20:10:01	19.90	2.393816	0.74818452
254	20:11:01	20.20	2.394540	0.7394963
255	20:12:01	20.30	2.393816	0.74156342
256	20:13:01	20.40	2.393816	0.73829662
257	20:14:01	20.30	2.393816	0.73505848
258	20:15:01	20.20	2.393816	0.73184862
259	20:16:01	20.00	2.393454	0.73128986
260	20:17:01	19.90	2.393454	0.7281241
261	20:18:01	19.80	2.393093	0.72757902
262	20:19:01	19.90	2.393454	0.72187411
263	20:20:01	20.00	2.392008	0.72908832
264	20:21:01	20.20	2.392008	0.72598582
265	20:22:01	20.30	2.392731	0.71780367
266	20:23:01	20.30	2.391646	0.72240506
267	20:24:01	20.20	2.392369	0.71430672
268	20:25:01	20.10	2.391646	0.71635983
269	20:26:01	20.00	2.391646	0.713375
270	20:27:01	19.90	2.390922	0.71542185
271	20:28:01	19.90	2.390922	0.71246556
272	20:29:01	19.90	2.390922	0.70953361
273	20:30:01	20.10	2.390922	0.70662568
274	20:31:01	20.30	2.390561	0.70619728
275	20:32:01	20.30	2.390922	0.70088076
276	20:33:01	20.30	2.390922	0.69804318
277	20:34:01	20.20	2.390561	0.69765457
278	20:35:01	20.00	2.390922	0.69243641
279	20:36:01	19.90	2.390199	0.69448667
280	20:37:01	19.80	2.390199	0.69171979
281	20:38:01	19.90	2.389476	0.69375661
282	20:39:01	20.00	2.389476	0.69101449
283	20:40:01	20.30	2.389114	0.69066929
284	20:41:01	20.40	2.388029	0.69505229
285	20:42:01	20.30	2.389114	0.68527344
286	20:43:01	20.20	2.388752	0.6849546
287	20:44:01	20.10	2.388029	0.68697028
288	20:45:01	19.90	2.388029	0.68431789
289	20:46:01	19.80	2.388029	0.6816859
290	20:47:01	19.90	2.388029	0.67907407
291	20:48:01	19.90	2.388029	0.67648219
292	20:49:01	20.20	2.388029	0.67391001
293	20:50:01	20.30	2.388029	0.67135732
294	20:51:01	20.30	2.387305	0.67337736
295	20:52:01	20.30	2.387667	0.66857769
296	20:53:01	20.20	2.387305	0.66833333
297	20:54:01	20.00	2.386944	0.66808458
298	20:55:01	19.90	2.386582	0.66784387
299	20:56:01	19.80	2.386582	0.66537037

300	20:57:01	19.90	2.385497	0.66958795
301	20:58:01	20.00	2.386220	0.66269608
302	20:59:01	20.20	2.385497	0.66468254
303	21:00:01	20.30	2.385858	0.66006083
304	21:01:01	20.30	2.385135	0.66204242
305	21:02:01	20.20	2.385135	0.65964372
306	21:03:01	20.10	2.385135	0.65726233
307	21:04:01	19.90	2.384773	0.65706835
308	21:05:01	19.80	2.385135	0.65255078
309	21:06:01	19.80	2.384773	0.652375
310	21:07:01	20.00	2.385135	0.64790629
311	21:08:01	20.20	2.385135	0.64560875
312	21:09:01	20.30	2.384773	0.64545936
313	21:10:01	20.30	2.384773	0.64318662
314	21:11:01	20.30	2.384412	0.64304094
315	21:12:01	20.20	2.384773	0.63868881
316	21:13:01	20.00	2.383688	0.64276423
317	21:14:01	19.90	2.383688	0.64053241
318	21:15:01	19.80	2.383327	0.64039792
319	21:16:01	19.90	2.383327	0.63818966
320	21:17:01	20.10	2.382603	0.64014318
321	21:18:01	20.30	2.382603	0.63795091
322	21:19:01	20.30	2.382965	0.63371445
323	21:20:01	20.30	2.382965	0.63155896
324	21:21:01	20.20	2.382241	0.63350847
325	21:22:01	20.10	2.382965	0.62729167
326	21:23:01	19.90	2.382241	0.62924242
327	21:24:01	19.80	2.382241	0.62713087
328	21:25:01	19.90	2.382241	0.62503344
329	21:26:01	20.00	2.382241	0.62295
330	21:27:01	20.20	2.382241	0.6208804
331	21:28:01	20.30	2.382241	0.6188245
332	21:29:01	20.30	2.382241	0.61678218
333	21:30:01	20.20	2.381880	0.61673246
334	21:31:01	20.10	2.381518	0.61668852
335	21:32:01	20.00	2.381156	0.61664488
336	21:33:01	19.80	2.380433	0.61856135
337	21:34:01	19.80	2.380433	0.61655303
338	21:35:01	19.90	2.380795	0.61260518
339	21:36:01	20.10	2.380795	0.61062903
340	21:37:01	20.30	2.380071	0.61254555
341	21:38:01	20.40	2.380071	0.61058226
342	21:39:01	20.30	2.380433	0.60670394
343	21:40:01	20.20	2.380795	0.60285032
344	21:41:01	20.00	2.379709	0.60668254
345	21:42:01	19.90	2.379348	0.60666667
346	21:43:01	19.80	2.379348	0.60475289
347	21:44:01	19.90	2.379348	0.60285115
348	21:45:01	20.00	2.378986	0.60285266
349	21:46:01	20.20	2.379348	0.59908333

350	21:47:01	20.30	2.379348	0.59721703
351	21:48:01	20.30	2.378624	0.59910973
352	21:49:01	20.20	2.379348	0.59351909
353	21:50:01	20.10	2.379348	0.59168724
354	21:51:01	19.90	2.378262	0.5954359
355	21:52:01	19.80	2.378986	0.58990798
356	21:53:01	19.90	2.378262	0.59179409
357	21:54:01	20.00	2.377177	0.59550305
358	21:55:01	20.20	2.377177	0.59369301
359	21:56:01	20.30	2.377901	0.58823737
360	21:57:01	20.30	2.377177	0.59010574
361	21:58:01	20.30	2.376816	0.59014056
362	21:59:01	20.10	2.376816	0.58836837
363	22:00:01	20.00	2.376816	0.58660679
364	22:01:01	19.80	2.376816	0.58485572
365	22:02:01	19.80	2.376454	0.58491071
366	22:03:01	19.90	2.376454	0.58317507
367	22:04:01	20.10	2.376454	0.5814497
368	22:05:01	20.30	2.376092	0.58151426
369	22:06:01	20.40	2.376454	0.57802941
370	22:07:01	20.30	2.376454	0.57633431
371	22:08:01	20.20	2.376454	0.57464912
372	22:09:01	20.00	2.376454	0.57297376
373	22:10:01	19.90	2.376092	0.57306202
374	22:11:01	19.80	2.376454	0.56965217
375	22:12:01	19.80	2.376092	0.56974952
376	22:13:01	20.00	2.375369	0.57158021
377	22:14:01	20.20	2.375731	0.56820402
378	22:15:01	20.30	2.375369	0.56830468
379	22:16:01	20.30	2.374645	0.57012857
380	22:17:01	20.30	2.374645	0.56850427
381	22:18:01	20.10	2.374284	0.56859848
382	22:19:01	20.00	2.374645	0.56528329
383	22:20:01	19.90	2.374284	0.56538606
384	22:21:01	19.80	2.374284	0.56379343
385	22:22:01	19.90	2.374284	0.56220974
386	22:23:01	20.10	2.373560	0.56401494
387	22:24:01	20.30	2.374284	0.5590689
388	22:25:01	20.30	2.373560	0.56087279
389	22:26:01	20.30	2.373560	0.55931481
390	22:27:01	20.20	2.373560	0.55776547
391	22:28:01	20.00	2.373560	0.55622468
392	22:29:01	19.90	2.373560	0.55469238
393	22:30:01	19.80	2.373560	0.5531685
394	22:31:01	19.90	2.373560	0.55165297
395	22:32:01	20.00	2.373922	0.54849727
396	22:33:01	20.20	2.372837	0.55193006
397	22:34:01	20.30	2.373560	0.5471558
398	22:35:01	20.30	2.372837	0.54893857
399	22:36:01	20.20	2.373199	0.54582432

400	22:37:01	20.10	2.373199	0.5443531
401	22:38:01	19.90	2.372113	0.54775538
402	22:39:01	19.80	2.372837	0.54305183
403	22:40:01	19.80	2.372113	0.5448262
404	22:41:01	20.00	2.372113	0.54337333
405	22:42:01	20.20	2.371752	0.54352837
406	22:43:01	20.30	2.371752	0.54208665
407	22:44:01	20.30	2.371028	0.5438448
408	22:45:01	20.30	2.370667	0.54399736
409	22:46:01	20.10	2.372113	0.53622368
410	22:47:01	19.90	2.371028	0.53956255
411	22:48:01	19.80	2.371028	0.53815009
412	22:49:01	19.80	2.370667	0.53831593
413	22:50:01	19.90	2.370667	0.53691406
414	22:51:01	20.10	2.370667	0.53551948
415	22:52:01	20.30	2.370667	0.53413212
416	22:53:01	20.30	2.370667	0.53275194
417	22:54:01	20.30	2.370667	0.53137887
418	22:55:01	20.10	2.370667	0.53001285
419	22:56:01	20.00	2.370667	0.52865385
420	22:57:01	19.90	2.370667	0.52730179
421	22:58:01	19.80	2.369220	0.53210884
422	22:59:01	19.90	2.369943	0.52768872
423	23:00:01	20.00	2.369943	0.52634941
424	23:01:01	20.20	2.369943	0.52501688
425	23:02:01	20.30	2.369943	0.52369108
426	23:03:01	20.30	2.369581	0.52389169
427	23:04:01	20.20	2.369220	0.5240871
428	23:05:01	20.10	2.369220	0.5227736
429	23:06:01	19.90	2.368496	0.52448333
430	23:07:01	19.80	2.369220	0.52016625
431	23:08:01	19.80	2.368496	0.52187396
432	23:09:01	19.90	2.368858	0.51908189
433	23:10:01	20.10	2.367773	0.5222731
434	23:11:01	20.30	2.367773	0.52098354
435	23:12:01	20.30	2.367773	0.51970033
436	23:13:01	20.20	2.367773	0.51842342
437	23:14:01	20.10	2.367773	0.51715278
438	23:15:01	19.90	2.367773	0.51588835
439	23:16:01	19.80	2.367773	0.51463008
440	23:17:01	19.80	2.367773	0.51337794
441	23:18:01	19.90	2.367773	0.51213188
442	23:19:01	20.10	2.367773	0.51089185
443	23:20:01	20.30	2.367773	0.50965781
444	23:21:01	20.30	2.367411	0.50988353
445	23:22:01	20.30	2.367411	0.50865785
446	23:23:01	20.10	2.367411	0.50743805
447	23:24:01	20.00	2.367411	0.50622408
448	23:25:01	19.80	2.367773	0.50357597
449	23:26:01	19.80	2.366326	0.50811905

450	23:27:01	19.90	2.366326	0.50691211
451	23:28:01	20.00	2.366326	0.5057109
452	23:29:01	20.20	2.366326	0.50451537
453	23:30:01	20.30	2.366326	0.50332547
454	23:31:01	20.30	2.366688	0.50072157
455	23:32:01	20.20	2.365602	0.50379499
456	23:33:01	20.00	2.365602	0.50261514
457	23:34:01	19.90	2.365964	0.50003115
458	23:35:01	19.80	2.365241	0.50167444
459	23:36:01	19.90	2.365241	0.50050775
460	23:37:01	20.00	2.364879	0.50074633
461	23:38:01	20.20	2.365241	0.49819059
462	23:39:01	20.30	2.364879	0.49843341
463	23:40:01	20.30	2.365602	0.49450845
464	23:41:01	20.20	2.364879	0.49614176
465	23:42:01	20.10	2.364879	0.49500382
466	23:43:01	19.90	2.364879	0.49387109
467	23:44:01	19.80	2.364879	0.49274353
468	23:45:01	19.80	2.364879	0.49162111
469	23:46:01	19.90	2.364517	0.491875
470	23:47:01	20.10	2.364156	0.49212396
471	23:48:01	20.30	2.364879	0.48828431
472	23:49:01	20.30	2.364156	0.48990218
473	23:50:01	20.20	2.364517	0.48744369
474	23:51:01	20.10	2.364156	0.48770037
475	23:52:01	19.90	2.364879	0.48390508
476	23:53:01	19.80	2.363794	0.48686801
477	23:54:01	19.80	2.363794	0.48578125
478	23:55:01	19.90	2.363432	0.48604306
479	23:56:01	20.10	2.363432	0.48496296
480	23:57:01	20.30	2.363432	0.48388766
481	23:58:01	20.30	2.363432	0.48281711
482	23:59:01	20.30	2.363432	0.48175129
483	0:00:01	20.20	2.363432	0.48069016
484	0:01:01	20.00	2.363794	0.47830769
485	0:02:01	19.80	2.361985	0.48387061
486	0:03:01	19.80	2.361985	0.48281182
487	0:04:01	19.90	2.361985	0.48175764
488	0:05:01	20.00	2.361985	0.48070806
489	0:06:01	20.20	2.363432	0.47442029
490	0:07:01	20.30	2.362347	0.47731381
491	0:08:01	20.30	2.361985	0.47758658
492	0:09:01	20.20	2.362347	0.47525198
493	0:10:01	20.00	2.361985	0.47552802
494	0:11:01	19.90	2.361985	0.47450538
495	0:12:01	19.80	2.361985	0.47348712
496	0:13:01	19.90	2.361985	0.47247323
497	0:14:01	20.00	2.361624	0.47274929
498	0:15:01	20.20	2.361985	0.47045842
499	0:16:01	20.30	2.361624	0.47073759

500	0:17:01	20.30	2.361985	0.46846072
501	0:18:01	20.20	2.361985	0.46746822
502	0:19:01	20.10	2.361262	0.46902748
503	0:20:01	19.90	2.361624	0.46676512
504	0:21:01	19.80	2.360177	0.47085965
505	0:22:01	19.80	2.361624	0.46480392
506	0:23:01	19.90	2.360177	0.46888539
507	0:24:01	20.10	2.360538	0.46664575
508	0:25:01	20.30	2.360538	0.46567154
509	0:26:01	20.30	2.359815	0.46721181
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511	0:28:01	20.10	2.360538	0.46277317
512	0:29:01	19.90	2.359453	0.46555901
513	0:30:01	19.80	2.360177	0.46210399
514	0:31:01	19.80	2.359092	0.46487973
515	0:32:01	19.90	2.359092	0.46392318
516	0:33:01	20.10	2.359092	0.46297057
517	0:34:01	20.30	2.359092	0.46202186
518	0:35:01	20.30	2.359092	0.46107703
519	0:36:01	20.30	2.359815	0.45767687
520	0:37:01	20.10	2.359453	0.45797352
521	0:38:01	20.00	2.359092	0.45826558
522	0:39:01	19.80	2.359453	0.45611562
523	0:40:01	19.80	2.359092	0.45641026
524	0:41:01	19.90	2.358730	0.45670707
525	0:42:01	20.00	2.359092	0.45456989
526	0:43:01	20.20	2.358368	0.45608317
527	0:44:01	20.30	2.358368	0.45516734
528	0:45:01	20.30	2.359092	0.45183701
529	0:46:01	20.20	2.359092	0.45093333
530	0:47:01	20.00	2.359092	0.45003327
531	0:48:01	19.90	2.358368	0.4515405
532	0:49:01	19.80	2.359092	0.44824387
533	0:50:01	19.90	2.358730	0.44855159
534	0:51:01	20.00	2.358730	0.44766337
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536	0:53:01	20.30	2.358730	0.44589744
537	0:54:01	20.30	2.358368	0.44620735
538	0:55:01	20.20	2.356921	0.45006876
539	0:56:01	20.00	2.357645	0.44682026
540	0:57:01	19.80	2.357283	0.44712655
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542	0:59:01	19.90	2.356198	0.44890838
543	1:00:01	20.00	2.357283	0.44451686
544	1:01:01	20.20	2.356560	0.44599353
545	1:02:01	20.30	2.356198	0.44629845
546	1:03:01	20.30	2.356560	0.44426821
547	1:04:01	20.20	2.356198	0.44457529
548	1:05:01	20.00	2.356198	0.44371869
549	1:06:01	19.90	2.356198	0.44286538

550	1:07:01	19.80	2.356560	0.44085733
551	1:08:01	19.80	2.355836	0.44232439
552	1:09:01	20.00	2.356198	0.44032505
553	1:10:01	20.20	2.356198	0.43948473
554	1:11:01	20.30	2.356198	0.43864762
555	1:12:01	20.30	2.356198	0.43781369
556	1:13:01	20.20	2.356560	0.43583808
557	1:14:01	20.00	2.356198	0.4361553
558	1:15:01	19.90	2.355836	0.43647133
559	1:16:01	19.80	2.356198	0.43450943
560	1:17:01	19.80	2.355474	0.43596359
561	1:18:01	19.90	2.355836	0.43401003
562	1:19:01	20.10	2.355836	0.43319575
563	1:20:01	20.30	2.356198	0.43125468
564	1:21:01	20.30	2.355836	0.43157632
565	1:22:01	20.20	2.355113	0.43301928
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567	1:24:01	19.90	2.355113	0.43140954
568	1:25:01	19.80	2.355836	0.42837353
569	1:26:01	19.80	2.355113	0.42981173
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571	1:28:01	20.10	2.354389	0.43045203
572	1:29:01	20.30	2.354389	0.4296593
573	1:30:01	20.30	2.354751	0.42776042
574	1:31:01	20.20	2.354751	0.42697554
575	1:32:01	20.10	2.353666	0.42950549
576	1:33:01	19.90	2.354389	0.42651737
577	1:34:01	19.80	2.354028	0.42683698
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579	1:36:01	19.90	2.353666	0.42638182
580	1:37:01	20.10	2.353304	0.42670296
581	1:38:01	20.30	2.353304	0.42592995
582	1:39:01	20.30	2.353666	0.42406872
583	1:40:01	20.20	2.353304	0.4243923
584	1:41:01	20.10	2.353304	0.42362763
585	1:42:01	19.90	2.353304	0.42286571
586	1:43:01	19.80	2.353304	0.42210652
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588	1:45:01	19.90	2.353304	0.4205963
589	1:46:01	20.00	2.353304	0.41984524
590	1:47:01	20.20	2.353304	0.41909685
591	1:48:01	20.30	2.353304	0.41835113
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593	1:50:01	20.10	2.353304	0.41686761
594	1:51:01	20.00	2.353304	0.41612979
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603	2:00:01	20.00	2.351496	0.41485482
604	2:01:01	19.80	2.350772	0.41623188
605	2:02:01	19.80	2.352219	0.41132234
606	2:03:01	19.90	2.351496	0.41269786
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608	2:05:01	20.20	2.350772	0.41335636
609	2:06:01	20.30	2.351134	0.41160345
610	2:07:01	20.30	2.350410	0.41297189
611	2:08:01	20.20	2.350410	0.41226231
612	2:09:01	20.00	2.350410	0.41155517
613	2:10:01	19.90	2.350410	0.41085046
614	2:11:01	19.80	2.350410	0.41014815
615	2:12:01	19.80	2.350410	0.40944824
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618	2:15:01	20.30	2.350410	0.40736276
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620	2:17:01	20.20	2.350410	0.40598421
621	2:18:01	20.00	2.350410	0.40529842
622	2:19:01	19.90	2.350410	0.40461495
623	2:20:01	19.80	2.350049	0.40494669
624	2:21:01	19.80	2.350410	0.4032549
625	2:22:01	19.90	2.350410	0.4025783
626	2:23:01	20.10	2.349687	0.40392239
627	2:24:01	20.30	2.350410	0.40123188
628	2:25:01	20.30	2.350410	0.40056205
629	2:26:01	20.20	2.350049	0.40089722
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631	2:28:01	19.90	2.349687	0.40056755
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633	2:30:01	19.80	2.348964	0.4012362
634	2:31:01	19.90	2.349687	0.39858127
635	2:32:01	20.10	2.350049	0.39692794
636	2:33:01	20.20	2.348240	0.40124108
637	2:34:01	20.30	2.349325	0.39760691
638	2:35:01	20.20	2.349687	0.39596333
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640	2:37:01	19.90	2.348602	0.39762684
641	2:38:01	19.80	2.348964	0.39599129
642	2:39:01	19.80	2.348240	0.39731376
643	2:40:01	19.90	2.348240	0.39666667
644	2:41:01	20.10	2.349687	0.39210027
645	2:42:01	20.30	2.348602	0.39439935
646	2:43:01	20.30	2.347517	0.39669098
647	2:44:01	20.20	2.348240	0.39409924
648	2:45:01	20.10	2.348240	0.39346257
649	2:46:01	19.90	2.347517	0.39477151

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651	2:48:01	19.80	2.347517	0.39350214
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653	2:50:01	20.00	2.347517	0.39224092
654	2:51:01	20.20	2.347517	0.39161333
655	2:52:01	20.30	2.347517	0.39098775
656	2:53:01	20.30	2.347878	0.38940457
657	2:54:01	20.10	2.347517	0.38974257
658	2:55:01	19.90	2.347517	0.38912295
659	2:56:01	19.80	2.347517	0.38850529
660	2:57:01	19.80	2.347517	0.38788959
661	2:58:01	19.90	2.347517	0.38727584
662	2:59:01	20.00	2.347155	0.38761717
663	3:00:01	20.20	2.347517	0.38605415
664	3:01:01	20.30	2.347155	0.38639633
665	3:02:01	20.30	2.346793	0.38673742
666	3:03:01	20.10	2.347517	0.384236
667	3:04:01	20.00	2.347155	0.38457941
668	3:05:01	19.80	2.347155	0.38397757
669	3:06:01	19.80	2.346793	0.38432031
670	3:07:01	19.90	2.346793	0.38372075
671	3:08:01	20.00	2.347155	0.38218328
672	3:09:01	20.20	2.346793	0.38252722
673	3:10:01	20.30	2.346793	0.38193323
674	3:11:01	20.30	2.345708	0.3841447
675	3:12:01	20.20	2.345708	0.38355005
676	3:13:01	20.00	2.345347	0.38388717
677	3:14:01	19.80	2.345347	0.38329475
678	3:15:01	19.80	2.345347	0.38270416
679	3:16:01	19.80	2.344985	0.38304359
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682	3:19:01	20.30	2.344985	0.38128382
683	3:20:01	20.30	2.344985	0.38070082
684	3:21:01	20.20	2.344985	0.38011959
685	3:22:01	20.00	2.344985	0.37954014
686	3:23:01	19.90	2.345347	0.37804414
687	3:24:01	19.80	2.344623	0.37930344
688	3:25:01	19.80	2.344985	0.37781234
689	3:26:01	19.90	2.344623	0.37815404
690	3:27:01	20.10	2.344623	0.37758195
691	3:28:01	20.30	2.344623	0.37701158
692	3:29:01	20.30	2.344623	0.37644294
693	3:30:01	20.20	2.344623	0.375876
694	3:31:01	20.00	2.344623	0.37531078
695	3:32:01	19.90	2.344261	0.37565315
696	3:33:01	19.80	2.344261	0.37508996
697	3:34:01	19.80	2.344623	0.37362525
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703	3:40:01	20.00	2.344623	0.37029921
704	3:41:01	19.90	2.344623	0.36975062
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706	3:43:01	19.80	2.344623	0.3686583
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708	3:45:01	20.10	2.343900	0.36934708
709	3:46:01	20.20	2.343900	0.36880392
710	3:47:01	20.30	2.343538	0.36914831
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712	3:49:01	20.10	2.343538	0.36806735
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715	3:52:01	19.80	2.343176	0.36733722
716	3:53:01	19.90	2.342815	0.36767831
717	3:54:01	20.00	2.342453	0.36802083
718	3:55:01	20.20	2.343176	0.36573778
719	3:56:01	20.30	2.343900	0.36345894
720	3:57:01	20.20	2.342091	0.36729619
721	3:58:01	20.10	2.341729	0.36763728
722	3:59:01	19.90	2.341729	0.36710678
723	4:00:01	19.80	2.342453	0.3648391
724	4:01:01	19.80	2.342453	0.36431415
725	4:02:01	19.90	2.342453	0.36379071
726	4:03:01	20.00	2.341729	0.365
727	4:04:01	20.20	2.342091	0.3636127
728	4:05:01	20.30	2.341729	0.36395565
729	4:06:01	20.20	2.342091	0.36257381
730	4:07:01	20.10	2.341729	0.36291726
731	4:08:01	19.90	2.341729	0.36240028
732	4:09:01	19.80	2.341729	0.36188478
733	4:10:01	19.80	2.341729	0.36137074
734	4:11:01	19.80	2.341729	0.36085816
735	4:12:01	20.00	2.341729	0.36034703
736	4:13:01	20.20	2.341729	0.35983734
737	4:14:01	20.30	2.341368	0.36017891
738	4:15:01	20.30	2.341729	0.35882228
739	4:16:01	20.10	2.341729	0.3583169
740	4:17:01	20.00	2.341368	0.35865917
741	4:18:01	19.80	2.341729	0.35731039
742	4:19:01	19.80	2.341368	0.35765311
743	4:20:01	19.80	2.341729	0.35630952
744	4:21:01	19.90	2.341368	0.35665268
745	4:22:01	20.10	2.341729	0.35531425
746	4:23:01	20.30	2.341006	0.3564993
747	4:24:01	20.30	2.341729	0.35432451
748	4:25:01	20.20	2.341729	0.35383171
749	4:26:01	20.00	2.340644	0.35585185

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751	4:28:01	19.80	2.340644	0.35486611
752	4:29:01	19.80	2.341006	0.3535408
753	4:30:01	19.90	2.340282	0.35471915
754	4:31:01	20.10	2.340282	0.35422989
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756	4:33:01	20.30	2.340282	0.35325539
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758	4:35:01	20.00	2.339921	0.35311157
759	4:36:01	19.90	2.340282	0.35180365
760	4:37:01	19.80	2.339559	0.35297082
761	4:38:01	19.80	2.339197	0.35331284
762	4:39:01	19.90	2.338836	0.35365166
763	4:40:01	20.10	2.339559	0.35152816
764	4:41:01	20.20	2.339921	0.35022902
765	4:42:01	20.30	2.339559	0.35057292
766	4:43:01	20.20	2.339559	0.35009724
767	4:44:01	20.00	2.339197	0.35044038
768	4:45:01	19.90	2.339197	0.34996617
769	4:46:01	19.80	2.338836	0.35030631
770	4:47:01	19.80	2.338836	0.34983356
771	4:48:01	19.90	2.338836	0.34936208
772	4:49:01	20.10	2.339197	0.3480821
773	4:50:01	20.20	2.339559	0.34680332
774	4:51:01	20.30	2.338836	0.34795526
775	4:52:01	20.20	2.339197	0.34668231
776	4:53:01	20.00	2.338474	0.34783133
777	4:54:01	19.90	2.338836	0.34655971
778	4:55:01	19.80	2.338836	0.34609702
779	4:56:01	19.80	2.338836	0.34563556
780	4:57:01	19.90	2.338836	0.34517532
781	4:58:01	20.00	2.338836	0.34471631
782	4:59:01	20.20	2.338836	0.34425852
783	5:00:01	20.30	2.338836	0.34380195
784	5:01:01	20.20	2.338836	0.34334658
785	5:02:01	20.10	2.338836	0.34289242
786	5:03:01	19.90	2.338474	0.34323646
787	5:04:01	19.80	2.338474	0.34278364
788	5:05:01	19.80	2.338836	0.34153711
789	5:06:01	19.90	2.337750	0.3434693
790	5:07:01	20.00	2.338474	0.34143233
791	5:08:01	20.20	2.338112	0.34177603
792	5:09:01	20.30	2.338112	0.34132809
793	5:10:01	20.20	2.338112	0.34088133
794	5:11:01	20.10	2.337750	0.3412244
795	5:12:01	19.90	2.338836	0.33841601
796	5:13:01	19.80	2.337027	0.34190569
797	5:14:01	19.80	2.337027	0.3414605
798	5:15:01	19.80	2.336665	0.34180104
799	5:16:01	20.00	2.337389	0.33979004

800	5:17:01	20.20	2.337027	0.34013186
801	5:18:01	20.30	2.336665	0.3404728
802	5:19:01	20.30	2.337027	0.33925183
803	5:20:01	20.10	2.337389	0.33803402
804	5:21:01	20.00	2.336304	0.33993118
805	5:22:01	19.80	2.336665	0.33871778
806	5:23:01	19.70	2.336665	0.33828185
807	5:24:01	19.80	2.336665	0.33784704
808	5:25:01	19.90	2.335942	0.33896021
809	5:26:01	20.10	2.337027	0.33620726
810	5:27:01	20.30	2.335942	0.33809219
811	5:28:01	20.30	2.335942	0.33765985
812	5:29:01	20.20	2.335219	0.33876756
813	5:30:01	20.00	2.335942	0.33679847
814	5:31:01	19.80	2.336304	0.33560085
815	5:32:01	19.80	2.335942	0.33594148
816	5:33:01	19.80	2.335942	0.33551461
817	5:34:01	19.90	2.335942	0.33508883
818	5:35:01	20.10	2.335942	0.33466413
819	5:36:01	20.30	2.335942	0.33424051
820	5:37:01	20.30	2.335942	0.33381795
821	5:38:01	20.20	2.335942	0.33339646
822	5:39:01	20.00	2.335580	0.33373686
823	5:40:01	19.80	2.335942	0.33255668
824	5:41:01	19.80	2.335942	0.33213836
825	5:42:01	19.80	2.335942	0.33172111
826	5:43:01	19.90	2.335219	0.33281681
827	5:44:01	20.10	2.335942	0.33088972
828	5:45:01	20.30	2.335942	0.33047559
829	5:46:01	20.30	2.335580	0.33081667
830	5:47:01	20.20	2.335219	0.33115481
831	5:48:01	20.00	2.335942	0.3292394
832	5:49:01	19.90	2.335942	0.32882939
833	5:50:01	19.80	2.335942	0.3284204
834	5:51:01	19.80	2.334857	0.3302588
835	5:52:01	19.90	2.335580	0.32835401
836	5:53:01	20.10	2.334495	0.33018794
837	5:54:01	20.30	2.335219	0.32828589
838	5:55:01	20.30	2.334857	0.32862588
839	5:56:01	20.20	2.335580	0.32673251
840	5:57:01	20.00	2.334857	0.32781545
841	5:58:01	19.90	2.334857	0.32741174
842	5:59:01	19.80	2.334495	0.32775113
843	6:00:01	19.80	2.334495	0.32734848
844	6:01:01	19.90	2.334134	0.32768507
845	6:02:01	20.00	2.333772	0.32802288
846	6:03:01	20.20	2.334495	0.32614647
847	6:04:01	20.30	2.334857	0.32501019
848	6:05:01	20.20	2.334495	0.32535002
849	6:06:01	20.10	2.333772	0.32642276

850	6:07:01	19.90	2.333772	0.32602517
851	6:08:01	19.80	2.333772	0.32562855
852	6:09:01	19.80	2.333772	0.32523289
853	6:10:01	19.90	2.333410	0.32557039
854	6:11:01	20.00	2.333048	0.32590707
855	6:12:01	20.20	2.333772	0.32405165
856	6:13:01	20.30	2.333048	0.3251189
857	6:14:01	20.20	2.333772	0.32326892
858	6:15:01	20.10	2.333048	0.32433454
859	6:16:01	20.00	2.334134	0.32176305
860	6:17:01	19.80	2.333048	0.32355395
861	6:18:01	19.80	2.333048	0.32316506
862	6:19:01	19.80	2.333410	0.32205282
863	6:20:01	20.00	2.333048	0.32239009
864	6:21:01	20.20	2.333048	0.32200399
865	6:22:01	20.30	2.333048	0.32161882
866	6:23:01	20.30	2.333048	0.32123457
867	6:24:01	20.20	2.333048	0.32085123
868	6:25:01	20.00	2.333410	0.3197497
869	6:26:01	19.80	2.332325	0.32152183
870	6:27:01	19.80	2.333048	0.3197067
871	6:28:01	19.80	2.333048	0.319327
872	6:29:01	19.90	2.332325	0.32037762
873	6:30:01	20.10	2.332687	0.31928318
874	6:31:01	20.30	2.332687	0.31890533
875	6:32:01	20.30	2.332325	0.31924153
876	6:33:01	20.20	2.333048	0.31744195
877	6:34:01	20.00	2.333048	0.31706761
878	6:35:01	19.80	2.333048	0.31669415
879	6:36:01	19.80	2.332325	0.31773922
880	6:37:01	19.80	2.332325	0.31736584
881	6:38:01	19.90	2.332325	0.31699335
882	6:39:01	20.10	2.333048	0.31520907
883	6:40:01	20.20	2.332687	0.3155445
884	6:41:01	20.30	2.332325	0.31588109
885	6:42:01	20.20	2.333048	0.31410436
886	6:43:01	20.00	2.332325	0.31514391
887	6:44:01	19.90	2.331963	0.3154798
888	6:45:01	19.80	2.331601	0.3158149
889	6:46:01	19.80	2.332325	0.31404457
890	6:47:01	19.90	2.331601	0.3150813
891	6:48:01	20.10	2.331963	0.31401585
892	6:49:01	20.20	2.331601	0.3143511
893	6:50:01	20.30	2.331601	0.31398727
894	6:51:01	20.20	2.331601	0.31362428
895	6:52:01	20.10	2.330878	0.31465358
896	6:53:01	19.90	2.331601	0.31290081
897	6:54:01	19.80	2.330516	0.31462366
898	6:55:01	19.80	2.330878	0.31356732
899	6:56:01	19.90	2.331240	0.31251341

900	6:57:01	20.00	2.330878	0.3128473
901	6:58:01	20.20	2.330516	0.31318043
902	6:59:01	20.30	2.330878	0.31213058
903	7:00:01	20.20	2.331240	0.31108314
904	7:01:01	20.10	2.330155	0.31279429
905	7:02:01	19.90	2.330878	0.31106164
906	7:03:01	19.80	2.330155	0.31208096
907	7:04:01	19.80	2.330878	0.31035308
908	7:05:01	19.80	2.330516	0.31068639
909	7:06:01	20.00	2.330516	0.31033333
910	7:07:01	20.20	2.330155	0.31066402
911	7:08:01	20.30	2.330155	0.31031179
912	7:09:01	20.20	2.330155	0.30996036
913	7:10:01	20.10	2.330155	0.30960973
914	7:11:01	19.90	2.330155	0.30925989
915	7:12:01	19.80	2.330155	0.30891084
916	7:13:01	19.80	2.330155	0.30856257
917	7:14:01	19.90	2.329793	0.30889452
918	7:15:01	20.00	2.330155	0.30786839
919	7:16:01	20.20	2.330155	0.30752247
920	7:17:01	20.30	2.330155	0.30717733
921	7:18:01	20.20	2.330155	0.30683296
922	7:19:01	20.10	2.330155	0.30648936
923	7:20:01	19.90	2.330155	0.30614653
924	7:21:01	19.80	2.330155	0.30580447
925	7:22:01	19.80	2.330155	0.30546317
926	7:23:01	19.80	2.330155	0.30512263
927	7:24:01	20.00	2.330155	0.30478285
928	7:25:01	20.20	2.329431	0.30578606
929	7:26:01	20.30	2.329069	0.30611667
930	7:27:01	20.30	2.330155	0.30376804
931	7:28:01	20.10	2.328708	0.30610495
932	7:29:01	20.00	2.329431	0.30443152
933	7:30:01	19.80	2.329431	0.30409476
934	7:31:01	19.80	2.329431	0.30375875
935	7:32:01	19.80	2.329431	0.30342347
936	7:33:01	19.90	2.329431	0.30308894
937	7:34:01	20.10	2.329431	0.30275514
938	7:35:01	20.30	2.329069	0.30308581
939	7:36:01	20.30	2.329069	0.30275275
940	7:37:01	20.20	2.329431	0.30175814
941	7:38:01	20.00	2.328708	0.30274854
942	7:39:01	19.80	2.327984	0.30373859
943	7:40:01	19.80	2.329069	0.30142779
944	7:41:01	19.80	2.328346	0.3024153
945	7:42:01	19.90	2.328708	0.30142649
946	7:43:01	20.10	2.327623	0.30306979
947	7:44:01	20.30	2.328708	0.30076979
948	7:45:01	20.30	2.327984	0.30175553
949	7:46:01	20.20	2.327623	0.30208152

950	7:47:01	20.00	2.327984	0.30110025
951	7:48:01	19.80	2.328346	0.30011931
952	7:49:01	19.80	2.327261	0.30175334
953	7:50:01	19.80	2.327261	0.30142677
954	7:51:01	19.90	2.327623	0.30044865
955	7:52:01	20.10	2.327623	0.30012419
956	7:53:01	20.30	2.327623	0.29980043
957	7:54:01	20.30	2.327261	0.30012751
958	7:55:01	20.20	2.327261	0.29980445
959	7:56:01	20.00	2.327261	0.29948208
960	7:57:01	19.90	2.327261	0.2991604
961	7:58:01	19.80	2.327623	0.29819206
962	7:59:01	19.80	2.327261	0.29851911
963	8:00:01	19.90	2.327261	0.2981995
964	8:01:01	20.10	2.327261	0.29788057
965	8:02:01	20.30	2.327261	0.29756232
966	8:03:01	20.30	2.327261	0.29724475
967	8:04:01	20.20	2.327261	0.29692786
968	8:05:01	20.10	2.327261	0.29661164
969	8:06:01	19.90	2.327261	0.2962961
970	8:07:01	19.80	2.327261	0.29598123
971	8:08:01	19.80	2.326899	0.2963075
972	8:09:01	19.90	2.326537	0.29663309
973	8:10:01	20.00	2.326899	0.29567973
974	8:11:01	20.20	2.326899	0.29536684
975	8:12:01	20.30	2.326899	0.29505462
976	8:13:01	20.20	2.326899	0.29474305
977	8:14:01	20.10	2.327261	0.29379571
978	8:15:01	19.90	2.326537	0.29475764
979	8:16:01	19.80	2.326899	0.29381228
980	8:17:01	19.80	2.326537	0.29413775
981	8:18:01	19.90	2.326537	0.29382878
982	8:19:01	20.00	2.326899	0.29288737
983	8:20:01	20.20	2.326537	0.29321279
984	8:21:01	20.30	2.326899	0.292274
985	8:22:01	20.20	2.325814	0.29385983
986	8:23:01	20.10	2.326176	0.29292233
987	8:24:01	19.90	2.325814	0.29324635
988	8:25:01	19.80	2.327261	0.29042579
989	8:26:01	19.80	2.325452	0.29326389
990	8:27:01	19.90	2.326537	0.291077
991	8:28:01	20.00	2.325814	0.29202703
992	8:29:01	20.20	2.324729	0.29360159
993	8:30:01	20.30	2.325814	0.29142116
994	8:31:01	20.20	2.325814	0.29111917
995	8:32:01	20.10	2.326176	0.29019324
996	8:33:01	19.90	2.325091	0.29176319
997	8:34:01	19.80	2.325091	0.29146178
998	8:35:01	19.80	2.325091	0.29116099
999	8:36:01	19.80	2.325091	0.29086082

1000	8:37:01	20.00	2.324367	0.29180398
1001	8:38:01	20.20	2.324729	0.29088306
1002	8:39:01	20.30	2.324729	0.2905841
1003	8:40:01	20.30	2.325091	0.28966632
1004	8:41:01	20.10	2.324729	0.28998803
1005	8:42:01	20.00	2.324367	0.29030908
1006	8:43:01	19.80	2.324367	0.29001194
1007	8:44:01	19.80	2.324367	0.28971541
1008	8:45:01	19.80	2.324367	0.28941948
1009	8:46:01	20.00	2.324367	0.28912415
1010	8:47:01	20.10	2.324367	0.28882943
1011	8:48:01	20.30	2.324367	0.2885353
1012	8:49:01	20.30	2.324729	0.28762801
1013	8:50:01	20.20	2.324367	0.28794885
1014	8:51:01	20.00	2.324367	0.28765651
1015	8:52:01	19.80	2.324367	0.28736477
1016	8:53:01	19.80	2.324367	0.28707362
1017	8:54:01	19.80	2.324367	0.28678306
1018	8:55:01	19.90	2.324367	0.28649309
1019	8:56:01	20.10	2.324006	0.28681145
1020	8:57:01	20.30	2.324367	0.2859149
1021	8:58:01	20.30	2.324006	0.2862332
1022	8:59:01	20.20	2.324367	0.28533904
1023	9:00:01	20.00	2.324367	0.28505198
1024	9:01:01	19.90	2.324367	0.28476549
1025	9:02:01	19.80	2.324367	0.28447959
1026	9:03:01	19.80	2.324006	0.28479773
1027	9:04:01	19.90	2.324367	0.28390949
1028	9:05:01	20.10	2.324006	0.28422756
1029	9:06:01	20.20	2.324006	0.28394333
1030	9:07:01	20.30	2.324367	0.28305861
1031	9:08:01	20.20	2.324367	0.28277611
1032	9:09:01	20.00	2.324367	0.28249418
1033	9:10:01	19.90	2.324006	0.28281208
1034	9:11:01	19.80	2.323644	0.28313101
1035	9:12:01	19.80	2.324006	0.28224983
1036	9:13:01	19.90	2.324006	0.28196955
1037	9:14:01	20.10	2.323282	0.2828869
1038	9:15:01	20.20	2.323644	0.28200859
1039	9:16:01	20.30	2.322920	0.28292409
1040	9:17:01	20.20	2.323644	0.28145071
1041	9:18:01	20.10	2.323282	0.28176877
1042	9:19:01	19.90	2.323282	0.28149062
1043	9:20:01	19.80	2.322197	0.28299638
1044	9:21:01	19.80	2.322920	0.28153038
1045	9:22:01	19.90	2.322920	0.28125328
1046	9:23:01	20.10	2.322559	0.28156834
1047	9:24:01	20.20	2.322559	0.28129175
1048	9:25:01	20.30	2.322559	0.2810157
1049	9:26:01	20.20	2.322559	0.2807402

1050	9:27:01	20.10	2.322559	0.28046523
1051	9:28:01	19.90	2.322920	0.27960209
1052	9:29:01	19.80	2.321474	0.28168459
1053	9:30:01	19.80	2.322197	0.28023275
1054	9:31:01	19.90	2.322197	0.27995935
1055	9:32:01	20.00	2.322197	0.27968648
1056	9:33:01	20.20	2.321474	0.28058747
1057	9:34:01	20.30	2.321474	0.28031453
1058	9:35:01	20.20	2.321474	0.28004211
1059	9:36:01	20.10	2.322197	0.27860032
1060	9:37:01	20.00	2.321835	0.27891529
1061	9:38:01	19.80	2.321474	0.27922804
1062	9:39:01	19.80	2.321474	0.27895773
1063	9:40:01	19.80	2.321474	0.27868794
1064	9:41:01	20.00	2.321474	0.27841868
1065	9:42:01	20.20	2.321474	0.27814994
1066	9:43:01	20.30	2.321474	0.27788171
1067	9:44:01	20.30	2.321474	0.277614
1068	9:45:01	20.20	2.321474	0.27734681
1069	9:46:01	20.00	2.321835	0.2765016
1070	9:47:01	19.80	2.321835	0.27623599
1071	9:48:01	19.80	2.321474	0.2765483
1072	9:49:01	19.80	2.321112	0.27686162
1073	9:50:01	19.90	2.321474	0.27601852
1074	9:51:01	20.10	2.321474	0.27575439
1075	9:52:01	20.30	2.321474	0.27549076
1076	9:53:01	20.30	2.321474	0.27522763
1077	9:54:01	20.20	2.321474	0.27496501
1078	9:55:01	20.00	2.321474	0.27470289
1079	9:56:01	19.90	2.321474	0.27444127
1080	9:57:01	19.80	2.321112	0.2747542
1081	9:58:01	19.80	2.321474	0.27391952
1082	9:59:01	19.90	2.321112	0.27423235
1083	10:00:01	20.10	2.321474	0.27339975
1084	10:01:01	20.30	2.320750	0.27428436
1085	10:02:01	20.30	2.321474	0.27288194
1086	10:03:01	20.20	2.320750	0.27376537
1087	10:04:01	20.10	2.321112	0.27293636
1088	10:05:01	19.90	2.320750	0.27324835
1089	10:06:01	19.80	2.321112	0.27242138
1090	10:07:01	19.80	2.320388	0.27330192
1091	10:08:01	19.90	2.320388	0.27304457
1092	10:09:01	20.00	2.320388	0.27278771
1093	10:10:01	20.20	2.321112	0.27139724
1094	10:11:01	20.30	2.319665	0.27340689
1095	10:12:01	20.20	2.321112	0.27088806
1096	10:13:01	20.10	2.320388	0.27176507
1097	10:14:01	19.90	2.319665	0.27263889
1098	10:15:01	19.80	2.320027	0.27181946
1099	10:16:01	19.80	2.320027	0.27156542

1100	10:17:01	19.90	2.319303	0.27243853
1101	10:18:01	20.00	2.320027	0.27105877
1102	10:19:01	20.20	2.320388	0.27024542
1103	10:20:01	20.30	2.319303	0.27167753
1104	10:21:01	20.30	2.320750	0.2691814
1105	10:22:01	20.10	2.320388	0.26949195
1106	10:23:01	19.90	2.320027	0.26980037
1107	10:24:01	19.80	2.319665	0.27010977
1108	10:25:01	19.80	2.318941	0.27097776
1109	10:26:01	19.90	2.318941	0.27072685
1110	10:27:01	20.00	2.318580	0.27103299
1111	10:28:01	20.20	2.319303	0.26966882
1112	10:29:01	20.30	2.318941	0.26997692
1113	10:30:01	20.30	2.319665	0.2686147
1114	10:31:01	20.10	2.318580	0.27003379
1115	10:32:01	20.00	2.319303	0.26867557
1116	10:33:01	19.80	2.319303	0.2684284
1117	10:34:01	19.80	2.319303	0.26818168
1118	10:35:01	19.90	2.318580	0.26904193
1119	10:36:01	20.00	2.319303	0.2676896
1120	10:37:01	20.20	2.319303	0.26744424
1121	10:38:01	20.30	2.318580	0.26830281
1122	10:39:01	20.30	2.318941	0.26750686
1123	10:40:01	20.10	2.318580	0.26781231
1124	10:41:01	20.00	2.318580	0.26756773
1125	10:42:01	19.80	2.318941	0.26677464
1126	10:43:01	19.80	2.318580	0.26707991
1127	10:44:01	19.90	2.318218	0.26738616
1128	10:45:01	20.00	2.318580	0.26659387
1129	10:46:01	20.20	2.318580	0.26635152
1130	10:47:01	20.30	2.318941	0.26556312
1131	10:48:01	20.30	2.318580	0.26586812
1132	10:49:01	20.20	2.318580	0.26562708
1133	10:50:01	20.00	2.318580	0.26538647
1134	10:51:01	19.80	2.318580	0.2651463
1135	10:52:01	19.80	2.317856	0.26599759
1136	10:53:01	19.80	2.318218	0.26521229
1137	10:54:01	19.90	2.318218	0.26497292
1138	10:55:01	20.10	2.318580	0.26418996
1139	10:56:01	20.30	2.318218	0.2644955
1140	10:57:01	20.30	2.318218	0.26425743
1141	10:58:01	20.20	2.318580	0.26347722
1142	10:59:01	20.00	2.318580	0.26324049
1143	11:00:01	19.90	2.318580	0.26300419
1144	11:01:01	19.80	2.318580	0.26276831
1145	11:02:01	19.80	2.317133	0.26469385
1146	11:03:01	19.90	2.318218	0.26283796
1147	11:04:01	20.10	2.318580	0.26206321
1148	11:05:01	20.30	2.317856	0.26290736
1149	11:06:01	20.30	2.318218	0.26213393

1150	11:07:01	20.20	2.317495	0.26297502
1151	11:08:01	20.10	2.318218	0.26166667
1152	11:09:01	19.90	2.317856	0.26197091
1153	11:10:01	19.80	2.317856	0.26173784
1154	11:11:01	19.80	2.317495	0.26204
1155	11:12:01	19.90	2.317495	0.26180728
1156	11:13:01	20.10	2.316410	0.26317953
1157	11:14:01	20.30	2.316410	0.26294622
1158	11:15:01	20.30	2.316771	0.2621804
1159	11:16:01	20.20	2.317133	0.26141445
1160	11:17:01	20.10	2.317133	0.26118332
1161	11:18:01	19.90	2.317133	0.26095259
1162	11:19:01	19.80	2.317133	0.26072227
1163	11:20:01	19.80	2.316771	0.2610244
1164	11:21:01	19.90	2.316410	0.26132452
1165	11:22:01	20.10	2.316410	0.26109448
1166	11:23:01	20.20	2.316048	0.26139549
1167	11:24:01	20.30	2.316410	0.26063562
1168	11:25:01	20.30	2.316771	0.25987855
1169	11:26:01	20.10	2.316048	0.2607076
1170	11:27:01	20.00	2.315686	0.26100789
1171	11:28:01	19.80	2.315686	0.26077933
1172	11:29:01	19.80	2.316410	0.25949548
1173	11:30:01	19.80	2.315686	0.26032343
1174	11:31:01	20.00	2.315686	0.26009607
1175	11:32:01	20.20	2.315686	0.25986911
1176	11:33:01	20.30	2.315686	0.25964255
1177	11:34:01	20.30	2.316048	0.25889082
1178	11:35:01	20.20	2.316410	0.25814041
1179	11:36:01	20.00	2.316048	0.25844058
1180	11:37:01	19.90	2.315686	0.25874023
1181	11:38:01	19.80	2.316048	0.2579919
1182	11:39:01	19.90	2.315686	0.25829141
1183	11:40:01	20.00	2.315686	0.25806759
1184	11:41:01	20.20	2.315686	0.25784416
1185	11:42:01	20.30	2.315686	0.25762111
1186	11:43:01	20.30	2.315686	0.25739844
1187	11:44:01	20.20	2.315686	0.25717617
1188	11:45:01	20.00	2.316048	0.25643371
1189	11:46:01	19.90	2.315686	0.25673276
1190	11:47:01	19.80	2.315686	0.25651163
1191	11:48:01	19.80	2.315325	0.25680866
1192	11:49:01	19.90	2.315686	0.25607051
1193	11:50:01	20.10	2.315686	0.25585052
1194	11:51:01	20.30	2.315686	0.2556309
1195	11:52:01	20.30	2.315686	0.25541166
1196	11:53:01	20.20	2.315686	0.2551928
1197	11:54:01	20.10	2.315325	0.25548944
1198	11:55:01	19.90	2.315686	0.2547562
1199	11:56:01	19.80	2.315325	0.25505271

1200	11:57:01	19.80	2.314601	0.25586536
1201	11:58:01	19.90	2.315325	0.25461746
1202	11:59:01	20.10	2.314601	0.2554291
1203	12:00:01	20.30	2.315325	0.2541837
1204	12:01:01	20.30	2.314963	0.25448085
1205	12:02:01	20.20	2.314963	0.25426446
1206	12:03:01	20.10	2.315686	0.25302464
1207	12:04:01	19.90	2.314963	0.25383277
1208	12:05:01	19.80	2.314963	0.25361747
1209	12:06:01	19.80	2.314601	0.25391384
1210	12:07:01	19.90	2.315325	0.25267711
1211	12:08:01	20.10	2.314239	0.25399464
1212	12:09:01	20.30	2.313878	0.25428853
1213	12:10:01	20.30	2.314601	0.25305602
1214	12:11:01	20.30	2.315325	0.25182419
1215	12:12:01	20.20	2.314239	0.253138
1216	12:13:01	20.00	2.314963	0.25190817
1217	12:14:01	19.80	2.314963	0.25169613
1218	12:15:01	19.80	2.314963	0.25148444
1219	12:16:01	19.80	2.314239	0.25228711
1220	12:17:01	20.00	2.314601	0.25156871
1221	12:18:01	20.20	2.314963	0.25085151
1222	12:19:01	20.30	2.314239	0.2516527
1223	12:20:01	20.30	2.314239	0.25144193
1224	12:21:01	20.20	2.313516	0.25223989
1225	12:22:01	20.00	2.313516	0.25202899
1226	12:23:01	19.90	2.313154	0.25232247
1227	12:24:01	19.80	2.312792	0.25261547
1228	12:25:01	19.80	2.313154	0.25190158
1229	12:26:01	20.00	2.313516	0.25118889
1230	12:27:01	20.20	2.313516	0.25097974
1231	12:28:01	20.30	2.313516	0.25077094
1232	12:29:01	20.30	2.313154	0.25106401
1233	12:30:01	20.20	2.313516	0.25035437
1234	12:31:01	20.10	2.312792	0.25114799
1235	12:32:01	19.90	2.313516	0.24993919
1236	12:33:01	19.80	2.313516	0.24973212
1237	12:34:01	19.80	2.313154	0.25002483
1238	12:35:01	19.90	2.312792	0.25031707
1239	12:36:01	20.10	2.312792	0.25011019
1240	12:37:01	20.30	2.312792	0.24990366
1241	12:38:01	20.30	2.312792	0.24969747
1242	12:39:01	20.30	2.313516	0.24849684
1243	12:40:01	20.10	2.313154	0.24878913
1244	12:41:01	20.00	2.312792	0.24908093
1245	12:42:01	19.80	2.313154	0.24837993
1246	12:43:01	19.80	2.312792	0.2486716
1247	12:44:01	19.90	2.312792	0.24846743
1248	12:45:01	20.00	2.312792	0.2482636
1249	12:46:01	20.20	2.312792	0.24806011

1250	12:47:01	20.30	2.312792	0.24785695
1251	12:48:01	20.30	2.312431	0.24814648
1252	12:49:01	20.20	2.312792	0.24745162
1253	12:50:01	20.00	2.312792	0.24724946
1254	12:51:01	19.90	2.312431	0.24753878
1255	12:52:01	19.80	2.312792	0.24684611
1256	12:53:01	19.90	2.312792	0.24664493
1257	12:54:01	20.00	2.312792	0.24644408
1258	12:55:01	20.20	2.312792	0.24624356
1259	12:56:01	20.30	2.312431	0.24653252
1260	12:57:01	20.30	2.312792	0.24584349
1261	12:58:01	20.20	2.312431	0.24613231
1262	12:59:01	20.10	2.312792	0.24544471
1263	13:00:01	19.90	2.312431	0.24573339
1264	13:01:01	19.80	2.312069	0.24602294
1265	13:02:01	19.80	2.312792	0.24484898
1266	13:03:01	19.90	2.312792	0.24465104
1267	13:04:01	20.10	2.312792	0.24445342
1268	13:05:01	20.30	2.312792	0.24425612
1269	13:06:01	20.30	2.312431	0.24454435
1270	13:07:01	20.30	2.312069	0.24483347
1271	13:08:01	20.10	2.312431	0.24415056
1272	13:09:01	20.00	2.311707	0.24492491
1273	13:10:01	19.90	2.312792	0.24327438
1274	13:11:01	19.80	2.311707	0.24453146
1275	13:12:01	19.90	2.311707	0.24433521
1276	13:13:01	20.00	2.312792	0.24268912
1277	13:14:01	20.20	2.312431	0.24297676
1278	13:15:01	20.30	2.311346	0.24423005
1279	13:16:01	20.30	2.311707	0.24355333
1280	13:17:01	20.20	2.312069	0.24287637
1281	13:18:01	20.00	2.311707	0.24316427
1282	13:19:01	19.90	2.311707	0.2429702
1283	13:20:01	19.80	2.312069	0.24229532
1284	13:21:01	19.90	2.311346	0.24306242
1285	13:22:01	20.00	2.310984	0.24334926
1286	13:23:01	20.20	2.310260	0.24411562
1287	13:24:01	20.30	2.310984	0.24296237
1288	13:25:01	20.30	2.310984	0.24276939
1289	13:26:01	20.20	2.311707	0.24162037
1290	13:27:01	20.10	2.310984	0.24238435
1291	13:28:01	19.90	2.310984	0.24219229
1292	13:29:01	19.80	2.311707	0.24104645
1293	13:30:01	19.80	2.311346	0.24133175
1294	13:31:01	20.00	2.310622	0.24209486
1295	13:32:01	20.10	2.310984	0.24142707
1296	13:33:01	20.30	2.310622	0.24171271
1297	13:34:01	20.30	2.311346	0.24057045
1298	13:35:01	20.30	2.310984	0.24085632
1299	13:36:01	20.10	2.310622	0.24114173

1300	13:37:01	20.00	2.310984	0.24047731
1301	13:38:01	19.90	2.309899	0.24170991
1302	13:39:01	19.80	2.310622	0.24057345
1303	13:40:01	19.90	2.309899	0.24133046
1304	13:41:01	20.10	2.310260	0.24066928
1305	13:42:01	20.30	2.310984	0.23953501
1306	13:43:01	20.30	2.310260	0.24029235
1307	13:44:01	20.30	2.309899	0.24057512
1308	13:45:01	20.20	2.310260	0.2399166
1309	13:46:01	20.00	2.309899	0.24019922
1310	13:47:01	19.90	2.310622	0.23907104
1311	13:48:01	19.80	2.309899	0.23982449
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1313	13:50:01	20.10	2.309899	0.23945093
1314	13:51:01	20.30	2.309899	0.23926459
1315	13:52:01	20.30	2.310260	0.23861068
1316	13:53:01	20.30	2.309899	0.23889277
1317	13:54:01	20.20	2.309899	0.2387073
1318	13:55:01	20.00	2.309899	0.23852211
1319	13:56:01	19.90	2.309899	0.23833721
1320	13:57:01	19.80	2.309899	0.23815259
1321	13:58:01	19.90	2.309537	0.23843524
1322	13:59:01	20.00	2.309899	0.23778422
1323	14:00:01	20.20	2.309899	0.23760046
1324	14:01:01	20.30	2.309899	0.23741699
1325	14:02:01	20.30	2.309899	0.2372338
1326	14:03:01	20.20	2.309899	0.23705089
1327	14:04:01	20.10	2.309175	0.23779789
1328	14:05:01	20.00	2.309175	0.23761483
1329	14:06:01	19.80	2.309899	0.23650385
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1331	14:08:01	19.90	2.309899	0.23614055
1332	14:09:01	20.10	2.309899	0.23595932
1333	14:10:01	20.30	2.309899	0.23577837
1334	14:11:01	20.30	2.309899	0.2355977
1335	14:12:01	20.30	2.309537	0.23587928
1336	14:13:01	20.20	2.309899	0.23523718
1337	14:14:01	20.00	2.309175	0.23597987
1338	14:15:01	19.90	2.309537	0.23533868
1339	14:16:01	19.80	2.309537	0.23515903
1340	14:17:01	19.90	2.308814	0.2358988
1341	14:18:01	20.00	2.309175	0.23526042
1342	14:19:01	20.20	2.308814	0.23553948
1343	14:20:01	20.30	2.308452	0.23581938
1344	14:21:01	20.30	2.309175	0.2347237
1345	14:22:01	20.20	2.309175	0.23454534
1346	14:23:01	20.10	2.308814	0.2348241
1347	14:24:01	19.90	2.308814	0.23464593
1348	14:25:01	19.80	2.308814	0.23446803
1349	14:26:01	19.80	2.307728	0.23566162

1350	14:27:01	19.90	2.308452	0.23456977
1351	14:28:01	20.20	2.309175	0.23348084
1352	14:29:01	20.30	2.308452	0.23421517
1353	14:30:01	20.30	2.308090	0.23449396
1354	14:31:01	20.30	2.308814	0.23340629
1355	14:32:01	20.10	2.307728	0.23459527
1356	14:33:01	20.00	2.308452	0.23350917
1357	14:34:01	19.90	2.308090	0.23378765
1358	14:35:01	19.80	2.307005	0.23497241
1359	14:36:01	19.90	2.308090	0.23343609
1360	14:37:01	20.10	2.307005	0.23461933
1361	14:38:01	20.30	2.307005	0.23444319
1362	14:39:01	20.30	2.307728	0.23336334
1363	14:40:01	20.30	2.307005	0.2340917
1364	14:41:01	20.20	2.307005	0.23391635
1365	14:42:01	20.10	2.307728	0.23283932
1366	14:43:01	19.90	2.307005	0.23356644
1367	14:44:01	19.80	2.307728	0.23249128
1368	14:45:01	19.90	2.307728	0.23231765
1369	14:46:01	20.00	2.307005	0.23304353
1370	14:47:01	20.20	2.307728	0.23197117
1371	14:48:01	20.30	2.307367	0.23224665
1372	14:49:01	20.30	2.307367	0.23207372
1373	14:50:01	20.30	2.307367	0.23190104
1374	14:51:01	20.10	2.307367	0.23172862
1375	14:52:01	20.00	2.307005	0.23200471
1376	14:53:01	19.90	2.307367	0.23138456
1377	14:54:01	19.80	2.307005	0.23166048
1378	14:55:01	19.90	2.307005	0.23148876
1379	14:56:01	20.10	2.307005	0.23131728
1380	14:57:01	20.30	2.307005	0.23114606
1381	14:58:01	20.30	2.307005	0.2309751
1382	14:59:01	20.30	2.307005	0.23080439
1383	15:00:01	20.20	2.307005	0.23063392
1384	15:01:01	20.00	2.307005	0.23046371
1385	15:02:01	19.90	2.307005	0.23029376
1386	15:03:01	19.80	2.307005	0.23012405
1387	15:04:01	19.90	2.307005	0.22995459
1388	15:05:01	20.00	2.307005	0.22978538
1389	15:06:01	20.20	2.307367	0.22917279
1390	15:07:01	20.30	2.307005	0.22944771
1391	15:08:01	20.30	2.307005	0.22927925
1392	15:09:01	20.30	2.307005	0.22911103
1393	15:10:01	20.10	2.307005	0.22894306
1394	15:11:01	20.00	2.307005	0.22877534
1395	15:12:01	19.80	2.306643	0.22904954
1396	15:13:01	19.80	2.306643	0.22888198
1397	15:14:01	19.90	2.306282	0.22915448
1398	15:15:01	20.10	2.306282	0.2289871
1399	15:16:01	20.30	2.306643	0.22838078

1400	15:17:01	20.40	2.306282	0.22865305
1401	15:18:01	20.30	2.307005	0.22760811
1402	15:19:01	20.20	2.306643	0.22788177
1403	15:20:01	20.00	2.305920	0.22859292
1404	15:21:01	19.90	2.306643	0.2275503
1405	15:22:01	19.80	2.306282	0.22782219
1406	15:23:01	19.90	2.306643	0.2272198
1407	15:24:01	20.00	2.306643	0.22705491
1408	15:25:01	20.20	2.306643	0.22689026
1409	15:26:01	20.40	2.305558	0.22803623
1410	15:27:01	20.30	2.305920	0.22743423
1411	15:28:01	20.20	2.307005	0.22596117
1412	15:29:01	20.10	2.305558	0.22754158
1413	15:30:01	20.00	2.306282	0.2265053
1414	15:31:01	19.90	2.305197	0.22764741
1415	15:32:01	19.90	2.306282	0.22617845
1416	15:33:01	19.90	2.305558	0.22688536
1417	15:34:01	20.10	2.305920	0.22628722
1418	15:35:01	20.30	2.305197	0.22699184
1419	15:36:01	20.40	2.305920	0.22596163
1420	15:37:01	20.30	2.305558	0.22623293
1421	15:38:01	20.20	2.304835	0.22693606
1422	15:39:01	20.00	2.305197	0.22634003
1423	15:40:01	19.90	2.305558	0.22574605
1424	15:41:01	19.80	2.305920	0.22515173
1425	15:42:01	19.90	2.305558	0.22542264
1426	15:43:01	20.10	2.304473	0.22655571
1427	15:44:01	20.30	2.305920	0.22466857
1428	15:45:01	20.30	2.305197	0.22536931
1429	15:46:01	20.30	2.304473	0.22607024
1430	15:47:01	20.20	2.304473	0.22590887
1431	15:48:01	20.10	2.304835	0.2253174
1432	15:49:01	19.90	2.304835	0.22515681
1433	15:50:01	19.80	2.304111	0.22585589
1434	15:51:01	19.90	2.304473	0.22526572
1435	15:52:01	20.00	2.304835	0.22467639
1436	15:53:01	20.20	2.304111	0.22537432
1437	15:54:01	20.30	2.304111	0.22521425
1438	15:55:01	20.40	2.304111	0.22505441
1439	15:56:01	20.30	2.304473	0.2244669
1440	15:57:01	20.20	2.304111	0.22473541
1441	15:58:01	20.00	2.304111	0.22457625
1442	15:59:01	19.90	2.304111	0.22441732
1443	16:00:01	19.80	2.304111	0.2242586
1444	16:01:01	19.90	2.304835	0.22324735
1445	16:02:01	20.00	2.304111	0.22394185
1446	16:03:01	20.20	2.304473	0.22335803
1447	16:04:01	20.30	2.304111	0.223626
1448	16:05:01	20.30	2.304111	0.2234684
1449	16:06:01	20.30	2.304111	0.22331103

1450	16:07:01	20.10	2.304111	0.22315388	
1451	16:08:01	20.00	2.304111	0.22299695	
1452	16:09:01	19.90	2.304111	0.22284024	
1453	16:10:01	19.80	2.304111	0.22268375	
1454	16:11:01	19.90	2.304111	0.22252749	
1455	16:12:01	20.10	2.304473	0.22194834	
1456	16:13:01	20.30	2.304111	0.2222156	
1457	16:14:01	20.30	2.304111	0.22205999	
1458	16:15:01	20.30	2.304111	0.2219046	
1459	16:16:01	20.20	2.304111	0.22174942	
1460	16:17:01	20.00	2.303388	0.22243652	
1461	16:18:01	19.90	2.304111	0.22143971	
1462	16:19:01	19.80	2.303388	0.22212608	
1463	16:20:01	19.90	2.304111	0.22113087	
1464	16:21:01	20.00	2.304111	0.22097677	
1465	16:22:01	20.20	2.303750	0.22124188	
1466	16:23:01	20.30	2.303750	0.22108791	
1467	16:24:01	20.30	2.304111	0.22051576	
1468	16:25:01	20.30	2.304111	0.22036252	
1469	16:26:01	20.10	2.304111	0.22020949	
1470	16:27:01	20.00	2.304111	0.22005667	24 horas
1471	16:28:01	19.90	2.303750	0.22032131	
1472	16:29:01	19.80	2.303750	0.22016863	
1473	16:30:01	19.90	2.303750	0.22001616	
1474	16:31:01	20.10	2.303750	0.2198639	
1475	16:32:01	20.30	2.303750	0.21971185	
1476	16:33:01	20.40	2.303750	0.21956001	
1477	16:34:01	20.30	2.303750	0.21940838	
1478	16:35:01	20.20	2.303026	0.22008972	
1479	16:36:01	20.10	2.302665	0.22035287	
1480	16:37:01	19.90	2.303750	0.21895474	
1481	16:38:01	19.90	2.302665	0.22004936	
1482	16:39:01	19.90	2.303026	0.21948383	
1483	16:40:01	20.00	2.303750	0.21850298	
1484	16:41:01	20.20	2.302665	0.21959565	
1485	16:42:01	20.30	2.303026	0.21903159	
1486	16:43:01	20.40	2.302303	0.2197083	
1487	16:44:01	20.30	2.303026	0.21873114	
1488	16:45:01	20.20	2.302303	0.21940713	
1489	16:46:01	20.00	2.303750	0.21760502	
1490	16:47:01	19.90	2.302303	0.21910678	
1491	16:48:01	19.80	2.301941	0.21936959	
1492	16:49:01	19.90	2.301941	0.21921964	
1493	16:50:01	20.10	2.302665	0.21824567	
1494	16:51:01	20.30	2.302303	0.21850853	
1495	16:52:01	20.40	2.302303	0.21835948	
1496	16:53:01	20.30	2.301941	0.2186219	
1497	16:54:01	20.20	2.302303	0.21806199	
1498	16:55:01	20.10	2.301941	0.21832426	
1499	16:56:01	20.00	2.301941	0.21817574	

1500	16:57:01	19.90	2.302665	0.21720712
1501	16:58:01	19.90	2.302303	0.21746943
1502	16:59:01	20.00	2.301941	0.21773139
1503	17:00:01	20.20	2.301579	0.21799299
1504	17:01:01	20.30	2.301579	0.2178452
1505	17:02:01	20.40	2.301941	0.21728884
1506	17:03:01	20.30	2.301579	0.21755021
1507	17:04:01	20.20	2.301941	0.21699481
1508	17:05:01	20.00	2.301579	0.21725603
1509	17:06:01	19.90	2.301218	0.21751577
1510	17:07:01	19.90	2.301579	0.21696264
1511	17:08:01	19.90	2.301218	0.21722222
1512	17:09:01	20.10	2.301579	0.21667004
1513	17:10:01	20.30	2.301218	0.21692947
1514	17:11:01	20.40	2.301941	0.21597194
1515	17:12:01	20.30	2.301218	0.21663751
1516	17:13:01	20.30	2.301941	0.21568146
1517	17:14:01	20.10	2.301218	0.21634633
1518	17:15:01	20.00	2.301218	0.21620103
1519	17:16:01	19.90	2.301218	0.21605593
1520	17:17:01	19.90	2.301218	0.21591102
1521	17:18:01	19.90	2.301218	0.21576631
1522	17:19:01	20.10	2.301218	0.21562179
1523	17:20:01	20.30	2.301218	0.21547747
1524	17:21:01	20.40	2.301579	0.21493088
1525	17:22:01	20.30	2.301218	0.21518939
1526	17:23:01	20.20	2.301218	0.21504565
1527	17:24:01	20.10	2.301218	0.21490209
1528	17:25:01	19.90	2.301218	0.21475873
1529	17:26:01	19.80	2.301218	0.21461556
1530	17:27:01	19.90	2.300856	0.21487453
1531	17:28:01	20.00	2.300856	0.21473147
1532	17:29:01	20.20	2.301218	0.21418718
1533	17:30:01	20.30	2.301218	0.21404477
1534	17:31:01	20.30	2.301218	0.21390255
1535	17:32:01	20.20	2.301218	0.21376051
1536	17:33:01	20.10	2.301218	0.21361867
1537	17:34:01	20.00	2.301218	0.21347701
1538	17:35:01	19.90	2.300856	0.21373537
1539	17:36:01	19.90	2.301218	0.21319426
1540	17:37:01	20.00	2.301218	0.21305317
1541	17:38:01	20.20	2.301218	0.21291226
1542	17:39:01	20.30	2.301218	0.21277154
1543	17:40:01	20.40	2.300856	0.2130295
1544	17:41:01	20.30	2.300856	0.21288889
1545	17:42:01	20.20	2.300856	0.21274846
1546	17:43:01	20.00	2.301218	0.2122105
1547	17:44:01	19.90	2.300494	0.21286561
1548	17:45:01	19.80	2.300856	0.21232829
1549	17:46:01	19.90	2.300494	0.21258553

1550	17:47:01	20.10	2.300494	0.21244576
1551	17:48:01	20.30	2.299771	0.2130979
1552	17:49:01	20.40	2.300856	0.21177063
1553	17:50:01	20.30	2.300494	0.21202756
1554	17:51:01	20.20	2.299409	0.21307432
1555	17:52:01	20.10	2.300856	0.2113543
1556	17:53:01	19.90	2.301218	0.21082078
1557	17:54:01	19.90	2.300494	0.21147251
1558	17:55:01	19.90	2.300494	0.21133421
1559	17:56:01	20.00	2.300494	0.21119608
1560	17:57:01	20.20	2.299771	0.2118452
1561	17:58:01	20.30	2.299771	0.21170692
1562	17:59:01	20.30	2.300494	0.21078278
1563	18:00:01	20.30	2.299771	0.2114309
1564	18:01:01	20.20	2.299409	0.21168621
1565	18:02:01	20.00	2.300132	0.21076389
1566	18:03:01	19.90	2.300132	0.21062676
1567	18:04:01	19.80	2.299409	0.2112733
1568	18:05:01	19.90	2.299409	0.21113602
1569	18:06:01	20.10	2.298686	0.21178139
1570	18:07:01	20.30	2.298324	0.21203547
1571	18:08:01	20.40	2.299409	0.21072525
1572	18:09:01	20.30	2.299047	0.21097969
1573	18:10:01	20.20	2.299771	0.21006153
1574	18:11:01	20.10	2.299409	0.21031607
1575	18:12:01	20.00	2.298686	0.21095947
1576	18:13:01	19.90	2.299047	0.21043417
1577	18:14:01	19.90	2.298324	0.21107666
1578	18:15:01	19.90	2.299047	0.21016247
1579	18:16:01	20.20	2.298686	0.21041505
1580	18:17:01	20.30	2.298686	0.21027939
1581	18:18:01	20.40	2.298686	0.2101439
1582	18:19:01	20.30	2.298324	0.21039708
1583	18:20:01	20.20	2.299047	0.20948627
1584	18:21:01	20.00	2.299047	0.20935155
1585	18:22:01	19.90	2.298324	0.20999143
1586	18:23:01	19.80	2.298686	0.20946906
1587	18:24:01	19.90	2.298324	0.20972187
1588	18:25:01	20.00	2.299047	0.20881441
1589	18:26:01	20.20	2.298324	0.20945299
1590	18:27:01	20.40	2.298324	0.20931881
1591	18:28:01	20.30	2.298324	0.20918481
1592	18:29:01	20.20	2.298324	0.20905097
1593	18:30:01	20.10	2.298324	0.20891731
1594	18:31:01	20.00	2.298686	0.2083983
1595	18:32:01	19.90	2.298686	0.20826522
1596	18:33:01	19.80	2.298324	0.20851734
1597	18:34:01	19.90	2.298324	0.20838435
1598	18:35:01	20.10	2.298324	0.20825154
1599	18:36:01	20.30	2.298324	0.2081189

1600	18:37:01	20.30	2.298324	0.20798642
1601	18:38:01	20.30	2.298324	0.20785411
1602	18:39:01	20.20	2.298324	0.20772197
1603	18:40:01	20.10	2.298324	0.20759
1604	18:41:01	19.90	2.298324	0.2074582
1605	18:42:01	19.80	2.298324	0.20732657
1606	18:43:01	19.90	2.298324	0.2071951
1607	18:44:01	20.00	2.297962	0.20744613
1608	18:45:01	20.20	2.298324	0.20693266
1609	18:46:01	20.30	2.298324	0.20680169
1610	18:47:01	20.30	2.298324	0.20667088
1611	18:48:01	20.20	2.298324	0.20654024
1612	18:49:01	20.10	2.298324	0.20640977
1613	18:50:01	20.00	2.298324	0.20627946
1614	18:51:01	19.90	2.298324	0.20614932
1615	18:52:01	19.90	2.297962	0.20639975
1616	18:53:01	20.00	2.298324	0.20588952
1617	18:54:01	20.20	2.297962	0.2061398
1618	18:55:01	20.30	2.298324	0.20563038
1619	18:56:01	20.30	2.298324	0.20550105
1620	18:57:01	20.30	2.298324	0.20537188
1621	18:58:01	20.10	2.298324	0.20524288
1622	18:59:01	20.00	2.298324	0.20511404
1623	19:00:01	19.90	2.298324	0.20498536
1624	19:01:01	19.80	2.297962	0.20523511
1625	19:02:01	19.90	2.297601	0.2054835
1626	19:03:01	20.10	2.297601	0.20535483
1627	19:04:01	20.30	2.298324	0.20447226
1628	19:05:01	20.40	2.297601	0.20509798
1629	19:06:01	20.30	2.298324	0.20421667
1630	19:07:01	20.20	2.297601	0.20484177
1631	19:08:01	20.10	2.297239	0.20509051
1632	19:09:01	19.90	2.296877	0.20533895
1633	19:10:01	19.80	2.296515	0.20558707
1634	19:11:01	19.90	2.296877	0.20508307
1635	19:12:01	20.00	2.297601	0.20420403
1636	19:13:01	20.20	2.297239	0.2044524
1637	19:14:01	20.30	2.296877	0.20470046
1638	19:15:01	20.30	2.297239	0.20419826
1639	19:16:01	20.30	2.297601	0.20369669
1640	19:17:01	20.10	2.297962	0.20319677
1641	19:18:01	20.00	2.297239	0.20381824
1642	19:19:01	19.90	2.296515	0.20443997
1643	19:20:01	19.80	2.296877	0.20393949
1644	19:21:01	19.90	2.296877	0.20381321
1645	19:22:01	20.10	2.295792	0.20480611
1646	19:23:01	20.30	2.296877	0.20356112
1647	19:24:01	20.30	2.295430	0.20492583
1648	19:25:01	20.30	2.296515	0.20368231
1649	19:26:01	20.20	2.296515	0.20355658

1650	19:27:01	20.00	2.296154	0.20380218
1651	19:28:01	19.90	2.295792	0.2040485
1652	19:29:01	19.80	2.296154	0.20355104
1653	19:30:01	19.90	2.295792	0.20379721
1654	19:31:01	20.00	2.295792	0.20367179
1655	19:32:01	20.20	2.296515	0.20280545
1656	19:33:01	20.40	2.295430	0.20379226
1657	19:34:01	20.30	2.295792	0.20329648
1658	19:35:01	20.20	2.295792	0.20317168
1659	19:36:01	20.10	2.295430	0.20341718
1660	19:37:01	20.00	2.296154	0.20255263
1661	19:38:01	19.90	2.296515	0.20205984
1662	19:39:01	19.80	2.296154	0.20230455
1663	19:40:01	19.90	2.295430	0.20291922
1664	19:41:01	20.10	2.295430	0.20279511
1665	19:42:01	20.30	2.296154	0.20193358
1666	19:43:01	20.30	2.295430	0.20254734
1667	19:44:01	20.30	2.296154	0.20168702
1668	19:45:01	20.20	2.295792	0.20193207
1669	19:46:01	20.00	2.295430	0.20217683
1670	19:47:01	19.90	2.295430	0.20205363
1671	19:48:01	19.80	2.295792	0.20156313
1672	19:49:01	19.90	2.295430	0.20180767
1673	19:50:01	20.00	2.295430	0.20168491
1674	19:51:01	20.20	2.295430	0.20156231
1675	19:52:01	20.30	2.295430	0.20143985
1676	19:53:01	20.30	2.295430	0.20131755
1677	19:54:01	20.20	2.295430	0.20119539
1678	19:55:01	20.10	2.295430	0.20107338
1679	19:56:01	19.90	2.295430	0.20095152
1680	19:57:01	19.90	2.295430	0.2008298
1681	19:58:01	19.90	2.295430	0.20070823
1682	19:59:01	20.00	2.295430	0.20058681
1683	20:00:01	20.20	2.295430	0.20046554
1684	20:01:01	20.30	2.295792	0.19997986
1685	20:02:01	20.30	2.295430	0.20022343
1686	20:03:01	20.30	2.295430	0.2001026
1687	20:04:01	20.10	2.295430	0.19998191
1688	20:05:01	20.00	2.295430	0.19986136
1689	20:06:01	19.90	2.295069	0.20010341
1690	20:07:01	19.80	2.295430	0.19962071
1691	20:08:01	19.90	2.295430	0.1995006
1692	20:09:01	20.10	2.295430	0.19938064
1693	20:10:01	20.30	2.295430	0.19926082
1694	20:11:01	20.30	2.295069	0.1995025
1695	20:12:01	20.30	2.295069	0.19938275
1696	20:13:01	20.20	2.295430	0.19890222
1697	20:14:01	20.00	2.295069	0.19914369
1698	20:15:01	19.90	2.294707	0.19938586
1699	20:16:01	19.80	2.295430	0.19854491

1700	20:17:01	19.90	2.294707	0.19914722
1701	20:18:01	20.00	2.294707	0.19902811
1702	20:19:01	20.20	2.294707	0.19890915
1703	20:20:01	20.30	2.295430	0.19807049
1704	20:21:01	20.30	2.294707	0.19867164
1705	20:22:01	20.20	2.295430	0.19783413
1706	20:23:01	20.10	2.295430	0.19771616
1707	20:24:01	19.90	2.295069	0.19795689
1708	20:25:01	19.80	2.294345	0.19855767
1709	20:26:01	19.80	2.295430	0.1973631
1710	20:27:01	19.90	2.295069	0.19760361
1711	20:28:01	20.10	2.293983	0.19856223
1712	20:29:01	20.30	2.294345	0.19808576
1713	20:30:01	20.30	2.294345	0.19796813
1714	20:31:01	20.30	2.294707	0.19749258
1715	20:32:01	20.20	2.293622	0.198448
1716	20:33:01	20.00	2.295069	0.19690081
1717	20:34:01	19.90	2.294707	0.19714159
1718	20:35:01	19.80	2.293622	0.19809552
1719	20:36:01	19.90	2.293983	0.19762229
1720	20:37:01	20.00	2.295069	0.19643505
1721	20:38:01	20.20	2.293622	0.19774429
1722	20:39:01	20.30	2.293260	0.19798386
1723	20:40:01	20.30	2.293260	0.19786698
1724	20:41:01	20.20	2.293622	0.1973943
1725	20:42:01	20.10	2.294707	0.19621167
1726	20:43:01	19.90	2.293983	0.19680711
1727	20:44:01	19.80	2.293622	0.19704554
1728	20:45:01	19.80	2.293260	0.19728468
1729	20:46:01	20.00	2.293260	0.19716863
1730	20:47:01	20.20	2.293260	0.19705271
1731	20:48:01	20.30	2.292898	0.19729142
1732	20:49:01	20.30	2.293622	0.19646702
1733	20:50:01	20.30	2.293260	0.19670579
1734	20:51:01	20.10	2.292536	0.19729814
1735	20:52:01	20.00	2.293260	0.19647519
1736	20:53:01	19.90	2.292898	0.19671353
1737	20:54:01	19.80	2.293260	0.19624512
1738	20:55:01	19.90	2.292898	0.19648332
1739	20:56:01	20.10	2.292898	0.19636842
1740	20:57:01	20.30	2.292898	0.19625365
1741	20:58:01	20.30	2.292536	0.19649143
1742	20:59:01	20.30	2.293260	0.19567231
1743	21:00:01	20.20	2.293260	0.19555815
1744	21:01:01	20.00	2.292536	0.19614772
1745	21:02:01	19.90	2.292536	0.19603341
1746	21:03:01	19.80	2.292536	0.19591924
1747	21:04:01	19.90	2.293622	0.19475165
1748	21:05:01	20.00	2.292536	0.19569129
1749	21:06:01	20.20	2.292536	0.19557752

1750	21:07:01	20.30	2.292536	0.19546388
1751	21:08:01	20.30	2.292536	0.19535037
1752	21:09:01	20.20	2.292898	0.19488683
1753	21:10:01	20.10	2.292536	0.19512374
1754	21:11:01	19.90	2.292536	0.19501063
1755	21:12:01	19.80	2.292536	0.19489764
1756	21:13:01	19.90	2.292536	0.19478479
1757	21:14:01	20.00	2.292536	0.19467207
1758	21:15:01	20.20	2.292536	0.19455948
1759	21:16:01	20.30	2.292536	0.19444701
1760	21:17:01	20.30	2.292536	0.19433468
1761	21:18:01	20.30	2.292536	0.19422248
1762	21:19:01	20.10	2.292536	0.19411041
1763	21:20:01	20.00	2.292536	0.19399846
1764	21:21:01	19.80	2.292536	0.19388665
1765	21:22:01	19.80	2.292536	0.19377496
1766	21:23:01	19.90	2.292175	0.19400979
1767	21:24:01	20.10	2.292536	0.19355198
1768	21:25:01	20.30	2.292536	0.19344067
1769	21:26:01	20.30	2.292536	0.1933295
1770	21:27:01	20.30	2.292536	0.19321846
1771	21:28:01	20.20	2.292175	0.19345293
1772	21:29:01	20.00	2.292536	0.19299675
1773	21:30:01	19.90	2.292536	0.19288609
1774	21:31:01	19.80	2.292536	0.19277555
1775	21:32:01	19.90	2.292175	0.19300974
1776	21:33:01	20.00	2.292175	0.19289926
1777	21:34:01	20.20	2.292175	0.1927889
1778	21:35:01	20.30	2.292175	0.19267867
1779	21:36:01	20.30	2.292536	0.19222476
1780	21:37:01	20.20	2.292536	0.19211498
1781	21:38:01	20.10	2.292175	0.19234874
1782	21:39:01	19.90	2.291813	0.19258319
1783	21:40:01	19.80	2.291813	0.19247339
1784	21:41:01	19.80	2.292175	0.19201994
1785	21:42:01	19.90	2.291813	0.19225418
1786	21:43:01	20.10	2.292536	0.19145893
1787	21:44:01	20.30	2.291813	0.19203546
1788	21:45:01	20.30	2.292175	0.19158329
1789	21:46:01	20.30	2.291451	0.19216004
1790	21:47:01	20.10	2.292175	0.1913657
1791	21:48:01	20.00	2.291451	0.19194192
1792	21:49:01	19.80	2.291813	0.19149083
1793	21:50:01	19.80	2.291090	0.19206538
1794	21:51:01	19.90	2.291813	0.19127384
1795	21:52:01	20.00	2.291813	0.19116553
1796	21:53:01	20.20	2.292175	0.1907159
1797	21:54:01	20.30	2.291090	0.19163084
1798	21:55:01	20.30	2.292175	0.19050028
1799	21:56:01	20.20	2.291813	0.19073352

1800	21:57:01	20.10	2.291451	0.1909665
1801	21:58:01	19.90	2.291090	0.19119827
1802	21:59:01	19.80	2.291451	0.19075108
1803	22:00:01	19.90	2.290366	0.19166291
1804	22:01:01	20.00	2.290728	0.19121502
1805	22:02:01	20.20	2.290366	0.19144707
1806	22:03:01	20.30	2.289643	0.19201745
1807	22:04:01	20.30	2.290728	0.19089239
1808	22:05:01	20.20	2.290366	0.19112423
1809	22:06:01	20.10	2.291451	0.19000094
1810	22:07:01	19.90	2.290366	0.1909096
1811	22:08:01	19.80	2.291090	0.19012533
1812	22:09:01	19.80	2.290728	0.19035708
1813	22:10:01	20.00	2.290004	0.19092676
1814	22:11:01	20.20	2.290366	0.19048179
1815	22:12:01	20.30	2.290366	0.19037514
1816	22:13:01	20.30	2.291090	0.18959336
1817	22:14:01	20.20	2.290728	0.18982476
1818	22:15:01	20.10	2.290366	0.1900559
1819	22:16:01	19.90	2.290004	0.19028678
1820	22:17:01	19.80	2.290366	0.18984366
1821	22:18:01	19.80	2.289643	0.19041016
1822	22:19:01	19.90	2.290004	0.1899684
1823	22:20:01	20.10	2.290004	0.1898625
1824	22:21:01	20.30	2.290366	0.18942061
1825	22:22:01	20.30	2.290004	0.18965108
1826	22:23:01	20.30	2.290728	0.18887405
1827	22:24:01	20.10	2.290004	0.18944012
1828	22:25:01	20.00	2.289643	0.18966926
1829	22:26:01	19.90	2.290004	0.18922963
1830	22:27:01	19.80	2.289643	0.18945863
1831	22:28:01	19.90	2.289643	0.1893535
1832	22:29:01	20.10	2.290004	0.18891477
1833	22:30:01	20.30	2.290366	0.18847561
1834	22:31:01	20.30	2.289643	0.18903878
1835	22:32:01	20.30	2.290004	0.18860096
1836	22:33:01	20.10	2.290366	0.1881627
1837	22:34:01	20.00	2.289643	0.18872511
1838	22:35:01	19.80	2.289643	0.18862078
1839	22:36:01	19.80	2.289643	0.18851657
1840	22:37:01	19.90	2.289643	0.18841248
1841	22:38:01	20.00	2.289643	0.1883085
1842	22:39:01	20.20	2.289643	0.18820463
1843	22:40:01	20.30	2.289643	0.18810088
1844	22:41:01	20.30	2.289643	0.18799725
1845	22:42:01	20.20	2.289643	0.18789372
1846	22:43:01	20.00	2.289643	0.18779031
1847	22:44:01	19.90	2.289643	0.18768702
1848	22:45:01	19.80	2.289643	0.18758384
1849	22:46:01	19.90	2.289643	0.18748077

1850	22:47:01	20.00	2.289281	0.18770913
1851	22:48:01	20.20	2.289643	0.18727497
1852	22:49:01	20.30	2.289643	0.18717224
1853	22:50:01	20.30	2.289643	0.18706963
1854	22:51:01	20.20	2.289643	0.18696712
1855	22:52:01	20.10	2.289643	0.18686473
1856	22:53:01	19.90	2.289643	0.18676245
1857	22:54:01	19.80	2.289643	0.18666028
1858	22:55:01	19.80	2.289281	0.1868881
1859	22:56:01	19.90	2.289643	0.18645628
1860	22:57:01	20.10	2.289643	0.18635445
1861	22:58:01	20.30	2.289643	0.18625273
1862	22:59:01	20.30	2.289643	0.18615112
1863	23:00:01	20.20	2.289281	0.18637859
1864	23:01:01	20.10	2.289643	0.18594823
1865	23:02:01	19.90	2.289281	0.18617556
1866	23:03:01	19.80	2.288558	0.18673018
1867	23:04:01	19.80	2.288919	0.18630123
1868	23:05:01	19.90	2.288919	0.18619993
1869	23:06:01	20.10	2.289281	0.18577083
1870	23:07:01	20.30	2.289643	0.18534221
1871	23:08:01	20.30	2.289281	0.18556913
1872	23:09:01	20.30	2.289281	0.18546844
1873	23:10:01	20.20	2.288919	0.18569505
1874	23:11:01	20.00	2.288919	0.1855944
1875	23:12:01	19.80	2.289281	0.18516703
1876	23:13:01	19.80	2.288196	0.18604584
1877	23:14:01	19.90	2.288919	0.18529311
1878	23:15:01	20.00	2.288919	0.1851929
1879	23:16:01	20.20	2.288558	0.18541802
1880	23:17:01	20.30	2.288919	0.1849928
1881	23:18:01	20.30	2.288196	0.18554356
1882	23:19:01	20.20	2.288919	0.18479313
1883	23:20:01	20.00	2.288919	0.18469346
1884	23:21:01	19.90	2.288558	0.18491824
1885	23:22:01	19.80	2.288558	0.18481861
1886	23:23:01	19.80	2.287834	0.18536887
1887	23:24:01	20.00	2.288558	0.18461966
1888	23:25:01	20.20	2.288196	0.1848449
1889	23:26:01	20.30	2.288919	0.18409767
1890	23:27:01	20.30	2.287472	0.18529464
1891	23:28:01	20.20	2.287834	0.18487111
1892	23:29:01	20.10	2.288196	0.18444802
1893	23:30:01	19.90	2.288919	0.18370261
1894	23:31:01	19.80	2.288196	0.18425022
1895	23:32:01	19.80	2.288196	0.18415148
1896	23:33:01	19.90	2.287834	0.184376
1897	23:34:01	20.10	2.287111	0.18492238
1898	23:35:01	20.30	2.287834	0.18417871
1899	23:36:01	20.30	2.287834	0.18408021

1900	23:37:01	20.20	2.287834	0.18398183
1901	23:38:01	20.10	2.287111	0.18452724
1902	23:39:01	19.90	2.287111	0.18442872
1903	23:40:01	19.80	2.287472	0.18400925
1904	23:41:01	19.80	2.288196	0.18326756
1905	23:42:01	19.90	2.287834	0.18349147
1906	23:43:01	20.10	2.288196	0.18307228
1907	23:44:01	20.30	2.287834	0.18329606
1908	23:45:01	20.30	2.287111	0.18383981
1909	23:46:01	20.20	2.287472	0.18342199
1910	23:47:01	20.10	2.287472	0.18332447
1911	23:48:01	19.90	2.287111	0.18354676
1912	23:49:01	19.80	2.287834	0.18280935
1913	23:50:01	19.80	2.287472	0.18303255
1914	23:51:01	19.90	2.287472	0.18293546
1915	23:52:01	20.10	2.286749	0.18347738
1916	23:53:01	20.30	2.287111	0.18306041
1917	23:54:01	20.30	2.287472	0.18264477
1918	23:55:01	20.30	2.286749	0.18318599
1919	23:56:01	20.10	2.287111	0.18276984
1920	23:57:01	20.00	2.286749	0.18299224
1921	23:58:01	19.80	2.287111	0.18257664
1922	23:59:01	19.80	2.287472	0.18216235
1923	0:00:01	19.90	2.286749	0.18270239
1924	0:01:01	20.00	2.286749	0.18260598
1925	0:02:01	20.20	2.287111	0.18219146
1926	0:03:01	20.30	2.286749	0.18241346
1927	0:04:01	20.30	2.286749	0.18231735
1928	0:05:01	20.20	2.286749	0.18222134
1929	0:06:01	20.00	2.286749	0.18212544
1930	0:07:01	19.90	2.287472	0.18139576
1931	0:08:01	19.80	2.286749	0.18193393
1932	0:09:01	19.80	2.287111	0.18152128
1933	0:10:01	20.00	2.286749	0.18174282
1934	0:11:01	20.20	2.286749	0.18164742
1935	0:12:01	20.30	2.286749	0.18155212
1936	0:13:01	20.30	2.286749	0.18145691
1937	0:14:01	20.20	2.286749	0.18136181
1938	0:15:01	20.00	2.286749	0.18126681
1939	0:16:01	19.90	2.286749	0.1811719
1940	0:17:01	19.80	2.286749	0.1810771
1941	0:18:01	19.80	2.286749	0.18098239
1942	0:19:01	20.00	2.286749	0.18088779
1943	0:20:01	20.10	2.286749	0.18079328
1944	0:21:01	20.30	2.286749	0.18069887
1945	0:22:01	20.30	2.286387	0.18091945
1946	0:23:01	20.20	2.286749	0.18051035
1947	0:24:01	20.00	2.286387	0.1807308
1948	0:25:01	19.90	2.286749	0.18032222
1949	0:26:01	19.80	2.286749	0.1802283

1950	0:27:01	19.80	2.286749	0.18013448
1951	0:28:01	19.90	2.286387	0.18035467
1952	0:29:01	20.10	2.286749	0.17994713
1953	0:30:01	20.30	2.286749	0.1798536
1954	0:31:01	20.30	2.286387	0.18007359
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1956	0:33:01	20.10	2.286749	0.1795736
1957	0:34:01	19.90	2.286026	0.18010546
1958	0:35:01	19.80	2.286387	0.17970019
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1961	0:38:01	20.10	2.286026	0.17973257
1962	0:39:01	20.30	2.286026	0.17963959
1963	0:40:01	20.30	2.286387	0.17923561
1964	0:41:01	20.20	2.285664	0.17976572
1965	0:42:01	20.10	2.285664	0.17967287
1966	0:43:01	19.90	2.286026	0.17926863
1967	0:44:01	19.80	2.286026	0.17917613
1968	0:45:01	19.80	2.286387	0.17877342
1969	0:46:01	19.90	2.284940	0.1799244
1970	0:47:01	20.10	2.285302	0.17952087
1971	0:48:01	20.30	2.284940	0.1797391
1972	0:49:01	20.30	2.285664	0.17902556
1973	0:50:01	20.20	2.285664	0.17893347
1974	0:51:01	20.10	2.285302	0.17915167
1975	0:52:01	19.90	2.284579	0.17967883
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1981	0:58:01	20.30	2.285302	0.17850922
1982	0:59:01	20.30	2.284940	0.17872675
1983	1:00:01	20.10	2.285302	0.17832651
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1985	1:02:01	19.80	2.285302	0.17814417
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1987	1:04:01	19.90	2.285302	0.17796221
1988	1:05:01	20.00	2.285302	0.17787136
1989	1:06:01	20.20	2.284940	0.17808844
1990	1:07:01	20.30	2.284579	0.17830444
1991	1:08:01	20.30	2.283855	0.17882858
1992	1:09:01	20.10	2.284217	0.17843012
1993	1:10:01	20.00	2.284940	0.17772573
1994	1:11:01	19.90	2.283855	0.17855556
1995	1:12:01	19.80	2.284217	0.17815785
1996	1:13:01	19.80	2.283855	0.178374
1997	1:14:01	20.00	2.284217	0.1779768
1998	1:15:01	20.20	2.284217	0.17788641
1999	1:16:01	20.30	2.283855	0.17810237

2000	1:17:01	20.30	2.285302	0.17678843
2001	1:18:01	20.20	2.284579	0.17730984
2002	1:19:01	20.00	2.284217	0.17752576
2003	1:20:01	19.90	2.283855	0.17774147
2004	1:21:01	19.80	2.283855	0.17765148
2005	1:22:01	19.80	2.283855	0.17756157
2006	1:23:01	20.00	2.283855	0.17747176
2007	1:24:01	20.20	2.283855	0.17738204
2008	1:25:01	20.30	2.283855	0.1772924
2009	1:26:01	20.30	2.283855	0.17720286
2010	1:27:01	20.20	2.283855	0.17711341
2011	1:28:01	20.00	2.283855	0.17702405
2012	1:29:01	19.90	2.283855	0.17693478
2013	1:30:01	19.80	2.283855	0.1768456
2014	1:31:01	19.80	2.284217	0.17645256
2015	1:32:01	19.90	2.284217	0.17636371
2016	1:33:01	20.10	2.284217	0.17627495
2017	1:34:01	20.30	2.283855	0.17648977
2018	1:35:01	20.30	2.283855	0.17640104
2019	1:36:01	20.20	2.283855	0.1763124
2020	1:37:01	20.10	2.283855	0.17622384
2021	1:38:01	19.90	2.283855	0.17613537
2022	1:39:01	19.80	2.283855	0.176047
2023	1:40:01	19.80	2.283855	0.17595871
2024	1:41:01	19.90	2.283855	0.17587051
2025	1:42:01	20.10	2.283855	0.1757824
2026	1:43:01	20.30	2.283855	0.17569437
2027	1:44:01	20.30	2.284217	0.17530447
2028	1:45:01	20.20	2.283855	0.17551859
2029	1:46:01	20.10	2.283855	0.17543083
2030	1:47:01	19.90	2.283494	0.17564384
2031	1:48:01	19.80	2.283855	0.17525558
2032	1:49:01	19.80	2.283855	0.17516808
2033	1:50:01	19.90	2.283855	0.17508067
2034	1:51:01	20.10	2.283855	0.17499335
2035	1:52:01	20.30	2.283855	0.17490611
2036	1:53:01	20.30	2.283855	0.17481897
2037	1:54:01	20.20	2.283855	0.17473191
2038	1:55:01	20.10	2.283855	0.17464493
2039	1:56:01	19.90	2.283494	0.17485738
2040	1:57:01	19.80	2.283494	0.17477043
2041	1:58:01	19.80	2.283494	0.17468357
2042	1:59:01	19.90	2.283494	0.17459679
2043	2:00:01	20.00	2.283494	0.1745101
2044	2:01:01	20.20	2.283855	0.1741249
2045	2:02:01	20.30	2.283494	0.17433697
2046	2:03:01	20.30	2.283855	0.17395224
2047	2:04:01	20.10	2.283494	0.17416419
2048	2:05:01	20.00	2.282770	0.17467558
2049	2:06:01	19.80	2.283132	0.17429043

2050	2:07:01	19.80	2.282408	0.17480125
2051	2:08:01	19.90	2.283132	0.17411803
2052	2:09:01	20.00	2.283494	0.17373373
2053	2:10:01	20.20	2.283855	0.17335063
2054	2:11:01	20.30	2.283132	0.17386008
2055	2:12:01	20.30	2.283494	0.17347647
2056	2:13:01	20.10	2.283494	0.17339089
2057	2:14:01	20.00	2.282408	0.1741979
2058	2:15:01	19.80	2.283132	0.17351733
2059	2:16:01	19.80	2.283855	0.17283826
2060	2:17:01	19.80	2.283132	0.17334646
2061	2:18:01	20.00	2.282408	0.17385499
2062	2:19:01	20.20	2.283132	0.17317593
2063	2:20:01	20.30	2.283132	0.17309079
2064	2:21:01	20.30	2.282408	0.17359869
2065	2:22:01	20.20	2.282770	0.17321709
2066	2:23:01	20.00	2.282770	0.17313206
2067	2:24:01	19.90	2.282408	0.17334315
2068	2:25:01	19.80	2.282408	0.17325813
2069	2:26:01	19.80	2.283494	0.17228595
2070	2:27:01	19.90	2.283132	0.17249714
2071	2:28:01	20.10	2.282770	0.17270813
2072	2:29:01	20.30	2.282408	0.17291891
2073	2:30:01	20.30	2.282408	0.17283431
2074	2:31:01	20.20	2.282408	0.1727498
2075	2:32:01	20.00	2.283132	0.17207559
2076	2:33:01	19.90	2.282047	0.17287494
2077	2:34:01	19.80	2.281685	0.17308512
2078	2:35:01	19.80	2.282408	0.17241256
2079	2:36:01	19.90	2.281685	0.17291626
2080	2:37:01	20.10	2.282047	0.17253779
2081	2:38:01	20.30	2.282408	0.17216049
2082	2:39:01	20.30	2.281323	0.17295746
2083	2:40:01	20.20	2.281685	0.17257952
2084	2:41:01	20.00	2.281685	0.17249554
2085	2:42:01	19.90	2.282408	0.17182555
2086	2:43:01	19.80	2.280962	0.17291363
2087	2:44:01	19.80	2.281685	0.17224409
2088	2:45:01	19.90	2.282047	0.17186741
2089	2:46:01	20.10	2.282408	0.17149191
2090	2:47:01	20.30	2.281323	0.17228611
2091	2:48:01	20.30	2.281685	0.17190996
2092	2:49:01	20.20	2.281685	0.17182663
2093	2:50:01	20.00	2.282047	0.17145107
2094	2:51:01	19.90	2.280962	0.17224374
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2097	2:54:01	19.90	2.281323	0.17170293
2098	2:55:01	20.10	2.281685	0.17132834
2099	2:56:01	20.30	2.281685	0.17124557

2100	2:57:01	20.30	2.280962	0.17174473
2101	2:58:01	20.20	2.281323	0.17137146
2102	2:59:01	20.10	2.281323	0.17128879
2103	3:00:01	19.90	2.280962	0.1714963
2104	3:01:01	19.80	2.281323	0.17112369
2105	3:02:01	19.80	2.281323	0.17104127
2106	3:03:01	19.90	2.281323	0.17095892
2107	3:04:01	20.00	2.281323	0.17087664
2108	3:05:01	20.20	2.280962	0.17108385
2109	3:06:01	20.30	2.280962	0.1710016
2110	3:07:01	20.20	2.280962	0.17091943
2111	3:08:01	20.10	2.280962	0.17083734
2112	3:09:01	19.90	2.280962	0.17075532
2113	3:10:01	19.80	2.280962	0.17067338
2114	3:11:01	19.80	2.280962	0.17059153
2115	3:12:01	19.90	2.281323	0.17022132
2116	3:13:01	20.00	2.280962	0.17042805
2117	3:14:01	20.20	2.280962	0.17034642
2118	3:15:01	20.30	2.280962	0.17026488
2119	3:16:01	20.30	2.280962	0.17018341
2120	3:17:01	20.10	2.280962	0.17010202
2121	3:18:01	19.90	2.280962	0.17002071
2122	3:19:01	19.80	2.280962	0.16993948
2123	3:20:01	19.80	2.280962	0.16985833
2124	3:21:01	19.80	2.280962	0.16977725
2125	3:22:01	20.00	2.280962	0.16969625
2126	3:23:01	20.20	2.280962	0.16961532
2127	3:24:01	20.30	2.280962	0.16953448
2128	3:25:01	20.30	2.280238	0.17002859
2129	3:26:01	20.10	2.280962	0.16937302
2130	3:27:01	20.00	2.280962	0.1692924
2131	3:28:01	19.80	2.280600	0.16949889
2132	3:29:01	19.80	2.280962	0.1691314
2133	3:30:01	19.80	2.280962	0.16905101
2134	3:31:01	20.00	2.280600	0.16925732
2135	3:32:01	20.10	2.280962	0.16889047
2136	3:33:01	20.30	2.280600	0.16909666
2137	3:34:01	20.30	2.280962	0.16873023
2138	3:35:01	20.20	2.280600	0.1689363
2139	3:36:01	20.00	2.280600	0.16885624
2140	3:37:01	19.80	2.280962	0.16849045
2141	3:38:01	19.80	2.280600	0.16869634
2142	3:39:01	19.80	2.280600	0.1686165
2143	3:40:01	19.90	2.280600	0.16853674
2144	3:41:01	20.10	2.280962	0.16817179
2145	3:42:01	20.30	2.280238	0.16866257
2146	3:43:01	20.30	2.280600	0.16829791
2147	3:44:01	20.20	2.280238	0.16850331
2148	3:45:01	20.00	2.280962	0.16785433
2149	3:46:01	19.90	2.279876	0.16862893

2150	3:47:01	19.80	2.279876	0.16854943
2151	3:48:01	19.80	2.279153	0.16903786
2152	3:49:01	19.90	2.279515	0.16867405
2153	3:50:01	20.10	2.279515	0.16859463
2154	3:51:01	20.30	2.280238	0.16794824
2155	3:52:01	20.30	2.279153	0.16871982
2156	3:53:01	20.20	2.280600	0.16750666
2157	3:54:01	20.00	2.280238	0.16771147
2158	3:55:01	19.90	2.279515	0.16819868
2159	3:56:01	19.80	2.279876	0.16783725
2160	3:57:01	19.80	2.279153	0.16832395
2161	3:58:01	19.90	2.279876	0.1676798
2162	3:59:01	20.10	2.279876	0.16760119
2163	4:00:01	20.30	2.279876	0.16752265
2164	4:01:01	20.30	2.280238	0.16716159
2165	4:02:01	20.20	2.279153	0.16792993
2166	4:03:01	20.10	2.279515	0.16756902
2167	4:04:01	19.90	2.279876	0.16720923
2168	4:05:01	19.80	2.279876	0.16713106
2169	4:06:01	19.80	2.279153	0.16761604
2170	4:07:01	19.90	2.279515	0.16725596
2171	4:08:01	20.00	2.279515	0.16717787
2172	4:09:01	20.20	2.279515	0.16709986
2173	4:10:01	20.30	2.279515	0.16702192
2174	4:11:01	20.20	2.279515	0.16694406
2175	4:12:01	20.10	2.279153	0.16714741
2176	4:13:01	19.90	2.279876	0.16650831
2177	4:14:01	19.80	2.278791	0.16727266
2178	4:15:01	19.80	2.279153	0.16691407
2179	4:16:01	19.90	2.279153	0.16683643
2180	4:17:01	20.00	2.278430	0.16731908
2181	4:18:01	20.20	2.279515	0.16640102
2182	4:19:01	20.30	2.278430	0.16716365
2183	4:20:01	20.20	2.279515	0.16624652
2184	4:21:01	20.10	2.278791	0.16672931
2185	4:22:01	19.90	2.279515	0.1660923
2186	4:23:01	19.80	2.278068	0.16713336
2187	4:24:01	19.80	2.278430	0.16677634
2188	4:25:01	19.90	2.278430	0.16669909
2189	4:26:01	20.00	2.278068	0.16690123
2190	4:27:01	20.20	2.278068	0.166824
2191	4:28:01	20.30	2.278430	0.16646778
2192	4:29:01	20.20	2.278430	0.16639082
2193	4:30:01	20.10	2.278068	0.16659273
2194	4:31:01	19.90	2.278068	0.16651578
2195	4:32:01	19.80	2.278068	0.1664389
2196	4:33:01	19.80	2.278791	0.16580603
2197	4:34:01	19.90	2.278068	0.16628536
2198	4:35:01	20.00	2.278430	0.16593054
2199	4:36:01	20.20	2.278430	0.16585407

2200	4:37:01	20.30	2.278068	0.16605558
2201	4:38:01	20.30	2.278068	0.16597913
2202	4:39:01	20.10	2.278068	0.16590275
2203	4:40:01	20.00	2.278068	0.16582643
2204	4:41:01	19.80	2.278430	0.1654728
2205	4:42:01	19.80	2.278068	0.16567402
2206	4:43:01	19.80	2.278068	0.16559792
2207	4:44:01	19.90	2.278068	0.16552189
2208	4:45:01	20.10	2.278068	0.16544592
2209	4:46:01	20.30	2.278068	0.16537003
2210	4:47:01	20.30	2.278068	0.16529421
2211	4:48:01	20.10	2.278068	0.16521845
2212	4:49:01	20.00	2.278068	0.16514277
2213	4:50:01	19.80	2.278068	0.16506716
2214	4:51:01	19.80	2.278068	0.16499161
2215	4:52:01	19.80	2.278068	0.16491613
2216	4:53:01	19.90	2.278068	0.16484073
2217	4:54:01	20.10	2.278068	0.16476539
2218	4:55:01	20.30	2.278068	0.16469012
2219	4:56:01	20.30	2.278068	0.16461492
2220	4:57:01	20.20	2.278068	0.16453978
2221	4:58:01	20.00	2.278068	0.16446472
2222	4:59:01	19.90	2.277706	0.16466484
2223	5:00:01	19.80	2.278068	0.1643148
2224	5:01:01	19.80	2.278068	0.16423994
2225	5:02:01	19.90	2.278068	0.16416515
2226	5:03:01	20.10	2.278068	0.16409043
2227	5:04:01	20.30	2.278068	0.16401577
2228	5:05:01	20.30	2.277706	0.16421555
2229	5:06:01	20.20	2.278068	0.16386667
2230	5:07:01	20.00	2.278068	0.16379222
2231	5:08:01	19.90	2.277706	0.16399183
2232	5:09:01	19.80	2.277706	0.16391739
2233	5:10:01	19.80	2.278068	0.16356927
2234	5:11:01	19.90	2.278068	0.16349509
2235	5:12:01	20.10	2.277344	0.16396797
2236	5:13:01	20.20	2.277344	0.16389367
2237	5:14:01	20.30	2.278068	0.16327295
2238	5:15:01	20.20	2.278068	0.16319903
2239	5:16:01	20.10	2.277706	0.16339819
2240	5:17:01	19.90	2.277706	0.16332429
2241	5:18:01	19.80	2.277706	0.16325045
2242	5:19:01	19.80	2.277706	0.16317668
2243	5:20:01	19.90	2.277706	0.16310298
2244	5:21:01	20.00	2.278068	0.16275696
2245	5:22:01	20.20	2.276983	0.16349955
2246	5:23:01	20.30	2.278068	0.16261013
2247	5:24:01	20.20	2.278068	0.16253682
2248	5:25:01	20.10	2.278068	0.16246357
2249	5:26:01	19.90	2.277344	0.16293393

2250	5:27:01	19.80	2.277344	0.16286057
2251	5:28:01	19.80	2.277706	0.16251575
2252	5:29:01	19.90	2.277706	0.16244265
2253	5:30:01	20.00	2.276259	0.16345399
2254	5:31:01	20.20	2.276983	0.1628382
2255	5:32:01	20.30	2.277344	0.16249476
2256	5:33:01	20.20	2.276983	0.16269196
2257	5:34:01	20.10	2.277344	0.16234889
2258	5:35:01	19.90	2.276621	0.16281666
2259	5:36:01	19.80	2.276983	0.16247309
2260	5:37:01	19.80	2.277706	0.16186015
2261	5:38:01	19.90	2.276621	0.16259782
2262	5:39:01	20.00	2.277344	0.16198537
2263	5:40:01	20.20	2.275898	0.16299164
2264	5:41:01	20.30	2.276983	0.16210962
2265	5:42:01	20.30	2.276621	0.16230695
2266	5:43:01	20.10	2.276983	0.16196468
2267	5:44:01	20.00	2.276621	0.1621619
2268	5:45:01	19.80	2.277344	0.16155129
2269	5:46:01	19.80	2.276621	0.16201711
2270	5:47:01	19.80	2.276259	0.16221404
2271	5:48:01	19.90	2.276983	0.16160348
2272	5:49:01	20.10	2.276259	0.1620694
2273	5:50:01	20.30	2.275898	0.1622653
2274	5:51:01	20.30	2.277344	0.16111952
2275	5:52:01	20.20	2.275536	0.16238943
2276	5:53:01	20.00	2.276259	0.16178089
2277	5:54:01	19.80	2.276621	0.16144054
2278	5:55:01	19.80	2.275536	0.16217282
2279	5:56:01	19.80	2.275536	0.16210074
2280	5:57:01	19.90	2.276621	0.16122538
2281	5:58:01	20.10	2.275536	0.16195678
2282	5:59:01	20.30	2.275536	0.16188489
2283	6:00:01	20.30	2.276259	0.16127847
2284	6:01:01	20.20	2.275898	0.16147376
2285	6:02:01	20.00	2.276259	0.16113549
2286	6:03:01	19.90	2.275536	0.16159799
2287	6:04:01	19.80	2.275536	0.16152642
2288	6:05:01	19.80	2.275174	0.161722
2289	6:06:01	19.90	2.275898	0.16111652
2290	6:07:01	20.10	2.275536	0.1613121
2291	6:08:01	20.20	2.275174	0.16150752
2292	6:09:01	20.30	2.275536	0.16116954
2293	6:10:01	20.20	2.275898	0.16083186
2294	6:11:01	20.00	2.275174	0.1612936
2295	6:12:01	19.90	2.275174	0.16122242
2296	6:13:01	19.80	2.275898	0.16061903
2297	6:14:01	19.80	2.275536	0.16081423
2298	6:15:01	19.90	2.275174	0.16100926
2299	6:16:01	20.10	2.275174	0.16093833

2300	6:17:01	20.20	2.275174	0.16086746
2301	6:18:01	20.30	2.275174	0.16079665
2302	6:19:01	20.20	2.275536	0.16046048
2303	6:20:01	20.10	2.275174	0.16065523
2304	6:21:01	19.90	2.275174	0.16058462
2305	6:22:01	19.80	2.275536	0.16024897
2306	6:23:01	19.80	2.275174	0.16044357
2307	6:24:01	19.90	2.275174	0.16037313
2308	6:25:01	20.00	2.275174	0.16030276
2309	6:26:01	20.20	2.275536	0.15996784
2310	6:27:01	20.30	2.275898	0.1596332
2311	6:28:01	20.20	2.275174	0.16009202
2312	6:29:01	20.10	2.275536	0.15975763
2313	6:30:01	19.90	2.275174	0.15995184
2314	6:31:01	19.80	2.275174	0.15988184
2315	6:32:01	19.80	2.275536	0.15954797
2316	6:33:01	19.90	2.275174	0.15974202
2317	6:34:01	20.00	2.275174	0.1596722
2318	6:35:01	20.20	2.275174	0.15960245
2319	6:36:01	20.30	2.275174	0.15953275
2320	6:37:01	20.20	2.275174	0.15946312
2321	6:38:01	20.10	2.275174	0.15939354
2322	6:39:01	19.90	2.275174	0.15932403
2323	6:40:01	19.80	2.275174	0.15925458
2324	6:41:01	19.80	2.275174	0.15918519
2325	6:42:01	19.90	2.275174	0.15911585
2326	6:43:01	20.00	2.275174	0.15904658
2327	6:44:01	20.20	2.274812	0.15923992
2328	6:45:01	20.30	2.275174	0.15890822
2329	6:46:01	20.20	2.275174	0.15883913
2330	6:47:01	20.10	2.274451	0.15929379
2331	6:48:01	19.90	2.274812	0.15896322
2332	6:49:01	19.80	2.274812	0.1588942
2333	6:50:01	19.80	2.275174	0.15856337
2334	6:51:01	19.80	2.274812	0.15875633
2335	6:52:01	20.00	2.274812	0.15868748
2336	6:53:01	20.20	2.275174	0.15835717
2337	6:54:01	20.30	2.275174	0.15828856
2338	6:55:01	20.30	2.274451	0.15874188
2339	6:56:01	20.10	2.274812	0.1584127
2340	6:57:01	20.00	2.274451	0.1586045
2341	6:58:01	19.80	2.274451	0.1585359
2342	6:59:01	19.80	2.274812	0.15820723
2343	7:00:01	19.80	2.274812	0.15813886
2344	7:01:01	20.00	2.274812	0.15807055
2345	7:02:01	20.10	2.274451	0.15826209
2346	7:03:01	20.30	2.275174	0.15767372
2347	7:04:01	20.30	2.274812	0.15786598
2348	7:05:01	20.10	2.274451	0.15805735
2349	7:06:01	20.00	2.274451	0.15798922

2350	7:07:01	19.80	2.274812	0.15766193
2351	7:08:01	19.70	2.274089	0.15811298
2352	7:09:01	19.80	2.274451	0.15778519
2353	7:10:01	19.90	2.274812	0.15745841
2354	7:11:01	20.10	2.274451	0.15764946
2355	7:12:01	20.30	2.274812	0.15732302
2356	7:13:01	20.30	2.274812	0.15725541
2357	7:14:01	20.20	2.275174	0.15692869
2358	7:15:01	20.00	2.275174	0.15686131
2359	7:16:01	19.90	2.274089	0.1575701
2360	7:17:01	19.80	2.274812	0.15698556
2361	7:18:01	19.80	2.274089	0.15743496
2362	7:19:01	19.90	2.274451	0.15710887
2363	7:20:01	20.10	2.274089	0.15730006
2364	7:21:01	20.20	2.274089	0.15723269
2365	7:22:01	20.30	2.273366	0.15768122
2366	7:23:01	20.20	2.275174	0.15632435
2367	7:24:01	20.00	2.274812	0.15651554
2368	7:25:01	19.90	2.272642	0.15799487
2369	7:26:01	19.80	2.273727	0.15715456
2370	7:27:01	19.80	2.273366	0.15734444
2371	7:28:01	19.90	2.273366	0.15727726
2372	7:29:01	20.10	2.273004	0.15746763
2373	7:30:01	20.20	2.274089	0.15662898
2374	7:31:01	20.30	2.273366	0.15707605
2375	7:32:01	20.20	2.274089	0.15649545
2376	7:33:01	20.00	2.273004	0.15719926
2377	7:34:01	19.90	2.273366	0.15687535
2378	7:35:01	19.80	2.273366	0.15680857
2379	7:36:01	19.80	2.273727	0.15648582
2380	7:37:01	19.90	2.273727	0.15641925
2381	7:38:01	20.00	2.272642	0.1571216
2382	7:39:01	20.20	2.274089	0.15602989
2383	7:40:01	20.30	2.273366	0.1564755
2384	7:41:01	20.20	2.273004	0.15666525
2385	7:42:01	20.00	2.272642	0.15685484
2386	7:43:01	19.90	2.272642	0.15678829
2387	7:44:01	19.80	2.273004	0.15646593
2388	7:45:01	19.80	2.273366	0.15614385
2389	7:46:01	19.90	2.273727	0.15582274
2390	7:47:01	20.10	2.272642	0.15652266
2391	7:48:01	20.20	2.273366	0.15594553
2392	7:49:01	20.30	2.273004	0.15613486
2393	7:50:01	20.20	2.273366	0.15581359
2394	7:51:01	20.00	2.273004	0.15600282
2395	7:52:01	19.90	2.272280	0.15644689
2396	7:53:01	19.80	2.273004	0.155871
2397	7:54:01	19.80	2.273004	0.15580518
2398	7:55:01	19.90	2.272280	0.15624877
2399	7:56:01	20.00	2.272642	0.15592827

2400	7:57:01	20.20	2.272642	0.15586251
2401	7:58:01	20.30	2.272642	0.1557968
2402	7:59:01	20.20	2.272642	0.15573114
2403	8:00:01	20.10	2.272642	0.15566554
2404	8:01:01	19.90	2.273366	0.15509193
2405	8:02:01	19.80	2.272280	0.15578844
2406	8:03:01	19.80	2.272280	0.1557229
2407	8:04:01	19.90	2.272642	0.1554037
2408	8:05:01	20.10	2.272280	0.15559199
2409	8:06:01	20.20	2.272280	0.15552661
2410	8:07:01	20.30	2.273004	0.1549545
2411	8:08:01	20.20	2.272642	0.15514274
2412	8:09:01	20.10	2.273004	0.15482445
2413	8:10:01	19.90	2.272642	0.15501258
2414	8:11:01	19.80	2.272642	0.15494759
2415	8:12:01	19.80	2.272280	0.15513551
2416	8:13:01	19.90	2.272642	0.15481776
2417	8:14:01	20.00	2.272642	0.15475293
2418	8:15:01	20.20	2.272642	0.15468815
2419	8:16:01	20.30	2.272280	0.15487587
2420	8:17:01	20.20	2.272280	0.1548111
2421	8:18:01	20.10	2.272280	0.15474638
2422	8:19:01	19.90	2.272280	0.15468171
2423	8:20:01	19.80	2.272280	0.1546171
2424	8:21:01	19.80	2.272280	0.15455254
2425	8:22:01	19.90	2.272280	0.15448804
2426	8:23:01	20.00	2.271557	0.1549263
2427	8:24:01	20.20	2.272280	0.15435919
2428	8:25:01	20.30	2.272280	0.15429485
2429	8:26:01	20.20	2.272280	0.15423056
2430	8:27:01	20.10	2.272280	0.15416632
2431	8:28:01	19.90	2.271919	0.15435262
2432	8:29:01	19.80	2.272280	0.15403801
2433	8:30:01	19.80	2.272280	0.15397393
2434	8:31:01	19.90	2.272280	0.15390991
2435	8:32:01	20.00	2.272280	0.15384594
2436	8:33:01	20.20	2.272280	0.15378202
2437	8:34:01	20.30	2.272280	0.15371816
2438	8:35:01	20.30	2.272280	0.15365435
2439	8:36:01	20.10	2.272280	0.15359059
2440	8:37:01	20.00	2.271919	0.15377644
2441	8:38:01	19.80	2.272280	0.15346324
2442	8:39:01	19.80	2.272280	0.15339964
2443	8:40:01	19.80	2.272280	0.1533361
2444	8:41:01	20.00	2.272280	0.1532726
2445	8:42:01	20.10	2.272280	0.15320916
2446	8:43:01	20.30	2.271919	0.1533947
2447	8:44:01	20.30	2.272280	0.15308244
2448	8:45:01	20.20	2.271919	0.15326788
2449	8:46:01	20.00	2.272280	0.15295592

2450	8:47:01	19.80	2.272280	0.15289274
2451	8:48:01	19.80	2.272280	0.15282962
2452	8:49:01	19.80	2.271195	0.15351286
2453	8:50:01	19.90	2.271557	0.15320063
2454	8:51:01	20.10	2.271919	0.15288866
2455	8:52:01	20.30	2.271919	0.15282564
2456	8:53:01	20.30	2.272280	0.15251476
2457	8:54:01	20.20	2.271557	0.15294824
2458	8:55:01	20.00	2.272280	0.15238919
2459	8:56:01	19.90	2.271919	0.15257407
2460	8:57:01	19.80	2.271195	0.15300768
2461	8:58:01	19.80	2.271557	0.15269668
2462	8:59:01	19.90	2.270833	0.15312988
2463	9:00:01	20.10	2.271919	0.15232334
2464	9:01:01	20.20	2.271557	0.15250856
2465	9:02:01	20.30	2.271919	0.15219828
2466	9:03:01	20.20	2.270833	0.15287854
2467	9:04:01	20.10	2.272280	0.15182663
2468	9:05:01	19.90	2.271195	0.15250581
2469	9:06:01	19.80	2.270833	0.15269057
2470	9:07:01	19.80	2.271557	0.15213369
2471	9:08:01	19.90	2.270833	0.15256552
2472	9:09:01	20.00	2.270833	0.15250307
2473	9:10:01	20.20	2.270833	0.15244067
2474	9:11:01	20.30	2.270833	0.15237832
2475	9:12:01	20.20	2.270472	0.15256201
2476	9:13:01	20.10	2.271195	0.15200722
2477	9:14:01	19.90	2.269748	0.15293028
2478	9:15:01	19.80	2.271195	0.15188308
2479	9:16:01	19.80	2.270833	0.15206735
2480	9:17:01	19.90	2.271195	0.15175915
2481	9:18:01	20.00	2.270833	0.15194331
2482	9:19:01	20.20	2.270110	0.1523726
2483	9:20:01	20.30	2.271195	0.15157362
2484	9:21:01	20.30	2.270833	0.15175764
2485	9:22:01	20.10	2.270833	0.15169585
2486	9:23:01	19.90	2.270110	0.15212454
2487	9:24:01	19.80	2.270110	0.15206265
2488	9:25:01	19.80	2.269748	0.15224617
2489	9:26:01	19.90	2.270110	0.15193902
2490	9:27:01	20.00	2.270833	0.15138765
2491	9:28:01	20.20	2.270110	0.1518156
2492	9:29:01	20.30	2.270110	0.15175396
2493	9:30:01	20.30	2.270472	0.15144751
2494	9:31:01	20.10	2.270472	0.15138607
2495	9:32:01	20.00	2.270833	0.1510807
2496	9:33:01	19.80	2.269748	0.15175247
2497	9:34:01	19.80	2.270110	0.15144652
2498	9:35:01	19.80	2.269748	0.15162954
2499	9:36:01	20.00	2.270110	0.15132389

2500	9:37:01	20.20	2.269387	0.1517503
2501	9:38:01	20.30	2.270110	0.15120146
2502	9:39:01	20.30	2.270472	0.15089635
2503	9:40:01	20.20	2.270110	0.15107922
2504	9:41:01	20.00	2.269748	0.15126195
2505	9:42:01	19.90	2.269387	0.15144386
2506	9:43:01	19.80	2.269748	0.15113982
2507	9:44:01	19.80	2.269387	0.15132163
2508	9:45:01	19.90	2.269748	0.15101788
2509	9:46:01	20.10	2.269387	0.1511996
2510	9:47:01	20.30	2.269748	0.15089614
2511	9:48:01	20.30	2.269748	0.15083535
2512	9:49:01	20.20	2.269387	0.15101692
2513	9:50:01	20.00	2.270110	0.15047101
2514	9:51:01	19.90	2.269748	0.15065325
2515	9:52:01	19.80	2.269748	0.15059265
2516	9:53:01	19.80	2.269748	0.1505321
2517	9:54:01	19.90	2.269387	0.15071342
2518	9:55:01	20.10	2.269387	0.15065287
2519	9:56:01	20.30	2.269748	0.15035074
2520	9:57:01	20.30	2.269387	0.15053191
2521	9:58:01	20.20	2.269387	0.15047151
2522	9:59:01	20.10	2.269748	0.15016981
2523	10:00:01	19.90	2.269387	0.15035084
2524	10:01:01	19.80	2.269748	0.15004943
2525	10:02:01	19.80	2.269387	0.15023037
2526	10:03:01	19.90	2.269387	0.1501702
2527	10:04:01	20.10	2.269748	0.14986923
2528	10:05:01	20.20	2.269748	0.14980926
2529	10:06:01	20.30	2.269748	0.14974933
2530	10:07:01	20.20	2.269387	0.14993003
2531	10:08:01	20.10	2.269387	0.1498701
2532	10:09:01	19.90	2.269387	0.14981023
2533	10:10:01	19.80	2.269025	0.14999135
2534	10:11:01	19.80	2.269387	0.14969062
2535	10:12:01	19.90	2.269387	0.14963089
2536	10:13:01	20.00	2.269387	0.1495712
2537	10:14:01	20.20	2.269387	0.14951156
2538	10:15:01	20.30	2.269387	0.14945197
2539	10:16:01	20.30	2.269387	0.14939243
2540	10:17:01	20.10	2.269025	0.14957321
2541	10:18:01	20.00	2.269387	0.14927349
2542	10:19:01	19.80	2.269387	0.14921409
2543	10:20:01	19.80	2.269387	0.14915473
2544	10:21:01	19.80	2.269387	0.14909543
2545	10:22:01	20.00	2.269025	0.14927597
2546	10:23:01	20.20	2.269387	0.14897696
2547	10:24:01	20.30	2.269387	0.14891779
2548	10:25:01	20.30	2.269387	0.14885867
2549	10:26:01	20.20	2.269387	0.1487996

2550	10:27:01	20.00	2.269387	0.14874058
2551	10:28:01	19.90	2.269387	0.1486816
2552	10:29:01	19.80	2.269025	0.1488618
2553	10:30:01	19.80	2.268663	0.14904186
2554	10:31:01	20.00	2.269025	0.14874389
2555	10:32:01	20.10	2.269387	0.14844616
2556	10:33:01	20.30	2.269025	0.14862617
2557	10:34:01	20.30	2.268663	0.14880604
2558	10:35:01	20.20	2.268663	0.1487472
2559	10:36:01	20.00	2.269387	0.14821146
2560	10:37:01	19.90	2.268302	0.14886738
2561	10:38:01	19.80	2.269387	0.14809439
2562	10:39:01	19.80	2.267940	0.14898802
2563	10:40:01	19.90	2.269387	0.14797751
2564	10:41:01	20.10	2.268663	0.14839513
2565	10:42:01	20.30	2.269387	0.1478608
2566	10:43:01	20.30	2.268302	0.14851531
2567	10:44:01	20.20	2.269387	0.14774429
2568	10:45:01	20.10	2.269025	0.14792372
2569	10:46:01	19.90	2.269025	0.14786549
2570	10:47:01	19.80	2.269025	0.14780729
2571	10:48:01	19.80	2.268663	0.14798649
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2573	10:50:01	20.10	2.269025	0.14763299
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2575	10:52:01	20.30	2.269025	0.14751702
2576	10:53:01	20.30	2.268663	0.14769598
2577	10:54:01	20.10	2.267940	0.14811094
2578	10:55:01	20.00	2.268302	0.14781614
2579	10:56:01	19.80	2.268663	0.14752222
2580	10:57:01	19.80	2.268663	0.14746439
2581	10:58:01	19.90	2.269025	0.14717019
2582	10:59:01	20.00	2.269387	0.14687622
2583	11:00:01	20.20	2.267940	0.14776299
2584	11:01:01	20.30	2.268663	0.14723353
2585	11:02:01	20.30	2.267940	0.14764737
2586	11:03:01	20.20	2.268663	0.14711837
2587	11:04:01	20.00	2.268663	0.14706085
2588	11:05:01	19.80	2.267217	0.14794516
2589	11:06:01	19.80	2.268302	0.14718099
2590	11:07:01	19.90	2.267940	0.1473591
2591	11:08:01	20.00	2.267940	0.14730159
2592	11:09:01	20.20	2.267940	0.14724411
2593	11:10:01	20.30	2.267940	0.14718669
2594	11:11:01	20.30	2.267940	0.1471293
2595	11:12:01	20.20	2.267578	0.14730709
2596	11:13:01	20.00	2.267940	0.14701467
2597	11:14:01	19.90	2.267578	0.14719237
2598	11:15:01	19.80	2.267578	0.14713507
2599	11:16:01	19.80	2.266855	0.14754669

2600	11:17:01	20.00	2.267578	0.14702061
2601	11:18:01	20.20	2.267217	0.14719738
2602	11:19:01	20.30	2.267217	0.14714017
2603	11:20:01	20.30	2.267578	0.14684926
2604	11:21:01	20.20	2.267940	0.14655793
2605	11:22:01	20.00	2.268302	0.14626682
2606	11:23:01	19.90	2.266855	0.14714591
2607	11:24:01	19.80	2.266855	0.14708883
2608	11:25:01	19.90	2.267578	0.14656456
2609	11:26:01	20.00	2.266493	0.14720866
2610	11:27:01	20.20	2.266493	0.14715162
2611	11:28:01	20.30	2.267217	0.14662729
2612	11:29:01	20.30	2.266855	0.1468041
2613	11:30:01	20.20	2.267217	0.1465138
2614	11:31:01	20.10	2.266855	0.14669052
2615	11:32:01	19.90	2.267217	0.14640049
2616	11:33:01	19.80	2.266493	0.14681033
2617	11:34:01	19.80	2.266855	0.14652048
2618	11:35:01	19.90	2.266493	0.14669692
2619	11:36:01	20.10	2.267217	0.14617439
2620	11:37:01	20.30	2.266493	0.14658369
2621	11:38:01	20.30	2.266493	0.14652713
2622	11:39:01	20.30	2.266493	0.14647063
2623	11:40:01	20.10	2.266493	0.14641416
2624	11:41:01	20.00	2.266493	0.14635774
2625	11:42:01	19.80	2.266855	0.14606895
2626	11:43:01	19.80	2.267217	0.14578039
2627	11:44:01	19.90	2.266493	0.14618873
2628	11:45:01	20.10	2.266493	0.14613249
2629	11:46:01	20.30	2.266493	0.14607628
2630	11:47:01	20.30	2.266855	0.14578816
2631	11:48:01	20.30	2.267217	0.14550026
2632	11:49:01	20.10	2.266855	0.14567614
2633	11:50:01	20.00	2.267217	0.1453885
2634	11:51:01	19.90	2.266493	0.14579591
2635	11:52:01	19.80	2.266493	0.14573996
2636	11:53:01	19.90	2.266493	0.14568406
2637	11:54:01	20.00	2.266493	0.1456282
2638	11:55:01	20.20	2.266855	0.14534113
2639	11:56:01	20.30	2.266493	0.1455166
2640	11:57:01	20.30	2.266493	0.14546087
2641	11:58:01	20.20	2.266493	0.14540518
2642	11:59:01	20.10	2.266493	0.14534953
2643	12:00:01	19.90	2.266493	0.14529393
2644	12:01:01	19.80	2.266493	0.14523837
2645	12:02:01	19.90	2.266855	0.14495222
2646	12:03:01	20.00	2.266493	0.14512737
2647	12:04:01	20.20	2.266493	0.14507194
2648	12:05:01	20.30	2.266493	0.14501655
2649	12:06:01	20.30	2.266493	0.1449612

2650	12:07:01	20.20	2.266493	0.14490589
2651	12:08:01	20.10	2.266493	0.14485062
2652	12:09:01	19.90	2.266493	0.1447954
2653	12:10:01	19.80	2.266493	0.14474022
2654	12:11:01	19.80	2.266493	0.14468508
2655	12:12:01	19.90	2.266493	0.14462998
2656	12:13:01	20.10	2.266493	0.14457493
2657	12:14:01	20.30	2.266493	0.14451991
2658	12:15:01	20.30	2.266855	0.14423545
2659	12:16:01	20.20	2.266493	0.14441001
2660	12:17:01	20.10	2.266493	0.14435512
2661	12:18:01	19.90	2.266493	0.14430028
2662	12:19:01	19.80	2.266493	0.14424547
2663	12:20:01	19.80	2.266131	0.14441977
2664	12:21:01	19.90	2.266493	0.14413599
2665	12:22:01	20.10	2.266493	0.14408131
2666	12:23:01	20.30	2.266493	0.14402667
2667	12:24:01	20.30	2.266493	0.14397207
2668	12:25:01	20.30	2.266493	0.14391752
2669	12:26:01	20.10	2.266131	0.14409154
2670	12:27:01	20.00	2.266493	0.14380853
2671	12:28:01	19.90	2.266131	0.14398246
2672	12:29:01	19.80	2.265770	0.14415563
2673	12:30:01	19.90	2.266131	0.14387355
2674	12:31:01	20.10	2.265770	0.14404663
2675	12:32:01	20.30	2.266131	0.1437648
2676	12:33:01	20.30	2.266131	0.14371049
2677	12:34:01	20.30	2.266493	0.14342837
2678	12:35:01	20.20	2.266493	0.14337423
2679	12:36:01	20.00	2.266493	0.14332013
2680	12:37:01	19.90	2.265770	0.14372061
2681	12:38:01	19.80	2.266131	0.14343954
2682	12:39:01	19.90	2.266493	0.14315806
2683	12:40:01	20.00	2.265770	0.14355815
2684	12:41:01	20.20	2.266131	0.14327746
2685	12:42:01	20.30	2.265770	0.14345005
2686	12:43:01	20.30	2.265770	0.14339606
2687	12:44:01	20.20	2.266493	0.14288876
2688	12:45:01	20.10	2.265770	0.1432882
2689	12:46:01	19.90	2.266131	0.14300815
2690	12:47:01	19.80	2.265408	0.14340724
2691	12:48:01	19.80	2.265408	0.14335337
2692	12:49:01	19.90	2.265408	0.14329954
2693	12:50:01	20.10	2.265770	0.14301927
2694	12:51:01	20.30	2.265770	0.1429656
2695	12:52:01	20.30	2.266131	0.1426863
2696	12:53:01	20.30	2.265770	0.14285839
2697	12:54:01	20.20	2.265046	0.14325712
2698	12:55:01	20.00	2.264323	0.14365493
2699	12:56:01	19.90	2.265046	0.14314981

2700	12:57:01	19.80	2.265046	0.14309622
2701	12:58:01	19.90	2.265046	0.14304266
2702	12:59:01	20.00	2.265408	0.14276344
2703	13:00:01	20.30	2.265770	0.14248442
2704	13:01:01	20.40	2.266131	0.14220623
2705	13:02:01	20.30	2.265408	0.14260339
2706	13:03:01	20.20	2.265408	0.14255012
2707	13:04:01	20.10	2.265408	0.14249689
2708	13:05:01	19.90	2.264323	0.1431187
2709	13:06:01	19.80	2.265046	0.14261567
2710	13:07:01	19.90	2.264323	0.14301194
2711	13:08:01	20.00	2.264685	0.14273366
2712	13:09:01	20.20	2.265408	0.14223133
2713	13:10:01	20.30	2.264685	0.1426273
2714	13:11:01	20.30	2.265408	0.14212539
2715	13:12:01	20.30	2.265046	0.1422971
2716	13:13:01	20.20	2.264685	0.14246806
2717	13:14:01	20.00	2.265046	0.14219122
2718	13:15:01	19.90	2.263961	0.14281083
2719	13:16:01	19.80	2.264323	0.14253346
2720	13:17:01	19.90	2.265046	0.1420327
2721	13:18:01	20.10	2.263961	0.14265168
2722	13:19:01	20.30	2.265046	0.14192722
2723	13:20:01	20.30	2.265046	0.14187454
2724	13:21:01	20.30	2.264323	0.14226902
2725	13:22:01	20.20	2.265046	0.14176929
2726	13:23:01	20.10	2.263961	0.14238722
2727	13:24:01	19.90	2.264685	0.1418872
2728	13:25:01	19.80	2.264685	0.14183463
2729	13:26:01	19.90	2.263961	0.14222901
2730	13:27:01	20.00	2.263599	0.14239973
2731	13:28:01	20.20	2.264685	0.14167715
2732	13:29:01	20.30	2.263599	0.14229436
2733	13:30:01	20.40	2.263961	0.14201861
2734	13:31:01	20.30	2.264685	0.14152002
2735	13:32:01	20.20	2.264323	0.14169069
2736	13:33:01	20.00	2.264323	0.14163835
2737	13:34:01	19.90	2.263961	0.14180884
2738	13:35:01	19.80	2.264323	0.14153378
2739	13:36:01	19.90	2.264323	0.14148155
2740	13:37:01	20.10	2.263599	0.14187446
2741	13:38:01	20.30	2.263599	0.14182215
2742	13:39:01	20.40	2.263599	0.14176987
2743	13:40:01	20.30	2.263961	0.14149533
2744	13:41:01	20.20	2.263961	0.14144322
2745	13:42:01	20.10	2.264323	0.141169
2746	13:43:01	19.90	2.263961	0.1413391
2747	13:44:01	19.90	2.263599	0.14150908
2748	13:45:01	19.90	2.263599	0.14145703
2749	13:46:01	20.00	2.263599	0.14140502

2750	13:47:01	20.20	2.263599	0.14135306
2751	13:48:01	20.30	2.263599	0.14130113
2752	13:49:01	20.40	2.263961	0.14102767
2753	13:50:01	20.30	2.263599	0.14119738
2754	13:51:01	20.20	2.263599	0.14114557
2755	13:52:01	20.00	2.263599	0.14109379
2756	13:53:01	19.90	2.264323	0.14059956
2757	13:54:01	19.80	2.263599	0.14099035
2758	13:55:01	19.90	2.263599	0.14093868
2759	13:56:01	20.00	2.263961	0.14066606
2760	13:57:01	20.20	2.263599	0.14083547
2761	13:58:01	20.40	2.263599	0.14078392
2762	13:59:01	20.30	2.263599	0.14073241
2763	14:00:01	20.30	2.263599	0.14068093
2764	14:01:01	20.10	2.263599	0.14062949
2765	14:02:01	20.00	2.263599	0.14057809
2766	14:03:01	19.90	2.263599	0.14052673
2767	14:04:01	19.80	2.263599	0.14047541
2768	14:05:01	19.90	2.263599	0.14042412
2769	14:06:01	20.10	2.263238	0.14059246
2770	14:07:01	20.30	2.263599	0.14032166
2771	14:08:01	20.40	2.263599	0.14027048
2772	14:09:01	20.30	2.263599	0.14021935
2773	14:10:01	20.20	2.263599	0.14016825
2774	14:11:01	20.10	2.263599	0.14011718
2775	14:12:01	20.00	2.263599	0.14006616
2776	14:13:01	19.90	2.263599	0.14001517
2777	14:14:01	19.90	2.263599	0.13996422
2778	14:15:01	20.00	2.263599	0.1399133
2779	14:16:01	20.20	2.263238	0.14008121
2780	14:17:01	20.30	2.263599	0.13981158
2781	14:18:01	20.40	2.263599	0.13976078
2782	14:19:01	20.30	2.263599	0.13971001
2783	14:20:01	20.20	2.263599	0.13965928
2784	14:21:01	20.10	2.263238	0.13982698
2785	14:22:01	19.90	2.263238	0.13977625
2786	14:23:01	19.90	2.263599	0.13950731
2787	14:24:01	19.90	2.263599	0.13945673
2788	14:25:01	20.00	2.263599	0.13940619
2789	14:26:01	20.20	2.263599	0.13935568
2790	14:27:01	20.40	2.263599	0.1393052
2791	14:28:01	20.40	2.263238	0.1394726
2792	14:29:01	20.30	2.262514	0.13985885
2793	14:30:01	20.20	2.263599	0.139154
2794	14:31:01	20.10	2.263599	0.13910368
2795	14:32:01	19.90	2.263599	0.13905339
2796	14:33:01	19.90	2.263599	0.13900313
2797	14:34:01	19.90	2.263238	0.13917028
2798	14:35:01	20.00	2.263599	0.13890273
2799	14:36:01	20.20	2.263238	0.1390698

2800	14:37:01	20.40	2.263238	0.13901961
2801	14:38:01	20.40	2.263599	0.13875241
2802	14:39:01	20.30	2.262876	0.13913692
2803	14:40:01	20.20	2.262876	0.13908676
2804	14:41:01	20.00	2.262876	0.13903664
2805	14:42:01	19.90	2.262152	0.13942123
2806	14:43:01	19.90	2.262876	0.1389365
2807	14:44:01	19.90	2.263238	0.13866931
2808	14:45:01	20.10	2.262152	0.13927072
2809	14:46:01	20.30	2.262152	0.13922062
2810	14:47:01	20.40	2.262514	0.13895361
2811	14:48:01	20.30	2.262514	0.13890367
2812	14:49:01	20.20	2.262876	0.13863696
2813	14:50:01	20.10	2.263238	0.13837045
2814	14:51:01	20.00	2.262876	0.1385374
2815	14:52:01	19.90	2.262876	0.13848768
2816	14:53:01	19.90	2.262514	0.13865447
2817	14:54:01	20.00	2.263238	0.13817193
2818	14:55:01	20.20	2.262876	0.13833871
2819	14:56:01	20.30	2.262152	0.13872162
2820	14:57:01	20.40	2.262514	0.13845575
2821	14:58:01	20.30	2.262876	0.13819007
2822	14:59:01	20.20	2.261791	0.13878804
2823	15:00:01	20.10	2.262514	0.13830709
2824	15:01:01	20.00	2.262514	0.1382576
2825	15:02:01	19.90	2.262152	0.13842394
2826	15:03:01	19.90	2.261429	0.13880527
2827	15:04:01	20.00	2.261791	0.13854003
2828	15:05:01	20.20	2.262152	0.13827557
2829	15:06:01	20.30	2.261429	0.13865655
2830	15:07:01	20.40	2.262152	0.13817684
2831	15:08:01	20.30	2.261067	0.1387729
2832	15:09:01	20.20	2.262152	0.13807825
2833	15:10:01	20.10	2.262514	0.13781384
2834	15:11:01	19.90	2.261791	0.1381943
2835	15:12:01	19.90	2.261429	0.13836006
2836	15:13:01	19.90	2.261429	0.13831077
2837	15:14:01	20.10	2.261791	0.13804665
2838	15:15:01	20.20	2.261067	0.13842708
2839	15:16:01	20.40	2.261429	0.13816311
2840	15:17:01	20.40	2.261429	0.13811396
2841	15:18:01	20.30	2.261791	0.13785028
2842	15:19:01	20.20	2.261791	0.13780128
2843	15:20:01	20.00	2.262152	0.1375385
2844	15:21:01	19.90	2.261429	0.1379177
2845	15:22:01	19.90	2.261067	0.13808298
2846	15:23:01	19.90	2.261791	0.13760561
2847	15:24:01	20.10	2.261429	0.13777088
2848	15:25:01	20.30	2.260706	0.13814946
2849	15:26:01	20.40	2.261791	0.13745922

2850	15:27:01	20.40	2.261791	0.13741049
2851	15:28:01	20.30	2.261429	0.1375756
2852	15:29:01	20.10	2.261429	0.13752686
2853	15:30:01	20.00	2.261067	0.13769181
2854	15:31:01	19.90	2.260706	0.13785605
2855	15:32:01	19.90	2.261067	0.13759436
2856	15:33:01	20.00	2.261791	0.13711885
2857	15:34:01	20.20	2.260706	0.13770981
2858	15:35:01	20.30	2.260706	0.13766113
2859	15:36:01	20.40	2.261429	0.13718669
2860	15:37:01	20.30	2.261067	0.13735135
2861	15:38:01	20.20	2.261067	0.13730285
2862	15:39:01	20.10	2.261067	0.13725438
2863	15:40:01	20.00	2.261067	0.13720595
2864	15:41:01	19.90	2.260706	0.13736978
2865	15:42:01	19.90	2.260706	0.13732134
2866	15:43:01	20.00	2.260706	0.13727294
2867	15:44:01	20.20	2.260706	0.13722457
2868	15:45:01	20.30	2.261429	0.13675179
2869	15:46:01	20.40	2.260706	0.13712793
2870	15:47:01	20.30	2.261067	0.13686789
2871	15:48:01	20.20	2.260706	0.13703143
2872	15:49:01	20.10	2.261067	0.1367716
2873	15:50:01	20.00	2.260706	0.13693507
2874	15:51:01	19.90	2.260706	0.13688694
2875	15:52:01	19.90	2.260706	0.13683884
2876	15:53:01	20.00	2.260706	0.13679077
2877	15:54:01	20.20	2.260706	0.13674274
2878	15:55:01	20.40	2.260706	0.13669475
2879	15:56:01	20.40	2.260706	0.13664678
2880	15:57:01	20.30	2.260706	0.13659885
2881	15:58:01	20.20	2.260706	0.13655096
2882	15:59:01	20.10	2.260706	0.1365031
2883	16:00:01	20.00	2.260706	0.13645527
2884	16:01:01	19.90	2.260706	0.13640747
2885	16:02:01	19.90	2.260706	0.13635971
2886	16:03:01	20.00	2.261067	0.13610139
2887	16:04:01	20.20	2.260706	0.13626429
2888	16:05:01	20.40	2.260706	0.13621663
2889	16:06:01	20.40	2.260344	0.13637995
2890	16:07:01	20.30	2.260706	0.1361214
2891	16:08:01	20.20	2.260706	0.13607384
2892	16:09:01	20.10	2.260706	0.13602631
2893	16:10:01	20.00	2.260706	0.13597882
2894	16:11:01	19.90	2.260706	0.13593136
2895	16:12:01	19.90	2.260706	0.13588393
2896	16:13:01	20.00	2.260344	0.13604697
2897	16:14:01	20.20	2.260706	0.13578917
2898	16:15:01	20.40	2.260706	0.13574184
2899	16:16:01	20.40	2.260344	0.13590476

2900	16:17:01	20.30	2.260706	0.13564728	
2901	16:18:01	20.20	2.259982	0.13602019	
2902	16:19:01	20.10	2.260706	0.13555285	
2903	16:20:01	20.00	2.260706	0.13550568	
2904	16:21:01	19.90	2.260706	0.13545855	
2905	16:22:01	19.90	2.260706	0.13541145	
2906	16:23:01	20.00	2.260706	0.13536438	
2907	16:24:01	20.20	2.260706	0.13531735	
2908	16:25:01	20.40	2.260706	0.13527035	
2909	16:26:01	20.40	2.260344	0.13543287	
2910	16:27:01	20.30	2.260706	0.13517644	48 horas

ANEXO 3.

RESULTADOS ENSAYOS CAPACIDAD

Muestra 1, test 3 (capacidad)			
Tiempo (s)	Voltaje (V)	Resistencia (Ω)	0.2
1	0.0004	Intensidad (A)	18
2	0.0819	Tiempo (s)	78
3	0.1388	Capacidad=Tiempo/Resistencia	390
4	0.1822	Ulímite = 0,632*Unominal	1.7064
5	0.2254	Tensión nominal	2.7
6	0.2744	Capacidad límite inferior	380
7	0.3158	Capacidad límite superior	440
8	0.3657		
9	0.4064		
10	0.4469		
11	0.4831		
12	0.5287		
13	0.5625		
14	0.5979		
15	0.6314		
16	0.6697		
17	0.6969		
18	0.725		
19	0.7624		
20	0.7895		
21	0.8194		
22	0.845		
23	0.8719		
24	0.8975		
25	0.9288		
26	0.9517		
27	0.977		
28	0.9986		
29	1.0204		
30	1.0433		
31	1.0635		
32	1.0891		
33	1.105		
34	1.1269		
35	1.1492		
36	1.1641		
37	1.1859		
38	1.2067		
39	1.2219		
40	1.2409		
41	1.2617		
42	1.2746		
43	1.2936		
44	1.3068		
45	1.3203		
46	1.3405		
47	1.3529		
48	1.3723		

49	1.3845
50	1.3983
51	1.41
52	1.4278
53	1.4398
54	1.4518
55	1.4638
56	1.4816
57	1.4929
58	1.5046
59	1.5163
60	1.5269
61	1.5386
62	1.549
63	1.5599
64	1.5711
65	1.5824
66	1.5926
67	1.6032
68	1.6138
69	1.6182
70	1.6287
71	1.6382
72	1.6488
73	1.6683
74	1.6775
75	1.6824
76	1.6915
77	1.7002
78	1.7099

Muestra 2, test 3 (capacidad)			
Tiempo	Voltaje	Resistencia (Ω)	0.2
1	0.0007	Intensidad (A)	13.5
2	0.0842	Tiempo (s)	62
3	0.143	Capacidad=Tiempo/Resistencia	310
4	0.2027	Ulímite = 0,632*Unominal	1.7064
5	0.2574	Tensión nominal	2.7
6	0.3272	Capacidad límite inferior	285
7	0.3777	Capacidad límite superior	330
8	0.4303		
9	0.4833		
10	0.5315		
11	0.5744		
12	0.6179		
13	0.6672		
14	0.7051		
15	0.7466		
16	0.7817		
17	0.8258		
18	0.8581		
19	0.8921		
20	0.9241		
21	0.9534		
22	0.984		
23	1.0176		
24	1.0462		
25	1.072		
26	1.1002		
27	1.1244		
28	1.1556		
29	1.1794		
30	1.2032		
31	1.2246		
32	1.2466		
33	1.2684		
34	1.2897		
35	1.3146		
36	1.3301		
37	1.3527		
38	1.3683		
39	1.3898		
40	1.4093		
41	1.425		
42	1.4434		
43	1.4563		
44	1.4771		

45	1.4905
46	1.5103
47	1.5229
48	1.5364
49	1.5488
50	1.5664
51	1.589
52	1.5904
53	1.6027
54	1.6143
55	1.6319
56	1.643
57	1.6546
58	1.6657
59	1.6759
60	1.6868
61	1.6971
62	1.7083

Muestra 3, test 3 (capacidad)	
Resistencia (Ω)	0.8
Intensidad (A)	3
Tiempo (s)	118
Capacidad=Tiempo/Resistencia	147.5
Ulímite = 0,632*Unominal	1.58
Tensión nominal	2.5
Capacidad límite inferior	120
Capacidad límite superior	180

Tiempo	Voltaje
1	0.0024
2	0.1623
3	0.1921
4	0.2272
5	0.2511
6	0.2745
7	0.3008
8	0.3236
9	0.348
10	0.3711
11	0.4005
12	0.4219
13	0.4458
14	0.4666
15	0.4869
16	0.5099
17	0.5313
18	0.5538
19	0.5693
20	0.5999
21	0.6144
22	0.6357
23	0.6517
24	0.6718
25	0.6938
26	0.7076
27	0.728
28	0.7424
29	0.7621
30	0.7802
31	0.795
32	0.8138
33	0.829
34	0.8413
35	0.8603
36	0.8748
37	0.8866
38	0.9057
39	0.9184
40	0.9317
41	0.9489
42	0.9622
43	0.9736
44	0.991

45	1.0025
46	1.0153
47	1.027
48	1.0381
49	1.0503
50	1.0613
51	1.0729
52	1.0846
53	1.0952
54	1.1123
55	1.1226
56	1.1338
57	1.144
58	1.1554
59	1.1664
60	1.1774
61	1.1821
62	1.1931
63	1.2033
64	1.213
65	1.2237
66	1.2333
67	1.2439
68	1.2536
69	1.2639
70	1.268
71	1.2785
72	1.2879
73	1.2978
74	1.3073
75	1.3111
76	1.3205
77	1.3296
78	1.3357
79	1.343
80	1.3523
81	1.3588
82	1.3657
83	1.374
84	1.3808
85	1.3887
86	1.3955
87	1.4031
88	1.4097
89	1.4174
90	1.4237
91	1.43

92	1.4373
93	1.4434
94	1.4504
95	1.4565
96	1.4633
97	1.4692
98	1.476
99	1.4815
100	1.4872
101	1.4937
102	1.499
103	1.5054
104	1.5107
105	1.5168
106	1.522
107	1.528
108	1.533
109	1.539
110	1.5439
111	1.5495
112	1.5544
113	1.5592
114	1.5647
115	1.5695
116	1.5747
117	1.5792
118	1.5846
119	
120	
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138	

Muestra 4, test 3 (capacidad)			
Tiempo	Voltaje	Resistencia (Ω)	0.6
1	0.0819	Intensidad (A)	2
2	0.1166	Tiempo (s)	67
3	0.1422	Capacidad=Tiempo/Resistencia	111.666667
4	0.1706	Ulímite = 0,632*Unominal	1.58
5	0.1954	Tensión nominal	2.5
6	0.2222	Capacidad límite inferior	80
7	0.2478	Capacidad límite superior	120
8	0.2728		
9	0.3056		
10	0.3312		
11	0.3575		
12	0.3816		
13	0.4089		
14	0.4328		
15	0.4643		
16	0.489		
17	0.5124		
18	0.5374		
19	0.5617		
20	0.5865		
21	0.6091		
22	0.6405		
23	0.6628		
24	0.6869		
25	0.7102		
26	0.7339		
27	0.7562		
28	0.7786		
29	0.8073		
30	0.8298		
31	0.8527		
32	0.8737		
33	0.8952		
34	0.9183		
35	0.939		
36	0.9674		
37	0.9877		
38	1.0097		
39	1.0308		
40	1.0525		
41	1.0756		
42	1.0947		
43	1.1176		
44	1.1418		

45	1.1574
46	1.1798
47	1.2037
48	1.2426
49	1.2646
50	1.2873
51	1.3028
52	1.3263
53	1.3467
54	1.3635
55	1.3852
56	1.4053
57	1.4216
58	1.4431
59	1.4658
60	1.4805
61	1.5021
62	1.5181
63	1.5372
64	1.5525
65	1.5699
66	1.5831

ANEXO 4.

DATASHEETS SUPERCONDENSADORES

XV Supercapacitor

Cylindrical snap-in



Features and benefits

- Over 10-year operating life at room temperature
- Ultra low ESR for high power density
- Large capacitance for high energy density
- Long cycle life
- UL Recognized

Applications

- Hybrid battery or fuel cell systems
- High pulse current applications
- UPS / hold up power

Description

Eaton supercapacitors are unique, ultra-high capacitance devices utilizing electrochemical double layer capacitor (EDLC) construction combined with new, high performance materials. This combination of advanced technologies allows Eaton to offer a wide variety of capacitor solutions tailored to specific applications that range from a few microamps for several days to several amps for milliseconds.

Specifications

Capacitance	300 F to 600 F
Working voltage	2.7 V
Surge voltage	2.85 V
Capacitance tolerance	-5% to +10%
Operating temperature range	-40 °C to +65 °C
Extended operating temperature range	-40 °C to +85 °C (with voltage derating to 2.3 V @ +85 °C)

Standard Product[1]

Capacitance (F)	Part Number	Max. initial DC ESR (mΩ) (Equivalent Series Resistance)	Max continuous current[2] (A)	Peak current[3] (A)	Max leakage current[4] (mA)	Max power[5] (W)	Stored energy[6] (Wh)	Typical mass (g)
300	XV3550-2R7307-R	4.5	20	160	0.60	410	0.30	62
400	XV3560-2R7407-R	3.2	26	220	0.85	570	0.41	72
600	XV3585-2R7607-R	2.6	33	320	1.30	790	0.60	108

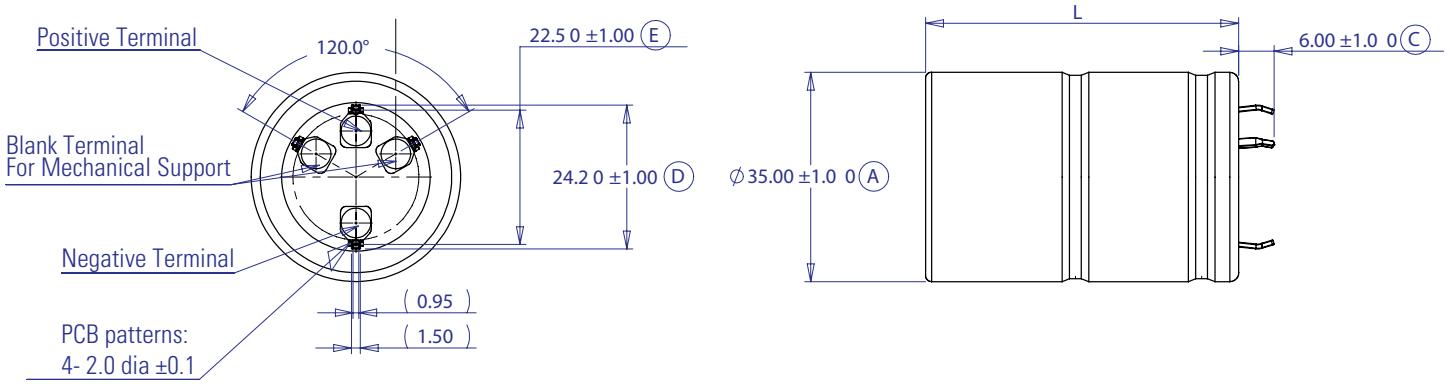
1. Capacitance, ESR and Leakage current are all measured according to IEC 62391-1 at +20 °C
2. 15 °C Temperature Rise
3. Peak Current is for 1 second = 1⁄2 Working Voltage x Capacitance / (1 + DC ESR x Capacitance)
4. Leakage current measured after 72 hours, +20 °C
5. Max. Power = Working Voltage^2 / 4 / DC ESR
6. Stored energy = 1⁄2 Capacitance x Working Voltage^2 / 3600

Performance

Parameter		Capacitance Change (% of initial value)	ESR (% of max. initial value)
Life			
@ Max. operating voltage and temp)	1500 hours	≤ 20%	≤ 200%
Charge/discharge cycling[1]	500,000	≤ 20%	≤ 200%
Storage Life- uncharged			
-40 °C to +65 °C	1500 hours	≤ 20%	≤ 200%
≤ 30 °C	3 years	≤ 5%	≤ 10%

1. Cycling between max operating and 50% of max operating voltage at room temperature

Dimensions (mm)



Part Number	L ±1.0
XV3550-2R7307-R	53
XV3560-2R7407-R	63
XV3585-2R7607-R	87.5

Part Numbering System

XV	3560		-	2R7	40	7	-R
Family Code	Size reference- mm Diameter	Length		Voltage (V) R = Decimal	Capacitance (µF) Value	Multiplier	
XV = Family Code	35	60		2R7= 2.7 V	Example: 407= 40 x 10^7µF or 400 F		Standard product

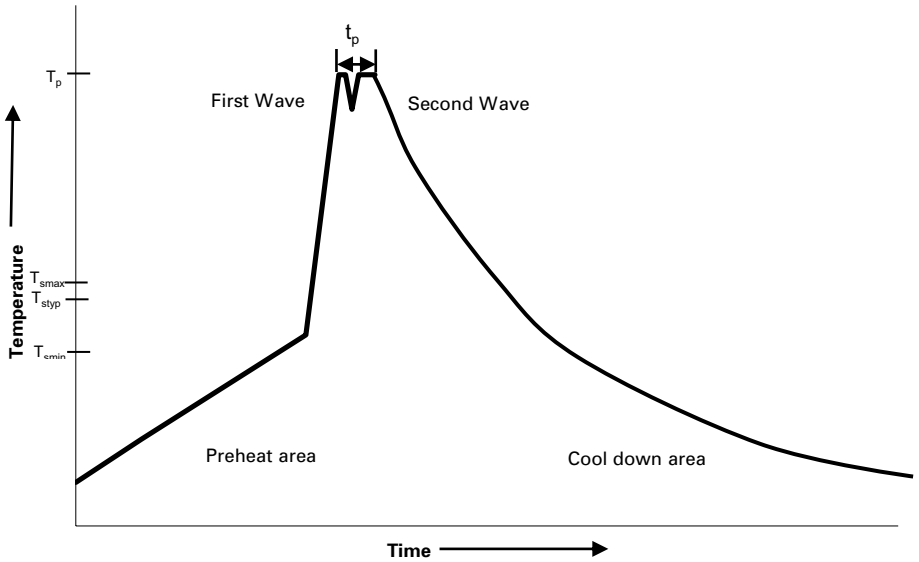
Packaging Information

- Standard packaging: 20 pieces per box

Part Marking

- Manufacturer
- Capacitance (F)
- Max operating voltage (V)
- Series code (or part number)
- Polarity

Wave solder profile



Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and soak	• Temperature max. (T_{smax})	100 °C	100 °C
	• Time max.	60 seconds	60 seconds
Δ preheat to max Temperature		160 °C max.	160 °C max.
Peak temperature (Tp)*		220 °C – 260 °C	250 °C – 260 °C
Time at peak temperature (t_p)		10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate		~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25 °C to 25 °C		4 minutes	4 minutes

Manual solder

+350 °C, 4-5 seconds. (by soldering iron), generally manual, hand soldering is not recommended.

Cleaning/Washing

Avoid cleaning of circuit boards, however if the circuit board must be cleaned use static or ultrasonic immersion in a standard circuit board cleaning fluid for no more than 5 minutes and a maximum temperature of +60 °C. Afterwards thoroughly rinse and dry the circuit boards. In general, treat supercapacitors in the same manner you would an aluminum electrolytic capacitor.

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

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Powering Business Worldwide

ELECTRIC DOUBLE LAYER CAPACITORS "EVerCAP®"

nichicon

JC series

Snap-in Terminal Type

- Excellent in voltage holding property.
- Suitable for quick charge and discharge.
- Wide temperature range (– 25°C to + 60°C).
- Compliant to the RoHS directive (2002/95/EC).



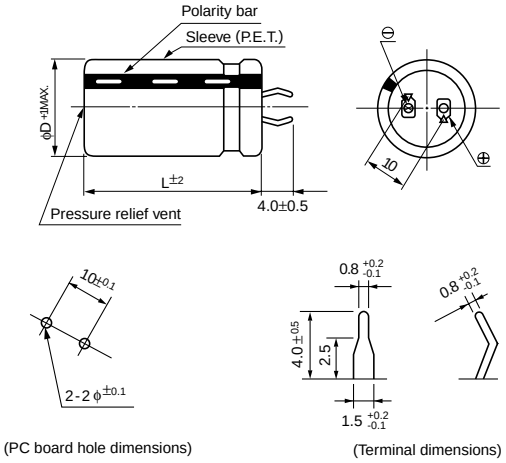
■Specifications

Item	Performance Characteristics
Category Temperature Range	– 25 to +60°C
Rated Voltage Range	2.5V
Rated Capacitance Range	15 to 150F See Note
Capacitance Tolerance	±20% (20°C)
Leakage Current	0.5C (mA) [C : Rated Capacitance(F)] (After 30 minutes' application of rated voltage, 2.5V)
Stability at Low Temperature	Capacitance (– 25°C) / Capacitance (+20°C) ×100 ≧ 70%
ESR, DCR*	Refer to the list below (20°C). *DC internal resistance
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 60°C.
Shelf Life	The specifications listed at right shall be met when the capacitors are restored to 20°C after storing the capacitors under no load for 2000 hours at 60°C.
Marking	Printed with white color letter on black sleeve.

Endurance / Shelf Life:

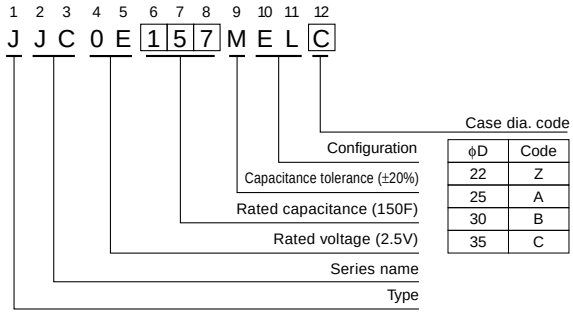
Capacitance change	Within ±30% of the initial capacitance value
ESR	300% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

■Drawing



(PC board hole dimensions) (Terminal dimensions)

Type numbering system (Example : 2.5V 150F)



φD	Code
22	Z
25	A
30	B
35	C

■Dimensions

Rated Voltage (code)	Cap. (F)	Cap. code	ESR(mΩ) (at 1kHz)	DCR※ Typical (mΩ)	Case size φD×L (mm)			
					φ22 (Z)	φ25 (A)	φ30 (B)	φ35 (C)
2.5V (0E)	15	156	120	160	22×20			
	18	186	120	140		25×20		
	22	226	90	130			30×20	
	27	276	90	110	22×30		30×20	
	33	336	80	90		25×30		35×20
	39	396	80	80	22×35	25×30		35×20
	47	476	70	60	22×40	25×35		
	56	566	70	50		25×40	30×30	
	68	686	60	45				35×30
	82	826	60	35		25×50	30×40	
	100	107	50	30				35×35
	120	127	50	25			30×50	35×40
	150	157	40	22				35×50

Note :
The capacitance calculated from discharge time (ΔT) with constant current (i) after 30minuite charge with rated voltage (2.5V).
The discharge current (i) is 0.01 × rated capacitance (F).
The discharge time (ΔT) measured between 2V and 1V with constant current.
The capacitance calculated bellow.

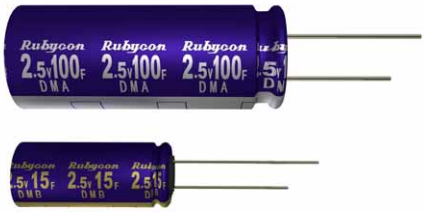
Capacitance (F) = i × ΔT

※The listed DCR value is typical and therefore not a guaranteed value.

DMA SERIES Load Life: 60℃ 1000 hours

DMB SERIES Load Life: 70℃ 1000 hours

RoHS compliance



◆SPECIFICATIONS

Items	DMA	DMB
Category Temperature Range	−25～+60℃	−25～+70℃
Rated Voltage Range	2.5Vdc	
Capacitance Tolerance	±20%(20℃)	
Characteristics at High and low Temperatures	Capacitance Change: | ΔC/C(+20℃) | ≦30% ESR: Max, 4 times of value at 20℃(at −25℃)	
Endurance	After 1000 hours with rated voltage at 60℃(DMA)or70℃(DMB), the capacitors shall meet the following requirements. Capacitance Change: | ΔC/C(initial) | ≦30% ESR: Max, 3 times of the specification	
Storage at High emperature	After 1000 hours without load at 60℃(DMA) or 70℃(DMB), the capacitors shall meet the same requiremnts specifiled for endurance.	

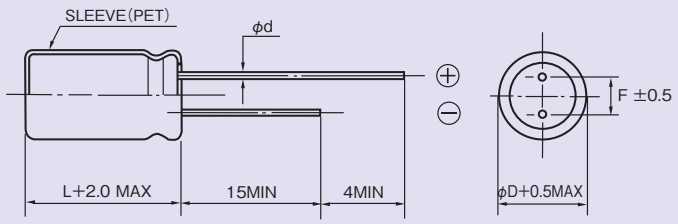
◆PART NUMBER

□□□ Rated Voltage / □□□ Series / □□□ Capacitance / M Capacitance Tolerance / □□□ Option / □□ Lead Forming / D×L Case Size

Lead Forming : Please refer to aluminum electrolytic capacitors section.

◆DIMENSIONS

(mm)



φD	8	10	12.5	16	18	20	22
φd	0.6	0.6	0.6	0.8	0.8	1.0	1.0
F	3.5	5.0	5.0	7.5	7.5	10.0	10.0

◆STANDARD SIZE

**:Lead Forming

Serires	Rated Voltage(Vdc)	Capacitance(F)	ESR (Ω/20℃, 1kHz)	φD x L (mm)	Part No.
DMA	2.5	50	0.1	18×35.5	2.5DMA50M**18×35.5
		60		18×40	2.5DMA60M**18×40
		100		20×55	2.5DMA100M**20×55
		190		22×65	2.5DMA190M**22×65
DMB	2.5	2.2	1	8×16	2.5DMB2R2M**8×16
		3.3		8×20	2.5DMB3R3M**8×20
		4.7	0.5	10×20	2.5DMB4R7M**10×20
		10	0.2	10×35	2.5DMB10M**10×35
				12.5×25	2.5DMB10M**12.5×25
		15	0.1	12.5×30	2.5DMB15M**12.5×30
		22		16×25	2.5DMB22M**16×25
		30		16×31.5	2.5DMB30M**16×31.5
		50		18×40	2.5DMB50M**18×40
		70		20×45	2.5DMB70M**20×45
		100		20×55	2.5DMB100M**20×55
		150		22×65	2.5DMB150M**22×65

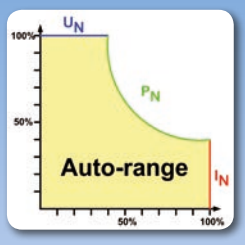
ANEXO 5.

MANUAL DE USUARIO DE FUENTE DE ALIMENTACION

U I P R OVP OTP USB RS232 LAN IEEE CAN AI Profi-bus







EA-PSI 8032-20 T

- **Weiteingangsbereich 90...264 V, mit aktiver PFC**
- **Hoher Wirkungsgrad bis 92%**
- **Ausgangsleistungen: 320 W bis 0...1500 W**
- **Ausgangsspannungen: 0...16 V bis 0...360 V**
- **Ausgangsströme: 0...4 A bis 0...60 A**
- **Flexible, leistungsgeregelte Ausgangsstufe***
- **Überspannungsschutz (OVP)**
- **Übertemperaturschutz (OT)**
- **Grafisches Display für alle Werte und Funktionen**
- **Zustandsanzeige und Meldungen im Display**
- **Fernfühleingang mit automatischer Erkennung**
- **Analoge Schnittstelle mit**
  - **U / I / P* programmierbar mit 0...10 V oder 0...5 V**
  - **U / I Monitorausgang mit 0...10 V oder 0...5 V**
- **Alarmmanagement, Benutzerprofile**
- **Integrierter Funktionsmanager**
- **Temperaturgeregelter Lüfter zur Kühlung**
- **Optionale Schnittstellenkarten**
- **Optionale Innenwiderstandsregelung**

- **Wide input voltage range 90...264 V, with active PFC**
- **High efficiency up to 92%**
- **Output power ratings: 320 W up to 0...1500 W**
- **Output voltages: 0...16 V up to 0...360 V**
- **Output currents: 0...4 A up to 0...60 A**
- **Flexible, power regulated output stage***
- **Overvoltage protection (OVP)**
- **Overtemperature protection (OT)**
- **Graphic display for all values and functions**
- **Status indication and notifications via display**
- **Remote sensing with automatic detection**
- **Analog interface with**
  - **U / I / P* programmable via 0...10 V or 0...5 V**
  - **U / I monitoring via 0...10 V or 0...5 V**
- **Alarm management, user profiles**
- **Integrated function manager**
- **Temperature controlled fans for cooling**
- **Optional interface cards**
- **Optional internal resistance regulation**

Allgemeines
Die mikroprozessorgesteuerten Labornetzgeräte der Serie EA-PSI 8000 T bieten dem Anwender neben einer benutzerfreundlichen, interaktiven Menüführung viele Funktionen und Features serienmäßig, die das Arbeiten mit diesen Geräten erheblich erleichtern. So lassen sich Benutzerprofile und Funktionsabläufe leicht konfigurieren und abspeichern, wodurch die Reproduzierbarkeit einer Prüfung oder anderer Anwendungen erhöht wird.
Die umfangreichen integrierten Überwachungsfunktionen für alle Ausgangsparameter mit einstellbaren Verzögerungen vereinfachen einen Prüfaufbau und machen externe Überwachungen meist überflüssig.

Eingang
Die Geräte besitzen alle eine aktive Leistungsfaktorkorrektur (PFC) und sind für den weltweiten Einsatz mit einem Netzeingang von 90 V_{AC} bis 264 V_{AC} ausgelegt. Bei Modellen mit 1,5 kW wird die Ausgangsleistung bei einer Eingangsspannung <150 V_{AC} auf 1 kW reduziert.

* Modelle ab 1 kW

General
The microprocessor controlled laboratory power supplies of series EA-PSI 8000 T cover state-of-the-art technology. They already offer many functions and features in their standard version, making the use of this equipment remarkably easy and most effective.
User and process profiles can be configured, saved and archived so that the reproducibility of a test or other application is improved.
The extensive integrated monitoring functions for all output parameters with adjustable delays of alerts simplify test assembly, such that the usual external monitoring is mostly unnecessary.

Input
The devices use an active **P**ower **F**actor **C**orrection circuit enabling worldwide use on a mains input from 90 V_{AC} up to 264 V_{AC}. Models with 1.5 kW will derate their output power to 1 kW below input voltages of 150 V_{AC}.

* Models from 1 kW

Irrtümer und Änderungen vorbehalten / Subject to modification without notice, errors and omissions excepted
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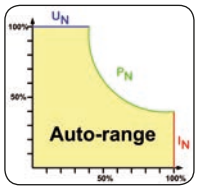
DC-Ausgang
Zur Verfügung stehen Modelle mit DC-Ausgangsspannungen zwischen 0...16 V und 0...360 V, Strömen zwischen 0...4 A und 0...60 A und Leistungen zwischen 320 W und 0...1500 W. Der Ausgang befindet sich auf der Vorderseite der Geräte. Modelle ab 1 kW haben eine flexible, leistungsgeregelte Ausgangsstufe, die bei hoher Ausgangsspannung den Strom oder bei hohem Ausgangsstrom die Spannung so reduziert, daß die zwischen 0..100% einstellbare Ausgangsleistung nicht überschritten wird.



DC output
DC output voltages between 0...16 V and 0...360 V, output currents between 0...4 A and 0...60 A and output power ratings between 320 W and 0...1500 W are available. The output terminal is located on the front panel. Models with 1 kW or higher output power are equipped with a flexible, auto-ranging power stage which provides a higher output voltage at lower output currents, or a higher output current at lower output voltages, always limited to the adjustable (0...100%) output power value.

Überspannungsschutz (OVP)
Um die angeschlossenen Verbraucher vor Beschädigung zu schützen, kann eine Überspannungsschutzschwelle (OVP) eingestellt werden. Beim Überschreiten des eingestellten Wertes wird der Ausgang abgeschaltet und es wird eine Alarmmeldung als akustisches Signal, sowie als Statusmeldung auf der analogen Schnittstelle und in der Anzeige ausgegeben.

Overvoltage protection (OVP)
In order to protect connected loads, it is possible to adjust an overvoltage protection threshold (OVP).
If the output voltage exceeds the defined threshold, the output is shut off and an acoustic warning signal will be given by the unit together with a status signal in the display and via the analog interface.

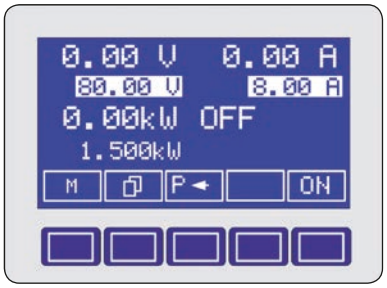
Alarmmanagement
Um die Ausgangsspannung und den Ausgangsstrom zu überwachen, kann ein Arbeitsbereich mit Unter- und Obergrenzen definiert werden. Dem Anwender stehen drei Möglichkeiten zur Auswahl, wie das Netzgerät beim Verlassen dieses Arbeitsbereichs reagieren soll. Eine Meldung wirkt sich nicht auf den Ausgang aus und wird, so lange sie ansteht, auf dem Display angezeigt. Warnungen bleiben hingegen auch dann bestehen, wenn die Werte wieder im normalen Bereich sind. Sie müssen dann vom Anwender quittiert werden. Alarme schalten den Ausgang direkt ab, wenn ein Wert überschritten wird. Warnungen und Alarme können akustisch signalisiert werden.

Alarm management
For monitoring the correct output voltage and output current, lower and upper limits can be defined.
If the deviation exceeds the adjusted limits, three possibilities are available as to how the appliance should react.
- Signals are displayed only; even if the fault is still active, without affecting the output
- Warnings remain active and must be acknowledged after the fault is removed
- Alarms will shut off the output instantly in case the deviation exceed the adjusted limits.
Alarms and Warnings can be signalled acoustically.

Fernfühlung (Sensing)
Der serienmäßig vorhandene Fernfühlungseingang (Sense) kann direkt am Verbraucher angeschlossen werden, um Spannungsabfall auf den Lastleitungen zu kompensieren. Das Gerät erkennt selbständig, wenn die Senseleitungen angeschlossen sind und regelt die Ausgangsspannung direkt am Verbraucher. Der Eingang befindet sich auf der Vorderseite des Gerätes.

Remote sensing
The standard sensing input can be connected directly to the load in order to compensate voltage drops along the power cables. If the sensing input is connected to the load, the power supply will detect this and adjust the output voltage automatically to ensure the accurate required voltage is available at the load.

Anzeige- und Bedienelemente
Das leicht abzulesende Grafikdisplay bietet zu jeder Zeit eine übersichtliche Darstellung der eingestellten Werte, der aktuellen Ausgangswerte, des Betriebzustandes und der aktuellen Belegung der Tasten.
Für alle benötigten Informationen und Einstellungen wird der Anwender durch ein übersichtliches Menü geführt.
Istwerte und Sollwerte von Ausgangsspannung, -strom und -leistung werden auf dem Grafikdisplay übersichtlich dargestellt. Die Betriebszustände des Gerätes, die Menüführung und die momentane Belegung der Tasten werden im Display so angezeigt, daß es dem Anwender möglich ist, das Gerät intuitiv zu bedienen.
Mittels Drehknöpfen können Spannung, Strom, Leistung und optional der Innenwiderstand eingestellt werden. Sie dienen außerdem dazu, Einstellungen im Menü vornehmen zu können. Zum Schutz gegen Fehlbedienung können die Bedienelemente gesperrt werden.



Displays and controls
The easily readable graphic display shows a clear representation of set values, actual output values, the operational state and the current functions of the operation pushbuttons.
For all necessary information and adjustments the user is guided by a clear menu.
Set values and actual values of output voltage, output current and output power are clearly represented on the graphic display. The operating state of the device, the menu guidance and the current assignment of the pushbuttons are also shown on the display. So the user is able to operate the unit intuitively.
The adjustment of output voltage, output current and output power, or optional internal resistance, is done by two rotary knobs. These knobs are used to change values in the different menus as well. To prevent unintentional operations, all operation controls can be locked.

Voreinstellung der Ausgangswerte
Um die Ausgangswerte einzustellen, ohne daß der Ausgang aktiv ist, werden im Display die Sollwerte unter den Istwerten angezeigt. So kann der Anwender Ausgangsspannung, Ausgangsstrom und Ausgangsleistung (Modelle ab 1 kW) voreinstellen. Desweiteren können in einer Preset-Liste Werte hinterlegt werden. Diese kann der Benutzer aus der Liste auswählen, um oft benötigte Werte schnell einzustellen oder zwischen Werten zu springen.

Presetting of output values
In order to preset output values for voltage, current or power (models from 1 kW) without affecting the output condition, the set values are displayed below the actual values. Also four parameter blocks for U / I / P can be stored in a preset list. From this list, parameter sets can be used for frequently required values or in order to jump between values.

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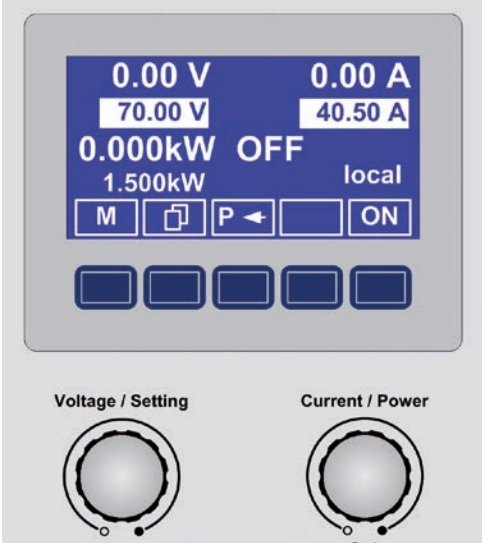
Anzeige- und Bedienelemente | **Display and control panel**

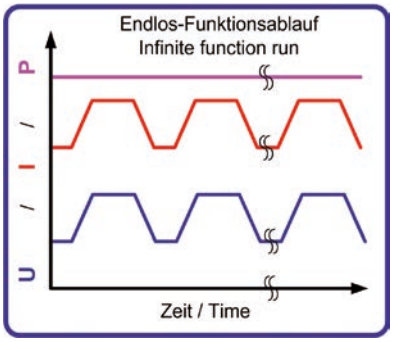
Istwerte Spannung und Strom	Actual values voltage and current
Sollwerte Spannung und Strom	Preset values voltage and current
Istwerte Leistung / Status Ausgang	Actual value power / status output
Sollwert Leistung / Status	Preset value power / status
Belegung der Tasten	Assignment of the pushbuttons
Folientastatur	Button panel
Drehknöpfe für Einstellungen	Rotary knobs for settings

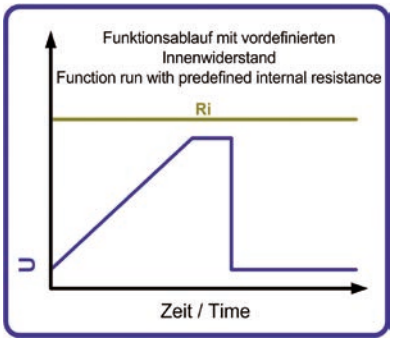


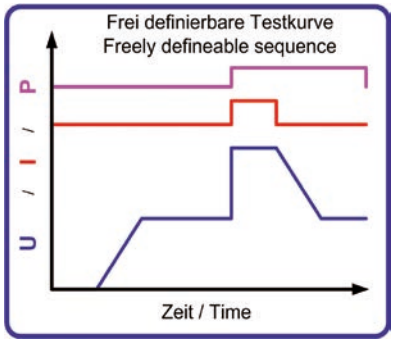
Funktionsmanager
Über das Bedienfeld können Funktionsabläufe gesteuert und archiviert werden.
Ein Funktionsablauf besteht aus bis zu 5 Sequenzen. Diese können dem Funktionsablauf in beliebiger Reihenfolge bis zu 5-mal, plus eine Wiederholrate, zugewiesen werden.
Eine Sequenz wird über 10 Sequenzpunkte, max. Ausgangsleistung oder Innenwiderstand (optional) und einer Wiederholrate zwischen 1 und 254 oder unendlich definiert. Ein kompletter Funktionsablauf kann zwischen 1 und 254 oder unendlich mal wiederholt werden. Somit sind die Möglichkeiten fast unbegrenzt.

Function manager
Functions consist of sequences and can be modified on the control panel.
Up to five different sequences can be assigned to a function in any succession or be repeated up to five times.

For each sequence, the maximum power, or optionally the internal resistance, and a repetition value from once up to 254 times or endless can be configured.
As well, the repetition of a whole function can be configured from once up to 254 times or endless.



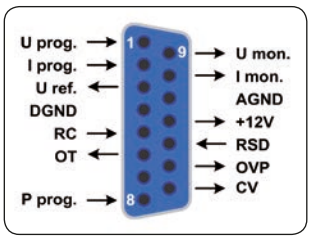




Benutzerprofile
Es besteht die Möglichkeit, über das Bedienfeld bis zu 4 verschiedene Benutzerprofile zu hinterlegen. Damit können anwendungsspezifische Parametersätze eingestellt und gespeichert werden.

User profiles
Via the control panel up to four different user profiles can be stored.
The user profiles are designed to set and save user specified parameter blocks.

Analogschnittstelle
Die serienmäßig eingebaute Analogschnittstelle befindet sich auf der Frontseite des Gerätes und verfügt über analoge Steuereingänge für 0...10 V oder 0...5 V, um Spannung, Strom und Leistung (nur Modelle ab 1 kW) von 0...100% zu programmieren. Ausgangsspannung und Ausgangsstrom können über analoge Monitorausgänge mit 0...10 V oder 0...5 V ausgelesen werden. Weiterhin gibt es Statuseingänge und -ausgänge.



P prog. nur bei Modellen ab 1kW /
P prog. only with models from 1kW

Analog interface
The built-in analog interface is located on the front of the device and provides inputs to set voltage, current and power (models from 1 kW) from 0...100% via a control voltage of 0 V...10 V or 0 V...5 V. To monitor output voltage and current, analog outputs of 0 V...10 V or 0 V...5 V can be read out. Furthermore, several inputs and outputs are available for controlling and monitoring the device status.

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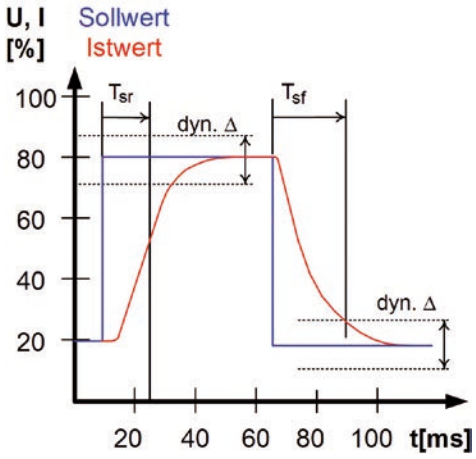
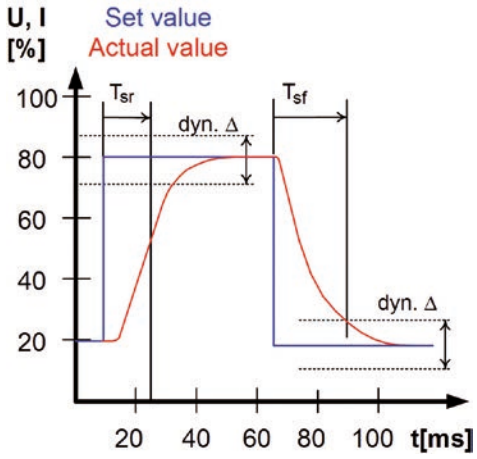
Überwachungsfunktionen

Alle Modelle bieten Überwachungsfunktionen (Supervision) für Strom und Spannung. Diese sind konfigurierbar, um eine Über- oder Unterspannung (ΔU, ΔI) zu überwachen und ggf. einen Alarm auszulösen. Weiterhin können die Anstiegs- und Abfallzeiten (t_{SR}, t_{SF}) bei Prüfabläufen, die eine bestimmte Vorgabe einhalten müssen, vom Gerät erfaßt werden und ggf. eine Meldung oder Alarm auslösen. Verdeutlichung:



Supervision features

All models of this series offer supervision features for voltage and current steps. The supervision is configurable to monitor voltage or current over- and undershooting (ΔU, ΔI), as well as rise and fall times (t_{SR}, t_{SF}) during test procedures which require to follow certain demands. In all cases, the device will supervise the condition and generate a notification or alert.
Representation:



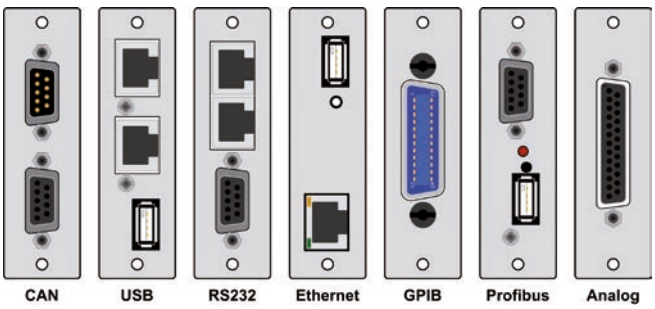
Optionen

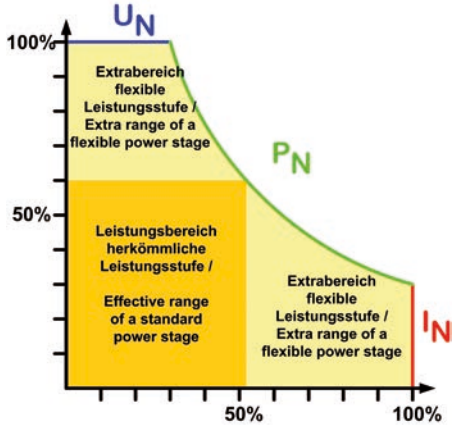
- Digitale, galvanisch getrennte Schnittstellenkarten für RS232, CAN, USB, GPIB (IEEE), Profibus oder Ethernet zur Steuerung per PC. Für diese Schnittstellen steht ein Steckplatz auf der Rückseite der Geräte zur Verfügung, so daß Nachrüstung oder Wechsel der Schnittstellen problemlos möglich sind. Die Schnittstellen werden vom Gerät automatisch eingebunden. Weiterhin gibt es eine kostenlose Windows-Software für RS232/USB/GPIB/Ethernet, die u. A. Datenaufzeichnung und halbautomatisches Steuern ermöglicht. Siehe Seiten 144 und 150.
- Analoge, galvanisch getrennte Schnittstellenkarte mit erweiterten Funktionen gegenüber der eingebauten Analogschnittstelle
- Simulierter, einstellbarer Innenwiderstand
- High speed - Höhere Regeldynamik (nur für Modelle ab 1 kW, siehe Seite 172)

Options

- Isolated digital interface cards for RS232, CAN, USB, GPIB (IEEE), Profibus or Ethernet to control the device by PC. The interface slot is located on the rear panel, making it easy for the user to plug in a new interface or to replace an existing one. The interface will be automatically detected by the device and requires no or only little configuration. Included with the interface cards is a free Windows software for RS232/USB/GPIB/Ethernet, which provides control and monitoring, data logging and semi-automatic sequences. See pages 144 and 150.
- Analog, galvanically isolated interface card with extended features compared to the built-in analog interface
- Simulated, adjustable internal resistance
- High speed ramping (only for models from 1 kW, also see page 172)

Schnittstellenkarten / Interface cards





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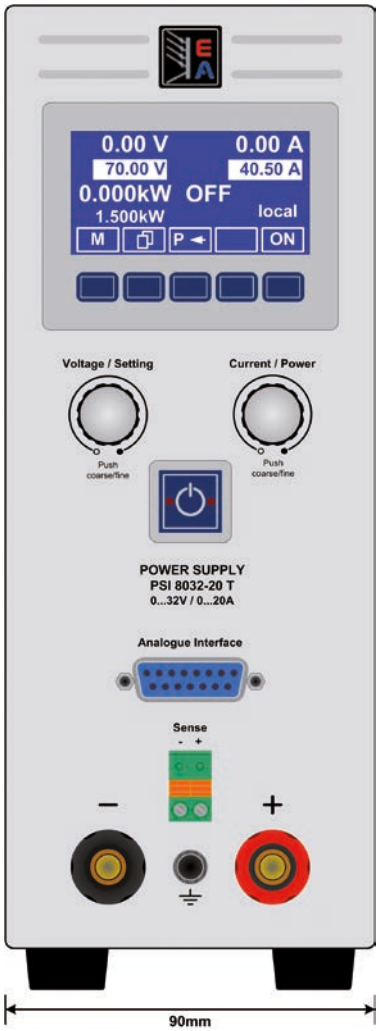



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Technische Daten	Technical Data	Serie / Series EA-PSI 8000 T
Eingangsspannung AC	**Input voltage AC**	90...264 V, 1ph+N
- Frequenz	- Frequency	45...65 Hz
- Leistungsfaktor	- Power factor	>0.99
Ausgangspannung DC	**Output voltage DC**	
- Genauigkeit	- Accuracy	<0.2%
- Stabilität bei 0-100% Last	- Load regulation 0-100%	<0.05%
- Stabilität bei ±10% ΔU_E	- Line regulation ±10% ΔU_{AC}	<0.02%
- Ausregelung 10-100% Last	- Regulation 10-100% load	<2 ms
- Anstiegszeit 10-90%	- Rise time 10-90%	Max. 30 ms
- Überspannungsschutz	- Overvoltage protection	Einstellbar, 0...110% U_{nenn} / adjustable, 0...110% U_{nom}
Ausgangsstrom	**Output current**	
- Genauigkeit	- Accuracy	<0.2%
- Stabilität bei 0-100% ΔU_{DC}	- Load regulation 0-100% ΔU_{DC}	<0.15%
- Stabilität bei ±10% ΔU_{AC}	- Line regulation ±10% ΔU_{AC}	<0.05%
Ausgangsleistung	**Output power**	Einstellbar bei Modellen ab 1000 W / Adjustable with models from 1000 W
- Genauigkeit	- Accuracy	<1%
Überspannungskategorie	**Overvoltage category**	2
Schutzvorrichtungen	**Protection**	OT, OVP (2
Spannungsfestigkeit	**Isolation**	
- Eingang zu Gehäuse	- Input to enclosure	2500 V DC
- Eingang zu Ausgang	- Input to output	2500 V DC
- Ausgang zu Gehäuse	- Output to enclosure	Max. 300 V am DC- gegen PE / Max. 300 V on DC- against PE
Verschmutzungsgrad	**Pollution degree**	2
Schutzklasse	**Protection class**	1
Analoge Schnittstelle	**Analog interface**	Eingebaut, 15-polige Sub-D-Buchse / Built in, 15-pole D-Sub, female
- Eingangsbereich	- Input range	0...5 V oder / or 0...10 V (umschaltbar / switchable)
- Genauigkeit U / I P	- Accuracy U / I / P	0...10 V: <0.2% 0...5 V: <0.4%
Reihenschaltung	**Series operation**	Möglich, mit max. Anhebung der DC-Minuspole bis 300 V DC gegenüber PE / Possible, with max. potential shift of 300 V DC of any DC minus against PE
Parallelschaltung	**Parallel operation**	Möglich, mit Master-Slave über analoge Schnittstelle / Possible, with master-slave via analog interface
Normen	**Standards**	EN 60950, EN 61326, EN 55022 Klasse B / Class B
Kühlung	**Cooling**	Lüfter / Fan
Betriebstemperatur	**Operation temperature**	0...50 °C
Lagertemperatur	**Storage temperature**	-20...70 °C
Relative Luftfeuchtigkeit	**Relative humidity**	<80%, nicht kondensierend / non-condensing
Betriebshöhe	**Operation altitude**	<2000 m
Mechanik	**Mechanics**	
- Gewicht	- Weight	320 W - 650 W: 3.8 kg 1000 W - 1500 W: 6.5 kg
- Abmessungen (BxHxT) (1	- Dimensions (WxHxD) (1	320 W - 650 W: 90x240x280 mm 1000 W - 1500 W: 90x240x395 mm

Modell	Spannung	Strom	Leistung	Wirkungsgrad	Restwelligkeit U (4	Restwelligkeit I (4	Programming (3			Artikelnummer
Model	**Voltage**	**Current**	**Power**	**Efficiency**	**Ripple U max.**	**Ripple I max.**	**U (typ.)**	**I (typ.)**	**P (typ.)**	**Ordering number**
PSI 8016-20 T	0...16 V	0...20 A	320 W	90.5%	40 mV_{PP} / 4 mV_{RMS}	60 mA_{PP} / 10 mA_{RMS}	4 mV	5 mA	-	09200400
PSI 8032-10 T	0...32 V	0...10 A	320 W	89%	100 mV_{PP} / 10 mV_{RMS}	35 mA_{PP} / 7 mA_{RMS}	9 mV	3 mA	-	09200401
PSI 8065-05 T	0...65 V	0...5 A	325 W	92%	150 mV_{PP} / 20 mV_{RMS}	12 mA_{PP} / 3 mA_{RMS}	18 mV	2 mA	-	09200402
PSI 8032-20 T	0...32 V	0...20 A	640 W	90.5%	100 mV_{PP} / 8 mV_{RMS}	65 mA_{PP} / 10 mA_{RMS}	9 mV	5 mA	-	09200403
PSI 8065-10 T	0...65 V	0...10 A	650 W	91%	150 mV_{PP} / 10 mV_{RMS}	25 mA_{PP} / 3 mA_{RMS}	18 mV	3 mA	-	09200404
PSI 8160-04 T	0...160 V	0...4 A	640 W	92%	120 mV_{PP} / 20 mV_{RMS}	3 mA_{PP} / 1 mA_{RMS}	43 mV	1.5 mA	-	09200405
PSI 8080-40 T	0...80 V	0...40 A	0...1000 W	93%	10 mV_{PP} / 4 mV_{RMS}	19 mA_{PP} / 7 mA_{RMS}	20 mV	11 mA	0.27 W	09200406
PSI 8360-10 T	0...360 V	0...10 A	0...1000 W	93%	30 mV_{PP} / 11 mV_{RMS}	1 mA_{PP} / 0.45 mA_{RMS}	88 mV	3 mA	0.27 W	09200408
PSI 8080-60 T	0...80 V	0...60 A	0...1500 W	93%	10 mV_{PP} / 4 mV_{RMS}	19 mA_{PP} / 7 mA_{RMS}	20 mV	16 mA	0.41 W	09200407
PSI 8360-15 T	0...360 V	0...15 A	0...1500 W	93%	50 mV_{PP} / 8 mV_{RMS}	1 mA_{PP} / 0.45 mA_{RMS}	88 mV	4 mA	0.41 W	09200409

(1 Nur Gehäuse, nicht über alles / Enclosure only, not overall
(2 Siehe Seite 173 / See page 173
(3 Programmierbare Auflösung ohne Gerätefehler / Programmable resolution without device error
(4 RMS-Wert: gemessen bei NF mit BWL 300 kHz, PP-Wert: gemessen bei HF mit BWL 20MHz / RMS value: measures at LF with BWL 300 kHz, PP value: measured at HF with BWL 20MHz

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ANEXO 6.

MANUAL DE USUARIO DE CARGA ELECTRÓNICA

ELEKTRONISCHE LAST 400W - 3600W / ELECTRONIC LOAD 400W - 3600W



Die mikroprozessorgesteuerte Last der Serie EA-EL 3000 und EA-EL 9000 erfüllt nahezu alle Anforderungen an moderne Verbraucherkonzepte im Labor- und Industriebereich.
Die vier gängigen Betriebsmodi Konstantspannung (CV), Konstantstrom (CC), Konstantleistung (CP) und Konstantwiderstand (CR) können mit den drei Steuermodi A, B und A/B beliebig zu kombiniert werden.

A oder B-Betrieb:
Zwei verschiedene Sollwerte für alle Betriebsmodi vorwählbar und manuell bzw. extern umschaltbar.

A/B-Betrieb:
Automatischer Wechsel zwischen A und B mit getrennt einstellbaren Sollwerten, Pulsdauer und Anstiegs- und Abfallzeit.

Batterietestmodus:
Kontrollierte Entladung von Batterien mit Amperestunden (Ah)-Zählung und Unterspannungsabschaltung, sowie Zeitanzeige in allen Betriebsarten.

Display:
Alle zum Betriebsmodus benötigten Istwerte und Sollwerte werden gleichzeitig und übersichtlich angezeigt.

Analoge Schnittstelle:
Hier stehen dem Anwender Sollwerteingänge für U/I/P/R, Monitorausgänge für U/I/P, Steuereingänge, Signalausgänge, Triggereingang (externer Wechsel zwischen A und B) zur Verfügung.

Triggerausgang:
Führt das interne Triggersignal heraus und kann zur Kontrolle oder zur Synchronisation mit anderen Anwendungen verwendet werden.

Kartenslot:
Für nachrüstbare Interfacekarten zur Ansteuerung der Last mit einem PC und Einbindung in bestehende Netzwerke wie z.B. CAN.

- **Leistungen:**
  400W, 1200W, 2400W, 3600W
- **Spannungen:**
  80V, 160V, 400V
- **Ströme:**
  50A bis 600A
- **Widerstand:**
  10Ω, 400Ω
- **A/B-Betrieb mit einstellbarer Pulsdauer (0,1ms...10s) und einstellbarem Anstieg (z.B. V/ms)**
- **4 Betriebsmodi:**
  CC (Constant Current)
  CV (Constant Voltage)
  CP (Constant Power)
  CR (Constant Resistance)
- **Analoge Schnittstelle**
- **Triggereingang für A o. B**
- **Triggerausgang**
- **Batterietestmodus**
- **Optionen:**
  RS232, CAN, USB, IEEE

- **Power:**
  400W, 1200W, 2400W, 3600W
- **Voltage:**
  80V, 160V, 400V
- **Current:**
  50A bis 600A
- **Resistance:**
  10Ω, 400Ω
- **A/B operation with adjustable pulse width (0.1ms...10s) and adjustable rise/fall (eg. V/ms)**
- **4 operation modes:**
  CC (Constant Current)
  CV (Constant Voltage)
  CP (Constant Power)
  CR (Constant Resistance)
- **Analogue interface**
- **Trigger input for A or B**
- **Trigger output**
- **Battery test mode**
- **Options:**
  RS232, CAN, USB, IEEE

The microprocessor controlled load of the series EA-EL 3000 and EA-EL 9000 complies nearly all requirements in modern load concepts for industrial and R&D area.
The four comon operation modes constant voltage (CV), constant current (CC), constant power (CP) and constant resistance (CR) can be used in any combination with the three control modes A, B and A/B.

A or B control:
Two different set values for all operation modes pre-selectable and switchable (manually or externally).

A/B control:
Automatic switching between A and B, with separately adjustable set values, pulse width and rise / fall time.

Battery test mode:
Controlled discharge of nearly all battery types with Ampere hours (Ah) counter, under-voltage shutdown and time count in all operation modes.

Display:
All actual and set values simultaneous.

Analogue Interface:
Set value inputs for V/A/P/R, monitor outputs for V/A/P, control inputs, signalling outputs, trigger input (external switching between A and B).

Trigger output:
Connects the internal trigger signal from the A/B control. Can be used to monitor or to synchronize with other applications.

Card slot:
For optionally expandable interface cards to control the load via a PC and to implement it into existing networks, like CAN.

ELEKTRONISCHE LAST 400W - 3600W / ELECTRONIC LOAD 400W - 3600W

Allgemeine Daten	General data	EA-EL 3000 & EA-EL 9000 Series
Eingangsdaten / Input data		Nennspannung, Strom & Leistung laut Tabelle / Rated voltage, current & power according type
		min. 1,5V für max. Strom, darunter Derating des Stromes gegen 0V,
		min. 1,5V f. max. current, below derating of current toward zero.
Spannungsregelung / Voltage regulation		
Einstellbereich / Adjusment range		0...U_{NENN}, 0...V_{RATED}
Auflösung / Resolution		10mV, 100mV >160V
Genauigkeit / Accuracy		<0,1%
Stromregelung / Current regulation		
Einstellbereich / Adjusment range		0...$I_{NENN,}$ 0...I_{RATED}
Auflösung / Resolution		10mA, 100mA >100A
Genauigkeit / Accuracy		<0,2%
Leistungsregelung / Power regulation		
Einstellbereich / Adjusment range		0...P_{NENN}, 0...P_{RATED}
Auflösung / Resolution		100mW, 1W >1000W
Genauigkeit / Accuracy		<2% (20W...P_{RATED})
Widerstandsregelung / Resistance regulation		
Einstellbereich 1 / Adjusment range 1		0...10Ω
Auflösung / Resolution		10 mΩ
Einstellbereich 2 / Adjusment range 2		0...400Ω
Auflösung / Resolution		100 mΩ
Genauigkeit / Accuracy		<2% (20...400Ω)
Dynamische Funktionen / Dynamic functions		
Pegel / Level		2 einstellbare Lastpegel / 2 adjustable load levels
Einschaltzeiten / turn on times		einstellbar, adjustable 0,05 ... 99,9sec.
Flankensteilheit / Slew rate		einstellbar / adjustable
Genauigkeit / Accuracy		±10% / ±0,2ms
Triggereingang / Trigger input		ext. Pegel Umschaltung, ext. level switching
Anstiegs- & Abfallzeit / Rise- & fall time		50µs (10...90% I_{NENN}/A_{RATED})
Batterietestfunktion / Mode function		
Modus / Mode		Strom, Leistung oder Widerstand / Current, power or resistance
Batterieschutz / Battery protection		Entladeschlussspannung einstellbar / Final discharging voltage adjustable
Anzeige / Indication		Zeit u. verbrauchte Batterie Kapazität / Time and absorbed battery capacity
Anzeige / Display		2 x 40 Zeichen,beleuchtet / 2 x 40 characters, illumenated
Analoge Schnittstelle / Analog interface		
Steuereingänge / Control inputs		0...10V für U,I,P,R (0...100% Nennwert) / 0...10V for V,A,P,R (0...100% rated value)
Monitorausgänge / Monitor outputs		0...10V für U,I (0...100% Nennwert) / 0...10V for V, A (0...100% rated value)
Steuersignale / Control signals		Intern / Extern, Input ON / OFF, R-Mode 10Ω / 400Ω
Meldesignale / Status signals		Überspannung / Übertemperatur / Over voltage / Over temperature
Ausgänge / Outputs		Referenzspannung / Reference voltage 10V
Kühlung / Cooling		Temperaturgeregelte Lüfter / Temperature regulated fan
Anschlüsse / Connections		
Lasteingang / Load input EA-EL 3000		Frontseite, Sicherheitsklemmen / Front side, safety sockets
Lasteingang / Load input EA-EL 9000		Rückseite, Schraubklemmen / Rear side, srew terminals
Fernfühlung / Remote sense		Rückseite, Schraubklemmen / Rear side, srew terminals

ELEKTRONISCHE LAST 400W - 3600W / ELECTRONIC LOAD 400W - 3600W

Technische Daten	Technical data	EA-EL 3160-60	EA-EL 3400-25
Netzeingangsspannung	Mains input voltage	115V / 230V umschaltbar / selectable	115V / 230V umschaltbar / selectable
DC-Eingangsspannung	DC-input voltage	0...160V	0...400V
DC-Eingangsstrom	DC-input current	0...60A	0...25A
DC-Eingangsleistung	DC-input power	0...400W	0...400W
Abmessungen BxHxT	Dimensions WxHxD	240 x 120 x 280mm	240 x 120 x 280mm
Gewicht	Weight	6,5kg	6,5kg
Artikel Nummer	Item No.	35320200	35320201

Technische Daten	Technical data	EA-EL 9080-200	EA-EL 9160-100	EA-EL 9400-50
Netzeingangsspannung	Mains input voltage	115V/230V wählbar/selectable	115V/230V wählbar/selectable	115V/230V wählbar/selectable
DC-Eingangsspannung	DC-input voltage	0...80V	0...160V	0...400V
DC-Eingangsstrom	DC-input current	0...200A	0...100A	0...50A
DC-Eingangsleistung	DC-input power	0...1200W	0...1200W	0...1200W
Überlast	Over load	2400W für / for 1min.	2400W für / for 1min.	2400W für / for 1min.
Abmessungen BxHxT	Dimensions WxHxD	19“ 2HE 460mm	19“ 2HE 460mm	19“ 2HE 460mm
Gewicht	Weight	13,0kg	13,0kg	13,0kg
Artikel Nummer	Item No.	33200230	33200233	33200236

Technische Daten	Technical data	EA-EL 9080-400	EA-EL 9160-200	EA-EL 9400-100
Netzeingangsspannung	Mains input voltage	115V/230V wählbar/selectable	115V/230V wählbar/selectable	115V/230V wählbar/selectable
DC-Eingangsspannung	DC-input voltage	0...80V	0...160V	0...400V
DC-Eingangsstrom	DC-input current	0...400A	0...200A	0...100A
DC-Eingangsleistung	DC-input power	0...2400W	0...2400W	0...2400W
Überlast	Over load	4800W für / for 1min.	4800W für / for 1min.	4800W für / for 1min.
Abmessungen BxHxT	Dimensions WxHxD	19“ 4HE 460mm	19“ 4HE 460mm	19“ 4HE 460mm
Gewicht	Weight	25,0kg	25,0kg	25,0kg
Artikel Nummer	Item No.	33200231	33200234	33200237

Technische Daten	Technical data	EA-EL 9080-600	EA-EL 9160-300	EA-EL 9400-150
Netzeingangsspannung	Mains input voltage	115V/230V wählbar/selectable	115V/230V wählbar/selectable	115V/230V wählbar/selectable
DC-Eingangsspannung	DC-input voltage	0...80V	0...160V	0...400V
DC-Eingangsstrom	DC-input current	0...600A	0...300A	0...150A
DC-Eingangsleistung	DC-input power	0...3600W	0...3600W	0...3600W
Überlast	Over load	7200W für / for 1min.	7200W für / for 1min.	7200W für / for 1min.
Abmessungen BxHxT	Dimensions WxHxD	19“ 6HE 460mm	19“ 6HE 460mm	19“ 6HE 460mm
Gewicht	Weight	37,0kg	37,0kg	37,0kg
Artikel Nummer	Item No.	33200232	33200235	33200238

ANEXO 7.

MANUAL DE USUARIO DE PLC SIEMENS

SIEMENS

SIMATIC

S7
Controlador programable S7-1200

Manual de sistema

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11/2009
A5E02486683-02

Notas jurídicas

Filosofía en la señalización de advertencias y peligros

Este manual contiene las informaciones necesarias para la seguridad personal así como para la prevención de daños materiales. Las informaciones para su seguridad personal están resaltadas con un triángulo de advertencia; las informaciones para evitar únicamente daños materiales no llevan dicho triángulo. De acuerdo al grado de peligro las consignas se representan, de mayor a menor peligro, como sigue.

⚠DANGER
Significa que, si no se adoptan las medidas preventivas adecuadas **se producirá** la muerte, o bien lesiones corporales graves.

⚠WARNING
Significa que, si no se adoptan las medidas preventivas adecuadas **puede producirse** la muerte o bien lesiones corporales graves.

⚠CAUTION
con triángulo de advertencia significa que si no se adoptan las medidas preventivas adecuadas, pueden producirse lesiones corporales.

CAUTION
sin triángulo de advertencia significa que si no se adoptan las medidas preventivas adecuadas, pueden producirse daños materiales.

NOTICE
significa que puede producirse un resultado o estado no deseado si no se respeta la consigna de seguridad correspondiente.

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El producto/sistema tratado en esta documentación sólo deberá ser manejado o manipulado por **personal cualificado** para la tarea encomendada y observando lo indicado en la documentación correspondiente a la misma, particularmente las consignas de seguridad y advertencias en ella incluidas. Debido a su formación y experiencia, el personal cualificado está en condiciones de reconocer riesgos resultantes del manejo o manipulación de dichos productos/sistemas y de evitar posibles peligros.

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Hemos comprobado la concordancia del contenido de esta publicación con el hardware y el software descritos. Sin embargo, como es imposible excluir desviaciones, no podemos hacernos responsable de la plena concordancia. El contenido de esta publicación se revisa periódicamente; si es necesario, las posibles las correcciones se incluyen en la siguiente edición.

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Industry Sector
Postfach 48 48
90026 NÜRNBERG
ALEMANIA

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Prólogo

Objeto del manual

La gama S7-1200 abarca distintos controladores lógicos programables (PLCs) que pueden utilizarse para numerosas tareas. Gracias a su diseño compacto, bajo costo y amplio juego de instrucciones, los PLCs S7-1200 son idóneos para controlar una gran variedad de aplicaciones. Los modelos S7-1200 y el software de programación basado en Windows ofrecen la flexibilidad necesaria para solucionar las tareas de automatización.

Este manual contiene información sobre cómo montar y programar los PLCs S7-1200 y está dirigido a ingenieros, programadores, técnicos de instalación y electricistas que dispongan de conocimientos básicos sobre los controladores lógicos programables.

Nociones básicas

Para comprender este manual se requieren conocimientos básicos en el campo de la automatización y de los controladores lógicos programables.

Objeto del manual

Este manual es válido para el software STEP 7 Basic V10.5 y la gama de productos S7-1200. En los datos técnicos (Página 319) encontrará una lista completa de los productos S7-1200 descritos en el manual.

Homologaciones, marcado CE, C-Tick y otras normas

Para más información, consulte los datos técnicos (Página 319).

Service & Support

Además de nuestra documentación, ponemos nuestros conocimientos técnicos a su disposición en Internet:

http://www.siemens.com/automation/support-request
(http://www.siemens.com/automation/support-request)

Contacte con el representante de Siemens más próximo si tiene consultas de carácter técnico, así como para obtener información sobre los cursillos de formación o para pedir productos S7. Puesto que los representantes de Siemens han sido debidamente aleccionados y tienen conocimientos detallados sobre las operaciones, los procesos y la industria, así como sobre los distintos productos de Siemens empleados, pueden solucionar cualquier problema de forma rápida y eficiente.

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Sinopsis del producto

1

1.1 Introducción al PLC S7-1200

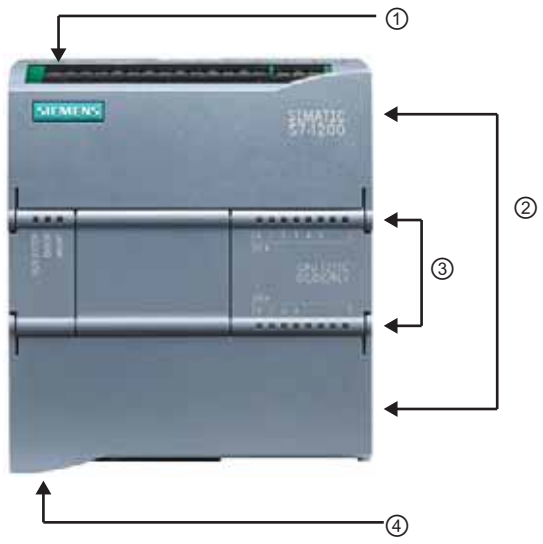
El controlador lógico programable (PLC) S7-1200 ofrece la flexibilidad y capacidad de controlar una gran variedad de dispositivos para las distintas tareas de automatización. Gracias a su diseño compacto, configuración flexible y amplio juego de instrucciones, el S7-1200 es idóneo para controlar una gran variedad de aplicaciones.

La CPU incorpora un microprocesador, una fuente de alimentación integrada, así como circuitos de entrada y salida en una carcasa compacta, conformando así un potente PLC. Una vez cargado el programa en la CPU, ésta contiene la lógica necesaria para vigilar y controlar los dispositivos de la aplicación. La CPU vigila las entradas y cambia el estado de las salidas según la lógica del programa de usuario, que puede incluir lógica booleana, instrucciones de contaje y temporización, funciones matemáticas complejas, así como comunicación con otros dispositivos inteligentes.

Numerosas funciones de seguridad protegen el acceso tanto a la CPU como al programa de control:

- Toda CPU ofrece protección por contraseña que permite configurar el acceso a sus funciones.
- Es posible utilizar la "protección de know-how" para ocultar el código de un bloque específico. Encontrará más detalles en el capítulo "Principios básicos de programación" (Página 99).

La CPU incorpora un puerto PROFINET para la comunicación en una red PROFINET. Los módulos de comunicación están disponibles para la comunicación en redes RS485 o RS232.



① Conector de corriente
② Conectores extraíbles para el cableado de usuario (detrás de las tapas)
② Ranura para Memory Card (debajo de la tapa superior)
③ LEDs de estado para las E/S integradas
④ Conector PROFINET (en el lado inferior de la CPU)

Los diferentes modelos de CPUs ofrecen una gran variedad de funciones y prestaciones que permiten crear soluciones efectivas destinadas a numerosas aplicaciones. Para más información sobre una CPU en particular, consulte los datos técnicos (Página 319).

Función	CPU 1211C	CPU 1212C	CPU 1214C
Dimensiones físicas (mm)	90 x 100 x 75		110 x 100 x 75
Memoria de usuario • Memoria de trabajo • Memoria de carga • Memoria remanente	 • 25 KB • 1 MB • 2 KB		 • 50 KB • 2 MB • 2 KB
E/S integradas locales • Digitales • Analógicas	 • 6 entradas/4 salidas • 2 entradas	 • 8 entradas/6 salidas • 2 entradas	 • 14 entradas/10 salidas • 2 entradas
Tamaño de la memoria imagen de proceso	1024 bytes para entradas (I) y 1024 bytes para salidas (Q)		
Área de marcas (M)	4096 bytes		8192 bytes
Ampliación con módulos de señales	Ninguna	2	8
Signal Board	1		
Módulos de comunicación	3 (ampliación en el lado izquierdo)		
Contadores rápidos • Fase simple • Fase en cuadratura	3 • 3 a 100 kHz • 3 a 80 kHZ	4 • 3 a 100 kHz 1 a 30 kHz • 3 a 80 kHz 1 a 20 kHz	6 • 3 a 100 kHz 3 a 30 kHz • 3 a 80 kHz 3 a 20 kHz
Salidas de impulsos	2		
Memory Card	SIMATIC Memory Card (opcional)		
Tiempo de respaldo del reloj de tiempo real	Típico: 10 días / Mínimo: 6 días a 40 °C		
PROFINET	1 puerto de comunicación Ethernet		
Velocidad de ejecución de funciones matemáticas con números reales	18 µs/instrucción		
Velocidad de ejecución booleana	0,1 µs/instrucción		

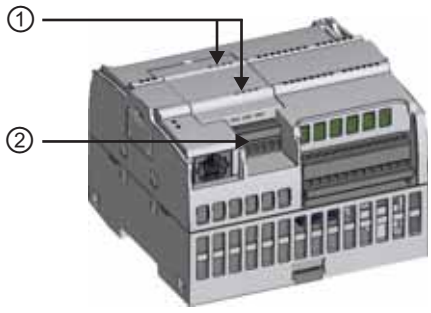
La gama S7-1200 ofrece una gran variedad de módulos de señales y Signal Boards que permiten ampliar las prestaciones de la CPU. También es posible instalar módulos de comunicación adicionales para soportar otros protocolos de comunicación. Para más información sobre un módulo en particular, consulte los datos técnicos (Página 319).

Módulo		Sólo entradas	Sólo salidas	Entradas y salidas
Módulo de señales (SM)	Digital	8 entradas DC	8 salidas DC 8 salidas de relé	8 entradas DC/8 salidas DC 8 entradas DC/8 salidas de relé
		16 entradas DC	16 salidas DC 16 salidas de relé	16 entradas DC/16 salidas DC 16 entradas DC/16 salidas de relé
	Analógico	4 entradas analógicas 8 entradas analógicas	2 salidas analógicas 4 salidas analógicas	4 entradas analógicas/2 salidas analógicas
Signal Board (SB)	Digital	-	-	2 entradas DC/2 salidas DC
	Analógico	-	1 salida analógica	-
Módulo de comunicación (CM) • RS485 • RS232				

1.2 Signal Boards

Una Signal Board (SB) permite agregar E/S a la CPU. Es posible agregar una SB con E/S digitales o analógicas. Una SB se conecta en el frente de la CPU.

- SB con 4 E/S digitales (2 entradas DC y 2 salidas DC)
- SB con 1 entrada analógica

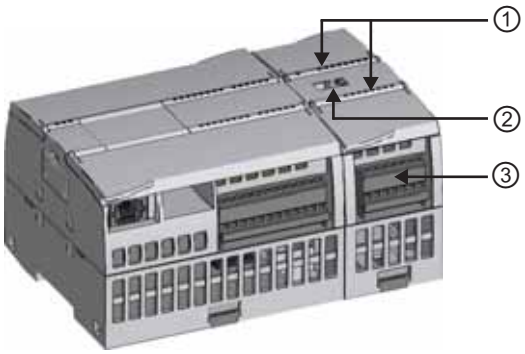


① LEDs de estado en la SB

② Conector extraíble para el cableado de usuario

1.3 Módulos de señales

Los módulos de señales se pueden utilizar para agregar funciones a la CPU. Los módulos de señales se conectan a la derecha de la CPU.



① LEDs de estado para las E/S del módulo de señales
② Conector de bus
③ Conector extraíble para el cableado de usuario

1.4 Módulos de comunicación

La gama S7-1200 provee módulos de comunicación (CMs) que ofrecen funciones adicionales para el sistema. Hay dos módulos de comunicación, a saber: RS232 y RS485.

- La CPU soporta como máximo 3 módulos de comunicación
- Todo CM se conecta en lado izquierdo de la CPU (o en lado izquierdo de otro CM)



① LEDs de estado del módulo de comunicación
② Conector de comunicación

1.5 STEP 7 Basic

El software STEP 7 Basic ofrece un entorno amigable que permite desarrollar, editar y observar la lógica del programa necesaria para controlar la aplicación, incluyendo herramientas para gestionar y configurar todos los dispositivos del proyecto, tales como PLCs y dispositivos HMI. STEP 7 Basic ofrece dos lenguajes de programación (KOP y FUP) que permiten desarrollar el programa de control de la aplicación de forma fácil y eficiente. Asimismo, incluye las herramientas para crear y configurar los dispositivos HMI en el proyecto.

Para poder encontrar la información necesaria, STEP 7 Basic ofrece un completo sistema de ayuda en pantalla.

Para instalar STEP 7 Basic, inserte el CD en la unidad de CDROM del equipo. El asistente de instalación arranca automáticamente y le guía por el proceso de instalación. Encontrará más información en el archivo Léame.

Nota

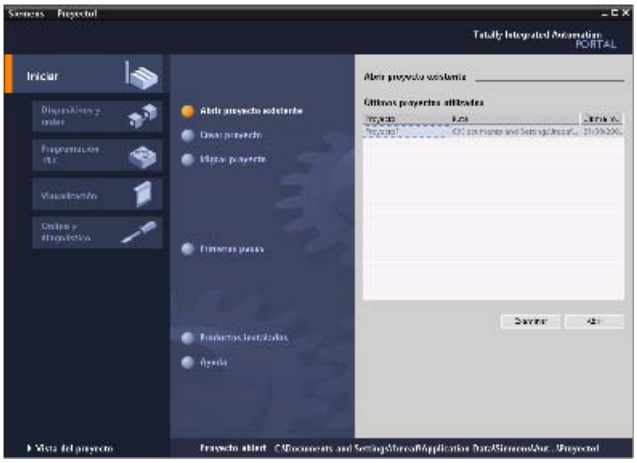
Para instalar el software STEP 7 Basic en un equipo con el sistema operativo Windows 2000, Windows XP o Windows Vista, es preciso iniciar la sesión con derechos de administrador.

1.5.1 Diferentes vistas que facilitan el trabajo

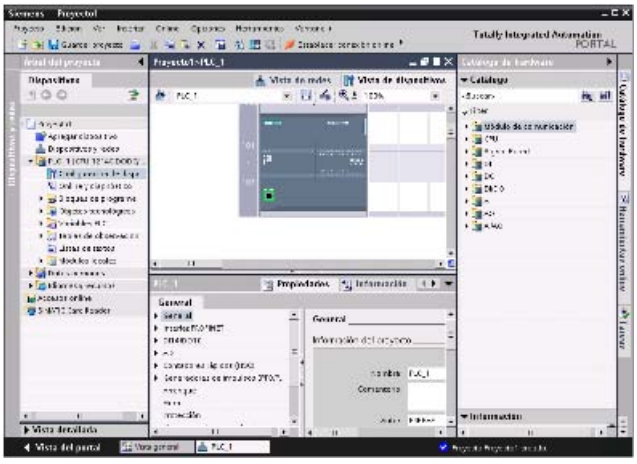
Para aumentar la productividad, el Totally Integrated Automation Portal (TIA Portal) ofrece dos vistas diferentes de las herramientas disponibles, a saber: distintos portales orientados a tareas organizados según las funciones de las herramientas (vista del portal) o una vista orientada a los elementos del proyecto (vista del proyecto). El usuario puede seleccionar la vista que considere más apropiada para trabajar eficientemente. Con un solo clic es posible cambiar entre la vista del portal y la vista del proyecto.

La vista del portal ofrece una vista funcional de las tareas del proyecto y organiza las funciones de las herramientas según las tareas que deban realizarse, p. ej. configurar los componentes de hardware y las redes.

Es posible determinar fácilmente el procedimiento y la tarea que debe seleccionarse.



La vista del proyecto proporciona acceso a todos los componentes del proyecto. Puesto que todos estos componentes se encuentran en un solo lugar, es posible acceder fácilmente a todas las áreas del proyecto. El proyecto contiene todos los elementos que se han creado o finalizado.



1.5.2 Acceso fácil a la ayuda

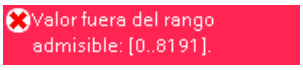
Respuestas rápidas a las preguntas

Para poder solucionar las tareas de forma rápida y eficiente, STEP 7 Basic proporciona asistencia inteligente donde se necesite:

- En los campos de entrada se ofrece ayuda "roll-out" (desplegable) que facilita la entrada de la información correcta (rangos válidos y tipo de datos). Por ejemplo, si se introduce un valor incorrecto, aparecerá un texto de aviso en el que se indica el rango de valores válidos.
- Algunos de los tooltips de la interfaz de usuario (p. ej. en las instrucciones) se abren "en cascada", ofreciendo información adicional. Algunos de los tooltips en cascada contienen enlaces a temas específicos del sistema de información (ayuda en pantalla).

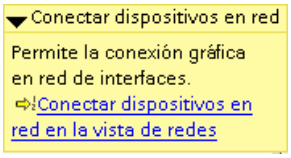
Además, STEP 7 Basic ofrece un completo sistema de información que describe detalladamente las funciones de las herramientas SIMATIC.

Ayuda "roll-out" y tooltips en cascada



En los campos de entrada de los diferentes diálogos y Task Cards se ofrece asistencia en forma de un cuadro de texto desplegable que informa proporciona información acerca del rango o los tipos de datos requeridos.

Los elementos de la interfaz de usuario ofrecen tooltips que explican la función del elemento en cuestión. Algunos de los elementos, tales como los botones "Abrir" o "Guardar", no requieren información adicional. No obstante, algunos de los elementos ofrecen un mecanismo que permite ver una descripción adicional del elemento en cuestión. Esta información adicional se visualiza en un tooltip "en cascada". (Un triángulo negro junto al tooltip indica que hay más información disponible.)



El tooltip aparece cuando se sitúa el puntero del ratón sobre un elemento de la interfaz de usuario. Para visualizar información adicional, el puntero del ratón se debe situar sobre el tooltip. Algunos de los tooltips en cascada también ofrecen enlaces a temas específicos del sistema de información. Al hacer clic en el enlace se visualiza el tema en cuestión.

Sistema de información

STEP 7 Basic pone a disposición un completo sistema de información online y Ayuda en pantalla, en el que se describen todos los productos SIMATIC que se han instalado. El sistema de información incluye asimismo información de referencia y ejemplos. Para visualizar el sistema de información, seleccione uno de los puntos de acceso siguientes:

- En la vista del portal, seleccione el portal de inicio y haga clic en "Ayuda".
- En la vista del proyecto, elija el comando "Mostrar ayuda" del menú "Ayuda".
- En un tooltip en cascada, haga clic en un enlace para ver más información sobre ese tema.

El sistema de información se abre en una ventana que no oculta las áreas de trabajo.

Haga clic en el botón "Mostrar/ocultar contenido" del sistema de información para ver el contenido y desacoplar la ventana de ayuda. Entonces se puede cambiar el tamaño de la ventana de ayuda. Utilice las fichas "Contenido" o "Índice" para buscar un tema o palabra clave en el sistema de información.

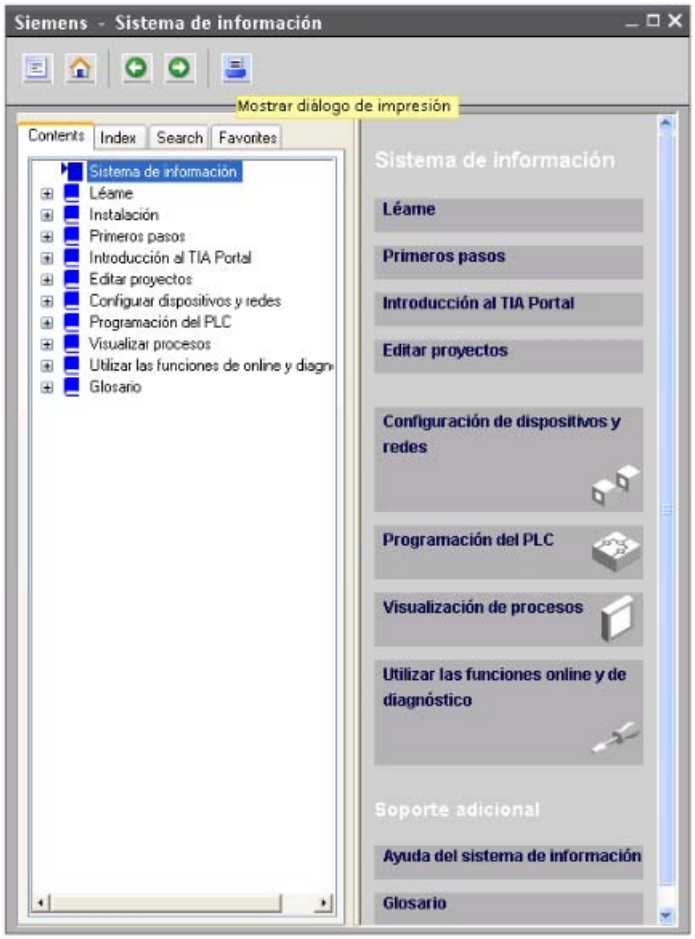
Ventana de ayuda (estándar)	Ventana de ayuda con contenido visualizado
	

Nota

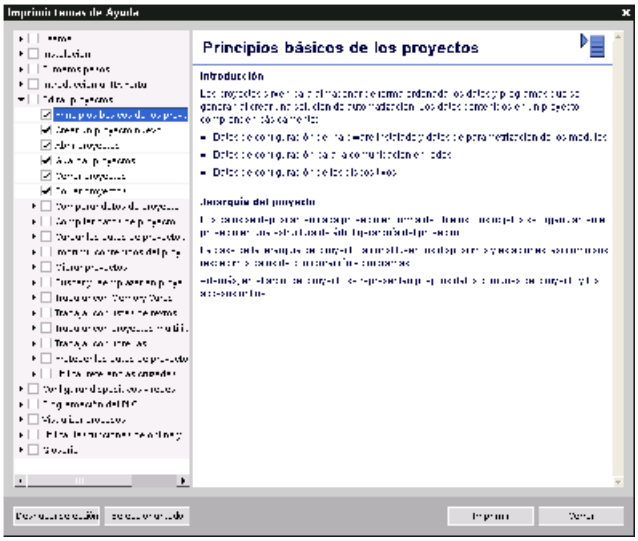
Si STEP 7 Basic está maximizado y se hace clic en el botón "Mostrar/ocultar contenido", no se desacoplará la ventana de ayuda. Haga clic en el botón "Acoplar" para desacoplar la ventana de ayuda. Entonces se puede desplazar la ventana de ayuda y cambiar su tamaño.

Imprimir temas del sistema de información

Para imprimir desde el sistema de información, haga clic en el botón "Imprimir" de la ventana de ayuda.



Para imprimir desde el sistema de información, haga clic en el botón "Imprimir" de la ventana de ayuda.



El diálogo "Imprimir" permite seleccionar los temas que se desean imprimir. Asegúrese de que se visualiza un tema en la ventana. Luego es posible seleccionar cualquier otro tema para imprimirlo. Haga clic en el botón "Imprimir" para enviar los temas seleccionados a la impresora.

1.6 Visualizadores

Puesto que la visualización se está convirtiendo cada vez más en un componente estándar de la mayoría de las máquinas, los Basic Panels SIMATIC HMI ofrecen dispositivos con pantalla táctil para tareas básicas de control y supervisión. Todos los paneles tienen el tipo de protección IP65 y certificación CE, UL, cULus y NEMA 4x.



KTP 400 Basic PN

- Mono (STN, escala de grises)
- Pantalla táctil de 4 pulgadas con 4 teclas táctiles
- Vertical u horizontal
- Tamaño: 3.8"
- Resolución: 320 x 240

- 128 variables
- 50 pantallas de proceso
- 200 alarmas
- 25 curvas
- 32 KB memoria de recetas
- 5 recetas, 20 registros, 20 entradas



KTP 600 Basic PN

- Color (TFT, 256 colores) o monocromo (STN, escala de grises)
- Pantalla táctil de 6 pulgadas con 6 teclas táctiles
- Vertical u horizontal
- Tamaño: 5.7"
- Resolución: 320 x 240

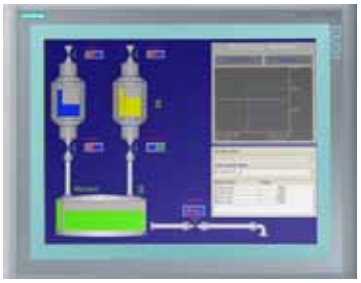
- 128 variables
- 50 pantallas de proceso
- 200 alarmas
- 25 curvas
- 32 KB memoria de recetas
- 5 recetas, 20 registros, 20 entradas



KTP1000 Basic PN

- Color (TFT, 256 colores)
- Pantalla táctil de 10 pulgadas
  con 8 teclas táctiles
- Tamaño: 10.4"
- Resolución: 640 x 480

- 256 variables
- 50 pantallas de proceso
- 200 alarmas
- 25 curvas
- 32 KB memoria de recetas
- 5 recetas, 20 registros, 20 entradas



TP1500 Basic PN

- Color (TFT, 256 colores)
- Pantalla táctil de 15 pulgadas
- Tamaño: 15.1"
- Resolución: 1024 x 768

- 256 variables
- 50 pantallas de proceso
- 200 alarmas
- 25 curvas
- 32 KB memoria de recetas (memoria flash integrada)
- 5 recetas, 20 registros, 20 entradas

Montaje

2

Los equipos S7-1200 son fáciles de montar. El S7-1200 puede montarse en un panel o en un raíl DIN, bien sea horizontal o verticalmente. El tamaño pequeño del S7-1200 permite ahorrar espacio.

⚠ ADVERTENCIA

Los PLCs S7-1200 SIMATIC son controladores abiertos. Por este motivo, el S7-1200 debe montarse en una carcasa, un armario eléctrico o una sala de control. Sólo el personal autorizado debe tener acceso a la carcasa, el armario eléctrico o la sala de control.

Si no se cumplen los requisitos de montaje, pueden producirse la muerte, lesiones corporales graves y/o daños materiales.

Vigile siempre los requisitos de montaje de los PLCs S7-1200.

Alejar los dispositivos S71200 de fuentes de calor, alta tensión e interferencias

Como regla general para la disposición de los dispositivos del sistema, los aparatos que generan altas tensiones e interferencias deben mantenerse siempre alejados de los equipos de baja tensión y de tipo lógico, tales como el S71200.

Al configurar la disposición del S7-1200 en el panel, se deben tener en cuenta los aparatos que generan calor y disponer los equipos electrónicos en las zonas más frías del armario eléctrico. Si se reduce la exposición a entornos de alta temperatura, aumentará la vida útil de cualquier dispositivo electrónico.

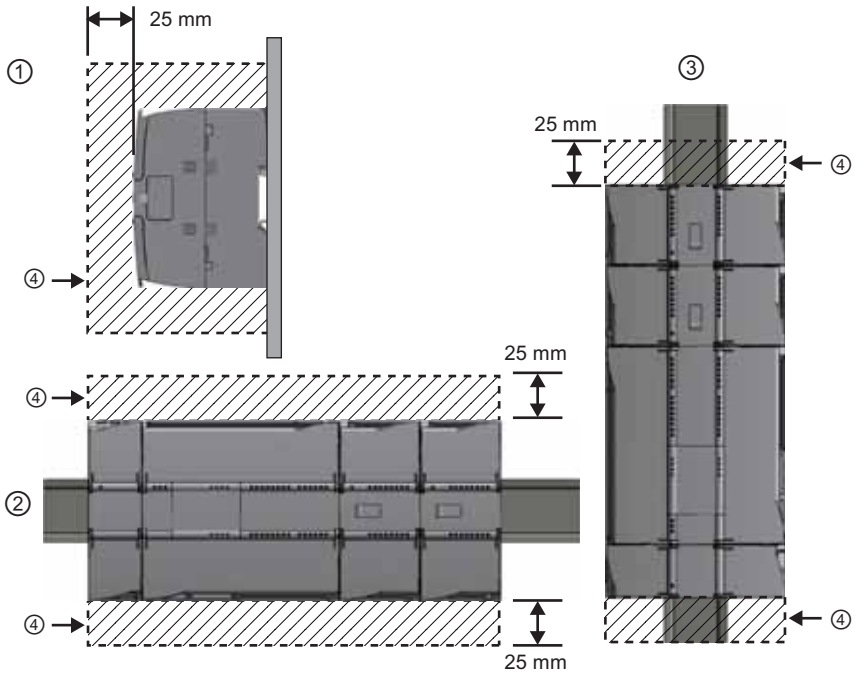
También se debe considerar la ruta del cableado de los dispositivos montados en el panel. Evite tender las líneas de señales de baja tensión y los cables de comunicación en un mismo canal junto con los cables AC y DC de alta energía y conmutación rápida.

Prever espacio suficiente para la refrigeración y el cableado

La refrigeración de los dispositivos S71200 se realiza por convección natural. Para la refrigeración correcta es preciso dejar un espacio mínimo de 25 mm por encima y por debajo de los dispositivos. Asimismo, se deben prever como mínimo 25 mm de profundidad entre el frente de los módulos y el interior de la carcasa.

⚠ PRECAUCIÓN
En el montaje vertical, la temperatura ambiente máxima admisible se reduce en 10 grados centígrados. Un sistema S7-1200 montado verticalmente debe orientarse de manera que la CPU se encuentre en el extremo inferior del conjunto.

Al planificar la disposición del sistema S71200, prevea espacio suficiente para el cableado y la conexión de los cables de comunicación.



① Vista lateral
② Montaje horizontal
③ Montaje vertical
④ Espacio libre

Corriente necesaria

La CPU dispone de una fuente de alimentación interna que suministra energía eléctrica a la CPU, los módulos de señales, la Signal Board y los módulos de comunicación, así como otros equipos consumidores de 24 V DC.

En los datos técnicos (Página 319) encontrará más información sobre la corriente de 5 V DC que suministra la CPU y la corriente de 5 V DC que requieren los módulos de señales, la Signal Board y los módulos de comunicación. En "Calcular la corriente necesaria" (Página 361) encontrará más información sobre cómo determinar cuánta energía (o corriente) puede proveer la CPU para la configuración.

La CPU provee una alimentación de sensores de 24 V DC que puede suministrar 24 V DC a las entradas y bobinas de relé de los módulos de señales, así como a otros equipos consumidores. Si los requisitos de corriente de 24 V DC exceden la capacidad de la alimentación de sensores, es preciso añadir una fuente de alimentación externa de 24 V DC al sistema. En los datos técnicos (Página 319) se indica la corriente necesaria para la alimentación de sensores de 24 V DC de las distintas CPUs S7-1200.

Si se requiere una fuente de alimentación externa de 24 V DC, vigile que no se conecte en paralelo con la alimentación de sensores de la CPU. Para aumentar la protección contra interferencias, se recomienda conectar los cables neutros (M) de las distintas fuentes de alimentación.

⚠ ADVERTENCIA

Si se conecta una fuente de alimentación externa de 24 V DC en paralelo con la fuente de alimentación de sensores de 24 V DC, puede surgir un conflicto entre ambas fuentes, ya que cada una intenta establecer su propio nivel de tensión de salida.

Este conflicto puede reducir la vida útil u ocasionar la avería inmediata de una o ambas fuentes de alimentación y, en consecuencia, el funcionamiento imprevisible del sistema PLC. El funcionamiento imprevisible puede producir la muerte, lesiones corporales graves y/o daños materiales.

La fuente de alimentación DC de sensores y cualquier fuente de alimentación externa deben alimentar diferentes puntos.

Algunos puertos de entrada de alimentación de 24 V DC del sistema S7-1200 están interconectados, teniendo un circuito lógico común que conecta varios bornes M. Por ejemplo, los circuitos siguientes están interconectados si no tienen aislamiento galvánico según las hojas de datos técnicos: la fuente de alimentación de 24 V DC de la CPU, la entrada de alimentación de la bobina de relé de un SM, o bien la fuente de alimentación de una entrada analógica sin aislamiento galvánico. Todos los bornes M sin aislamiento galvánico deben conectarse al mismo potencial de referencia externo.

⚠ ADVERTENCIA

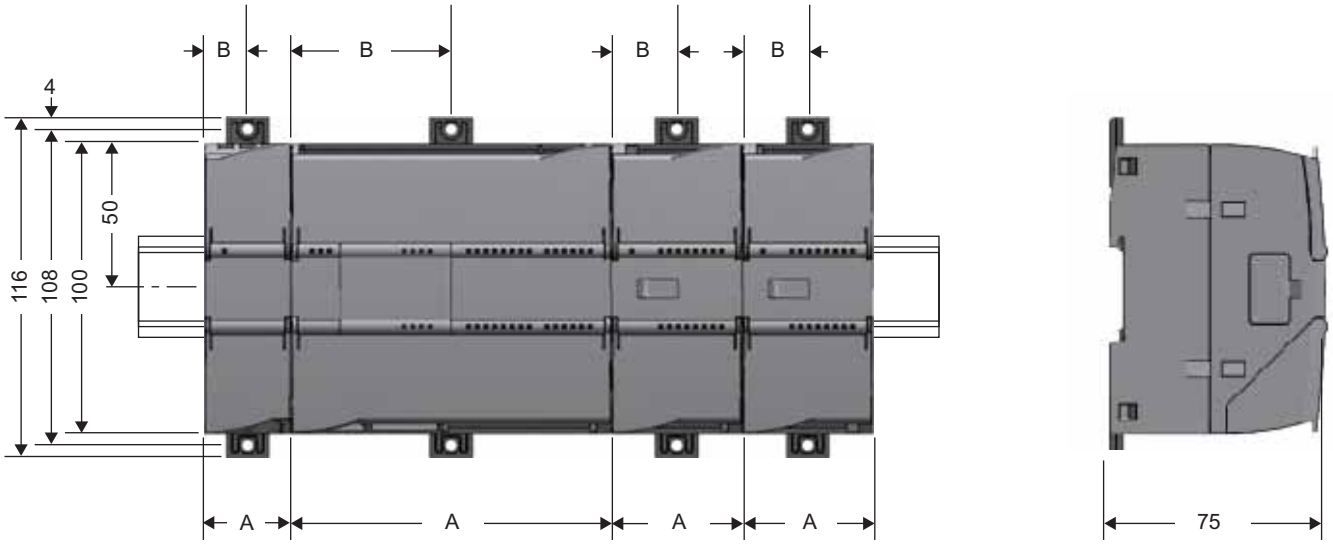
Si los bornes M sin aislamiento galvánico se conectan a diferentes potenciales de referencia, circularán corrientes indeseadas que podrían averiar o causar reacciones inesperadas en el PLC y los equipos conectados.

Si no se cumplen estas directrices, es posible que se produzcan averías o reacciones inesperadas que podrían causar la muerte, lesiones corporales graves y/o daños materiales.

Asegúrese que todos los bornes M sin aislamiento galvánico de un sistema S7-1200 están conectados al mismo potencial de referencia.

2.2 Procedimientos de montaje y desmontaje

Dimensiones de montaje (mm)



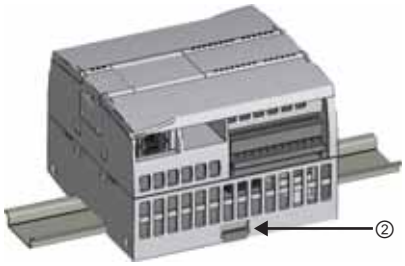
Dispositivos S7-1200		Ancho A	Ancho B
CPUs:	CPU 1211C y CPU 1212C	90 mm	45 mm
	CPU 1214C	110 mm	55 mm
Módulos de señales:	8 y 16 E/S, DC y relé (8I, 16I, 8Q, 16Q, 8I/8Q) Analógicos (4AI, 8AI, 4AI/4AQ, 2AQ, 4AQ)	45 mm	22,5 mm
	16I/16Q relé (16I/16Q)	70 mm	35 mm
Módulos de comunicación:	CM 1241 RS232 y CM 1241 RS485	30 mm	15 mm

Las CPUs, los SMs y CMs pueden montarse en un perfil DIN o en un panel. Utilice los clips del módulo previstos para el perfil DIN para fijar el dispositivo al perfil. Estos clips también pueden extenderse a otra posición para poder montar la unidad directamente en un panel. La dimensión interior del orificio para los clips de fijación en el dispositivo es 4,3 mm.

Es preciso prever una zona de disipación de 25 mm por encima y por debajo de la unidad para que el aire pueda circular libremente.

Montaje y desmontaje de dispositivos S7-1200

La CPU se puede montar fácilmente en un perfil estándar o en un panel. Los clips de fijación permiten fijar el dispositivo al perfil DIN. Estos clips también encajan en una posición extendida para proveer orificios de montaje que permiten montar el dispositivo directamente en un panel.



①



③

① Montaje en perfil DIN
② Clip de fijación al perfil enclavado
③ Montaje en panel
④ Clip de fijación en posición extendida para el montaje en panel

Antes de montar o desmontar cualquier dispositivo eléctrico, asegúrese que se ha desconectado la alimentación. Asegúrese también que está desconectada la alimentación eléctrica de todos los dispositivos conectados.

⚠ ADVERTENCIA

Si el S7-1200 o los dispositivos conectados se montan o desmontan estando conectada la alimentación, puede producirse un choque eléctrico o un funcionamiento inesperado de los dispositivos.

Si la alimentación del S7-1200 y de los dispositivos conectados no se desconecta por completo antes del montaje o desmontaje, podrían producirse la muerte, lesiones corporales graves y/o daños materiales debidos a choques eléctricos o al funcionamiento inesperado de los equipos.

Respete siempre las medidas de seguridad necesarias y asegúrese que la alimentación del S7-1200 está desconectada antes de montar o desmontar las CPUs S7-1200 o los equipos conectados.

Al sustituir o montar un dispositivo S7-1200, vigile que se utilice siempre el módulo correcto o un dispositivo equivalente.

⚠ ADVERTENCIA

El montaje incorrecto de un módulo S7-1200 puede ocasionar el funcionamiento impredecible del programa del S7-1200.

Si un dispositivo S7-1200 no se sustituye por el mismo modelo o si no se monta con la orientación correcta y en el orden previsto, podrían producirse la muerte, lesiones corporales graves y/o daños materiales debido al funcionamiento inesperado del equipo.

Sustituya un dispositivo S7-1200 por el mismo modelo y móntelo con la orientación y posición correctas.

2.2.1 Montaje y desmontaje de la CPU

Montaje

La CPU se puede montar en un panel o en un perfil DIN.

Nota

Conecte los módulos de comunicación necesarios a la CPU y monte el conjunto en forma de unidad. Los módulos de señales se montan por separado una vez montada la CPU.

Para montar la CPU en un panel, proceda del siguiente modo:

1. Posicione y taladre los orificios de montaje (M4 o estándar americano n.º 8) según las dimensiones de montaje indicadas en la tabla.
2. Extienda los clips de fijación del módulo. Asegúrese que los clips de fijación al perfil DIN en los lados superior e inferior de la CPU están en posición extendida.
3. Atornille el módulo al panel utilizando tornillos dispuestos en los clips.

Nota

Si el sistema está sometido a vibraciones fuertes o si se monta verticalmente, el montaje en panel ofrece mayor protección al S7-1200.

Para montar la CPU en un perfil DIN, proceda del siguiente modo:

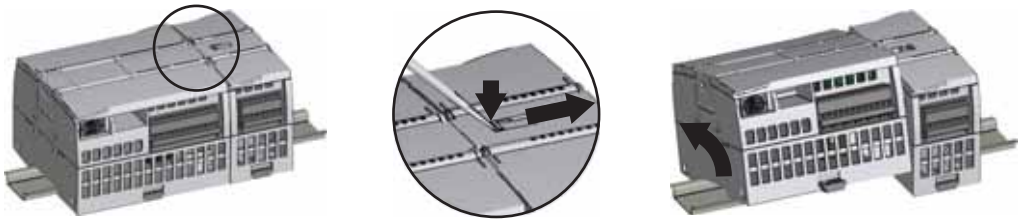




1. Monte el perfil DIN. Atornille el perfil al panel de montaje dejando un espacio de 75 mm entre tornillo y tornillo.
2. Enganche la CPU por el lado superior del perfil.
3. Extraiga el clip de fijación en el lado inferior de la CPU de manera que asome por encima del perfil.
4. Gire la CPU hacia abajo para posicionarla correctamente en el perfil.
5. Oprima los clips hasta que la CPU encaje en el perfil.

Desmontaje

Para preparar la CPU para el desmontaje, desconecte la alimentación eléctrica y los conectores de E/S y retire el cableado y demás cables de la CPU. Desmonte la CPU y los módulos de comunicación conectados en forma de conjunto. Todos los módulos de señales deben permanecer montados.



Si un módulo de señales está conectado a la CPU, retraiga el conector de bus:

1. Coloque un destornillador junto a la lengüeta en el lado superior del módulo de señales.
2. Oprima hacia abajo para desenclavar el conector de la CPU.
3. Desplace la lengüeta por completo hacia la derecha.

Desmonte la CPU:

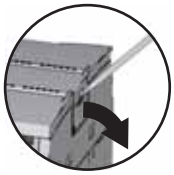
1. Extraiga el clip de fijación para desenclavar la CPU del perfil DIN.
2. Gire la CPU hacia arriba, extráigala del perfil y retírela del sistema.

2.2.2 Montaje y desmontaje de un módulo de señales

Montaje

El SM se monta una vez montada la CPU.





Retire la tapa del conector en el lado derecho de la CPU.

- Inserte un destornillador en la ranura arriba de la tapa.
- Haga palanca suavemente en el lado superior de la tapa y retírela. Guarde la tapa para poder reutilizarla.



Coloque el SM junto a la CPU.

1. Enganche el SM por el lado superior del perfil DIN.
2. Extraiga el clip de fijación inferior para colocar el SM sobre el perfil.
3. Gire el SM hacia abajo hasta su posición junto a la CPU y oprima el clip de fijación inferior para enclavar el SM en el perfil.



Extienda el conector de bus.

1. Coloque un destornillador junto a la lengüeta en el lado superior del SM.
2. Desplace la lengüeta por completo hacia la izquierda para extender el conector de bus hacia la CPU.



Al extender el conector de bus se crean las conexiones mecánicas y eléctricas para el SM.

Siga el mismo procedimiento para montar un módulo de señales en otro módulo de señales.

Desmontaje

Cualquier SM se puede desmontar sin necesidad de desmontar la CPU u otros SMs. Para preparar el SM para el desmontaje, desconecte la alimentación eléctrica de la CPU y los conectores de E/S y retire el cableado del SM.

Retraiga el conector de bus.

1. Coloque un destornillador junto a la lengüeta en el lado superior del SM.
2. Oprima hacia abajo para desenclavar el conector de la CPU.
3. Desplace la lengüeta por completo hacia la derecha.



Si hay otro SM en el lado derecho, repita este procedimiento para ese SM.

Desmonte el SM:

1. Extraiga el clip de fijación inferior para desenclavar el SM del perfil DIN.
2. Gire el SM hacia arriba y extráigalo del perfil. Retire el SM del sistema.
3. En caso necesario, cubra el conector de bus de la CPU para impedir que se ensucie.



Siga el mismo procedimiento para desmontar un módulo de señales de otro módulo de señales.

2.2.3 Montaje y desmontaje de un módulo de comunicación

Montaje

Acople el CM a la CPU antes de montar el conjunto en forma de unidad en el perfil DIN o panel.

Retire la tapa de bus en el lado izquierdo de la CPU:

1. Inserte un destornillador en la ranura arriba de la tapa de bus.
2. Haga palanca suavemente en el lado superior de la tapa.

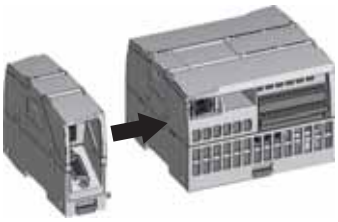




Retire la tapa de bus. Guarde la tapa para poder reutilizarla.

Conecte las unidades:

1. Alinee el conector de bus y las clavijas del CM con los orificios de la CPU.
2. Empuje firmemente una unidad contra la otra hasta que encajen las clavijas.





Montar las unidades en un perfil DIN o panel.

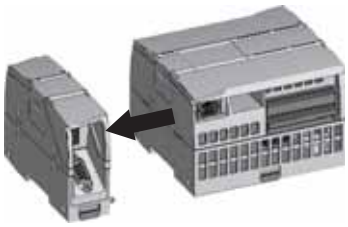
1. Para el montaje en un raíl DIN, asegúrese de que el clip de fijación superior está en la posición enclavada (interior) y que el clip de fijación inferior está extendido, tanto en la CPU como en los CMs acoplados.
2. Monte la CPU y los CMs acoplados de la forma descrita en Montaje y desmontaje de la CPU (Página 29).
3. Una vez montados los dispositivos en el perfil DIN, enclave los clips de sujeción para sujetar los dispositivos al raíl.

Para el montaje en un panel, asegúrese de que los clips de fijación al raíl DIN están en posición extendida.

Desmontaje

Desmonte la CPU y el CM en forma de unidad del raíl DIN o panel.





Prepare el CM para el desmontaje.

1. Desconecte la alimentación eléctrica de la CPU.
2. Desconecte los conectores de E/S y retire el cableado y demás cables de la CPU y los CMs.
3. Para el montaje en un raíl DIN, extienda los clips de sujeción inferiores de la CPU y los CMs.
4. Desmonte la CPU y los CMs del raíl DIN o panel.

Desmonte el CM.

1. Sujete la CPU y los CMs con las manos.
2. Sepárelos.

No utilice herramientas para separar los módulos, puesto que podrían deteriorarse.

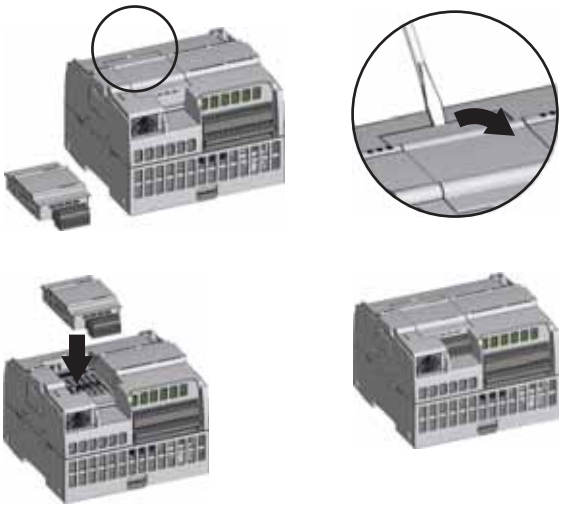
2.2.4 Montaje y desmontaje de una Signal Board

Montaje

Prepare la CPU para el montaje de la SB desconectando la alimentación de la CPU y retirando las tapas superior e inferior de los bloques de terminales de la CPU.

Para montar el SB, proceda del siguiente modo:

1. Inserte un destornillador en la ranura arriba de la CPU en el lado posterior de la tapa.
2. Haga palanca suavemente para levantar la tapa y retírela de la CPU.
3. Coloque la SB rectamente en su posición de montaje en el lado superior de la CPU.
4. Oprima firmemente la SB hasta que encaje en su posición.
5. Coloque nuevamente las tapas de los bloques de terminales.

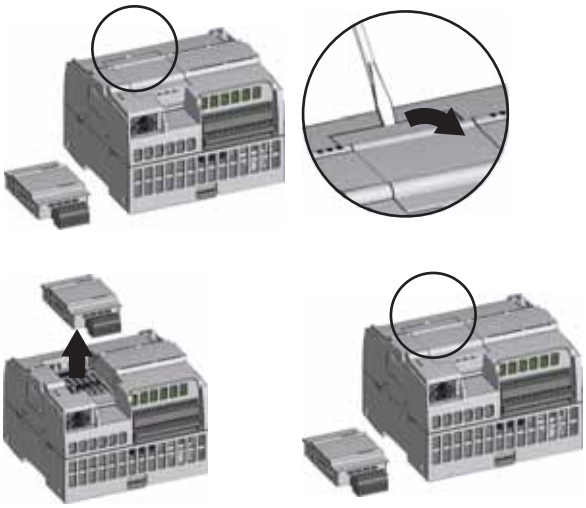


Desmontaje

Prepare la CPU para el desmontaje de la SB desconectando la alimentación de la CPU y retirando las tapas superior e inferior de los bloques de terminales de la CPU.

Para desmontar la SB, proceda del siguiente modo:

1. Inserte un destornillador en la ranura en el lado superior de la SB.
2. Haga palanca suavemente para desacoplar la SB de la CPU.
3. Retire la SB rectamente desde arriba de su posición de montaje en el lado superior de la CPU.
4. Coloque nuevamente la tapa de la SB.
5. Coloque nuevamente las tapas de los bloques de terminales.



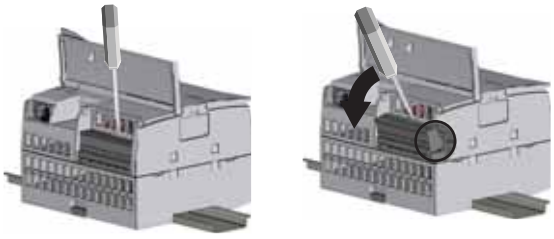
2.2.5 Extraer y reinsertar el conector del bloque de terminales del S7-1200

La CPU, la SB y los módulos SM incorporan conectores extraíbles que facilitan la conexión del cableado. Para preparar el sistema para la extracción del conector del bloque de terminales:

- Desconecte la alimentación eléctrica de la CPU.
- Abra la tapa por encima del conector.

Para desmontar el conector, proceda del siguiente modo:

1. Busque la ranura para insertar la punta del destornillador en el lado superior del conector.
2. Inserte un destornillador en la ranura.
3. Haga palanca suavemente en el lado superior del conector para extraerlo de la CPU. El conector se desenclava audiblemente.
4. Sujete el conector con las manos y extráigalo de la CPU.



Para montar el conector, proceda del siguiente modo:

1. Prepare los componentes para el montaje del bloque de terminales desconectando la alimentación de la CPU y abriendo la tapa del bloque de terminales.
2. Alinee el conector a los pines del dispositivo.
3. Alinee el lado de cableado del conector en el zócalo.
4. Con un movimiento giratorio, empuje firmemente el conector hacia abajo hasta que encaje.

Compruebe si el conector está bien alineado y encajado correctamente.



2.3 Directrices de cableado

La puesta a tierra y el cableado correctos de todos los equipos eléctricos es importante para garantizar el funcionamiento óptimo del sistema y aumentar la protección contra interferencias de la aplicación y del S7-1200. Encontrará los diagramas de cableado del S7-1200 en los datos técnicos (Página 319).

Requisitos

Antes de poner a tierra o cablear cualquier dispositivo eléctrico, asegúrese que la alimentación está desconectada. Asegúrese también que está desconectada la alimentación eléctrica de todos los equipos conectados.

Vigile que se respeten todos los reglamentos eléctricos vinculantes al cablear el S7-1200 y los equipos conectados. El equipo se debe montar y operar conforme a todas las normas nacionales y locales vigentes. Contacte con las autoridades locales para determinar qué reglamentos y normas rigen en su caso específico.

⚠ ADVERTENCIA

Si el S7-1200 o los equipos conectados se montan o cablean estando conectada la alimentación, puede producirse un choque eléctrico o un funcionamiento inesperado de los equipos. Si la alimentación del S7-1200 y de los equipos conectados no se desconecta por completo antes del montaje o desmontaje, pueden producirse la muerte, lesiones corporales graves y/o daños debidos a choques eléctricos o al funcionamiento inesperado de los equipos.

Respete siempre las medidas de seguridad necesarias y asegúrese que la alimentación eléctrica del S7-1200 está desconectada antes de montar o desmontar el S7-1200 o los equipos conectados.

Considere siempre los aspectos de seguridad al configurar la puesta a tierra y el cableado del sistema S7-1200. Los dispositivos de control electrónicos, tales como el S7-1200, pueden fallar y causar reacciones inesperadas de los equipos que se están controlando o vigilando. Por este motivo, se recomienda prever medidas de seguridad independientes del S7-1200 para evitar lesiones corporales y/o daños materiales.

⚠ ADVERTENCIA

Los dispositivos de control pueden fallar y provocar condiciones no seguras, causando a su vez reacciones inesperadas de los equipos controlados. Las reacciones inesperadas podrían producir la muerte, lesiones corporales graves y/o daños materiales.

Prevea dispositivos de parada de emergencia, dispositivos de protección electromecánicos y otras medidas redundantes de seguridad que sean independientes del S7-1200.

Directrices de aislamiento galvánico

Los límites de la alimentación AC del S7-1200 y de las E/S a los circuitos AC se han diseñado y aprobado para proveer un aislamiento galvánico seguro entre las tensiones de línea AC y los circuitos de baja tensión. Estos límites incluyen un aislamiento doble o reforzado, o bien un aislamiento básico más uno adicional, según las distintas normas. Los componentes que cruzan estos límites, tales como optoacopladores, condensadores, transformadores y relés se han aprobado, ya que proveen un aislamiento galvánico seguro. Los límites de aislamiento que cumplen estos requisitos se identifican en las hojas de datos de los productos S7-1200, indicando que tienen un aislamiento de 1500 V AC o superior. Esta indicación se basa en una prueba de fábrica rutinaria de (2Ue + 1000 V AC) o equivalente, según los métodos aprobados. Los límites de aislamiento galvánico seguro del S7-1200 se han comprobado hasta 4242 V DC.

La salida de la fuente de alimentación de sensores, los circuitos de comunicación y los circuitos lógicos internos de un S7-1200 con fuente de alimentación AC incluida tienen una fuente SELV (pequeña tensión de seguridad) conforme a EN 61131-2.

Para conservar el carácter seguro de los circuitos de baja tensión del S7-1200, las conexiones externas a puertos de comunicación, circuitos analógicos y todas las fuentes de alimentación nominales de 24 V y circuitos E/S deben ser alimentados por fuentes aprobadas que cumplan los requisitos de SELV, PELV, clase 2, tensión limitada o intensidad limitada, según distintas normas.

⚠ ADVERTENCIA

La utilización de fuentes de alimentación no aisladas o con aislamiento simple para abastecer los circuitos de baja tensión desde un conductor AC pueden causar tensiones peligrosas en circuitos considerados no peligrosos (seguros al tacto), tales como los circuitos de comunicación y el cableado de sensores de baja tensión.

Las altas tensiones inesperadas podrían causar choques eléctricos que pueden producir la muerte, lesiones corporales graves y/o daños materiales.

Utilice sólo convertidores de alta a baja tensión aprobados como fuentes de circuitos de tensión limitada seguros al tacto.

Directrices de puesta a tierra del S7-1200

La mejor forma de poner a tierra la aplicación es garantizar que todos los conductores neutros y de masa del S7-1200 y de los equipos conectados se pongan a tierra en un mismo punto. Este punto debería conectarse directamente a la toma de tierra del sistema.

Todos los cables de puesta a tierra deberían tener la menor longitud posible y una sección grande, p. ej. 2 mm^2 (14 AWG).

Al definir físicamente las tierras es necesario considerar los requisitos de puesta a tierra de protección y el funcionamiento correcto de los dispositivos protectores.

Directrices de cableado del S7-1200

Al diseñar el cableado del S7-1200, prevea un interruptor unipolar para cortar simultáneamente la alimentación de la CPU S7-1200, de todos los circuitos de entrada y de todos los circuitos de salida. Prevea dispositivos de protección contra sobreintensidad (p. ej. fusibles o cortacircuitos) para limitar las corrientes de fallo en el cableado de alimentación. Para mayor protección es posible disponer un fusible u otro limitador de sobreintensidad en todos los circuitos de salida.

Utilice dispositivos de supresión de sobretensiones apropiados en el cableado sujeto a perturbaciones por descargas atmosféricas.

Evite colocar las líneas de señales de baja tensión y los cables de comunicación en una misma canalización junto con los cables AC y los cables DC de alta energía y conmutación rápida. El cableado deberá efectuarse por pares; con el cable de neutro o común combinado con el hilo caliente o de señal.

Utilice el cable más corto posible y vigile que tenga una sección suficiente para conducir la corriente necesaria. El conector acepta cables con una sección de 2 mm^2 a 0,3 mm^2 (14 AWG a 22 AWG). Utilice cables apantallados para obtener una protección óptima contra interferencias. Por lo general, los mejores resultados se obtienen poniendo a tierra la pantalla del S7-1200.

Al cablear circuitos de entrada alimentados por una fuente externa, prevea dispositivos protectores contra sobrecorriente en estos circuitos. La protección externa no se requiere en los circuitos alimentados por la alimentación de sensores de 24 V DC del S7-1200, puesto que la alimentación de sensores ya está protegida contra sobrecorriente.

Todos los módulos S7-1200 incorporan conectores extraíbles para el cableado de usuario. Para evitar conexiones flojas, asegúrese que el conector está encajado correctamente y que el cable está insertado de forma segura en el conector. No apriete excesivamente los tornillos para impedir que se deteriore el conector. El par máximo de apriete de los tornillos del conector es de 0,56 Nm (5 pulgadas-libra).

Para impedir flujos de corriente indeseados en la instalación, el S7-1200 provee límites de aislamiento galvánico en ciertos puntos. Tenga en cuenta estos límites de aislamiento al planificar el cableado del sistema. En los datos técnicos encontrará más información acerca de la ubicación de los puntos de aislamiento galvánico y la capacidad que ofrecen. Los aislamientos con valores nominales inferiores a 1500 V AC no deben tomarse para definir barreras de seguridad.

Directrices relativas a las cargas inductivas

Se recomienda equipar las cargas inductivas con circuitos de supresión que limiten el incremento de tensión producido al desactivarse las salidas. Los circuitos de supresión protegen las salidas contra fallos prematuros debidos a altas tensiones al desconectar las cargas inductivas. Además, estos circuitos limitan las interferencias generadas al conmutar las cargas inductivas. La manera más efectiva de reducir las interferencias es disponer un circuito de supresión externo paralelo eléctricamente a la carga y ubicado físicamente cerca de la carga.

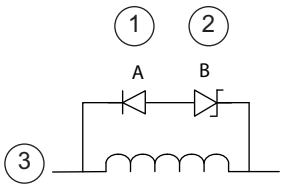
Nota

La eficacia de un determinado circuito de supresión depende de la aplicación. Por tanto, debe verificarse para cada caso en particular. Asegúrese que los todos componentes utilizados en el circuito de supresión se adecúan para la aplicación en cuestión.

Controlar cargas inductivas DC

Las salidas DC del S7-1200 incluyen circuitos de supresión adecuados para las cargas inductivas en la mayoría de las aplicaciones. Puesto que los relés pueden utilizarse para cargas tanto DC como AC, no proporcionan protección interna. La figura siguiente muestra un ejemplo de un circuito de supresión para una carga DC.

En la mayoría de las aplicaciones es suficiente prever adicionalmente un diodo (A) paralelo a la carga inductiva. No obstante, si la aplicación requiere tiempos de desconexión más rápidos, se recomienda utilizar un diodo Zener (B).

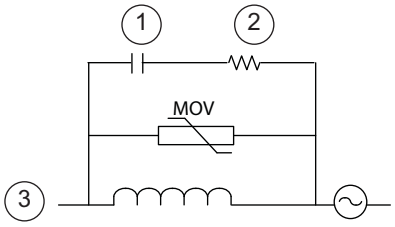


① Diodo l1N4001 o equivalente
② Zener de 8,2 V (salidas DC)
Zener de 36 V (salidas de relé)
③ Salida

Vigile que el diodo Zener tenga suficiente capacidad para la cantidad de corriente en el circuito de salida.

Salidas de relé que controlan cargas AC

Si se utiliza una salida de relé para conmutar cargas de 115 V/230 V AC, es preciso disponer redes de resistores/condensadores paralelas a la carga AC como se muestra en esta figura. También es posible utilizar un varistor de óxido metálico (MOV) para limitar la tensión de pico. Vigile que la tensión de trabajo del varistor MOV sea como mínimo un 20% superior a la tensión de línea nominal.



① 0,1 µ F
② 100 a 120 Ω
③ Salida

Directrices para las cargas de lámpara

Las cargas de lámpara pueden averiar los contactos de relé, debido a la elevada sobrecorriente momentánea de conexión. Esta sobrecorriente momentánea es nominalmente 10 a 15 veces superior a la corriente en régimen permanente de una lámpara de tungsteno. Se recomienda intercalar un relé sustituible o un limitador de sobretensión para las cargas de lámparas que deben conmutarse con frecuencia durante la vida útil de la aplicación.

Principios básicos del PLC

3

3.1 Ejecución del programa de usuario

La CPU soporta los siguientes tipos de bloques lógicos que permiten estructurar eficientemente el programa de usuario:

- Los bloques de organización (OBs) definen la estructura del programa. Algunos OBs tienen reacciones y eventos de arranque predefinidos. No obstante, también es posible crear OBs con eventos de arranque personalizados.
- Las funciones (FCs) y los bloques de función (FBs) contienen el código de programa correspondiente a tareas específicas o combinaciones de parámetros. Cada FC o FB provee parámetros de entrada y salida para compartir datos con el bloque invocante. Un FB utiliza también un bloque de datos asociado (denominado DB instancia) para conservar el estado de valores durante la ejecución que pueden utilizar otros bloques del programa.
- Los bloques de datos (DBs) almacenan datos que pueden ser utilizados por los bloques del programa.

La ejecución del programa de usuario comienza con uno o varios bloques de organización (OBs) de arranque que se ejecutan una vez al cambiar a estado operativo RUN, seguidos de uno o varios OBs de ciclo que se ejecutan cíclicamente. También es posible asociar un OB a un evento de alarma que puede ser un evento estándar o de error y que se ejecuta cada vez que ocurre el evento en cuestión.

Una función (FC) o un bloque de función (FB) es un bloque de código del programa que puede llamarse desde un OB, o bien desde otra FC u otro FB. Son posibles los niveles siguientes:

- 16 desde OBs de ciclo o de arranque
- 4 desde OBs de alarma de retardo, alarma cíclica, alarma de proceso, alarma de error de tiempo o alarma de diagnóstico

Las FCs no están asociadas a ningún bloque de datos (DB) en particular, mientras que los FBs están vinculados directamente a un DB que utilizan para transferir parámetros, así como para almacenar valores intermedios y resultados.

El tamaño del programa de usuario, los datos y la configuración está limitado por la memoria de carga disponible y la memoria de trabajo de la CPU. El número de bloques soportado no está limitado dentro de la cantidad de memoria de trabajo disponible.

En cada ciclo se escribe en las salidas, se leen las entradas, se ejecutan las instrucciones del programa de usuario y se realiza el mantenimiento del sistema o procesamiento en segundo plano. En inglés, el ciclo también se llama "scan cycle" o "scan".

La Signal Board, así como los módulos de señales y de comunicación, se detectan y se dan de alta durante el arranque.

Nota

No se soporta la sustitución en caliente (hot swap) de la Signal Board ni de los módulos de señales ni de comunicación. La única excepción es la SIMATIC Memory Card que se puede insertar o extraer estando conectada la alimentación de la CPU.

De forma predeterminada, todas las E/S digitales y analógicas se actualizan de forma síncrona con el ciclo, utilizando un área de memoria interna denominada memoria imagen de proceso. La memoria imagen de proceso contiene una instantánea de las entradas y salidas físicas (es decir, las E/S físicas de la CPU, de la Signal Board y de los módulos de señales).

La CPU ejecuta las siguientes tareas:

- La CPU escribe las salidas desde la memoria imagen de proceso de las salidas en las salidas físicas.
- La CPU lee las entradas físicas inmediatamente antes de ejecutar el programa de usuario y almacena los valores de entrada en la memoria imagen de proceso de las entradas. Así se garantiza que estos valores sean coherentes durante la ejecución de las instrucciones programadas.
- La CPU ejecuta la lógica de las instrucciones programadas y actualiza los valores de salida en la memoria imagen de proceso de las salidas, en vez de escribirlos en las salidas físicas reales.

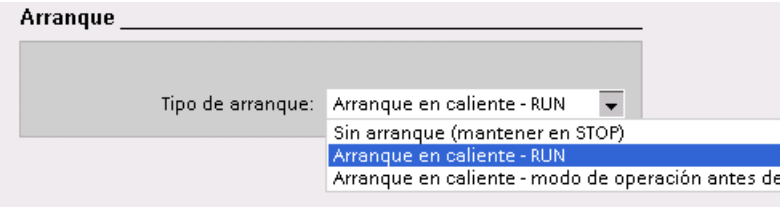
Este proceso ofrece una lógica coherente al ejecutar las instrucciones programadas durante un ciclo determinado y previene la fluctuación de las salidas físicas cuyo estado puede cambiar varias veces en la memoria imagen de proceso de las salidas.

Es posible definir si las E/S digitales y analógicas deben guardarse en la memoria imagen de proceso. Si un módulo se inserta en la vista de dispositivos, sus datos se encontrarán en la memoria imagen de proceso de la CPU S7-1200 (ajuste predeterminado). La CPU procesa el intercambio de datos entre el módulo y el área de la memoria imagen de proceso automáticamente durante la actualización de ésta. Para excluir E/S digitales o analógicas de la actualización automática de la memoria imagen de proceso, seleccione el dispositivo en cuestión en la "Configuración de dispositivos", abra la ficha "Propiedades", expanda en caso necesario para localizar las E/S deseadas y seleccione luego "Direcciones I/O/identificador HW". A continuación, cambie la entrada en "Memoria imagen de proceso:" de "IP cíclica" a "---". Para volver a incluir las E/S en la actualización automática de la memoria imagen de proceso, cambie de nuevo esta selección a "IP cíclica".

Es posible leer inmediatamente los valores de las entradas físicas y escribir inmediatamente los valores de las salidas físicas cuando se ejecuta una instrucción. Una lectura inmediata accede al estado actual de la entrada física y no actualiza la memoria imagen de proceso de las entradas, independientemente de si se ha configurado que la entrada se almacene en la memoria imagen de proceso. Una lectura inmediata en una salida física actualiza tanto la memoria imagen de proceso de las salidas (si se ha configurado que la salida se almacene en la memoria imagen de proceso) y la salida física. Añada el sufijo ":P" a la dirección E/S si desea que el programa acceda inmediatamente a los datos E/S directamente desde la E/S física, en vez de utilizar la memoria imagen de proceso.

Configurar los parámetros de arranque

En las propiedades de la CPU se puede configurar cómo debe arrancar tras desconectar y conectar la alimentación.



Seleccione si la CPU debe arrancar en estado operativo STOP o RUN, o bien en el estado operativo anterior (antes de desconectar y conectar la alimentación).

La CPU ejecuta un arranque en caliente antes de pasar al estado operativo RUN. El arranque en caliente inicializa toda la memoria no remanente a los valores iniciales predeterminados. No obstante, se conservan los valores actuales almacenados en la memoria remanente.

Nota

La CPU ejecuta siempre un rearranque tras una carga

Cada vez que un elemento del proyecto (p. ej. bloque de programa, bloque de datos o configuración hardware) se carga en la CPU, ésta ejecuta un rearranque en la próxima transición al estado operativo RUN. Además de borrar las entradas e inicializar las salidas y la memoria no remanente, el rearranque inicializa asimismo las áreas de memoria remanente.

Tras el rearranque posterior a la carga en la CPU, todas las transiciones de STOP a RUN subsiguientes ejecutan un arranque en caliente (que no inicializa la memoria remanente).

3.1.1 Estados operativos de la CPU

La CPU tiene tres estados operativos, a saber: STOP, ARRANQUE y RUN. Los LEDs de estado en el frente de la CPU indican el estado operativo actual.

- En estado operativo STOP, la CPU no ejecuta el programa. Entonces es posible cargar un proyecto en la CPU.
- En estado operativo ARRANQUE, los OBs de arranque (si existen) se ejecutan una vez. Los eventos de alarma no se procesan durante la fase de arranque del estado operativo RUN.
- El ciclo se ejecuta repetidamente en estado operativo RUN. Los eventos de alarma pueden ocurrir y procesarse en cualquier fase del ciclo del programa.

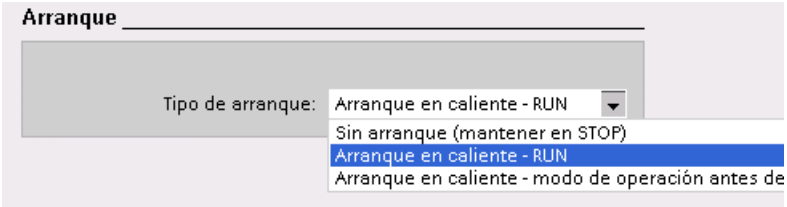
  En estado operativo RUN no es posible cargar proyectos en la CPU.

La CPU soporta el arranque en caliente para pasar al estado operativo RUN. El arranque en caliente no incluye la inicialización de la memoria. Los datos de sistema no remanentes y los datos de usuario se inicializan en un arranque en caliente. Se conservan los datos de usuario remanentes.

El borrado total borra toda la memoria de trabajo, así como las áreas de memoria remanentes y no remanentes. Además, copia la memoria de carga en la memoria de trabajo. El borrado total no borra el búfer de diagnóstico ni tampoco los valores almacenados permanentemente de la dirección IP.

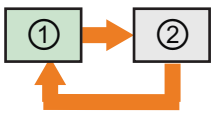
El tipo de arranque y método de rearranque de la CPU se pueden determinar mediante el software de programación. Este ajuste se encuentra en la "Configuración de dispositivos" de la CPU en "Arranque". Cuando se aplica tensión, la CPU ejecuta una secuencia de tests de diagnóstico de arranque e inicialización del sistema. A continuación, la CPU conmuta al tipo de arranque configurado. Determinados errores impiden que la CPU pase a estado operativo RUN. La CPU soporta los tipos de arranque siguientes:

- Estado operativo STOP
- Cambio a estado operativo RUN después del arranque en caliente
- Cambio al estado operativo anterior después del arranque en caliente



El estado operativo actual se puede cambiar mediante los comandos "STOP" o "RUN" de las herramientas online del software de programación. También se puede insertar una instrucción STP en el programa para cambiar la CPU a estado operativo STOP. Esto permite detener la ejecución del programa en función de la lógica.

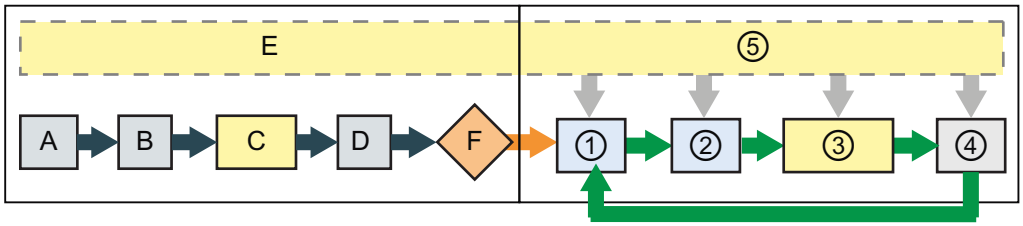
En estado operativo STOP, la CPU ① procesa las peticiones de comunicación (según sea necesario) y ② realiza el autodiagnóstico.



En estado operativo STOP, la CPU no ejecuta el programa de usuario y la memoria imagen de proceso no se actualiza automáticamente.

El proyecto sólo se puede cargar en la CPU si está se encuentra en estado operativo STOP.

En estado operativo RUN, la CPU ejecuta las tareas que muestra la figura siguiente.



ARRANQUE

- A Borra el área de memoria I
- B Inicializa las salidas con el último valor o el valor sustitutivo
- C Ejecuta los OBs de arranque
- D Copia el estado de las entradas físicas en la memoria I
- E Almacena los eventos de alarma en la cola de espera que deben procesarse en estado operativo RUN
- F Habilita la escritura de la memoria Q en las salidas físicas

RUN

- ① Escribe la memoria Q en las salidas físicas
- ② Copia el estado de las entradas físicas en la memoria I
- ③ Ejecuta los OBs de ciclo
- ④ Realiza autodiagnóstico
- ⑤ Procesa alarmas y comunicaciones en cualquier parte del ciclo

Procesamiento del ARRANQUE

Cada vez que el estado operativo cambia de STOP a RUN, la CPU borra las entradas de la memoria imagen de proceso, inicializa las salidas de la memoria imagen de proceso y procesa los OBs de arranque. En los accesos de lectura a las entradas de la memoria imagen de proceso realizados por instrucciones en los OBs de arranque se lee cero, en vez del valor actual de la entrada física. Por tanto, para leer el estado actual de una entrada física durante el estado operativo ARRANQUE, es preciso realizar una lectura inmediata. Luego se ejecutan los OBs de arranque, así como los FBs y FCs asociados. Si existe más de un OB de arranque, cada uno de ellos se ejecuta en el orden correspondiente al número de OB, comenzando con el número de OB más bajo.

Todo OB de arranque incluye información de arranque que ayuda a determinar la validez de los datos remanentes y el reloj en tiempo real. Es posible programar instrucciones dentro de los OBs de arranque para examinar estos valores de arranque y realizar las acciones apropiadas. Los OBs de arranque soportan las siguientes ubicaciones de arranque:

Entrada	Tipos de datos	Descripción
LostRetentive	BOOL	Este bit es verdadero (TRUE) si se han perdido las áreas de almacenamiento de datos remanentes
LostRTC	BOOL	Este bit es verdadero (TRUE) si se ha perdido el reloj en tiempo real

La CPU también ejecuta las siguientes tareas durante el procesamiento del arranque.

- Las alarmas se ponen en cola de espera, pero no se procesan durante la fase de arranque
- El tiempo de ciclo no se vigila durante la fase de arranque
- La configuración de HSC (contadores rápidos), PWM (modulación del ancho de pulso) y módulos PtP (comunicación punto a punto) se puede modificar durante el arranque
- Los HSC, la PWM y los módulos de comunicación punto a punto sólo funcionan en estado operativo RUN

Una vez finalizada la ejecución de los OBs de arranque, la CPU pasa a estado operativo RUN y procesa las tareas de control en un ciclo continuo.

Procesamiento del ciclo en estado operativo RUN

En cada ciclo, la CPU escribe en las salidas, lee las entradas, ejecuta el programa de usuario, actualiza los módulos de comunicación, realiza tareas de mantenimiento internas y reacciona a los eventos de alarma de usuario y peticiones de comunicación. Las peticiones de comunicación se procesan periódicamente durante el ciclo.

Estas acciones (excepto los eventos de alarma de usuario) se procesan con regularidad y en orden secuencial. Los eventos de alarma de usuario habilitados se procesan según su prioridad en el orden en que aparecen.

El sistema garantiza que el ciclo se procese dentro de un periodo denominado tiempo de ciclo máximo. De lo contrario, se generará un evento de error de tiempo.

- Todo ciclo comienza con la consulta de los valores actuales de las salidas digitales y analógicas de la memoria imagen de proceso. Estos valores se escriben luego en las salidas físicas de la CPU, la SB y los módulos SM configurados para la actualización automática de E/S (configuración predeterminada). Cuando una instrucción accede a una salida física, se actualizan tanto la memoria imagen de proceso de las salidas como la salida física.
- El ciclo continúa con la lectura de los valores actuales de las entradas digitales y analógicas de la CPU, la SB y los SMs configurados para la actualización automática de E/S (configuración predeterminada). Estos valores se escriben luego en la memoria imagen de proceso. Cuando una instrucción accede a una entrada física, se modifica el valor de ésta, pero no se actualiza la memoria imagen de proceso de las entradas.
- Tras leer las entradas, el programa de usuario se ejecuta desde la primera hasta la última instrucción. Esto incluye todos los OBs de ciclo, así como sus FCs y FBs asociados. Los OBs de ciclo se ejecutan en el orden correspondiente al número de OB, comenzando con el número de OB más bajo.

Las comunicaciones se procesan periódicamente durante todo el ciclo, siendo posible que se interrumpa la ejecución del programa de usuario.

El autodiagnóstico incluye comprobaciones periódicas del sistema y de estado de los módulos de E/S.

Las alarmas pueden ocurrir en cualquier parte del ciclo y son controladas por eventos. Cuando ocurre un evento, la CPU interrumpe el ciclo y llama el OB configurado para procesar ese evento. Una vez que el OB haya finalizado el procesamiento del evento, la CPU reanuda la ejecución del programa de usuario en el punto de interrupción.

Bloques de organización (OBs)

Los OBs controlan la ejecución del programa de usuario. Todo OB debe tener un número de OB unívoco. Algunos números menores que 200 están reservados para OBs predeterminados. La numeración de los demás OBs debe comenzar a partir de 200.

Determinados eventos de la CPU disparan la ejecución de un bloque de organización. Un OB no puede llamar a otro. Tampoco es posible llamar un OB desde una FC o un FB. Sólo un evento de arranque, p. ej. una alarma de diagnóstico o un intervalo, puede iniciar la ejecución de un OB. La CPU procesa los OBs según su clase de prioridad. Los OBs de mayor prioridad se ejecutan antes que los de menor prioridad. La clase de prioridad más baja es 1 (para el ciclo del programa principal) y la más alta es 27 (para las alarmas de error de tiempo).

Los OBs controlan los siguientes procesos:

- Los OBs de ciclo se ejecutan cíclicamente cuando la CPU se encuentra en estado operativo RUN. El bloque principal del programa es un OB de ciclo. Éste contiene las instrucciones que controlan el programa y permite llamar otros bloques de usuario. Es posible utilizar varios OBs de ciclo. Éstos se ejecutan en orden numérico. El OB 1 es el bloque predeterminado. Los demás OBs de ciclo deben identificarse como OB 200 o superior.
- Los OBs de arranque se ejecutan una vez cuando el estado operativo de la CPU cambia de STOP a RUN, al arrancar a estado operativo RUN y en una transición ordenada de STOP a RUN. Una vez finalizado, se comienza a ejecutar el OB de ciclo. Es posible utilizar varios OBs de arranque. El OB 100 es el bloque predeterminado. El número de los demás OBs debe ser 200 o superior.
- Los OBs de alarma de retardo se ejecutan al cabo de un intervalo posterior a un evento configurado en la instrucción de alarma de arranque (SRT_DINT). El tiempo de retardo se especifica en el parámetro de entrada de la instrucción avanzada SRT_DINT. Los OBs de alarma de retardo interrumpen la ejecución cíclica del programa una vez transcurrido un tiempo de retardo especificado. Es posible configurar como máximo 4 eventos de retardo en cualquier momento. Por cada evento de retardo configurado se permite un OB. El número del OB de alarma de retardo debe ser 200 o superior.
- Los OBs de alarma cíclica se ejecutan en intervalos periódicos. Los OBs de alarma cíclica interrumpen la ejecución cíclica del programa en intervalos definidos, p. ej. cada 2 segundos. Es posible configurar como máximo 4 eventos de alarma cíclica. Por cada evento de alarma cíclica configurado se permite un OB. El número del OB debe ser 200 o superior.
- Los OBs de alarma de proceso se ejecutan cuando ocurre el evento de hardware correspondiente, incluyendo flancos ascendentes y descendentes en las entradas digitales integradas y eventos de contadores rápidos (HSC). Los OBs de alarma de proceso interrumpen la ejecución cíclica del programa como reacción a una señal de un evento de hardware. Los eventos se definen en las propiedades de la configuración hardware. Por cada evento de hardware configurado se permite un OB. El número del OB debe ser 200 o superior.
- Los OBs de error de tiempo se ejecutan cuando se detecta un error de tiempo. Los OBs de error de tiempo interrumpen la ejecución cíclica del programa cuando se rebasa el tiempo de ciclo máximo. El tiempo de ciclo máximo se define en las propiedades del PLC. El OB 80 es el único número de OB soportado para el evento de error de tiempo. Es posible configurar la acción que debe realizarse si no existe el OB 80: ignorar el error o cambiar a STOP.
- Los OBs de alarma de diagnóstico se ejecutan cuando se detecta y notifica un error de diagnóstico. Los OBs de alarma de diagnóstico interrumpen la ejecución cíclica del programa cuando el módulo apto para diagnóstico detecta un error (si se ha habilitado la alarma de diagnóstico para ese módulo). El OB 82 es el único número de OB soportado para el evento de error de diagnóstico. Si el programa no contiene ningún OB de diagnóstico, la CPU se puede configurar para que ignore el error o cambie a STOP.

3.1.2 Prioridades y colas de espera para la ejecución de eventos

El procesamiento de la CPU es controlado por eventos. Los eventos disparan OBs de alarma que deben ejecutarse. El OB de alarma de un evento se especifica durante la creación del bloque, durante la configuración de dispositivos, o bien con una instrucción ATTACH o DETACH. Algunos eventos ocurren con regularidad, tales como los eventos de ciclo o cíclicos. Otros eventos ocurren una sola vez, tales como el evento de arranque y los eventos de alarma de retardo. Algunos eventos ocurren cuando se produce un cambio disparado por hardware, p. ej. un flanco en una entrada o un evento de contador rápido. Asimismo, hay eventos p. ej. de error de diagnóstico o de error de tiempo que ocurren solamente cuando se produce un error. Las prioridades de eventos, los grupos de prioridad y las colas de espera sirven para determinar el orden de procesamiento de los OBs de alarma.

El evento de ciclo ocurre una vez por ciclo del programa. Durante el ciclo del programa, la CPU escribe en las salidas, lee las entradas y ejecuta los OBs de ciclo. El evento de ciclo es necesario y siempre está habilitado. Es posible no tener OBs de ciclo, o bien tener varios OBs de ciclo seleccionados para el evento de ciclo. Una vez disparado el evento de ciclo, se ejecuta el OB de ciclo con el número más bajo (normalmente el OB1). Los demás OBs de ciclo se ejecutan secuencialmente, en orden numérico, dentro del ciclo de programa.

Los eventos de alarma cíclica permiten configurar la ejecución de un OB de alarma en un intervalo configurado. El intervalo se configura al crear y seleccionar el OB para que sea de alarma cíclica. Los eventos cíclicos interrumpen el ciclo del programa y ejecutan el OB de alarma cíclica (el evento cíclico está en un grupo de mayor prioridad que el evento de ciclo). Un solo OB de alarma cíclica puede asignarse a un evento cíclico. La CPU soporta cuatro eventos de alarma cíclica. Los OBs de alarma cíclica tienen una propiedad de desfase. Por tanto, las alarmas cíclicas con el mismo periodo pueden ejecutarse con un offset la una de la otra por la cantidad de desfase.

El evento de arranque ocurre una vez al producirse un cambio de STOP a RUN y lanza la ejecución de los OBs de arranque. Es posible seleccionar varios OBs para el evento de arranque. Los OBs de arranque se ejecutan en orden numérico.

Los eventos de alarma de retardo permiten configurar la ejecución de un OB de alarma transcurrido un tiempo de retardo definido. El tiempo de retardo se especifica con la instrucción SRT_DINT. Los eventos de alarma de retardo interrumpen el ciclo del programa, con el fin de ejecutar el OB de alarma de retardo. Un solo OB de alarma de retardo puede asignarse a un evento de retardo. La CPU soporta cuatro eventos de retardo.

Los eventos de alarma de proceso son disparados por un cambio en el hardware, p. ej. un flanco ascendente o descendente en una entrada, o bien un evento de contador rápido (HSC). Sólo un OB de alarma puede estar seleccionado para cada evento de alarma de proceso. Los eventos de alarma de proceso se habilitan en la "Configuración de dispositivos". Los OBs se definen para el evento en la "Configuración de dispositivos" o con una instrucción ATTACH en el programa de usuario. La CPU soporta varios eventos de alarma de proceso. Los eventos exactos dependen del modelo de CPU y del número de entradas.

Los eventos de error de tiempo y diagnóstico son disparados cuando la CPU detecta un error. Estos eventos están en un grupo de mayor prioridad que los demás eventos de alarma y pueden interrumpir la ejecución de los eventos de alarma de retardo, alarma cíclica y alarma de proceso. Es posible definir un OB de alarma para cada uno de los eventos de error de tiempo y diagnóstico.

Prioridades y colas de espera para la ejecución de eventos

El número de eventos pendientes (en cola de espera) de una sola fuente se limita utilizando una cola diferente para cada tipo de evento. Al alcanzar el límite de eventos pendientes de un determinado tipo, se pierde el evento siguiente. Para más información sobre el desbordamiento de colas de espera, consulte el apartado "Eventos de error de tiempo".

Todo evento de la CPU tiene una prioridad asociada y las prioridades de eventos se clasifican en clases de prioridad. La tabla siguiente ofrece una sinopsis de la profundidad de las colas de espera, las clases de prioridad y las prioridades de los eventos de CPU soportados.

Nota

No es posible modificar la prioridad, ni la asignación a las clases de prioridad, ni tampoco la profundidad de las colas de espera.

Generalmente, los eventos se procesan según su prioridad (primero los de mayor prioridad). Los eventos de igual prioridad se procesan según su orden de aparición.

Tipo de evento (OB)	Cantidad	Números de OB válidos	Profundidad de la cola de espera	Clase de prioridad	Prioridad
Ciclo	1 evento de ciclo Se permiten varios OBs	1 (estándar) 200 o superior	1	1	1
Arranque	1 evento de arranque[1] Se permiten varios OBs	100 (estándar) 200 o superior	1		1
Retardo	4 eventos de retardo 1 OB por evento	200 o superior	8	2	3
Cíclico	4 eventos cíclicos 1 OB por evento	200 o superior	8		4
Flancos	16 eventos de flanco ascendente 16 eventos de flanco descendente 1 OB por evento	200 o superior	32		5
HSC	6 eventos CV = PV 6 eventos de cambio de sentido 6 eventos de reset externo 1 OB por evento	200 o superior	16		6
Error de diagnóstico	1 evento	Sólo 82	8		9
Evento de error de tiempo/evento de tiempo MaxCycle	1 evento de error de tiempo 1 evento de tiempo MaxCycle	Sólo 80	8	3	26

Tipo de evento (OB)	Cantidad	Números de OB válidos	Profundidad de la cola de espera	Clase de prioridad	Prioridad
2 eventos de tiempo MaxCycle	1 2 eventos de tiempo MaxCycle	No se llama ningún OB	-	3	27

[1] Casos especiales del evento de arranque

- Los eventos de arranque y de ciclo no ocurren nunca simultáneamente, ya que el evento de arranque se debe haber finalizado antes de poder iniciar el evento de ciclo (controlado por el sistema operativo).
- Ningún evento puede interrumpir el evento de arranque. Los eventos que ocurran durante el arranque se pondrán en cola de espera para su posterior procesamiento una vez finalizado el evento de arranque.

Tras iniciarse la ejecución de un OB, su procesamiento no se puede interrumpir al aparecer otro evento cuya clase de prioridad sea igual o inferior. Estos eventos se ponen en cola de espera para su procesamiento posterior, permitiendo que finalice el OB actual.

No obstante, un evento de una clase de prioridad superior sí interrumpe el OB actual. La CPU ejecuta entonces el OB correspondiente al evento de mayor prioridad. Tras finalizar el OB de mayor prioridad, la CPU ejecuta los OBs de los demás eventos en cola de espera en esta clase de prioridad superior, según la prioridad en la clase. Si no hay otros eventos pendientes (en cola de espera) en esta clase de prioridad superior, la CPU regresa a la clase de prioridad inferior y reanuda el procesamiento del OB interrumpido en el punto en el que se interrumpió el procesamiento de ese OB.

Latencia de alarmas

La latencia de los eventos de alarma (es decir, el tiempo que transcurre desde que la CPU notifica que ha ocurrido un evento hasta que comienza la ejecución de la primera instrucción en el OB que procesa este evento) es de aproximadamente 210 µs, siempre que un OB de ciclo sea el único subprograma activo que procese el evento de alarma en el momento de su aparición.

Eventos de error de tiempo

La aparición de cualquiera de las condiciones de error de tiempo diferentes causa un evento de error de tiempo. Se soportan los siguientes errores de tiempo:

- Rebase del tiempo de ciclo máximo
- No se puede iniciar el OB solicitado
- Desbordamiento de la cola de espera

El error de rebase del tiempo de ciclo máximo ocurre si el ciclo de programa no finaliza dentro del tiempo de ciclo máximo especificado. Encontrará más información acerca de este error y sobre cómo configurar el tiempo de ciclo máximo e inicializar la vigilancia del tiempo de ciclo en el apartado "Vigilancia del tiempo de ciclo (Página 48)".

El OB solicitado no se puede iniciar si una alarma cíclica o una alarma de retardo solicita un OB, pero éste ya se está ejecutando.

La cola de espera se desborda si las alarmas ocurren más rápidamente de lo que pueden procesarse. El número de eventos pendientes (en cola de espera) se limita utilizando una cola diferente para cada tipo de evento. Si ocurre un evento estando llena la cola de espera correspondiente, se genera un evento de error de tiempo.

Todos los eventos de error de tiempo disparan la ejecución del OB 80 (si existe). Si el OB 80 no existe, la CPU ignora el error. Si el tiempo de ciclo máximo se rebasa dos veces en un mismo ciclo del programa sin que se inicialice el temporizador de ciclo, la CPU pasará a STOP, independientemente de si existe el OB 80. Consulte el apartado "Vigilancia del tiempo de ciclo". (Página 48)

El OB 80 incluye información de arranque que permite determinar qué evento y OB ha generado el error de tiempo. Es posible programar instrucciones dentro del OB 80 para examinar estos valores de arranque y realizar las acciones apropiadas. El OB 80 soporta las siguientes ubicaciones de arranque:

Entrada	Tipo de datos	Descripción
fault_id	BYTE	16#01 - rebase del tiempo de ciclo máximo 16#02 - no se puede iniciar el OB solicitado 16#07 y 16#09 - desbordamiento de la cola de espera
csg_OBnr	OB_ANY	Número de OB que se estaba ejecutando cuando ocurrió el error
csg_prio	UINT	Prioridad del OB que ha causado el error

Cuando se crea un proyecto nuevo, no existe ningún OB 80 de error de tiempo. Si desea agregar un OB 80 de error de tiempo al proyecto, haga doble clic en "Agregar nuevo bloque" en "Bloques de programa" en el árbol del proyecto, seleccione luego "Bloque de organización" y después "OB de error de tiempo".

Eventos de error de diagnóstico

Algunos dispositivos pueden detectar y notificar errores de diagnóstico. La aparición o eliminación de cualquiera de las diferentes condiciones de error de diagnóstico ocasiona un evento de error de diagnóstico. Se soportan los siguientes errores de diagnóstico:

- Falta alimentación externa
- Límite alto excedido
- Límite bajo excedido
- Rotura de hilo
- Cortocircuito

Todos los eventos de error de diagnóstico disparan la ejecución del OB 82 (si existe). Si el OB 82 no existe, la CPU ignora el error. Cuando se crea un proyecto nuevo, no existe ningún OB 82 de error de diagnóstico. Si desea agregar un OB 82 de error de diagnóstico al proyecto, haga doble clic en "Agregar nuevo bloque" en "Bloques de programa" en el árbol del proyecto, seleccione luego "Bloque de organización" y después "OB de alarma de diagnóstico".

El OB 82 incluye información de arranque que ayuda a determinar si el evento se debe a la aparición o eliminación de un error, así como el dispositivo y canal que han notificado el error. Es posible programar instrucciones dentro del OB 82 para examinar estos valores de arranque y realizar las acciones apropiadas. El OB 82 soporta las siguientes ubicaciones de arranque:

Entrada	Tipo de datos	Descripción
IOstate	WORD	Estado de E/S del dispositivo
laddr	HW_ANY	ID de hardware del dispositivo o unidad funcional que ha notificado el error
channel	UINT	Número de canal
multierror	BOOL	TRUE (verdadero) si ha ocurrido más de un error (*no se soporta en versiones anteriores*)

El bit 4 de IO_state indica si el evento se debe a la aparición o eliminación de un error. El bit 4 es "1" si existe un error (p. ej. rotura de hilo), o bien "0" si se ha solucionado el error.

La entrada en KOP contiene el identificador de hardware (ID HW) del dispositivo o unidad funcional que ha devuelto el error. La ID HW se asigna automáticamente cuando se insertan componentes en la vista de dispositivos o redes y aparece en la ficha "Constantes" de "Variables PLC". También se asigna automáticamente un nombre a la ID HW. Estas entradas de la ficha "Constantes" de "Variables PLC" no se pueden modificar.

El número de canal comienza en 0 para la primera entrada (analógica o digital) y en 64 para la primera salida (analógica o digital). Los diferentes offsets son necesarios para distinguir las entradas de las salidas, en caso de que el dispositivo disponga de ambas. Si un error afecta al dispositivo o unidad funcional en su totalidad (p. ej. falta de alimentación externa), se activa el bit más significativo de la palabra del número de canal (número de canal 32768).

Vigilancia del tiempo de ciclo

El tiempo de ciclo es el tiempo que requiere el sistema operativo de la CPU para ejecutar la fase cíclica del estado operativo RUN. La CPU ofrece dos métodos para vigilar el tiempo de ciclo:

- Tiempo de ciclo máximo
- Tiempo de ciclo mínimo fijo

La vigilancia del tiempo de ciclo comienza una vez finalizado el evento de arranque. Esta función se configura en la "Configuración de dispositivos" de la CPU en "Tiempo de ciclo".

La CPU vigila siempre el ciclo y reacciona si se rebasa el tiempo de ciclo máximo. Si se rebasa el tiempo de ciclo máximo configurado, se generará un error que se procesa de dos maneras posibles:

- Si no existe el OB 80 de error de tiempo, la CPU generará un error y continuará ejecutando el programa de usuario.
- Si existe un OB 80 de error de tiempo, la CPU ejecutará el OB 80.

La instrucción RE_TRIGR (Volver a lanzar la vigilancia del tiempo de ciclo) permite resetear el temporizador que mide el tiempo de ciclo. No obstante, esta instrucción funciona únicamente si se ejecuta en un OB de ciclo. La instrucción RE_TRIGR se ignorará si se ejecuta en el OB 80. Si el tiempo de ciclo máximo se rebasa dos veces en un mismo ciclo del programa, sin que la instrucción RE_TRIGR se ejecute entre los dos rebases, la CPU cambiará inmediatamente a estado operativo STOP. Si la instrucción RE_TRIGR se ejecuta repetidas veces, ello puede ocasionar un bucle infinito o un ciclo muy prolongado.

Generalmente, el ciclo se ejecuta tan rápido como sea posible y el ciclo siguiente comienza cuando finaliza el ciclo actual. En función del programa de usuario y las tareas de comunicación, el tiempo de ciclo puede fluctuar de ciclo en ciclo. Para eliminar esta fluctuación, la CPU soporta un tiempo de ciclo mínimo fijo opcional (o "ciclo fijo"). Si está habilitada esta función opcional y se ha definido un tiempo de ciclo mínimo fijo en ms, la CPU mantendrá el tiempo de ciclo mínimo con una tolerancia de ±1 ms para la finalización de cada ciclo.

Si la CPU finaliza el ciclo normal antes del tiempo de ciclo mínimo especificado, aprovechará el tiempo restante para realizar tareas de diagnóstico en runtime y/o procesar peticiones de comunicación. De esta manera, la CPU utiliza siempre un tiempo fijo para finalizar un ciclo.

Si la CPU no finaliza el ciclo normal dentro del tiempo de ciclo mínimo especificado, lo finalizará normalmente (incluyendo el procesamiento de las peticiones de comunicación), sin que el rebase del tiempo de ciclo mínimo cause una reacción del sistema. La tabla siguiente muestra los rangos y valores predeterminados para las funciones de vigilancia del tiempo de ciclo.

Tiempo de ciclo	Rango (ms)	Valor predeterminado
Tiempo de ciclo máximo[1]	1 a 6000	150 ms
Tiempo de ciclo mínimo fijo[2]	1 hasta tiempo de ciclo máximo	Inhibido

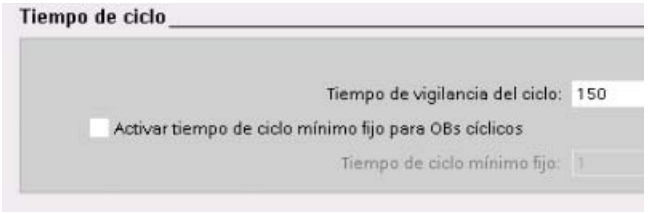
1 El tiempo de ciclo máximo siempre está habilitado. Configure un tiempo de ciclo comprendido entre 1 y 6000 ms. El valor predeterminado es 150 ms.

2 El tiempo de ciclo mínimo fijo es opcional y está inhibido de forma predeterminada. En caso necesario, configure un tiempo de ciclo comprendido entre 1 ms y el tiempo de ciclo máximo.

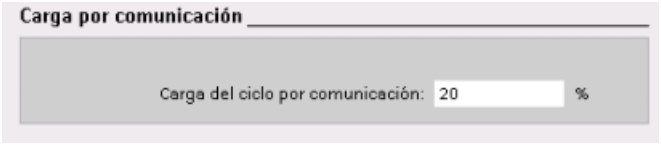
Configurar el tiempo de ciclo y la carga de comunicación

Las propiedades de la CPU en la "Configuración de dispositivos" permiten configurar los siguientes parámetros:

- Tiempo de ciclo: Es posible introducir un tiempo de ciclo máximo. También se puede definir un tiempo de ciclo mínimo fijo.



- Carga de comunicación: Es posible configurar un porcentaje del tiempo que debe dedicarse a las tareas de comunicación.



Encontrará más información sobre el ciclo en el apartado "Vigilancia del tiempo de ciclo". (Página 48)

3.1.3 Memoria de la CPU

Gestión de la memoria

La CPU provee las áreas de memoria siguientes para almacenar el programa de usuario, los datos y la configuración:

- La memoria de carga permite almacenar de forma no volátil el programa de usuario, los datos y la configuración. Cuando un proyecto se carga en la CPU, se almacena primero en el área de memoria de carga. Esta área se encuentra bien sea en una Memory Card (si está disponible) o en la CPU. Esta área de memoria no volátil se conserva incluso tras una pérdida de potencia. La Memory Card ofrece mayor espacio de almacenamiento que el integrado en la CPU.
- La memoria de trabajo ofrece almacenamiento volátil para algunos elementos del proyecto mientras se ejecuta el programa de usuario. La CPU copia algunos elementos del proyecto desde la memoria de carga en la memoria de trabajo. Esta área volátil se pierde si se desconecta la alimentación. La CPU la restablece al retornar la alimentación.
- La memoria remanente permite almacenar de forma no volátil un número limitado de valores de la memoria de trabajo. El área de memoria remanente se utiliza para almacenar los valores de algunas posiciones de memoria durante una pérdida de potencia. Si ocurre un corte de alimentación, la CPU dispone de suficiente tiempo de retención para respaldar los valores de un número limitado de posiciones de memoria definidas. Estos valores remanentes se restablecen al retornar la alimentación.

Para ver el uso de memoria del proyecto actual, haga clic con el botón derecho del ratón en la CPU (o uno de sus bloques) y elija el comando "Carga de la memoria" del menú contextual. Para ver el uso de memoria de la CPU actual, haga doble clic en "Online y diagnóstico", expanda "Diagnóstico" y seleccione "Memoria".

Memoria remanente

Para impedir la pérdida de datos tras un corte de alimentación, es posible definir que ciertos datos sean remanentes. Los siguientes datos pueden configurarse para que sean remanentes:

- Área de marcas (M): El ancho preciso de la memoria para el área de marcas puede definirse en la tabla de variables PLC o el plano de ocupación. El área de marcas remanente comienza siempre en MB0, abarcando consecutivamente un determinado número de bytes. Para definir este valor, haga clic en el botón "Remanencia" de la barra de herramientas de la tabla de variables PLC o del plano de ocupación. Introduzca el número de bytes M que deben ser remanentes a partir de MB0.
- Variables de un bloque de función (FB): Si un FB se ha creado estando activada la casilla "Sólo con direccionamiento simbólico", la interfaz del bloque de este FB incluirá una columna "Remanencia". En esta columna es posible seleccionar "Remanente" o "No remanente" individualmente para cada una de las variables. Un DB instancia que haya sido creado al insertar este FB en el editor de programas muestra asimismo la columna "Remanencia", aunque no permite editarla. El estado remanente no se puede modificar desde la interfaz del bloque del DB de instancia para un FB que haya sido configurado "Sólo con direccionamiento simbólico".

  Si un FB ha sido creado estando desactivada la casilla "Sólo con direccionamiento simbólico", la interfaz del bloque de este FB no incluirá la columna "Remanencia". Un DB instancia que haya sido creado al insertar este FB en el editor de programas muestra y permite editar la columna "Remanencia". En este caso, si se activa la opción "Remanente" para alguna de las variables, se seleccionarán **todas** las variables. Por analogía, si se desactiva la opción "Remanente" para alguna de las variables, se deseleccionarán **todas** las variables. Si un FB se ha configurado **sin** el atributo "Sólo con direccionamiento simbólico", el estado remanente se puede cambiar desde la interfaz del bloque del DB instancia, pero todas las variables se ajustan conjuntamente al mismo estado remanente.

  Tras haber creado el FB no es posible modificar la opción "Sólo con direccionamiento simbólico". Esta opción sólo se puede seleccionar cuando se crea el FB. Para determinar si un FB existente se ha configurado "Sólo con direccionamiento simbólico", haga clic con el botón derecho del ratón en el FB en el árbol del proyecto, elija "Propiedades" y seleccione luego "Atributos".
- Variables de un bloque de datos global: El comportamiento de un DB global respecto a la asignación del estado remanente es similar al de un FB. En función del ajuste de direccionamiento simbólico, es posible definir el estado remanente de algunas o todas las variables de un bloque de datos global.
  - Si el atributo "Sólo con direccionamiento simbólico" está activado para el DB, el estado remanente se podrá ajustar para cada una de las variables.
  - Si el atributo "Sólo con direccionamiento simbólico" está desactivado para el DB, el ajuste de remanencia se aplicará a todas las variables del DB. Por tanto, todas o ninguna de las variables serán remanentes.

Un total de 2048 bytes de datos pueden ser remanentes. Para ver cuánto espacio está disponible, haga clic en el botón "Remanencia" de la barra de herramientas de la tabla de variables PLC o del plano de ocupación. Aunque aquí se especifica el rango remanente para la memoria M, la segunda fila indica la memoria restante disponible en total para M y DB conjuntamente.

Búfer de diagnóstico

La CPU soporta un búfer de diagnóstico que contiene una entrada para cada evento de diagnóstico. Toda entrada incluye la fecha y hora del evento, así como su categoría y descripción. Las entradas se visualizan en orden cronológico. El evento más reciente aparece en primer lugar. Estando conectada la alimentación de la CPU, los 50 eventos más recientes están disponibles en este búfer. Cuando se llena el búfer, un evento nuevo reemplaza al evento más antiguo. Cuando se corta la alimentación, se almacenan los diez eventos más recientes.

Los siguientes tipos de eventos se registran en el búfer de diagnóstico:

- Todo evento de diagnóstico del sistema, p. ej. errores de la CPU y de los módulos
- Todo cambio de estado de la CPU (todo arranque, toda transición a STOP, toda transición a RUN)

Para acceder al búfer de diagnóstico es preciso estar online. El búfer se encuentra en "Online y diagnóstico / Diagnóstico / Búfer de diagnóstico". Encontrará más información acerca de la búsqueda y eliminación de errores en el capítulo "Online y diagnóstico".

Reloj en tiempo real

La CPU soporta un reloj en tiempo real. Un condensador de alto rendimiento suministra la energía necesaria para que el reloj pueda seguir funcionando mientras está desconectada la alimentación de la CPU. El condensador de alto rendimiento se carga mientras está conectada la alimentación de la CPU. Tras haber estado conectada la alimentación de la CPU como mínimo 2 horas, la carga del condensador de alto rendimiento alcanzará para que el reloj pueda funcionar 10 días por lo general.

El reloj en tiempo real sirve para ajustar la hora del sistema que es el tiempo universal coordinado (UTC). STEP 7 Basic ajusta el reloj en tiempo real a la hora del sistema. Se dispone de instrucciones que permiten leer la hora del sistema (RD_SYS_T) o la hora local (RD_LOC_T). La hora local se calcula según la diferencia con respecto a la zona horaria y al horario de verano que se han ajustado en la "Configuración de dispositivos" del reloj de la CPU.

El reloj en tiempo real de la CPU se configura en la propiedad "Hora". También es posible habilitar el horario de verano y determinar su fecha y hora de inicio y fin. Para ajustar el reloj en tiempo real es preciso estar online y en la vista "Online y diagnóstico" de la CPU. Utilice la función "Ajustar hora".

Marcas de sistema y de ciclo

Los bytes de "marcas de sistema" y "marcas de ciclo" se habilitan en las propiedades de la CPU. La lógica del programa puede referenciar los distintos bits de estas funciones.

- Un byte del área de marcas (M) se puede asignar a las marcas de sistema. El byte de marcas de sistema pone a disposición los siguientes cuatro bits que puede referenciar el programa de usuario:
  - El bit "Siempre 0 (low)" está siempre puesto a 0.
  - El bit "Siempre 1 (high)" está siempre puesto a 1.
  - El bit "Diagrama de diagnóstico modificado" se pone a 1 durante un ciclo, una vez que la CPU registre un evento de diagnóstico. Puesto que la CPU no activa el bit "Diagrama de diagnóstico modificado" hasta el final de la primera ejecución de los OBs de ciclo, el programa de usuario no puede detectar si ha cambiado el diagnóstico durante la ejecución de los OBs de arranque, o bien durante la primera ejecución de los OBs de ciclo.
  - El bit "Primer ciclo" se pone a 1 durante el primer ciclo tras finalizar el OB de arranque. (Una vez finalizada la ejecución del primer ciclo, el bit "Primer ciclo" se pone a 0.)
- Es posible asignar un byte de marcas de ciclo en el área de marcas. Todo bit del byte de marcas de ciclo genera un impulso de onda cuadrada. El byte de marcas de ciclo ofrece 8 frecuencias diferentes, comprendidas entre 0,5 Hz (lenta) hasta 10 Hz (rápida). Estos bits pueden utilizarse como bits de control para disparar acciones cíclicas en el programa de usuario, especialmente si se combinan con instrucciones de detección de flancos.

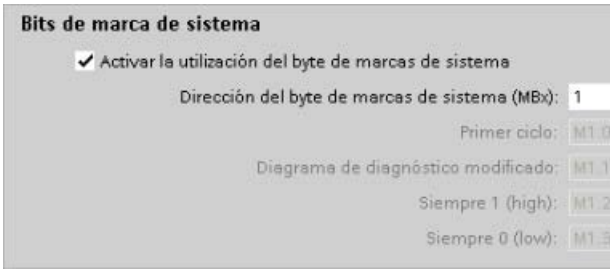
La CPU inicializa estos bytes cuando el estado operativo cambia de STOP a ARRANQUE. Los bits de las marcas de ciclo cambian de forma síncrona al reloj de la CPU durante los estados operativos ARRANQUE y RUN.

⚠ PRECAUCIÓN

Si se sobrescriben los bits de marcas de sistema o de ciclo, se podrían corromper los datos en estas funciones. Debido a ello, el programa de usuario funcionará incorrectamente, lo que podría ocasionar daños materiales y lesiones corporales.

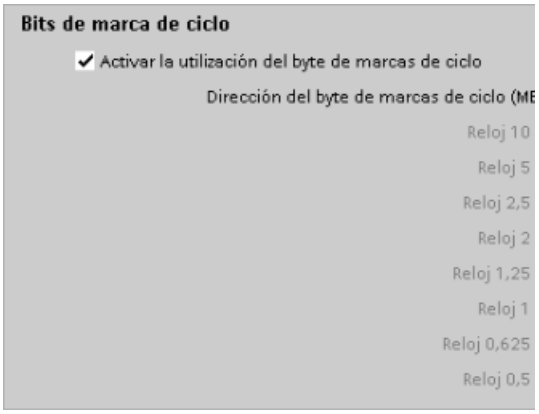
Puesto que las marcas de ciclo y de sistema forman no están reservadas en la memoria M, las instrucciones o comunicaciones pueden escribir en estas posiciones de memoria y corromper los datos.

Evite escribir datos en estas direcciones para garantizar el funcionamiento correcto de estas funciones y prevea siempre un circuito de parada de emergencia para el proceso o la máquina.



Las marcas de sistema configuran un byte que se activa (se pone a 1) en las siguientes condiciones.

- Primer ciclo: Se activa en el primer ciclo en modo RUN
- Diagrama de diagnóstico modificado:
- Siempre 1 (high): Siempre activado
- Siempre 0 (low): Siempre desactivado



Las marcas de ciclo configuran un byte que activa y desactive los distintos bits en intervalos fijos.

Las marcas de ciclo generan un impulso de onda cuadrada en el bit correspondiente del área de marcas. Estos bits pueden utilizarse como bits de control para disparar acciones cíclicas en el programa de usuario, especialmente si se combinan con instrucciones de detección de flancos.

Configurar la reacción de las salidas cuando la CPU esté en STOP

Es posible configurar la reacción de las salidas digitales y analógicas cuando la CPU se encuentre en estado operativo STOP. Es posible congelar los valores de las salidas o aplicar un valor sustitutivo a cualquier salida de una CPU, SB o SM:

- Sustituir un valor de salida específico (ajuste predeterminado): Para cada salida (canal) de la CPU, de la SB o del SM se define un valor sustitutivo.

  El valor sustitutivo predeterminado de los canales de salida digitales es OFF y el de los canales de salida analógicos es 0.

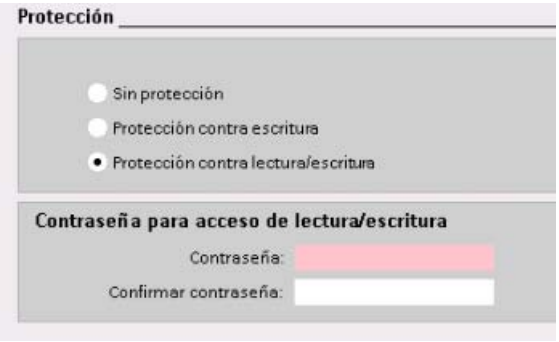
- Congelar las salidas a su último estado: Las salidas conservan su valor actual en el momento de la transición de RUN a STOP. Después del arranque, las salidas se ajustan al valor sustitutivo predeterminado.

La reacción de las salidas se configura en la "Configuración de dispositivos". Seleccione los dispositivos individuales y utilice la ficha "Propiedades" para configurar las salidas de cada dispositivo.

Cuando la CPU cambia de RUN a STOP, conserva la memoria imagen de proceso y escribe los valores correspondientes en las salidas digitales y analógicas según la configuración.

3.1.4 Protección por contraseña de la CPU S7-1200

La CPU ofrece 3 niveles de protección para restringir el acceso a determinadas funciones. Al configurar el nivel de protección y la contraseña de una CPU, se limitan las funciones y áreas de memoria accesibles sin introducir una contraseña.



Para configurar la contraseña, proceda del siguiente modo:

1. Seleccione la CPU en la "Configuración de dispositivos".
2. Seleccione la ficha "Propiedades" en la ventana de inspección.
3. Elija la propiedad "Protección" para seleccionar el nivel de protección e introducir una contraseña.

La contraseña distingue entre mayúsculas y minúsculas.

Todo nivel permite acceder a ciertas funciones sin introducir una contraseña. El ajuste predeterminado de la CPU es "sin restricción" y "sin protección por contraseña". Para restringir el acceso a una CPU, es preciso configurar sus propiedades e introducir la contraseña.

Si la contraseña se introduce a través de una red, ésto no afecta la protección por contraseña de la CPU. Una CPU protegida por contraseña permite el acceso ilimitado sólo a un usuario a la vez. La protección por contraseña no es aplicable a la ejecución de las instrucciones del programa de usuario incluyendo las funciones de comunicación. Si se introduce la contraseña correcta es posible acceder a todas las funciones.

El nivel de protección de la CPU no restringe la comunicación entre PLCs (mediante instrucciones de comunicación en los bloques lógicos). Tampoco se restringen las funciones HMI.

Nivel de protección	Restricciones de acceso
Sin protección	Permite el acceso completo sin protección por contraseña.
Protección contra escritura	Ofrece acceso a los dispositivos HMI y permite toda la comunicación entre PLCs sin protección por contraseña. La contraseña se requiere para modificar (escribir en) la CPU y cambiar su estado operativo (RUN/STOP).
Protección contra lectura/escritura	Ofrece acceso a los dispositivos HMI y permite toda la comunicación entre PLCs sin protección por contraseña. La contraseña se requiere para leer los datos de la CPU, modificar (escribir en) la CPU y cambiar su estado operativo (RUN/STOP).

3.1.5 Recuperación si se olvida la contraseña

Si se ha olvidado la contraseña de una CPU protegida por contraseña, es preciso utilizar una tarjeta de transferencia vacía para borrar el programa protegido por contraseña. La tarjeta de transferencia vacía borra la memoria de carga interna de la CPU. Luego es posible cargar un programa de usuario nuevo desde STEP 7 Basic en la CPU.

Encontrará más información sobre cómo crear y utilizar una tarjeta de transferencia vacía en el apartado Tarjeta de transferencia (Página 71).

⚠ ADVERTENCIA

Si se inserta una tarjeta de transferencia en una CPU que esté funcionando, la CPU pasará a STOP. Los dispositivos de control pueden fallar y provocar condiciones no seguras, causando a su vez reacciones inesperadas de los equipos controlados. Las reacciones inesperadas podrían producir la muerte, lesiones corporales graves y/o daños materiales.

Extraiga la tarjeta de transferencia antes de cambiar la CPU a estado operativo RUN.

3.2 Almacenamiento de datos, áreas de memoria y direccionamiento

La CPU ofrece varias opciones para almacenar datos durante la ejecución del programa de usuario:

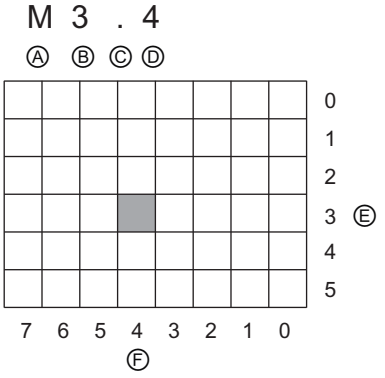
- Memoria global: La CPU ofrece distintas áreas de memoria, incluyendo entradas (I), salidas (Q) y marcas (M). Todos los bloques lógicos pueden acceder sin restricción alguna a esta memoria.
- Bloque de datos (DB): Es posible incluir DBs en el programa de usuario para almacenar los datos de los bloques lógicos. Los datos almacenados se conservan cuando finaliza la ejecución del bloque lógico asociado. Un DB "global" almacena datos que pueden ser utilizados por todos los bloques lógicos, mientras que un DB instancia almacena datos para un bloque de función (FB) especifico y está estructurado según los parámetros del FB.
- Memoria temporal: Cada vez que se llama un bloque lógico, el sistema operativo de la CPU asigna la memoria temporal o local (L) que debe utilizarse durante la ejecución del bloque. Cuando finaliza la ejecución del bloque lógico, la CPU reasigna la memoria local para la ejecución de otros bloques lógicos.

Toda posición de memoria diferente tiene una dirección unívoca. El programa de usuario utiliza estas direcciones para acceder a la información de la posición de memoria.

Área de memoria	Descripción	Forzado permanente	Remanente
I Memoria imagen de proceso de las entradas	Se copia de las entradas físicas al inicio del ciclo	No	No
I_:P (entrada física)	Lectura inmediata de las entradas físicas de la CPU, SB y SM	Sí	No

Área de memoria	Descripción	Forzado permanente	Remanente
Q Memoria imagen de proceso de las salidas Q_:P (salida física)	Se copia en las salidas físicas al inicio del ciclo	No	No
	Escritura inmediata en las salidas físicas de la CPU, SB y SM	Sí	No
M Área de marcas	Control y memoria de datos	No	Sí
L Memoria temporal	Datos locales temporales de un bloque	No	No
DB Bloque de datos	Memoria de datos y de parámetros de FBs	No	Sí

Toda posición de memoria diferente tiene una dirección unívoca. El programa de usuario utiliza estas direcciones para acceder a la información de la posición de memoria. La figura muestra cómo acceder a un bit (lo que también se conoce como direccionamiento "byte.bit"). En este ejemplo, el área de memoria y la dirección del byte (I = entrada y 3 = byte 3) van seguidas de un punto (".") que separa la dirección del bit (bit 4).



A Identificador de área
B Dirección de byte: Byte 3
C Separador ("byte.bit")
D Bit del byte (bit 4 de 8)
E Bytes del área de memoria
F Bits del byte seleccionado

A los datos de la mayoría de las áreas de memoria (I, Q, M, DB y L) se puede acceder como bytes, palabras o palabras dobles utilizando el formato "dirección de byte". Para acceder a un byte, una palabra o una palabra doble de datos en la memoria, la dirección debe especificarse de forma similar a la dirección de un bit. Esto incluye un identificador de área, el tamaño de los datos y la dirección de byte inicial del valor de byte, palabra o palabra doble. Los designadores de tamaño son B (byte), W (palabra) y D (palabra doble), p. ej. IB0, MW20 ó QD8. Las direcciones tales como I0.3 y Q1.7 acceden a la memoria imagen de proceso. Para acceder a la entrada o salida física es preciso añadir ":P" a la dirección (p. ej. I0.3:P, Q1.7:P o "Stop:P").

Acceder a los datos en las áreas de memoria de la CPU

STEP 7 Basic facilita la programación simbólica. Normalmente, las variables se crean en variables PLC, en un bloque de datos o en la interfaz arriba de un OB, FC o FB. Estas variables incluyen un nombre, tipo de datos, offset y comentario. Además, es posible definir un valor inicial en un bloque de datos. Estas variables pueden utilizarse durante la programación, introduciendo el nombre de la variable en el parámetro de la instrucción. Opcionalmente se puede introducir el operando absoluto (memoria, área, tamaño y offset) en el parámetro de la instrucción. Los ejemplos de los apartados siguientes muestran cómo introducir operandos absolutos. El editor de programación antepone automáticamente el carácter % al operando absoluto. Es posible cambiar entre las siguientes vistas del editor de programación: simbólica, simbólica y absoluta o absoluta.

I (memoria imagen de proceso de las entradas): La CPU consulta las entradas de periferia (físicas) inmediatamente antes de ejecutar el OB de ciclo en cada ciclo y escribe estos valores en la memoria imagen de proceso de las entradas. A la memoria imagen de proceso de las entradas se puede acceder en formato de bit, byte, palabra o palabra doble. Aunque se permiten accesos de lectura y escritura, generalmente sólo se leen las entradas de la memoria imagen de proceso.

Bit	I[dirección de byte].[dirección de bit]	I0.1
Byte, palabra o palabra doble	I[tamaño][dirección de byte inicial]	IB4, IW5 o ID12

Añadiendo una ":P" a la dirección es posible leer inmediatamente las entradas digitales y analógicas de la CPU, SB o SM. La diferencia entre un acceso que utiliza I_:P en vez de I es que los datos provienen directamente de las entradas direccionadas, en vez de la memoria imagen de proceso de las entradas. El acceso I_:P también se denomina "lectura inmediata", puesto que los datos se leen inmediatamente del origen y no de una copia creada la última vez que se actualizó la memoria imagen de proceso de las entradas.

Puesto que las entradas físicas reciben sus valores directamente de los aparatos de campo conectados a ellas, está prohibido escribir en estas entradas. Por tanto, los accesos I_:P son de sólo lectura, a diferencia de los accesos I que pueden ser de lectura o escritura.

Los accesos I_:P también están restringidos por el tamaño de las entradas que soporta una única CPU, SB o SM, redondeado al byte más próximo. Por ejemplo, si las entradas de una SB de 2 DI / 2 DQ se configuran de manera que comiencen en I4.0, las entradas se podrán direccionar como I4.0:P e I4.1:P, o bien IB4:P. Aunque no se rechazan los accesos a I4.2:P hasta I4.7:P, no tienen sentido ya que estas entradas no se utilizan. Los accesos a IW4:P y ID4:P están prohibidos, puesto que exceden el offset de bytes asociado a la SB.

Los accesos mediante I_:P no afectan el valor correspondiente almacenado en la memoria imagen de proceso de las entradas.

Bit	I[dirección de byte].[dirección de bit]:P	I0.1:P
Byte, palabra o palabra doble	I[tamaño][dirección de byte inicial]:P	IB4:P, IW5:P o ID12:P

Q (memoria imagen de proceso de las salidas): La CPU copia los valores almacenados en la imagen de proceso de las salidas en las salidas físicas. A la memoria imagen de proceso de las salidas se puede acceder en formato de bit, byte, palabra o palabra doble. Se permiten accesos de lectura y escritura a la memoria imagen de proceso de las salidas.

Bit	Q[dirección de byte].[dirección de bit]	Q1.1
Byte, palabra o palabra doble	Q[tamaño][dirección de byte inicial]	QB5, QW10, QD40

Añadiendo una ":P" a la dirección es posible escribir inmediatamente en las salidas digitales y analógicas físicas de la CPU, SB o SM. La diferencia entre un acceso que utiliza Q_:P en vez de Q es que los datos se escriben directamente en las salidas direccionadas y también en la memoria imagen de proceso de las salidas. El acceso Q_:P se denomina a veces "escritura inmediata", puesto que los datos se escriben inmediatamente en la salida de destino. Por tanto, ésta no tiene que esperar hasta la siguiente actualización desde la memoria imagen de proceso de las salidas.

Puesto que las salidas físicas controlan directamente los aparatos de campo conectados a ellas, está prohibido leer de estas salidas. Por tanto, los accesos Q_:P son de sólo escritura, a diferencia de los accesos Q que pueden ser de lectura o escritura.

Los accesos Q_:P también están restringidos por el tamaño de las salidas que soporta una única CPU, SB o SM, redondeado al byte más próximo. Por ejemplo, si las salidas de una SB de 2 DI / 2 DQ se configuran de manera que comiencen en Q4.0, las salidas se podrán direccionar como Q4.0:P y Q4.1:P, o bien QB4:P. Aunque no se rechazan los accesos a QB4.2:P hasta QB4.7:P, no tienen sentido ya que estas salidas no se utilizan. Los accesos a QW4:P y QD4:P están prohibidos, puesto que exceden el offset de bytes asociado a la SB.

Los accesos mediante Q_:P afectan tanto la salida física como el valor correspondiente almacenado en la memoria imagen de proceso de las salidas.

Bit	Q[dirección de byte].[dirección de bit]:P	Q1.1:P
Byte, palabra o palabra doble	Q[tamaño][dirección de byte inicial]:P	QB5:P, QW10:P o QD40:P

M (área de marcas): El área de marcas (memoria M) puede utilizarse para relés de control y datos para almacenar el estado intermedio de una operación u otra información de control. Al área de marcas se puede acceder en formato de bit, byte, palabra o palabra doble. Se permiten accesos de lectura y escritura al área de marcas.

Bit	M[dirección de byte].[dirección de bit]	M26.7
Byte, palabra o palabra doble	M[tamaño][dirección de byte inicial]	MB20, MW30, MD50

Temp (memoria temporal): La CPU asigna la memoria temporal según sea necesario. La CPU asigna la memoria temporal al bloque lógico cuando éste se inicia (en caso de un OB) o se llama (en caso de una FC o un FB). La asignación de la memoria temporal a un bloque lógico puede reutilizar las mismas posiciones de memoria temporal usadas anteriormente por un OB, FC o FB diferente. La CPU no inicializa la memoria temporal durante la asignación. por lo que esta memoria puede contener un valor cualquiera.

La memoria temporal es similar al área de marcas, con una excepción importante: el área de marcas tiene un alcance "global", en tanto que la memoria temporal tiene un alcance "local".

- Área de marcas: Cualquier OB, FC o FB puede acceder a los datos del área de marcas. Esto significa que los datos están disponibles globalmente para todos los elementos del programa de usuario.
- Memoria temporal: El acceso a los datos de la memoria temporal está restringido al OB, FC o FB que ha creado o declarado la posición de memoria temporal. Las posiciones de memoria temporal son siempre locales y no son compartidas por diferentes bloques lógicos, incluso si un bloque lógico llama otro bloque lógico. Ejemplo: Cuando un OB llama una FC, ésta no puede acceder a la memoria temporal del OB que ha efectuado la llamada.

La CPU pone a disposición memoria temporal (local) para cada una de las tres clases de prioridad de OBs:

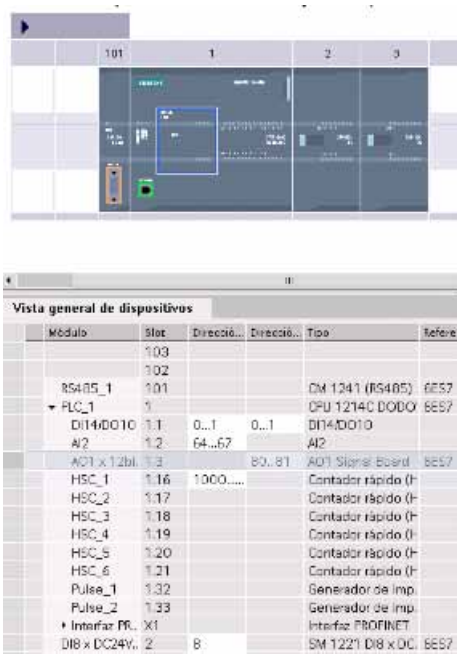
- 16 KB para arranque y ciclo, incluyendo los FBs y FCs asociados
- 4 KB para eventos de alarma estándar, incluyendo FBs y FCs
- 4 KB para eventos de alarma de error, incluyendo FBs y FCs

A la memoria temporal se puede acceder sólo con direccionamiento simbólico.

DB (bloque de datos): Los bloques de datos se utilizan para almacenar diferentes tipos de datos, incluyendo el estado intermedio de una operación u otros parámetros de control de FBs, así como estructuras de datos requeridas para numerosas instrucciones, p. ej. temporizadores y contadores. Es posible determinar que un bloque de datos sea de lectura/escritura o de sólo lectura. A los bloques de datos se puede acceder en formato de bit, byte, palabra o palabra doble. A los bloques de datos que se pueden leer y escribir se permiten accesos de lectura y escritura. A los bloques de datos de sólo lectura se permiten sólo los accesos de lectura.

Bit	DB[número de bloque de datos].DBX[dirección de byte].[dirección de bit]	DB1.DBX2.3
Byte, palabra o palabra doble	DB[número de bloque de datos].DB[tamaño][dirección de byte inicial]	DB1.DBB4, DB10.DBW2, DB20.DBD8

Direccionar las E/S de la CPU y los módulos de E/S



Al agregar una CPU y módulos de E/S en la ventana de configuración, se asignan automáticamente direcciones I y Q.

El direccionamiento predeterminado puede cambiarse seleccionando el campo de dirección en la ventana de configuración y tecleando números nuevos. Las entradas y salidas digitales se asignan en bytes completos (de 8 bits), sin importar si el módulo utiliza todas las E/S o no. Las entradas y salidas analógicas se asignan en grupos de 2 (4 bytes). En este ejemplo, la dirección de DI16 se podría cambiar a 2..3 en vez de 8..9. La herramienta cambia los rangos de direcciones cuyo tamaño sea incorrecto o que causen conflictos con otras direcciones.

La figura muestra un ejemplo de una CPU 1214C con dos SMs.

3.3 Tipos de datos

Los tipos de datos se utilizan para determinar el tamaño de un elemento de datos y cómo deben interpretarse los datos. Todo parámetro de instrucción soporta como mínimo un tipo de datos. Algunos parámetros soportan varios tipos de datos. Sitúe el cursor sobre el campo de parámetro de una instrucción para ver qué tipos de datos soporta el parámetro en cuestión.

Un parámetro formal es el identificador en una instrucción que indica la ubicación de los datos que deben utilizarse (ejemplo: la entrada IN1 de una instrucción ADD). Un parámetro actual es la posición de memoria o constante que contiene los datos que debe utilizar la instrucción (ejemplo: %MD400 "Número_de_widgets"). El tipo de datos del parámetro actual definido por el usuario debe concordar con uno de los tipos de datos que soporta el parámetro formal especificado por la instrucción.

Al definir un parámetro actual es preciso indicar una variable (símbolo) o una dirección absoluta. Las variables asocian un nombre simbólico (nombre de variable) con un tipo de datos, área de memoria, offset y comentario. Se pueden crear bien sea en el editor de variables PLC, o bien en la interfaz del bloque (OB, FC, FB o DB). Si se introduce una dirección absoluta que no tenga una variable asociada, es preciso utilizar un tamaño apropiado que coincida con el tipo de datos soportado. Al realizar la entrada se creará una variable predeterminada.

También es posible introducir un valor de constante para numerosos parámetros de entrada. La tabla siguiente muestra los tipos de datos simples soportados, incluyendo ejemplos de entrada de constantes. Todos los tipos de datos, excepto String, están disponibles en el editor de variables PLC y en la interfaz del bloque. String sólo está disponible en la interfaz del bloque. La tabla siguiente muestra los tipos de datos simples.

Tipo de datos	Tamaño (bits)	Rango	Ejemplos de entrada de constantes
Bool	1	0 a 1	TRUE, FALSE, 0, 1
Byte	8	16#00 a 16#FF	16#12, 16#AB
Word	16	16#0000 a 16#FFFF	16#ABCD, 16#0001
DWord	32	16#00000000 a 16#FFFFFFFF	16#02468ACE
Char	8	16#00 a 16#FF	'A', 't', '@'
Sint	8	128 a 127	123, -123
Int	16	32.768 a 32.767	123, -123
Dint	32	-2.147.483.648 a 2.147.483.647	123, -123
USInt	8	0 a 255	123
UInt	16	0 a 65.535	123
UDInt	32	0 a 4.294.967.295	123
Real	32	+/-1,18 x 10^{-38} a +/-3,40 x 10^{38}	123,456, -3,4, -1,2E+12, 3,4E-3
LReal	64	+/-2,23 x 10^{-308} a +/-1,79 x 10^{308}	12345.123456789 -1,2E+40
Time	32	T#-24d_20h_31m_23s_648ms a T#24d_20h_31m_23s_647ms Almacenado como: -2,147,483,648 ms a +2,147,483,647 ms	T#5m_30s 5#-2d T#1d_2h_15m_30x_45ms
String	Variable	0 a 254 caracteres en tamaño de byte	'ABC'

Aunque no están disponibles como tipos de datos, las instrucciones de conversión soportan el siguiente formato numérico BCD.

Formato	Tamaño (bits)	Rango numérico	Ejemplos de entrada de constantes
BCD16	16	-999 a 999	123, -123
BCD32	32	-9999999 a 9999999	1234567, -1234567

Formato de números reales

Los números reales (o en coma flotante) se representan como números de 32 bits de precisión simple (Real) o de 64 bits de precisión doble (LReal) según la norma ANSI/IEEE 7541985. Los números en coma flotante de precisión simple tienen una exactitud de hasta 6 dígitos significativos, en tanto que los de precisión doble tienen una exactitud de hasta 15 dígitos significativos. Al introducir una constante en coma flotante, pueden indicarse como máximo 6 (Real) o 15 (LReal) dígitos significativos para conservar la precisión.

Los cálculos que comprenden una serie de valores prolongada, incluyendo números muy grandes y muy pequeños, pueden producir resultados inexactos. Esto puede suceder si los números difieren en 10 a la potencia de x, siendo x > 6 (Real) ó 15 (LReal). Ejemplo (Real): 100 000 000 + 1 = 100 000 000.

Formato del tipo de datos STRING

La CPU soporta el tipo de datos STRING para almacenar una secuencia de caracteres de un byte. El tipo de datos STRING contiene el número de caracteres total (número de caracteres de la cadena) y el número de caracteres actual. El tipo de datos STRING ofrece como máximo 256 bytes para almacenar el número máximo de caracteres total (1 byte), el número de caracteres actual (1 byte) y como máximo 254 caracteres. Cada carácter se almacena en 1 byte.

Es posible utilizar cadenas literales (constantes) para los parámetros de instrucción del tipo IN entre comillas sencillas. Por ejemplo, 'ABC' es una cadena de tres caracteres que podría utilizarse como entrada para el parámetro IN de la instrucción S_CONV. También es posible crear variables de cadena, seleccionando para ello el tipo de datos "String" en la interfaz de bloques OB, FC, FB y DB. En el editor de variables PLC no se pueden crear cadenas. El tamaño máximo de la cadena puede indicarse en bytes al declarar la cadena. Por ejemplo, "MiCadena[10]" especificaría un tamaño máximo de 10 bytes para MiCadena. Si se omiten los corchetes con un indicador de tamaño máximo, se supone que el tamaño es 254.

El ejemplo máximo define un STRING con un número máximo de caracteres de 10 y un número de caracteres actual de 3. Esto significa que el STRING contiene actualmente 3 caracteres de un byte, pero que podría ampliarse de manera que contenga como máximo 10 caracteres de un byte.

Número de caracteres total	Número de caracteres actual	Carácter 1	Carácter 2	Carácter 3	...	Carácter 10
10	3	'C' (16#43)	'A' (16#41)	'T' (16#54)	...	-
Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	...	Byte 11

Matrices

Es posible crear una matriz que contenga varios elementos de un tipo de datos simple. Las matrices pueden crearse en las interfaces de bloques OB, FC, FB y DB. En el editor de variables PLC no se pueden crear matrices.

Para crear una matriz en la interfaz del bloque, seleccione el tipo de datos "Array [lo .. hi] of type" y modifique luego "lo", "hi" y "type" como se indica a continuación:

- lo - el índice inicial (más bajo) de la matriz
- hi - el índice final (más alto) de la matriz
- type - uno de los tipos de datos simples, p. ej. BOOL, SINT, UDINT

Se soportan los índices negativos. El nombre de la matriz se puede introducir en la columna "Nombre" de la interfaz del bloque. La tabla siguiente muestra ejemplos de matrices, tal y como podrían aparecer en la interfaz del bloque:

Nombre	Tipo de datos	Comentario
My_Bits	Array [1 .. 10] of BOOL	Esta matriz contiene 10 valores booleanos
My_Data	Array [-5 .. 5] of SINT	Esta matriz contiene 11 valores SINT, incluyendo el índice 0

Los elementos de matriz se referencian en el programa con la sintaxis siguiente:

- Array_name[*i*], donde *i* es el índice deseado.

Ejemplos que podrían aparecer en el editor de programación como entrada de parámetro:

- #My_Bits[3] - referencia el tercer bit de la matriz "My_Bits"
- #My_Data[-2] - referencia el cuatro SINT de la matriz "My_Data"

El editor de programación inserta automáticamente el símbolo #.

Tipo de datos DTL (Data and Time Long)

El tipo de datos DTL es una estructura de 12 bytes que almacena información de fecha y hora en una estructura predefinida. Un DTL se puede definir en la memoria temporal del bloque o en un DB.

Longitud (bytes)	Formato	Rango de valores	Ejemplo de un valor de entrada
12	Reloj y calendario (año-mes día:hora:minuto:segundo.nanosegundos)	Min.: DTL#1970-01-01-00:00:00.0 Max.: DTL#2554-12-31-23:59:59.999 999 999	DTL#2008-12-16-20:30:20.250

Todo componente de DTL contiene un diferente tipo de datos y rango de valores. El tipo de datos de un valor especificado debe concordar con el tipo de datos de los componentes correspondientes.

Byte	Componente	Tipo de datos	Rango de valores
0	Año	UINT	1970 a 2554
1			
2	Mes	USINT	1 a 12
3	Día	USINT	1 a 31
4	Día de la semana	USINT	1(domingo) a 7(sábado) El día de la semana no se considera en la entrada del valor.
5	Hora	USINT	0 a 23
6	Minuto	USINT	0 a 59
7	Segundo	USINT	0 a 59
8	Nanosegundos	UDINT	0 a 999 999 999
9			
10			
11			

3.4 Utilizar una Memory Card

ATENCIÓN
La CPU sólo soporta la SIMATIC Memory Card (Página 359) preformateada. Si se utiliza un formateador de Windows para reformatear la SIMATIC Memory Card, la CPU no podrá utilizar la Memory Card reformateada. Antes de copiar cualquier programa en la Memory Card formateada, borre todo programa almacenado previamente en ella.

Utilice la Memory Card como tarjeta de transferencia o de programa. Todo programa que se copie en la Memory Card contendrá todos los bloques lógicos y de datos, los objetos tecnológicos y la configuración del dispositivo. En cambio, **no** contendrá los valores de forzado permanente.

- Utilice una tarjeta de transferencia para copiar un programa en la memoria de carga interna de la CPU sin utilizar STEP 7 Basic. Una vez insertada la tarjeta de transferencia, la CPU borra primero el programa de usuario y los valores de forzado permanente de la memoria de carga interna y copia luego el programa desde la tarjeta de transferencia en la memoria de carga interna. Tras finalizar la transferencia es preciso extraer la tarjeta de transferencia.

  Una tarjeta de transferencia vacía puede utilizarse para acceder a una CPU protegida por contraseña si se ha perdido u olvidado la contraseña (Página 60). Cuando se inserta una tarjeta de transferencia vacía, se borra el programa protegido por contraseña en la memoria de carga interna de la CPU. Luego es posible cargar un programa nuevo en la CPU.

- Utilice una tarjeta de programa como memoria de carga externa para la CPU. Cuando se inserta una tarjeta de programa, se borra toda la memoria de carga interna de la CPU (el programa de usuario y los valores de forzado permanente). La CPU ejecuta luego el programa en la memoria de carga externa (la tarjeta de programa). Si se realiza una carga en una CPU que tenga insertada una tarjeta de programa, se actualizará sólo la memoria de carga externa (la tarjeta de programa).

  Puesto que la memoria de carga interna de la CPU se borró cuando se insertó la tarjeta de programa, ésta **debe** permanecer en la CPU. Si se extrae la tarjeta de programa, la CPU pasará a estado operativo STOP. (El LED de error parpadea para indicar que se ha extraído la tarjeta de programa.)

El programa contenido en una Memory Card incluye los bloques lógicos y de datos, los objetos tecnológicos y la configuración del dispositivo. La Memory Card **no** contiene valores de forzado permanente. Los valores de forzado permanente no forman parte del programa, pero se almacenan en la memoria de carga interna (en la CPU) o externa (en una tarjeta de programa). Si se inserta una tarjeta de programa en la CPU, STEP 7 Basic aplicará los valores de forzado permanente sólo a la memoria de carga externa en la tarjeta de programa.

3.4.1 Insertar una Memory Card en la CPU

⚠ ADVERTENCIA

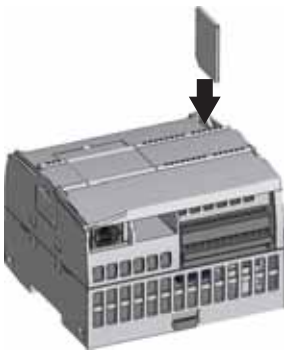
Si se inserta una Memory Card (configurada como tarjeta de programa o transferencia) en una CPU que esté funcionando, la CPU pasará inmediatamente a STOP. Los dispositivos de control pueden fallar y provocar condiciones no seguras, causando a su vez reacciones inesperadas de los equipos controlados. Las reacciones inesperadas podrían producir la muerte, lesiones corporales graves y/o daños materiales. Prevea siempre un circuito de parada de emergencia para la aplicación o proceso.

PRECAUCIÓN

Las descargas electroestáticas pueden deteriorar la Memory Card o la ranura para tarjetas en la CPU.

Al manejar la Memory Card deberá estar en contacto con una superficie conductiva puesta a tierra y/o llevar una muñequera antiestática. Guarde la Memory Card en una caja conductiva.

Para insertar una Memory Card, abra la tapa superior de la CPU e inserte la Memory Card en la ranura. Un conector de trinquete facilita la inserción y extracción. La Memory Card está diseñada de manera que pueda insertarse en un único sentido.





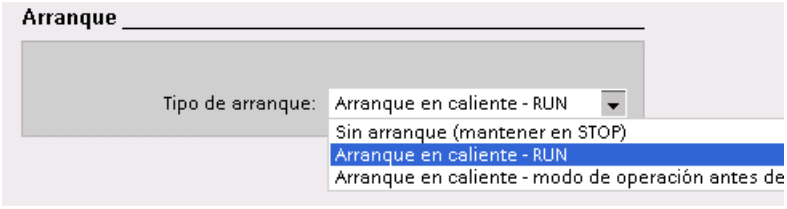
Asegúrese de que la Memory Card no está protegida contra escritura. Deslice el interruptor de protección fuera de la posición "Lock".

Nota

Si se inserta una Memory Card estando la CPU en estado operativo STOP, el búfer de diagnóstico mostrará un mensaje de que se ha iniciado la evaluación de la Memory Card. Ignore este mensaje. La evaluación de la Memory Card no comienza hasta que la CPU se conmuta a estado operativo RUN, se realiza un borrado total de la CPU (MRES) o se desconecta y vuelve a conectar la alimentación de la CPU.

3.4.2 Configurar los parámetros de arranque de la CPU antes de copiar el proyecto en la Memory Card

Cuando un programa se copia en una tarjeta de transferencia o de programa, incluye los parámetros de arranque de la CPU. Antes de copiar el programa en la Memory Card, asegúrese de que se ha configurado el estado operativo de la CPU posterior a la desconexión y conexión de la alimentación. Seleccione si la CPU debe arrancar en estado operativo STOP o RUN, o bien en el estado operativo anterior (a la desconexión y conexión de la alimentación).



3.4.3 Tarjeta de transferencia

PRECAUCIÓN
Las descargas electroestáticas pueden deteriorar la Memory Card o la ranura para tarjetas en la CPU. Cuando maneje la Memory Card deberá estar en contacto con una superficie conductiva puesta a tierra y/o llevar una muñequera antiestática. Guarde la Memory Card en una caja conductiva.

Crear una tarjeta de transferencia

Recuerde siempre que es necesario configurar los parámetros de arranque de la CPU (Página 71) antes de copiar un programa en la tarjeta de transferencia. Para crear una tarjeta de transferencia, proceda del siguiente modo:

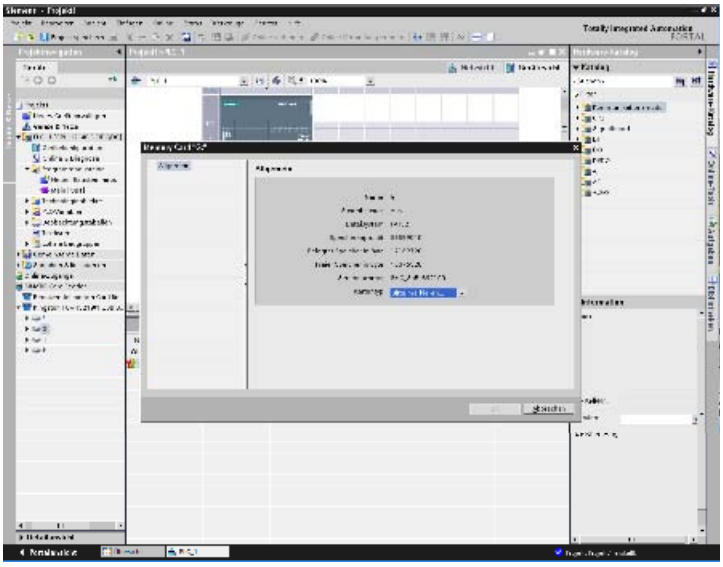
1. Inserte una Memory Card vacía en el lector/grabador de tarjetas conectado a la programadora.

   (Si la Memory Card no está vacía, borre la carpeta "SIMATIC.S7S" y el archivo "S7_JOB.S7S" de la Memory Card utilizando p. ej. el Explorador de Windows.)

2. En el árbol del proyecto (vista del proyecto), expanda la carpeta "SIMATIC Card Reader" y seleccione el lector de tarjetas deseado.
3. Para abrir el diálogo "Memory Card", haga clic con el botón derecho del ratón en la Memory Card en el lector de tarjetas y elija el comando "Propiedades" del menú contextual.

4. En el diálogo "Memory Card", seleccione "Transferencia" en la lista desplegable.

   STEP 7 Basic crea entonces la tarjeta de transferencia vacía. Si está creando una tarjeta de transferencia vacía p. ej. para realizar una recuperación tras olvidar la contraseña de la CPU (Página 60), extraiga la tarjeta de transferencia del lector de tarjetas.



5. Agregue el programa seleccionando la CPU (p. ej. PLC_1 [CPU 1214 DC/DC/DC]) en el árbol del proyecto y arrastrándola hasta la Memory Card. (Como alternativa, copie la CPU e insértela en la Memory Card.) Cuando la CPU se copia en la Memory Card se abre el diálogo "Cargar vista preliminar".
6. En el diálogo "Cargar vista preliminar", haga clic en el botón "Cargar" para copiar la CPU en la Memory Card.
7. Cuando aparezca un mensaje indicando que la CPU (el programa) se ha cargado sin errores, haga clic en el botón "Finalizar".

Utilizar una tarjeta de transferencia

Para transferir el programa a una CPU, proceda del siguiente modo:

1. Inserte la tarjeta de transferencia en la CPU (Página 70). Si la CPU está en RUN, pasará a estado operativo STOP. (El LED de mantenimiento parpadea para indicar que debe evaluarse la Memory Card.)
2. Utilice una de las opciones siguientes para evaluar la Memory Card:
   - Desconecte y vuelva a conectar la alimentación de la CPU.
   - Cambie el estado operativo de STOP a RUN.
   - Realice un borrado total (MRES).
3. Tras rearrancar y evaluar la Memory Card, la CPU copiará el programa en la memoria de carga interna de la CPU. Una vez finalizada la operación de copia, el LED de mantenimiento de la CPU parpadeará para indicar que la tarjeta de transferencia se puede extraer.
4. Extraiga la tarjeta de "Transferencia" de la CPU.
5. Utilice una de las opciones siguientes para evaluar el programa nuevo que se ha transferido a la memoria de carga interna:
   - Desconecte y vuelva a conectar la alimentación de la CPU.
   - Cambie el estado operativo de STOP a RUN.
   - Realice un borrado total (MRES).

La CPU pasa entonces al modo de arranque (RUN o STOP) configurado para el proyecto.

Nota

Extraiga la tarjeta de transferencia antes de cambiar la CPU a estado operativo RUN.

3.4.4 Tarjeta de programa

PRECAUCIÓN
Las descargas electroestáticas pueden deteriorar la Memory Card o la ranura para tarjetas en la CPU. Al manejar la Memory Card deberá estar en contacto con una superficie conductiva puesta a tierra y/o llevar una muñequera antiestática. Guarde la Memory Card en una caja conductiva.



Asegúrese de que la Memory Card no está protegida contra escritura. Deslice el interruptor de protección fuera de la posición "Lock".

Antes de copiar elementos de programa en la tarjeta de programa, borre todo programa almacenado previamente en ella.

Crear una tarjeta de programa

Si se utiliza como tarjeta de programa, la Memory Card es la memoria de carga externa de la CPU. Si se extrae la tarjeta de programa, la memoria de carga interna de la CPU estará vacía.

Nota

Si una Memory Card vacía se inserta en la CPU y se evalúa desconectando y conectando la alimentación de la CPU, cambiando el estado operativo de STOP a RUN o realizando un borrado total (MRES), el programa y los valores de forzado permanente contenidos en la memoria de carga interna de la CPU se copiarán en la Memory Card. (La Memory Card se convierte entonces en una tarjeta de programa.) Una vez finalizada la operación de copia, se borrará el programa en la memoria de carga interna de la CPU. La CPU pasa entonces al modo de arranque (RUN o STOP) configurado.

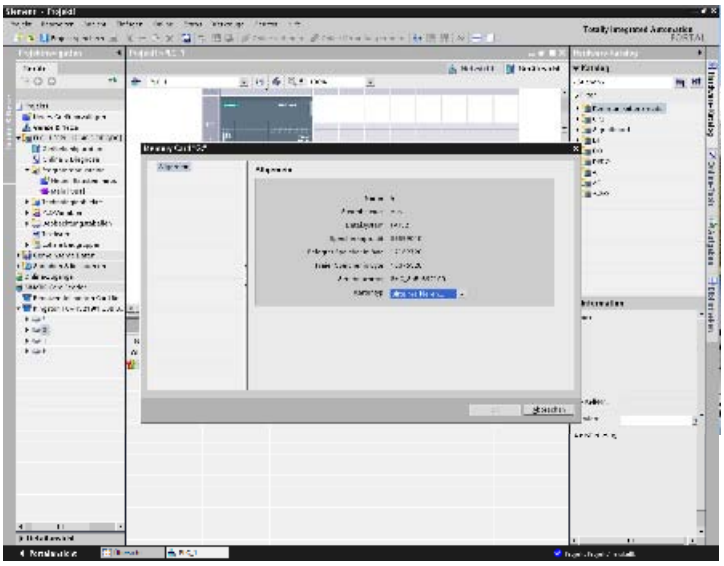
Recuerde siempre que es necesario configurar los parámetros de arranque de la CPU (Página 71) antes de copiar el proyecto en la tarjeta de programa. Para crear una tarjeta de programa con STEP 7 Basic, proceda del siguiente modo:

1. Inserte una Memory Card vacía en el lector/grabador de tarjetas conectado a la programadora.

   (Si la Memory Card no está vacía, borre la carpeta "SIMATIC.S7S" y el archivo "S7_JOB.S7S" de la Memory Card utilizando p. ej. el Explorador de Windows.)

2. En el árbol del proyecto (vista del proyecto), expanda la carpeta "SIMATIC Card Reader" y seleccione el lector de tarjetas deseado.
3. Para abrir el diálogo "Memory Card", haga clic con el botón derecho del ratón en la Memory Card en el lector de tarjetas y elija el comando "Propiedades" del menú contextual.

4. En el diálogo "Memory Card", seleccione "Programa" en la lista desplegable.



5. Agregue el programa seleccionando la CPU (p. ej. PLC_1 [CPU 1214 DC/DC/DC]) en el árbol del proyecto y arrastrándola hasta la Memory Card. (Como alternativa, copie la CPU e insértela en la Memory Card.) Cuando la CPU se copia en la Memory Card se abre el diálogo "Cargar vista preliminar".
6. En el diálogo "Cargar vista preliminar", haga clic en el botón "Cargar" para copiar la CPU en la Memory Card.
7. Cuando aparezca un mensaje indicando que la CPU (el programa) se ha cargado sin errores, haga clic en el botón "Finalizar".

Utilizar una tarjeta de programa como memoria de carga para la CPU

PRECAUCIÓN

La CPU pasa a modo STOP si se inserta una Memory Card vacía. Al desconectar y volver a conectar la alimentación de la CPU, cambiar el estado operativo de la CPU de STOP a RUN o realizar un borrado total (MRES), la CPU copia su memoria de carga interna en la Memory Card (lo que configura la Memory Card como tarjeta de programa) y borra el programa de la memoria de carga interna. Si se extrae la tarjeta de programa, la memoria de carga interna de la CPU no contendrá ningún programa.

Para utilizar una tarjeta de programa en la CPU, proceda del siguiente modo:

1. Inserte la tarjeta de programa en la CPU. Si la CPU está en RUN, pasará a estado operativo STOP. El LED de mantenimiento parpadea para indicar que debe evaluarse la tarjeta de programa.
2. Utilice una de las opciones siguientes para evaluar la tarjeta de programa:
   - Desconecte y vuelva a conectar la alimentación de la CPU.
   - Cambie el estado operativo de STOP a RUN.
   - Realice un borrado total (MRES).
3. La CPU rearranca automáticamente. Tras rearrancar y evaluar la tarjeta de programa, la CPU borrará su memoria de carga interna.

La CPU pasa entonces al modo de arranque (RUN o STOP) configurado para ella.

La tarjeta de programa debe permanecer en la CPU. Si se extrae la tarjeta de programa, la memoria de carga interna de la CPU no contendrá ningún programa.

⚠ ADVERTENCIA

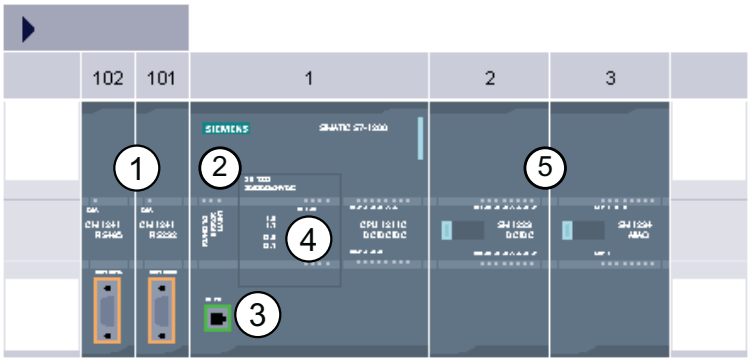
Si se extrae la tarjeta de programa, la CPU perderá su memoria de carga externa y generará un error. La CPU pasa a estado operativo STOP y el LED de error parpadea.

Los dispositivos de control pueden fallar y provocar condiciones no seguras, causando a su vez reacciones inesperadas de los equipos controlados. Las reacciones inesperadas podrían producir la muerte, lesiones corporales graves y/o daños materiales.

Configuración de dispositivos

4

Para crear la configuración de dispositivos del PLC es preciso agregar una CPU y módulos adicionales al proyecto.



① Módulo de comunicación (CM): máx. 3, insertados en los slots 101, 102 y 103

② CPU: Slot 1

③ Puerto Ethernet de la CPU

④ Signal Board (SB): máx. 1, insertada en la CPU

⑤ Módulo de señales (SM) para E/S digitales o analógicas: máx. 8, insertados en los slots 2 a 9 (la CPU 1214C permite 8, la CPU 1212C permite 2, la CPU 1211C no permite ninguno)

Para crear la configuración de dispositivos, agregue un dispositivo al proyecto.

- En la vista del portal, seleccione "Dispositivos y redes" y haga clic en "Agregar dispositivo".



- En la vista del proyecto, bajo el nombre del proyecto, haga doble clic en "Agregar nuevo dispositivo".



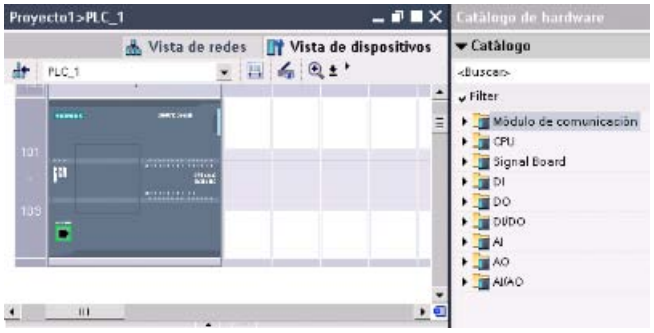
4.2 Insertar una CPU

La configuración de dispositivos se crea insertando una CPU en el proyecto. Al seleccionar la CPU en el diálogo "Agregar nuevo dispositivo" se crean el rack y la CPU.

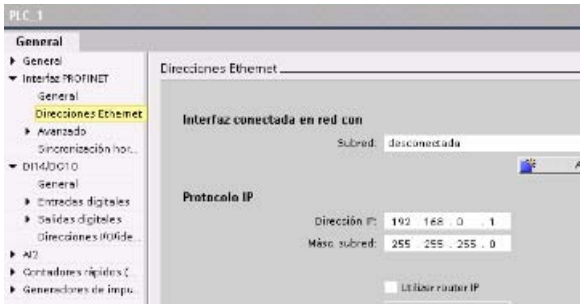
Diálogo "Agregar nuevo dispositivo"



Vista de dispositivos de la configuración de hardware



Al seleccionar la CPU en la vista de dispositivos se visualizan las propiedades de la CPU en la ventana de inspección.

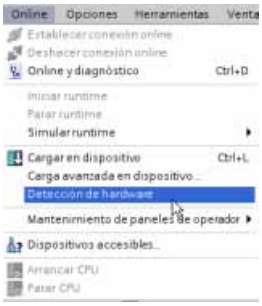


Nota

La CPU no tiene una dirección IP preconfigurada. La dirección IP de la CPU se debe asignar manualmente durante la configuración de dispositivos. Si la CPU está conectada a un router de la red, también es preciso introducir la dirección IP del router.

4.3 Detectar la configuración de una CPU sin especificar

Cargar una configuración hardware existente es muy fácil



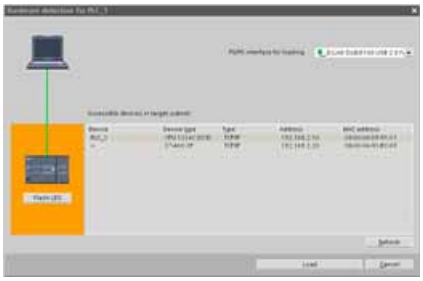
Si existe una conexión con una CPU, es posible cargar su configuración en el módulo (incluidos los módulos). Tan sólo hay que crear un proyecto nuevo y seleccionar la "CPU sin especificar" en lugar de una específica. (También es posible omitir la configuración de dispositivo por completo seleccionando "Crear un programa PLC" en "Primeros pasos". Entonces STEP 7 Basic crea automáticamente una CPU sin especificar.)

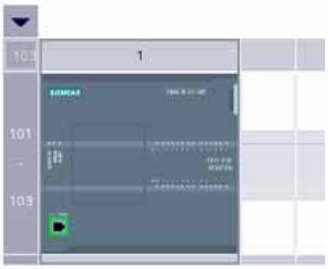
En el editor de programación, seleccione el comando "Detección de hardware" del menú "Online".

En el editor de configuración de dispositivos, seleccione la opción de detección del dispositivo conectado.



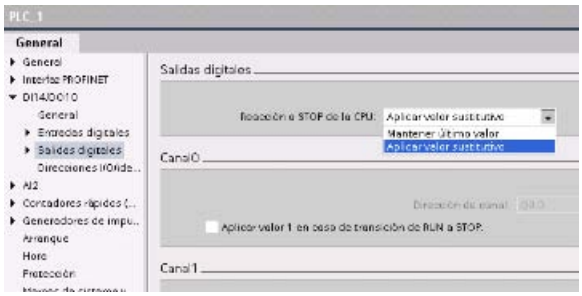
Tras seleccionar la CPU en el cuadro de diálogo online, STEP 7 Basic carga la configuración hardware de la CPU, incluyendo todos los módulos (SM, SB o CM). Entonces pueden configurarse los parámetros de la CPU y de los módulos.





4.4 Configurar el funcionamiento de la CPU

Para configurar los parámetros operativos de la CPU, selecciónela en la vista de dispositivos (recuadro azul alrededor de la CPU) y utilice la ficha "Propiedades" de la ventana de inspección.



Edite las propiedades para configurar los siguientes parámetros:

- Interfaz PROFINET: Permite configurar la dirección IP de la CPU y la sincronización horaria
- DI, DO y AI: Permite configurar la reacción de las E/S locales (integradas) digitales y analógicas
- Contadores rápidos y generadores de impulsos: Permite habilitar y configurar los contadores rápidos (HSC) y generadores de impulsos utilizados para las operaciones de tren de impulsos (PTO) y modulación del ancho de pulso (PWM)

  Si las salidas de la CPU o Signal Board se configuran como generadores de impulsos (para su utilización con la PWM o instrucciones de Motion Control básicas), las direcciones de las salidas correspondientes (Q0.0, Q0.1, Q4.0 y Q4.1) se eliminarán de la memoria Q y no podrán utilizarse para ningún otro fin en el programa de usuario. Si el programa de usuario escribe un valor en una salida utilizada como generador de impulsos, la CPU no escribirá ese valor en la salida física.
- Arranque: Permite configurar la reacción de la CPU a una transición de OFF a ON, p. ej. el arranque en estado operativo STOP o la transición a RUN tras un arranque en caliente
- Hora: Permite ajustar la hora, la zona horaria y el horario de verano/invierno
- Protección: Permite ajustar la protección de lectura/escritura y la contraseña para acceder a la CPU
- Marcas de sistema y de ciclo: Permite habilitar un byte para "marcas de sistema" (para los bits "Primer ciclo", "Siempre 1 (high)" y "Siempre 0 (low)") y un byte para "marcas de ciclo" (cada bit se activa y desactiva con una frecuencia predefinida).
- Tiempo de ciclo: Permite definir un tiempo de ciclo máximo o un tiempo de ciclo mínimo fijo
- Carga de comunicación: Permite asignar el porcentaje del tiempo de la CPU que debe dedicarse a las tareas de comunicación

4.5 Agregar módulos a la configuración

El catálogo de hardware se utiliza para agregar módulos a la CPU. Hay tres tipos de módulos, a saber:

- Los módulos de señales (SM) proveen E/S digitales o analógicas adicionales. Estos módulos se conectan a la derecha de la CPU.
- Las Signal Boards (SB) proveen unas pocas E/S adicionales a la CPU. La SB se inserta en el frente de la CPU.
- Los módulos de comunicación (CM) proveen un puerto de comunicación adicional (RS232 o RS485) a la CPU. Estos módulos se conectan a la izquierda de la CPU.

Para insertar un módulo en la configuración de hardware, selecciónelo en el catálogo de hardware y haga doble clic en él, o bien arrástrelo hasta el slot resaltado.

Módulo	Seleccionar el módulo	Insertar el módulo	Resultado
SM			
SB			
CM			

4.6 Configurar los parámetros de los módulos

Para configurar los parámetros operativos de un módulo, selecciónelo en la vista de dispositivos y utilice la ficha "Propiedades" de la ventana de inspección.

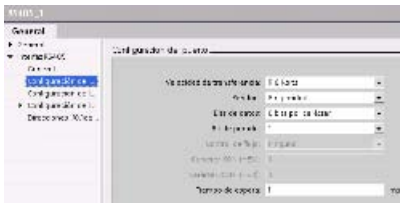
Configurar un módulo de señales (SM) o una Signal Board (SB)





- E/S digitales: Las entradas pueden configurarse para detectar flancos ascendentes o descendentes (asociando cada una de ellas a un evento y una alarma de proceso) y para la "captura de impulsos" (para que permanezcan activadas tras un impulso momentáneo) hasta la siguiente actualización de la memoria imagen de proceso de las entradas. Las salidas pueden congelarse o utilizar un valor sustitutivo.
- E/S analógicas: Es posible configurar los parámetros de las distintas entradas, tales como el tipo de medición (tensión o intensidad), el rango y el alisamiento, así como habiitar el diagnóstico de rebase por defecto o por exceso. Las salidas ponen a disposición parámetros tales como el tipo de salida (tensión o intensidad) y para el diagnóstico, p. ej. cortocircuito (para salidas de tensión) o diagnóstico de límite superior/inferior.
- Direcciones E/S de diagnóstico: Permite configurar la dirección inicial de las entradas y salidas del módulo

Configurar un módulo de comunicación (CM)



- Configuración del puerto: Permite configurar los parámetros de comunicación, p. ej. velocidad de transferencia, paridad, bits de datos, bits de parada, control de flujo, caracteres XON y XOFF y tiempo de espera
- Configuración de la transferencia de mensajes: Permite habilitar y configurar las opciones relativas a la transferencia
- Configuración de la recepción de mensajes: Permite habilitar y configurar los parámetros de inicio y fin del mensaje

El programa de usuario puede cambiar estos parámetros de configuración.

4.7 Crear una conexión de red

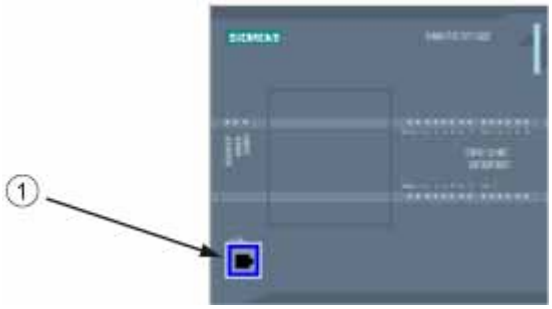
Utilice la "Vista de red" de la "Configuración de dispositivos" para crear las conexiones de red entre los dispositivos del proyecto. Tras crear la conexión de red, utilice la ficha "Propiedades" de la ventana de inspección para configurar los parámetros de la red.

Acción	Resultado
Seleccione "Vista de red" para visualizar los dispositivos que deben conectarse.	
Seleccione el puerto de uno de los dispositivos y arrastre la conexión hasta el puerto del otro dispositivo.	
Suelte el botón del ratón para crear la conexión de red.	

4.8 Configurar una dirección IP en el proyecto

Configurar la interfaz PROFINET

Tras configurar el rack con la CPU (Página 80), es posible configurar los parámetros de la interfaz PROFINET. A este efecto, haga clic en la casilla PROFINET verde en la CPU para seleccionar el puerto PROFINET. La ficha "Propiedades" de la ventana de inspección muestra el puerto PROFINET.



① Puerto PROFINET

Configurar la dirección IP

Dirección Ethernet (MAC): Todo dispositivo de una red PROFINET recibe una dirección MAC (Media Access Control o control de acceso al medio) del fabricante para su identificación. Una dirección MAC consta de seis grupos de dos dígitos hexadecimales, separados por guiones (-) o dos puntos (:), en orden de transmisión (p. ej. 01-23-45-67-89-AB ó 01:23:45:67:89:AB).

Dirección IP: Todo dispositivo debe tener también una dirección IP (Internet Protocol o Protocolo Internet). Esta dirección permite al dispositivo transferir datos a través de una red enrutada y más compleja.

Toda dirección IP se divide en segmentos de ocho bits (octetos) y se expresa en formato decimal separado por puntos (p. ej. 211.154.184.16). La primera parte de la dirección IP se utiliza para la ID de red (¿en qué red se encuentra?) y, la segunda, para la ID del host (unívoca para cada dispositivo de la red). Una dirección IP 192.168.x.y es una designación estándar reconocida como parte de una red privada que no se enruta vía Internet.

Máscara de subred: Una subred es una agrupación lógica de dispositivos de red conectados. Generalmente, los nodos de una subred están próximos físicamente en una red de área local (LAN). Una máscara (denominada "máscara de subred" o "máscara de red") define los límites de una subred IP.

Generalmente, una máscara de subred 255.255.255.0 se adecúa para una red local pequeña. Esto significa que los 3 primeros octetos de todas las direcciones IP de esta red deberían ser iguales. Los diferentes dispositivos de la red se identifican mediante el último octeto (campo de 8 bits). Por ejemplo, es posible asignar la máscara de subred 255.255.255.0 y direcciones IP comprendidas entre 192.168.2.0 y 192.168.2.255 a los dispositivos de una red local pequeña.

La única conexión entre las diferentes subredes se realiza a través de un router. Si se utilizan subredes, es preciso utilizar un router IP.

Router IP: Los routers interconectan las distintas LANs. Si se utiliza un router, un equipo de una LAN puede enviar mensajes a otras redes que, a su vez, pertenezcan a otras LANs. Si el destino de los datos se encuentra fuera de la LAN, el router reenvía los datos a otra red o grupo de redes desde donde pueden transferirse a su destino.

Los routers necesitan direcciones IP para poder transferir y recibir paquetes de datos.



Propiedades de direcciones IP: En la ventana de propiedades, seleccione la entrada de configuración "Dirección Ethernet". El TIA Portal visualiza el diálogo de configuración de direcciones Ethernet, en el que el proyecto de software se asocia a la dirección IP de la CPU que lo recibirá.

Nota

La CPU no tiene una dirección IP preconfigurada. La dirección IP de la CPU se debe asignar manualmente. Si la CPU está conectada a un router de la red, también es preciso introducir la dirección IP del router. Todas las direcciones IP se configuran al cargar el proyecto en el dispositivo.

Para más información, consulte el apartado "Asignar direcciones IP a los dispositivos de programación y red (Página 244)".

La tabla siguiente define los parámetros de la dirección IP:

Parámetro		Descripción
Subred	Nombre de la subred a la que está conectada el dispositivo. Haga clic en el botón "Agregar nueva subred" para crear una subred nueva. El ajuste predeterminado es "no conectado". Hay dos tipos de conexión posibles: • El ajuste predeterminado "no conectado" ofrece una conexión local. • Una subred se requiere cuando la red comprende dos o más dispositivos.	
Protocolo IP	Dirección IP	Dirección IP asignada a la CPU
	Máscara de subred	Máscara de subred asignada
	Utilizar router IP	Haga clic en esta casilla de verificación para indicar el uso de un router IP
	Dirección del router	Dirección IP asignada al router (si es aplicable)

Principios básicos de programación

5

5.1 Directrices para diseñar un sistema PLC

Al diseñar un sistema PLC es posible seleccionar entre diferentes métodos y criterios. Las directrices generales siguientes pueden aplicarse a un gran número de proyectos. Por supuesto que es necesario respetar las directrices corporativas y las prácticas usuales aprendidas y aplicadas.

Pasos recomendados	Tareas
Dividir el proceso o máquina	Divida el proceso o máquina en secciones independientes. Estas secciones determinan los límites entre los controladores e influyen en las especificaciones funcionales y la asignación de recursos.
Crear las especificaciones funcionales	Describa el funcionamiento de cada una de las secciones del proceso o máquina, tales como las entradas y salidas, la descripción funcional de la operación, los estados que deben adoptarse antes de que puedan entrar en acción los actuadores (como p. ej. electroválvulas, motores o accionamientos), la descripción de la interfaz de operador y cualquier interfaz con otras secciones del proceso o máquina.
Diseñar los circuitos de seguridad	Determine los equipos que puedan requerir cableado fijo por motivos de seguridad. Recuerde que los dispositivos de control pueden fallar y provocar condiciones no seguras, causando a su vez un arranque inesperado o cambios de funcionamiento de la maquinaria. El funcionamiento inesperado o incorrecto de la maquinaria puede causar lesiones corporales o daños materiales considerables. Por tanto, prevea dispositivos de protección electromecánicos (que funcionen independientemente del PLC) para evitar las condiciones no seguras. Las siguientes tareas deben incluirse en el diseño de circuitos de seguridad: • Definir el funcionamiento erróneo o inesperado de los actuadores que pudiera resultar peligroso. • Definir las condiciones que garanticen un funcionamiento seguro y determinar cómo detectar estas condiciones, independientemente del PLC. • Definir cómo el PLC y los módulos de ampliación deben influir en el proceso al conectarse y desconectarse la alimentación eléctrica, así como al detectarse errores. Utilice esta información sólo para proyectar el funcionamiento normal y el funcionamiento anormal esperado. Por motivos de seguridad, no conviene fiarse del supuesto más favorable. • Prever dispositivos de parada de emergencia manual o dispositivos de protección electromecánicos que impidan el funcionamiento peligroso, independientemente del PLC. • Proporcionar información de estado apropiada desde los circuitos independientes al PLC para que el programa y las interfaces de operador dispongan de la información necesaria. • Definir otros requisitos adicionales de seguridad para el funcionamiento seguro del proceso.
Determinar las estaciones de operador	Según los requisitos de las especificaciones funcionales, cree los siguientes dibujos de las estaciones de operador: • Dibujo general de la ubicación de todas las estaciones de operador con respecto al proceso o máquina • Dibujo de la disposición mecánica de los dispositivos de la estación de operador, p. ej. display, interruptores y lámparas • Esquemas eléctricos con las E/S asociadas del PLC y los módulos de señales

Pasos recomendados	Tareas
Crear los dibujos de configuración	Según los requisitos de las especificaciones funcionales, cree dibujos de configuración de los equipos de control: • Dibujo general de la ubicación de todos los PLCs con respecto al proceso o máquina • Dibujo de la disposición mecánica de todos los PLCs y módulos de E/S, incluyendo los armarios y otros equipos. • Esquemas eléctricos de todos los PLCs y módulos de E/S, incluyendo los números de referencia de los dispositivos, las direcciones de comunicación y las direcciones de E/S.
Crear una lista de nombres simbólicos	Cree una lista de los nombres simbólicos correspondientes a las direcciones absolutas. Incluya no sólo las E/S físicas, sino también los demás elementos (p. ej. los nombres de variables) que se utilizarán en el programa.

5.2 Estructurar el programa de usuario

Al crear el programa de usuario para las tareas de automatización, las instrucciones del programa se insertan en bloques lógicos:

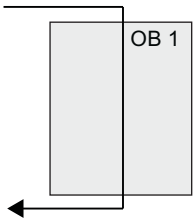
- Un bloque de organización (OB) reacciona a un evento específico en la CPU y puede interrumpir la ejecución del programa de usuario. El bloque predeterminado para la ejecución cíclica del programa de usuario (OB 1) ofrece la estructura básica y es el único bloque lógico que se requiere para el programa de usuario. Si se incluyen otros OBs en el programa, éstos interrumpen la ejecución del OB 1. Los demás OBs ejecutan funciones específicas, tales como tareas de arranque, procesamiento de alarmas y tratamiento de errores, o ejecución de un código de programa específico en determinados intervalos.
- Un bloque de función (FB) es una subrutina que se ejecuta cuando se llama desde otro bloque lógico (OB, FB o FC). El bloque que efectúa la llamada transfiere parámetros al FB e identifica un bloque de datos determinado (DB) que almacena los datos de la llamada o instancia específica de este FB. La modificación del DB instancia permite a un FB genérico controlar el funcionamiento de un conjunto de dispositivos. Por ejemplo, un solo FB puede controlar varias bombas o válvulas. Diferentes DBs de instancia contienen los parámetros operativos específicos de cada bomba o válvula.
- Una función (FC) es una subrutina que se ejecuta cuando se llama desde otro bloque lógico (OB, FB o FC). La FC no tiene un DB instancia asociado. El bloque que efectúa la llamada transfiere los parámetros a la FC. Los valores de salida de la FC deben escribirse en una dirección de la memoria o en un DB global.

Seleccionar el tipo de estructura del programa de usuario

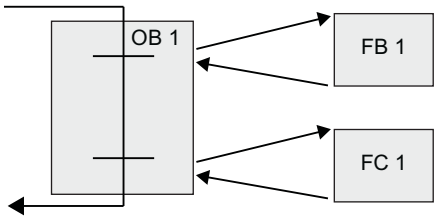
Según los requisitos de la aplicación, es posible seleccionar una estructura lineal o modular para crear el programa de usuario:

- Un programa lineal ejecuta todas las instrucciones de la tarea de automatización de forma secuencial, es decir, una tras otra. Generalmente, el programa lineal deposita todas las instrucciones del programa en el OB encargado de la ejecución cíclica del programa (OB 1).
- Un programa modular llama bloques de función específicos que ejecutan determinadas tareas. Para crear una estructura modular, la tarea de automatización compleja se divide en tareas subordinadas más pequeñas, correspondientes a las funciones tecnológicas del proceso. Cada bloque lógico provee el segmento del programa para cada tarea subordinada. El programa se estructura llamando uno de los bloques lógicos desde otro bloque.

Estructura lineal:



Estructura modular:



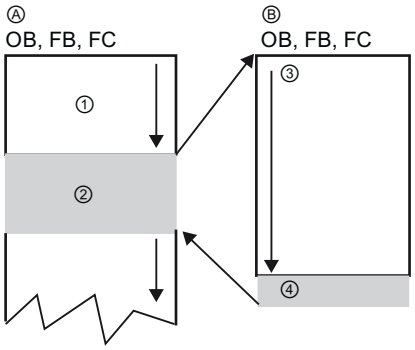
Creando bloques lógicos genéricos que pueden reutilizarse en el programa de usuario, es posible simplificar el diseño y la implementación del programa de usuario. La utilización de bloques lógicos genéricos ofrece numerosas ventajas:

- Es posible crear bloques lógicos reutilizables para tareas estándar, tales como el control de una bomba o motor. También es posible almacenar estos bloques lógicos genéricos en una librería, de manera que puedan ser utilizados por diferentes aplicaciones o soluciones.
- El programa de usuario puede dividirse en componentes modulares para las tareas funcionales, facilitando así su comprensión y gestión. Los componentes modulares ayudan no sólo a estandarizar el diseño del programa, sino que también pueden facilitar y agilizar la actualización o modificación del código del programa.
- La creación de componentes modular simplifica la depuración del programa. Dividiendo el programa completo en segmentos de programa modulares, es posible comprobar las funciones de cada bloque lógico a medida que se va desarrollando.
- La creación de componentes modulares para las distintas funciones tecnológicas permite simplificar y reducir el tiempo de puesta en marcha de la aplicación.

5.3 Utilizar bloques para estructurar el programa

Diseñando FBs y FCs que ejecuten tareas genéricas, se crean bloques lógicos modulares. El programa se estructura luego, de manera que otros bloques lógicos llamen estos bloques modulares reutilizables. El bloque que efectúa la llamada transfiere los parámetros específicos del dispositivo al bloque llamado.

A Bloque que llama
B Bloque llamado (o que interrumpe)
① Ejecución del programa
② Operación que llama otro bloque
③ Ejecución del programa
④ Fin del bloque (regresa al bloque que llama)

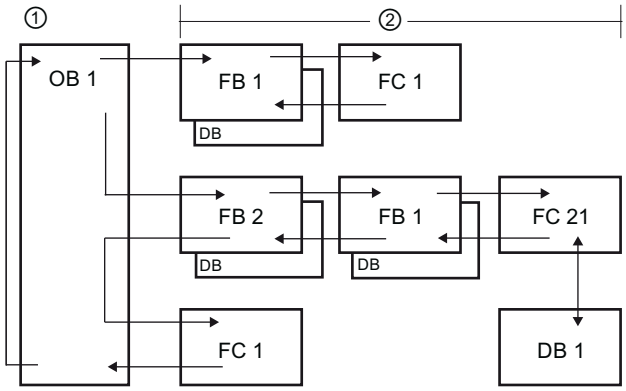


Cuando un bloque lógico llama otro bloque lógico, la CPU ejecuta el código del programa en el bloque llamado. Una vez finalizada la ejecución del bloque llamado, la CPU reanuda la ejecución del bloque que ha efectuado la llamada.

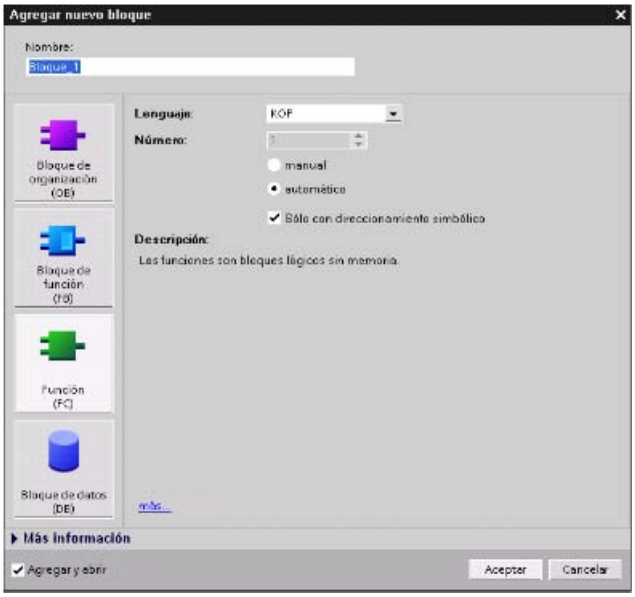
El procesamiento continúa con la ejecución de la instrucción siguiente a la llamada de bloque.

Las llamadas de bloque pueden anidarse para crear una estructura más modular.

① Inicio del ciclo
② Profundidad de anidamiento



Crear bloques lógicos reutilizables



Utilice el diálogo "Agregar nuevo bloque" en "Bloques de programa" en el árbol del proyecto para crear OBs, FBs, FCs y DBs globales.

Al crear el bloque lógico se selecciona el lenguaje de programación para el bloque. El lenguaje de un DB no se selecciona, puesto que éste sólo almacena datos.

5.3.1 Bloque de organización (OB)

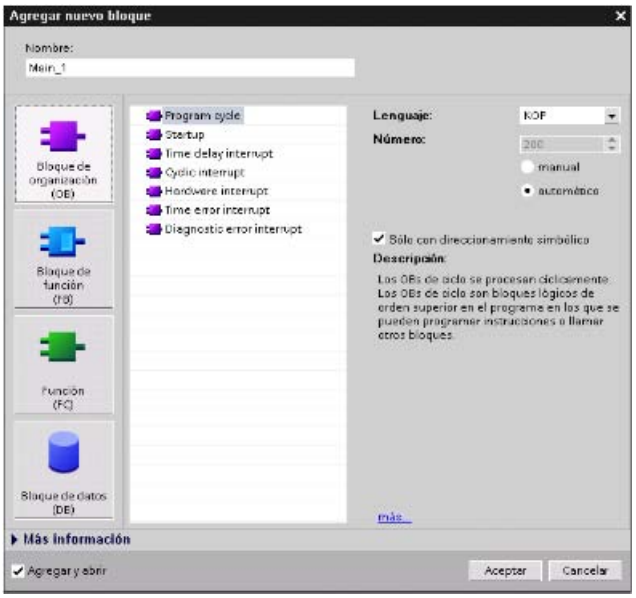
Los bloques de organización permiten estructurar el programa. Estos bloques sirven de interfaz entre el sistema operativo y el programa de usuario. Los OBs son controlados por eventos. Un evento, p. ej. una alarma de diagnóstico o un intervalo, hace que la CPU ejecute un OB. Algunos OBs tienen eventos de arranque y comportamiento en arranque predefinidos.

El OB de ciclo contiene el programa principal. Es posible incluir más de un OB de ciclo en el programa de usuario. En estado operativo RUN, los OBs de ciclo se ejecutan en el nivel de prioridad más bajo y pueden ser interrumpidos por todos los demás tipos de procesamiento del programa. El OB de arranque no interrumpe el OB de ciclo, puesto que la CPU ejecuta el OB de arranque antes de pasar al estado operativo RUN.

Tras finalizar el procesamiento de los OBs de ciclo, la CPU vuelve a ejecutarlos inmediatamente. Esta ejecución cíclica es el tipo de procesamiento "normal" que se utiliza para los controladores lógicos programables. En numerosas aplicaciones, el programa de usuario entero está contenido en un solo OB de ciclo.

Es posible crear otros OBs para ejecutar funciones específicas, tales como tareas de arranque, procesamiento de alarmas y tratamiento de errores, o ejecución de un código de programa específico en determinados intervalos. Estos OBs interrumpen la ejecución de los OBs de ciclo.

Utilice el diálogo "Agregar nuevo bloque" para crear OBs nuevos en el programa de usuario.



En función de su nivel de prioridad, un OB puede interrumpir a otro OB. Las alarmas se procesan siempre de forma controlada por eventos. Cuando ocurre un evento, la CPU interrumpe la ejecución del programa de usuario y llama el OB configurado para procesar ese evento. Una vez finalizada la ejecución del OB de alarma, la CPU reanuda la ejecución del programa de usuario en el punto de interrupción.

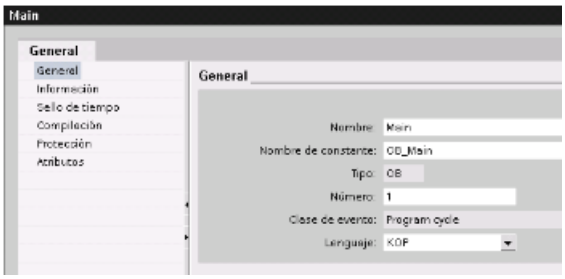
La CPU determina el orden de procesamiento de eventos de alarma según la prioridad asignada a cada OB. Todo evento tiene una prioridad de procesamiento propia. Varios eventos de alarma pueden combinarse en clases de prioridad. Para más información, consulte la sección relativa a la ejecución del programa de usuario en el capítulo "Principios básicos del PLC" (Página 41).

Crear un OB adicional en una clase de OB

Es posible crear varios OBs para el programa de usuario, incluso para las clases de OB correspondientes a los OBs de ciclo y de arranque. Utilice el diálogo "Agregar nuevo bloque" para crear un OB. Introduzca el nombre del OB y un número de OB mayor que 200.

Si se crean varios OBs de ciclo para el programa de usuario, la CPU ejecutará cada uno de ellos en una secuencia numérica, comenzando con el OB de ciclo principal (ajuste predeterminado: OB 1). Ejemplo: tras finalizar el primer OB de ciclo (OB1), la CPU ejecutará el segundo OB de ciclo (p. ej. OB 200).

Configurar el funcionamiento de un OB



Los parámetros operativos de un OB se pueden modificar. Por ejemplo, es posible configurar el parámetro de tiempo de un OB de alarma de retardo o de ciclo.

5.3.2 Función (FC)

Una función (FC) es un bloque lógico que, por lo general, realiza una operación específica en un conjunto de valores de entrada. La FC almacena los resultados de esta operación en posiciones de memoria.

Las FCs se utilizan para realizar las tareas siguientes:

- Para ejecutar operaciones estándar y reutilizables, p. ej. en cálculos matemáticos.
- Para ejecutar funciones tecnológicas, p. ej. controles individuales con operaciones lógicas binarias.

Una FC también se puede llamar varias veces en diferentes puntos de un programa. Esto facilita la programación de tareas que se repiten con frecuencia.

Una FC no tiene ningún bloque de datos instancia asociado (DB). La FC usa la pila de datos locales para los datos temporales utilizados para calcular la operación. Los datos temporales no se almacenan. Para almacenar los datos de forma permanente es preciso asignar el valor de salida a una posición de memoria global, p. ej. el área de marcas o un DB global.

5.3.3 Bloque de función (FB)

Un bloque de función (FB) es un bloque lógico que utiliza un bloque de datos instancia para sus parámetros y datos estáticos. Los FBs tienen una memoria variable ubicada en un bloque de datos (DB) o DB "instancia". El DB instancia ofrece un bloque de memoria asociado a esa instancia (o llamada) del FB y almacena datos una vez que haya finalizado el FB. Es posible asociar distintos DBs de instancia a diferentes llamadas del FB. Los DBs instancia permiten utilizar un FB genérico para controlar varios dispositivos. El programa se estructura de manera que un bloque lógico llame un FB y un DB instancia. La CPU ejecuta luego el código del programa en ese FB y almacena los parámetros del bloque y los datos locales estáticos en el DB instancia. Cuando finaliza la ejecución del FB, la CPU regresa al bloque lógico que ha llamado el FB. El DB instancia conserva los valores de esa instancia del FB. Estos valores están disponibles para las llamadas posteriores al bloque de función, bien sea en el mismo ciclo o en otros ciclos.

Bloques lógicos reutilizables con memoria asociada

Por lo general, los FBs se utilizan para controlar tareas o dispositivos cuya operación no finaliza dentro de un ciclo. Para almacenar los parámetros operativos de manera que sea posible acceder rápidamente a ellos de un ciclo a otro, todo FB del programa de usuario tiene uno o más DBs instancia. Cuando se llama un FB, se especifica también un DB instancia que contiene los parámetros del bloque y los datos locales estáticos de esa llamada o "instancia" del FB. El DB instancia conserva estos valores una vez finalizada la ejecución del FB.

Si el FB se diseña para realizar tareas de control genéricas, es posible reutilizarlo para varios dispositivos, seleccionando diferentes DB instancia para las distintas llamadas del FB.

Un FB almacena los parámetros de entrada (IN), salida (OUT) y entrada/salida (IN_OUT) en un DB instancia.

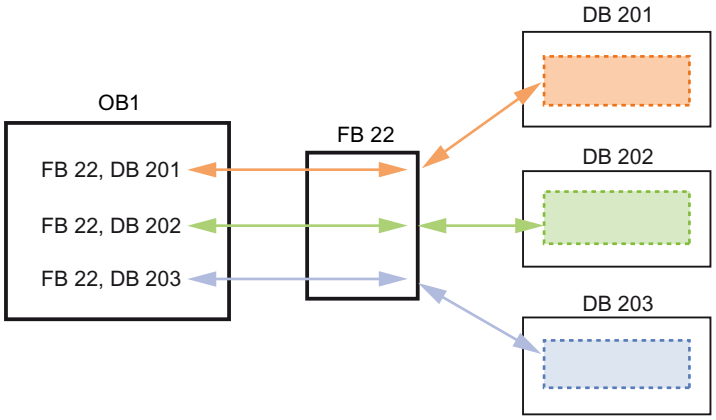
Asignar valores iniciales

Si no se asignan valores a los parámetros de entrada, salida o entrada/salida de un bloque de función (FB), se utilizan los valores almacenados en el bloque de datos (DB) instancia. En algunos casos es necesario asignar parámetros.

Los valores iniciales se asignan a los parámetros en la interfaz del FB. Estos valores se transfieren al DB instancia asociado. Si no se asignan parámetros, se utilizan los valores almacenados actualmente en el DB instancia.

Utilizar un solo FB con DBs

La figura siguiente muestra un OB que llama un FB tres veces, utilizando un bloque de datos diferente para cada llamada. Esta estructura permite que un FB genérico controle varios dispositivos similares (p. ej. motores), asignando un bloque de datos instancia diferente a cada llamada de los distintos dispositivos. Cada DB instancia almacena los datos (p. ej. velocidad, tiempo de aceleración y tiempo de operación total) de un dispositivo en particular. En este ejemplo, el FB 22 controla tres dispositivos diferentes. El DB 201 almacena los datos operativos del primer dispositivo, el DB 202, los del segundo y, el DB 203, los del tercero.



5.3.4 Bloque de datos (DB)

Los bloques de datos (DB) se crean en el programa de usuario para almacenar los datos de los bloques lógicos. Todos los bloques del programa de usuario pueden acceder a los datos en un DB global. En cambio, un DB instancia almacena los datos de un bloque de función (FB) específico. Un DB se puede definir de manera que sea de sólo lectura.

Los datos almacenados en un DB no se borran cuando finaliza la ejecución del bloque lógico asociado. Hay dos tipos de DBs, a saber:

- Un DB global almacena los datos de los bloques lógicos en el programa. Cualquier OB, FB o FC puede acceder a los datos en un DB global.
- Un DB instancia almacena los datos de un FB específico. La estructura de los datos en un DB instancia refleja los parámetros (Input, Output e InOut) y los datos estáticos del FB. (La memoria temporal del FB no se almacena en el DB instancia.)

Nota

Aunque el DB instancia refleja los datos de un FB específico, cualquier bloque lógico puede acceder a los datos en un DB instancia.

5.4 Principios básicos de la coherencia de datos

La CPU conserva la coherencia de datos de todos los tipos de datos simples (p. ej. Word o DWord) y de todas las estructuras definidas por el sistema (p. ej. IEC_TIMERS o DTL). La lectura o escritura de valores no se puede interrumpir. (Por ejemplo, la CPU protege el acceso a un valor de palabra doble (DWord) hasta que se hayan leído o escrito los cuatro bytes de la palabra doble.) Para garantizar que los OBs de ciclo y de alarma no puedan escribir simultáneamente en la misma posición de memoria, la CPU no ejecuta un OB de alarma hasta que no haya finalizado la operación de lectura o escritura en el OB de ciclo.

Si el programa de usuario comparte varios valores entre un OB de ciclo y un OB de alarma en la memoria, dicho programa debe garantizar asimismo que estos valores se modifiquen o lean de forma coherente. Las instrucciones DIS_AIRT y EN_AIRT se utilizan en el OB de ciclo para proteger cualquier acceso a los valores compartidos.

- Inserte una instrucción DIS_AIRT en el bloque lógico para garantizar que un OB de alarma no pueda ejecutarse durante la operación de lectura o escritura.
- Inserte las instrucciones que leen o escriben los valores que podrían ser modificados por un OB de alarma.
- Inserte una instrucción EN_AIRT al final de la secuencia para cancelar la instrucción DIS_AIRT y permitir la ejecución del OB de alarma.

Una petición de comunicación de un dispositivo HMI o de otra CPU puede interrumpir asimismo la ejecucion del OB de ciclo. Las peticiones de comunicación también pueden causar problemas en relación con la coherencia de datos. La CPU garantiza que las instrucciones del programa de usuario lean y escriban coherentemente los tipos de datos simples. Puesto que las comunicaciones interrumpen el programa de usuario de forma periódica, no es posible garantizar que el dispositivo HMI actualice simultáneamente varios valores en la CPU. Por ejemplo, los valores visualizados en la pantalla de un HMI podrían provenir de diferentes ciclos de la CPU.

Las instrucciones PtP (punto a punto) y PROFINET (p. ej. TSEND_C y TRCV_C) transfieren búferes de datos que podrían interrumpirse. La coherencia de datos de los búferes debe asegurarse evitando operaciones de lectura y escritura en los búferes, tanto en el OB de ciclo como en un OB de alarma. Si es necesario modfiicar los valores de los búferes para estas instrucciones en un OB de alarma, utilice una instrucción DIS_AIRT para retardar las alarmas (un OB de alarma o una alarma de comunicación de un HMI u otra CPU) hasta que se ejecute una instrucción EN_AIRT.

Nota

La utilización de la instrucción DIS_AIRT retarda el procesamiento de los OBs de alarma hasta que se ejecuta la instrucción EN_AIRT, lo que afecta la latencia de alarmas (tiempo que transcurre desde un evento hasta que se ejecuta el OB de alarma) del programa de usuario.

5.5 Seleccionar el lenguaje de programación

Es posible elegir entre el lenguaje de programación KOP (Esquema de contactos) o FUP (Diagrama de funciones).

Lenguaje de programación KOP

KOP es un lenguaje de programación gráfico. Su representación es similar a los esquemas de circuitos.



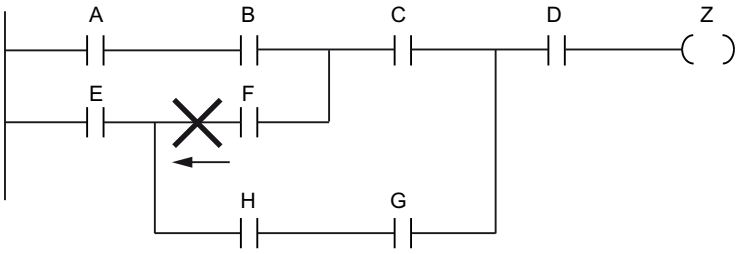
Los elementos de un esquema de circuitos, tales como los contactos normalmente cerrados y normalmente abiertos, así como las bobinas, se combinan para formar segmentos.

Para crear la lógica de operaciones complejas, es posible insertar ramas para los circuitos paralelos. Las ramas paralelas se abren hacia abajo o se conectan directamente a la barra de alimentación. Las ramas se terminan hacia arriba.

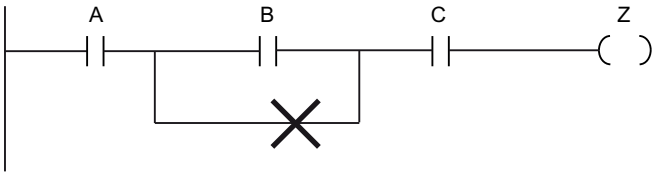
KOP ofrece instrucciones con cuadros para numerosas funciones, p. ej. matemáticas, temporizadores, contadores y transferencia.

Tenga en cuenta las reglas siguientes al crear segmentos KOP:

- Todo segmento KOP debe terminar con una bobina o cuadro. No termine un segmento con una instrucción de comparación ni de detección de flancos (ascendentes o descendentes).
- No se permite programar ramas que puedan ocasionar un flujo invertido de la corriente.



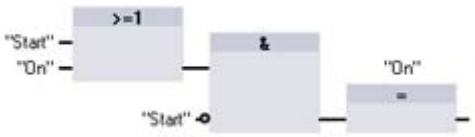
- No se permite programar ramas que causen cortocircuitos.



Lenguaje de programación Diagrama de funciones (FUP)

Al igual que KOP, FUP es un lenguaje de programación gráfico. La representación de la lógica se basa en los símbolos lógicos gráficos del álgebra booleana.

Las funciones matemáticas y otras operaciones complejas pueden representarse directamente en combinación con los cuadros lógicos. Para crear la lógica de operaciones complejas, inserte ramas paralelas entre los cuadros.



Significado de EN y ENO en las instrucciones con cuadros

Tanto KOP como FUP utilizan el flujo de corriente (EN y ENO) para algunas instrucciones con cuadros. Algunas instrucciones (p. ej. matemáticas y de transferencia) visualizan parámetros para EN y ENO. Estos parámetros se refieren al flujo de corriente y determinan si la instrucción se ejecuta en ese ciclo.

- EN (entrada de habilitación) es una entrada booleana para los cuadros KOP y FUP. Esta entrada debe tener flujo de corriente (EN = 1) para poder ejecutar el cuadro. Si la entrada EN de un cuadro KOP se conecta directamente a la barra de alimentación izquierda, el cuadro se ejecutará siempre.
- ENO (salida de habilitación) es una salida booleana para los cuadros KOP y FUP. Si el cuadro tiene flujo de corriente en la entrada EN y su función se ejecuta sin errores, la salida ENO conducirá corriente (ENO = 1) al siguiente elemento. Si se detecta un error en la ejecución del cuadro, el flujo de corriente se terminará (ENO = 0) en la instrucción de cuadro que ha generado el error.

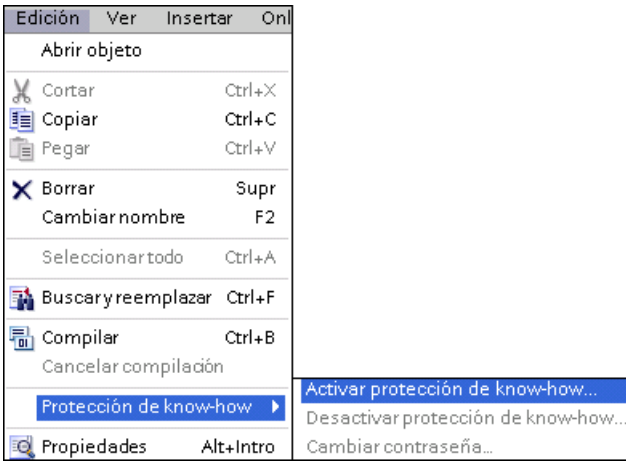
Editor de programas	Entradas/salidas	Operandos	Tipo de datos
KOP	EN, ENO	Flujo de corriente	BOOL
FUP	EN	I, I:P, Q, M, DB, Temp, flujo de corriente	BOOL
	ENO	Flujo de corriente	BOOL

5.6 Protección anticopia

La protección anticopia o de "know-how" impide el acceso no autorizado a uno o más bloques lógicos (OB, FB o FC) del programa. Es posible crear una contraseña para limitar el acceso al bloque lógico.

Si un bloque se configura para que tenga protección de "know-how", no será posible acceder al código del bloque si no se introduce la contraseña.

Para proteger el bloque contra copia, elija el comando "Protección de know-how" del menú "Edición". Introduzca luego la contraseña que permite acceder al bloque.



La protección por contraseña impide que el bloque lógico sea leído o modificado sin autorización. Si no se introduce la contraseña, sólo es posible leer la siguiente información del bloque lógico:

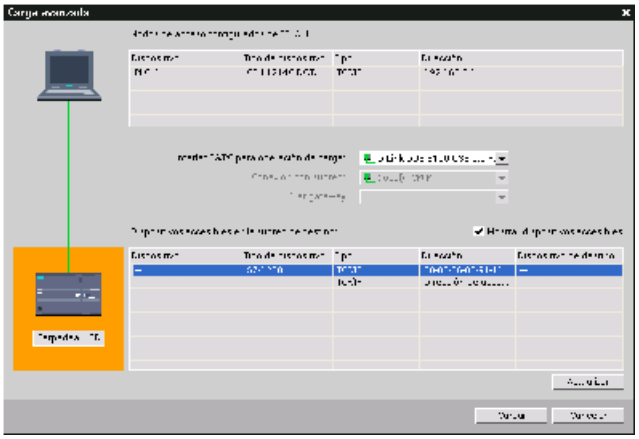
- Título, comentario y propiedades del bloque
- Parámetros de transferencia (IN, OUT, IN_OUT, Return)
- Estructura de llamadas del programa
- Variables globales en las referencias cruzadas (sin información acerca de la ubicación); las variables locales se ocultan

5.7 Cargar los elementos del programa en la CPU

Los elementos del proyecto se pueden cargar desde la programadora a la CPU. Al cargar un proyecto en la CPU, el programa de usuario (OBs, FCs, FBs y DBs) se almacena en la memoria no volátil de la CPU.

El proyecto se puede cargar de la programadora en la CPU desde cualquiera de las ubicaciones siguientes:

- "Árbol del proyecto": Haga clic con el botón derecho del ratón en el elemento de programa deseado y elija el comando "Cargar en dispositivo" del menú contextual.
- Menú "Online": Elija el comando "Cargar en dispositivo".
- Barra de herramientas: Haga clic en el botón "Cargar en dispositivo".



5.8 Cargar los elementos del programa desde un dispositivo

Todos los bloques de programa y la tabla de variables se pueden cargar desde una CPU online en un proyecto offline. No obstante, no es posible cargar la configuración de dispositivos ni tablas de observación. No es posible cargar en un proyecto vacío. Una CPU offline debe estar disponible para poder realizar la carga. No es posible cargar un solo bloque desde un dispositivo, sino sólo el programa entero. Al cargar desde un dispositivo, la CPU offline (es decir, todos los bloques y la tabla de variables) se "borrará" antes de realizar la carga y tras confirmar una pregunta de seguridad. No es posible editar un bloque en el área online. Primero es necesario cargarlo desde el dispositivo en el área offline, modificarlo allí y volver a cargarlo en el PLC.

La carga puede realizarse de dos maneras, a saber: mediante drag&drop en el árbol del proyecto o por sincronización en el editor de comparación.

Drag&drop en el árbol del proyecto

1. Cree un proyecto.
2. Agregue una CPU que concuerde con la CPU desde la que desea realizar la carga.
3. Expanda el nodo de la CPU una vez para visualizar la carpeta "Bloques de programa".
4. En el árbol del proyecto, expanda el nodo "Accesos online" y luego el nodo de la red deseada y haga doble clic en "Actualizar dispositivos accesibles".
5. Una vez listadas las CPUs disponibles, expanda el nodo de la CPU deseada.
6. Haga clic con el botón izquierdo del ratón en la carpeta "Bloques de programa" del área "Accesos online" y arrástrela hasta la carpeta "Bloques de programa" del área offline. Suelte luego el botón izquierdo del ratón. El puntero del ratón se convierte en un ‘+’ cuando se encuentre en el área correcta.
7. Se abre el diálogo "Vista preliminar para cargar del dispositivo". Haga clic en la casilla para "Continuar" y luego en "Cargar de dispositivo".
8. Espere hasta que finalice la carga desde el dispositivo. Todos los bloques de programa, bloques tecnológicos y variables aparecen en el área offline.
9. Puesto que no es posible cargar la configuración del dispositivo, utilice la "Configuración de dispositivos" para configurar manualmente las propiedades de la CPU, incluyendo la dirección IP deseada y agregue todos los demás dispositivos al proyecto offline.

Es posible arrastrar desde el área online hasta el área "Bloques de programa" de un programa existente. Por tanto, el área offline "Bloques de programa" no tiene que estar vacía. En este caso, el programa existente se borrará y se sustituirá por el programa online.

Sincronización en el editor de comparación

1. Abra el proyecto que contiene el proyecto.
2. En el árbol del proyecto, seleccione la CPU offline que desea comparar.
3. Abra el editor de comparación haciendo clic con el botón derecho en la CPU offline o eligiendo el comando "Comparar offline/online" del menú "Herramientas".
4. El editor de comparación lista las diferencias en la carpeta "Bloques de programa". Haga clic en el símbolo en la columna "Acción". Para cargar el proyecto, seleccione "Cargar de dispositivo".
5. Haga clic en el botón "Sincronizar online y offline" para copiar el proyecto desde la CPU online en la CPU offline.

5.9 Depurar y comprobar el programa

Las "tablas de observación" se utilizan para observar y forzar los valores del programa de usuario que se está ejecutando en la CPU online. Es posible crear y guardar diferentes tablas de observación en el programa para soportar distintos entornos de test. Esto permite reproducir los tests durante la puesta en marcha, o bien para fines de servicio y mantenimiento.

Una tabla de observación permite observar e interactuar con la CPU mientras ésta ejecuta el programa de usuario. Es posible ver o cambiar los valores no sólo de las variables de los bloques lógicos y bloques de datos, sino también de las áreas de memoria de la CPU, incluyendo las entradas y salidas (I y Q), entradas y salidas de la periferia (I:P y Q:P), marcas (M) y bloques de datos (DB).

La tabla de observación permite habilitar las salidas físicas (Q:P) de una CPU en estado operativo STOP. Por ejemplo, es posible asignar valores específicos a las salidas al comprobar el cableado de la CPU.

La tabla de observación también permite "forzar permanentemente" o ajustar una variable a un determinado valor. Para más información sobre el forzado permanente, consulte el apartado Forzado permanente de valores en la CPU (Página 313) del capítulo "Online y diagnóstico".

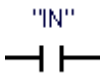
Instrucciones de programación

6

6.1 Instrucciones básicas

6.1.1 Instrucciones lógicas con bits

Contactos KOP



Normalmente abierto



Normalmente cerrado

Los contactos se pueden conectar a otros contactos, creando así una lógica combinacional propia. Si el bit de entrada indicado utiliza el identificador de memoria I (entrada) o Q (salida), el valor de bit se lee de la memoria imagen de proceso. Las señales de los contactos físicos del proceso controlado se cablean con los bornes de entrada del PLC. La CPU consulta las señales de entrada cableadas y actualiza continuamente los valores de estado correspondientes en la memoria imagen de proceso de las entradas.

La lectura inmediata de una entrada física se indica introduciendo ":P" después del offset I (p. ej. "%I3.4:P"). En una lectura inmediata, los valores de datos de bit se leen directamente de la entrada física y no de la memoria imagen de proceso. La lectura inmediata no actualiza la memoria imagen de proceso.

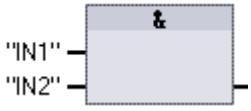
Parámetro	Tipo de datos	Descripción
IN	Bool	Bit asignado

- El contacto normalmente abierto se cierra (ON) cuando el valor de bit asignado es igual a 1.
- El contacto normalmente cerrado se cierra (ON) cuando el valor de bit asignado es igual a 0.
- Los contactos conectados en serie crean segmentos lógicos Y.
- Los contactos conectados en paralelo crean segmentos lógicos O.

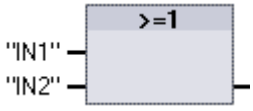
Cuadros Y, O y O-exclusiva en FUP

En la programación FUP, los segmentos de los contactos KOP se transforman en segmentos de cuadros Y (&), O (>=1) y O-exclusiva OR (x), en los que pueden indicarse valores de bit para las entradas y salidas de los cuadros. También es posible interconectar cuadros lógicos y crear combinaciones lógicas propias. Tras disponer un cuadro en el segmento, es posible arrastrar la función "Insertar entrada binaria" desde la barra de herramientas "Favoritos" o desde el árbol de instrucciones y soltarla en el lado de entrada del cuadro para agregar entradas adicionales. También se puede hacer clic con el botón derecho del ratón en el conector de entrada del cuadro y seleccionar "Insertar entrada".

Es posible conectar las entradas y salidas de los cuadros con un cuadro lógico diferente, o bien introducir una dirección de bit o un nombre simbólico de bit para una entrada no conectada. Cuando se ejecuta el cuadro, los estados actuales de las entradas se aplican a la lógica del cuadro binario y, si se cumplen, la salida del cuadro será verdadera.



Operación lógica Y



Operación lógica O



Operación lógica O-exclusiva

Parámetro	Tipo de datos	Descripción
IN1, IN2	Bool	Bit de entrada

- Todas las entradas de un cuadro Y tienen que cumplirse para que la salida sea TRUE (verdadera).
- Una entrada cualquiera de un cuadro O tiene que cumplirse para que la salida sea TRUE (verdadera).
- Un número impar de entradas de un cuadro O-exclusiva tiene que cumplirse para que la salida sea TRUE (verdadera).

Invertir resultado lógico (NOT)

En la programación FUP es posible arrastrar la función "Negar valor binario" desde la barra de herramientas "Favoritos" o desde el árbol de instrucciones y soltarla en una entrada o salida para crear un inversor lógico en ese conector del cuadro.



KOP: Contacto negado (NOT)



FUP: Cuadro Y con una entrada lógica negada

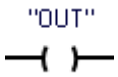


FUP: Cuadro Y con entrada y salida lógica negada

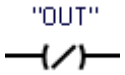
El contacto NOT KOP invierte el estado lógico de la entrada de flujo de corriente.

- Si no fluye corriente al contacto NOT, hay flujo de corriente en la salida.
- Si fluye corriente al contacto NOT, no hay flujo de corriente en la salida.

Bobina de salida KOP



Bobina de relé, salida



Bobina de relé negada

La instrucción "Bobina de salida, relé" escribe un valor en un bit de salida. Si el bit de salida indicado utiliza el identificador de memoria Q, la CPU activa o desactiva el bit de salida en la memoria imagen de proceso, poniendo el bit especificado al correspondiente estado de flujo de corriente. Las señales de salida de los actuadores se cablean con los bornes de salida del S7-1200. En estado operativo RUN, la CPU consulta continuamente las señales de entrada, procesa los estados de las entradas según la lógica del programa y escribe los nuevos valores de las salidas en la memoria imagen de proceso de las salidas. Tras cada ciclo del programa, la CPU transfiere el nuevo estado de las salidas almacenado en la memoria imagen de proceso a los bornes de salida cableados.

La escritura inmediata en una salida física se indica introduciendo ":P" después del offset Q (p. ej. "%Q3.4:P"). En una escritura inmediata, los valores de datos de bit se escriben en la memoria imagen de proceso de las salidas y directamente en la salida física.

Parámetro	Tipo de datos	Descripción
OUT	Bool	Bit asignado

- Si fluye corriente a través de una bobina de salida, el bit de salida se pone a 1.
- Si no fluye corriente a través de una bobina de salida, el bit de la bobina de salida se pone a 0.
- Si fluye corriente a través de una bobina de relé negada, el bit de salida se pone a 0.
- Si no fluye corriente a través de una bobina de relé negada, el bit de salida se pone a 1.

Cuadro de asignación de salidas FUP

En la programación FUP, las bobinas KOP se transforman en cuadros de asignación (= y /=), en los que se indica una dirección de bit para la salida del cuadro. Es posible conectar las entradas y salidas del cuadro con otros cuadros lógicos, o bien introducir una dirección de bit.



Asignación



Negar asignación



Asignación con salida negada

Parámetro	Tipo de datos	Descripción
OUT	Bool	Bit asignado

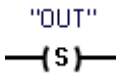
- Si la entrada del cuadro de salida es 1, el bit OUT se pone a 1.
- Si la entrada del cuadro de salida es 0, el bit OUT se pone a 0.
- Si la entrada del cuadro de salida negada es 1, el bit OUT se pone a 0.
- Si la entrada del cuadro de salida negada es 0, el bit OUT se pone a 1.

6.1.1.1 Instrucciones "Activar salida" y "Desactivar salida"

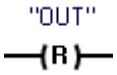
S y R: Activar y desactivar 1 bit

- Si se activa S (Set), el valor de datos de la dirección de salida OUT se pone a 1. Si no se activa S, no se modifica OUT.
- Si se activa R (Reset), el valor de datos de la dirección de salida OUT se pone a 0. Si no se activa R, no se modifica OUT.
- Estas instrucciones pueden disponerse en cualquier posición del segmento.

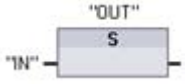
KOP: Activar salida



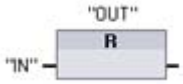
KOP: Desactivar salida



FUP: Activar salida



FUP: Desactivar salida



Parámetro	Tipo de datos	Descripción
IN (o conectar a contacto/puerta)	Bool	Dirección de bit que debe vigilarse
OUT	Bool	Dirección de bit que se debe activar o desactivar

SET_BF y RESET_BF: Activar y desactivar mapa de bits

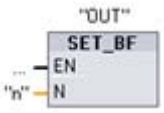
KOP: SET_BF



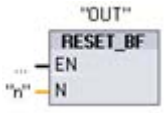
KOP: RESET_BF



FUP: SET_BF



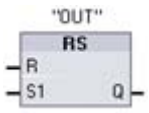
FUP: RESET_BF



Parámetro	Tipo de datos	Descripción
n	Constante	Número de bits que deben escribirse
OUT	Elemento de una matriz booleana	Elemento inicial de un mapa de bits que se debe activar o desactivar Ejemplo: #MyArray[3]

- Cuando se activa SET_BF, el valor de datos 1 se asigna a "n" bits, comenzando en la dirección OUT. Si no se activa SET_BF, no se modifica OUT.
- RESET_BF escribe el valor de datos 0 en "n" bits, comenzando en la dirección OUT. Si no se activa RESET_BF, no se modifica OUT.
- Estas instrucciones sólo se pueden disponer en el extremo derecho de una rama.

RS y SR: Flipflop de activación/desactivación y flipflop de desactivación/activación





RS es un flipflop en el que domina la activación. Si las señales de activación (S1) y desactivación (R) son verdaderas, la dirección de salida OUT se pone a 1.

SR es un flipflop en el que domina la desactivación. Si las señales de activación (S) y desactivación (R1) son verdaderas, la dirección de salida OUT se pone a 0.

El parámetro OUT indica la dirección de bit que se activa o desactiva. La salida opcional OUT Q refleja el estado lógico de la dirección "OUT".

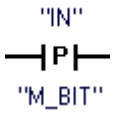
Parámetro	Tipo de datos	Descripción
S, S1	BOOL	Activar entrada; 1 indica dominancia
R, R1	BOOL	Desactivar entrada; 1 indica dominancia
OUT	BOOL	Salida de bit asignada "OUT"
Q	BOOL	Corresponde al estado del bit "OUT"

Instrucción	S1	R	Bit "OUT"
RS	0	0	Estado anterior
	0	1	0
	1	0	1
	1	1	1
	S	**R1**	
SR	0	0	Estado anterior
	0	1	0
	1	0	1
	1	1	0

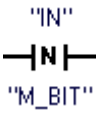
6.1.1.2 Instrucciones "Consultar flanco de señal ascendente de un operando" y "Consultar flanco de señal descendente de un operando"

Consultar flanco de señal ascendente de un operando y Consultar flanco de señal descendente de un operando

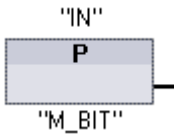
Contacto P: KOP



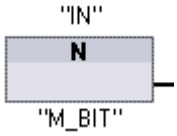
Contacto N: KOP



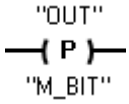
Cuadro P: FUP



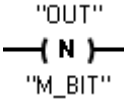
Cuadro N: FUP



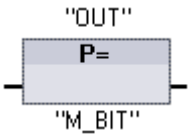
Bobina P: KOP



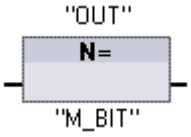
Bobina N: KOP



Cuadro P=: FUP



Cuadro N=: FUP



P_TRIG: KOP/FUP



N_TRIG: KOP/FUP



Parámetro	Tipo de datos	Descripción
M_BIT	Bool	Marca en la que se almacena el estado anterior de la entrada
IN	Bool	Bit de entrada cuyo flanco debe detectarse
OUT	Bool	Bit de salida que indica que se ha detectado un flanco
CLK	Bool	Flujo de corriente o bit de entrada cuyo flanco debe detectarse
Q	Bool	Salida que indica que se ha detectado un flanco

Contacto P: KOP — El estado de este contacto es TRUE (verdadero) cuando se detecta un flanco ascendente (OFF a ON) en el bit "IN" asignado. El estado lógico del contacto se combina entonces con el estado de entrada del flujo de corriente para activar el estado de salida del flujo de corriente. El contacto P puede disponerse en cualquier posición del segmento, excepto al final de una rama.

Contacto N: KOP — El estado de este contacto es TRUE (verdadero) cuando se detecta un flanco descendente (ON a OFF) en el bit de entrada asignado. El estado lógico del contacto se combina entonces con el estado de entrada del flujo de corriente para activar el estado de salida del flujo de corriente. El contacto N puede disponerse en cualquier posición del segmento, excepto al final de una rama.

Cuadro P: FUP	El estado lógico de la salida es TRUE (verdadero) cuando se detecta un flanco ascendente (OFF a ON) en el bit de entrada asignado. El cuadro P sólo se puede disponer al comienzo de una rama.
Cuadro N: FUP	El estado lógico de la salida es TRUE (verdadero) cuando se detecta un flanco descendente (ON a OFF) en el bit de entrada asignado. El cuadro N sólo se puede disponer al comienzo de una rama.
Bobina P: KOP	El bit asignado "OUT" es TRUE (verdadero) cuando se detecta un flanco ascendente (OFF a ON) en el flujo de corriente que entra a la bobina. El estado de entrada del flujo de corriente atraviesa la bobina como el estado de salida del flujo de corriente. La bobina P puede disponerse en cualquier posición del segmento.
Bobina N: KOP	El bit asignado "OUT" es TRUE (verdadero) cuando se detecta un flanco descendente (ON a OFF) en el flujo de corriente que entra a la bobina. El estado de entrada del flujo de corriente atraviesa la bobina como el estado de salida del flujo de corriente. La bobina N puede disponerse en cualquier posición del segmento.
Cuadro P=: FUP	El bit asignado "OUT" es TRUE (verdadero) cuando se detecta un flanco ascendente (OFF a ON) en el estado lógico de la conexión de entrada del cuadro, o bien en la asignación del bit de entrada si el cuadro está ubicado al comienzo de una rama. El estado lógico de la entrada atraviesa el cuadro como el estado lógico de la salida. El cuadro P= puede disponerse en cualquier posición de la rama.
Cuadro N=: FUP	El bit asignado "OUT" es TRUE (verdadero) cuando se detecta un flanco descendente (ON a OFF) en el estado lógico de la conexión de entrada del cuadro, o bien en la asignación del bit de entrada si el cuadro está ubicado al comienzo de una rama. El estado lógico de la entrada atraviesa el cuadro como el estado lógico de la salida. El cuadro N= puede disponerse en cualquier posición de la rama.
P_TRIG: KOP/FUP	El flujo de corriente o estado lógico de la salida Q es TRUE (verdadero) cuando se detecta un flanco ascendente (OFF a ON) en el estado lógico de CLK (en FUP) o en el flujo de corriente de CLK (en KOP). En KOP, la instrucción P_TRIG no se puede disponer ni al comienzo ni al final de un segmento. En FUP, la instrucción P_TRIG puede disponerse en cualquier posición de la rama, excepto al final.
N_TRIG (KOP/FUP)	El flujo de corriente o estado lógico de la salida Q es TRUE (verdadero) cuando se detecta un flanco descendente (ON a OFF) en el estado lógico de CLK (en FUP) o en el flujo de corriente de CLK (en KOP). En KOP, la instrucción N_TRIG no se puede disponer ni al comienzo ni al final de un segmento. En FUP, la instrucción P_TRIG puede disponerse en cualquier posición de la rama, excepto al final.

Todas las instrucciones de detección de flancos utilizan una marca (M_BIT) para almacenar el estado anterior de la señal de entrada que se está vigilando. Un flanco se detecta comparando el estado de la entrada con el estado de la marca. Si los estados indican un cambio de la entrada en el sentido deseado, se notifica un flanco activando la salida (TRUE). De lo contrario, se desactivará la salida (FALSE).

Nota

Las instrucciones de detección de flancos evalúan los valores de la entrada y de la marca cada vez que se ejecutan, incluyendo la primera ejecución. Los estados iniciales de la entrada y de la marca deben considerarse al diseñar el programa, con objeto de permitir o impedir la detección de flancos en el primer ciclo.

Puesto que la marca debe conservarse desde una ejecución hasta la siguiente, es preciso utilizar un bit unívoco para cada instrucción de detección de flancos. Este bit no se puede utilizar en ninguna otra ubicación del programa. También se debe evitar la memoria temporal y la memoria que pueda ser modificada por otras funciones de sistema, p. ej. una actualización de E/S. Utilice sólo el área de marcas (M), DB global o memoria estática (en un DB instancia) para las asignaciones de memoria de M_BIT.

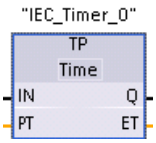
6.1.2 Temporizadores

Las instrucciones con temporizadores se utilizan para crear retardos programados:

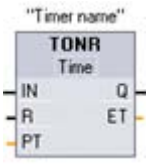
- TP: El temporizador Impulso genera un impulso con una duración predeterminada.
- TON: La salida Q del temporizador de retardo al conectar se activa al cabo de un tiempo de retardo predeterminado.
- TOF: La salida Q del temporizador de retardo al desconectar se desactiva al cabo de un tiempo de retardo predeterminado.
- TONR: La salida Q del acumulador de tiempo se activa al cabo de un tiempo de retardo predeterminado. El tiempo transcurrido se acumula a lo largo de varios periodos de temporización hasta que la entrada R inicializa el tiempo transcurrido.
- RT: Inicializa un temporizador borrando los datos de tiempo almacenados en el bloque de datos instancia del temporizador indicado.

Todos los temporizadores utilizan una estructura almacenada en un bloque de datos para mantener los datos. El bloque de datos se asigna al colocar la instrucción de temporización en el editor.

Al colocar instrucciones de temporización en un bloque de función es posible seleccionar la opción de bloque de datos multiinstancia. Los nombres de estructura de los temporizadores pueden diferir en las distintas estructuras, pero los datos de los temporizadores se encuentran en un bloque de datos individual y no requieren un bloque de datos propio para cada temporizador. Esto reduce el tiempo de procesamiento y la memoria de datos necesaria para gestionar los temporizadores. No hay interacción entre las estructuras de datos de los temporizadores en el bloque de datos multiinstancia compartido.



Los temporizadores TP, TON y TOF tienen los mismos parámetros de entrada y salida.



El temporizador TONR dispone adicionalmente de la entrada de reset R.

Cree un "Nombre de temporizador" propio para designar el bloque de datos temporizador y describir el objetivo de este temporizador en el proceso.

"Nombre de temporizador"
----[RT]----

La instrucción RT inicializa el tiempo del temporizador indicado.

Parámetro	Tipo de datos	Descripción
IN	Bool	Habilitar entrada del temporizador
R	Bool	Poner a cero el tiempo transcurrido de TONR
PT	Bool	Entrada que indica el tiempo predeterminado
Q	Bool	Salida del temporizador
ET	Time	Salida que indica el tiempo transcurrido
Bloque de datos temporizador	DB	Indica qué temporizador debe inicializarse con la instrucción RT

El parámetro IN inicia y detiene los temporizadores:

- Un cambio de 0 a 1 del parámetro IN inicia los temporizadores TP, TON y TONR.
- Un cambio de 1 a 0 del parámetro IN inicia el temporizador TOF.

La tabla siguiente muestra el efecto de los cambios de valores en los parámetros PT e IN.

Temporizador	Cambios de los parámetros PT e IN
TP	• Un cambio de PT no tiene efecto alguno durante el funcionamiento del temporizador. • Un cambio de IN no tiene efecto alguno durante el funcionamiento del temporizador.
TON	• Un cambio de PT no tiene efecto alguno durante el funcionamiento del temporizador. • Si IN cambia a FALSE durante el funcionamiento del temporizador, éste se inicializará y se detendrá.
TOF	• Un cambio de PT no tiene efecto alguno durante el funcionamiento del temporizador. • Si IN cambia a TRUE durante el funcionamiento del temporizador, éste se inicializará y se detendrá.
TONR	• Un cambio de PT no tiene efecto alguno durante el funcionamiento del temporizador, pero sí cuando reanuda el contaje. • Si IN cambia a FALSE durante el funcionamiento del temporizador, éste se detendrá pero no se inicializará. Si IN vuelve a cambiar a TRUE, el temporizador comenzará a contar desde el valor de tiempo acumulado.

Valores TIME

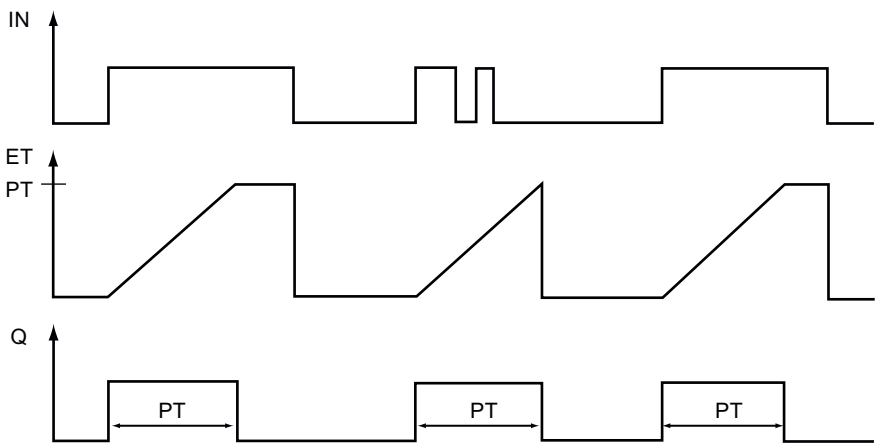
Los valores PT (tiempo predeterminado) y ET (tiempo transcurrido) se almacenan en la memoria como enteros dobles con signo que representan milisegundos. Los datos TIME utilizan el identificador T# y pueden introducirse como unidad de tiempo simple "T#200ms" o como unidades de tiempo compuestas "T#2s_200ms".

Tipo de datos	Tamaño	Rangos válidos
TIME	32 bits Almacenado como	T#-24d_20h_31m_23s_648ms hastaT#24d_20h_31m_23s_647ms -2.147.483.648 ms hasta +2.147.483.647 ms

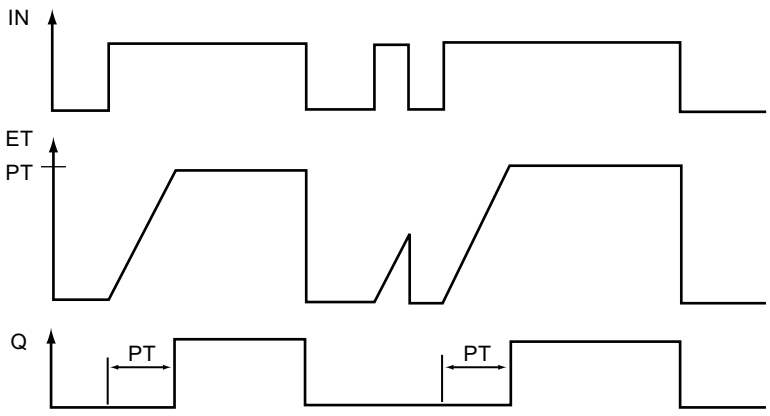
Nota

El rango negativo del tipo de datos TIME indicado arriba no puede utilizarse con las instrucciones de temporización. Los valores PT (tiempo predeterminado) negativos se ponen a cero cuando se ejecuta la instrucción de temporización. ET (tiempo transcurrido) es siempre un valor positivo.

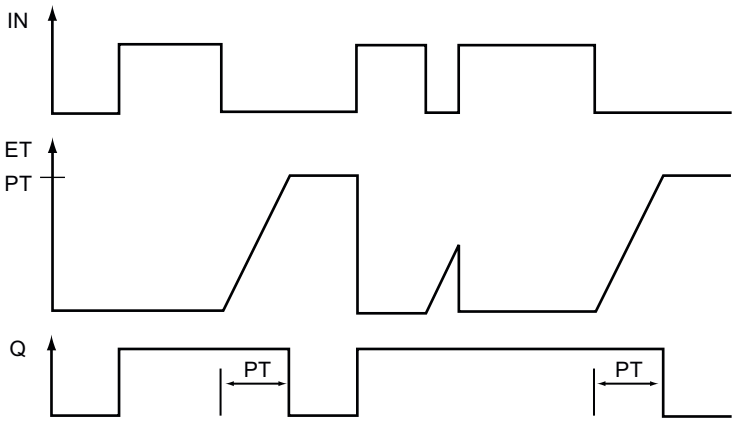
TP: Cronograma de impulsos



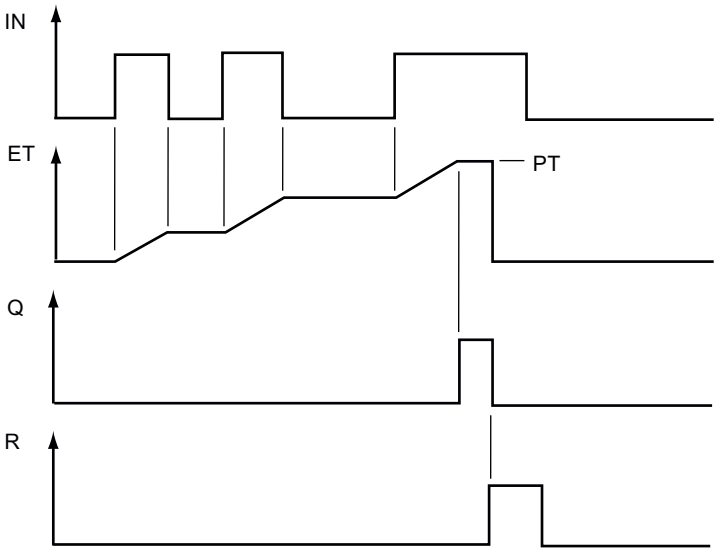
TON: Cronograma de retardo al conectar



TOF: Cronograma de retardo al desconectar



TONR: Cronograma del acumulador de tiempo



6.1.3 Contadores

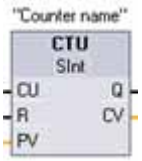
6.1.3.1 Contadores

Las instrucciones con contadores se utilizan para contar eventos del programa internos y eventos del proceso externos:

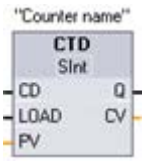
- CTU es un contador ascendente.
- CTD es un contador descendente.
- CTUD es un contador ascendente/descendente.

Todo contador utiliza una estructura almacenada en un bloque de datos para conservar sus datos. El bloque de datos se asigna al colocar la instrucción de contaje en el editor. Estas instrucciones utilizan contadores por software cuya frecuencia de contaje máxima está limitada por la frecuencia de ejecución del OB en el que están contenidas. El OB en el que se depositan las instrucciones debe ejecutarse con suficiente frecuencia para detectar todas las transiciones de las entradas CU o CD. Para operaciones de contaje rápido, consulte la instrucción CTRL_HSC.

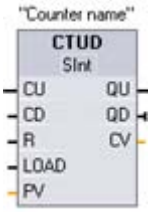
Al colocar instrucciones con contadores en un bloque de función es posible seleccionar la opción de bloque de datos multiinstancia. Los nombres de estructura de los contadores pueden diferir en las distintas estructuras, pero los datos de los contadores se encuentran en un bloque de datos individual y no requieren un bloque de datos propio para cada contador. Esto reduce el tiempo de procesamiento y la memoria de datos necesaria para los contadores. No hay interacción entre las estructuras de datos de los contadores en el bloque de datos multiinstancia compartido.



Seleccione el tipo de datos del valor de contaje en la lista desplegable debajo del nombre del cuadro.



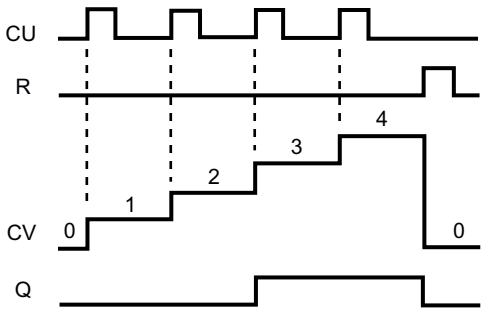
Cree un "Nombre de contador" propio para designar el bloque de datos contador y describir el objetivo de este contador en el proceso.



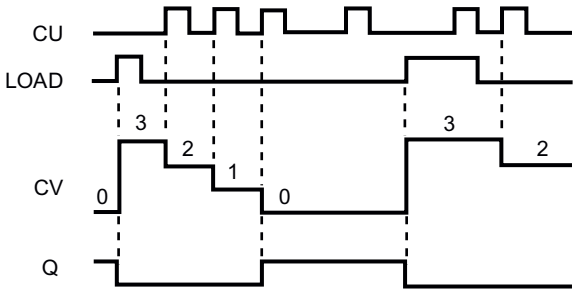
Parámetro	Tipo de datos	Descripción
CU, CD	Bool	Contaje ascendente o descendente, en incrementos de uno
R (CTU, CTUD)	Bool	Poner a cero el valor del contador
LOAD (CTD, CTUD)	Bool	Control de carga del valor predeterminado
PV	SInt, Int, DInt, USInt, UInt, UDInt	Valor de contaje predeterminado
Q, QU	Bool	Es verdadero si CV >= PV
QD	Bool	Es verdadero si CV <= 0
CV	SInt, Int, DInt, USInt, UInt, UDInt	Valor de contaje actual

El rango numérico de valores de contaje depende del tipo de datos seleccionado. Si el valor de contaje es un entero sin signo, es posible contar hacia atrás hasta cero o hacia delante hasta el límite del rango. Si el valor de contaje es un entero con signo, es posible contar hacia atrás hasta el límite de entero negativo y contar hacia delante hasta el límite de entero positivo.

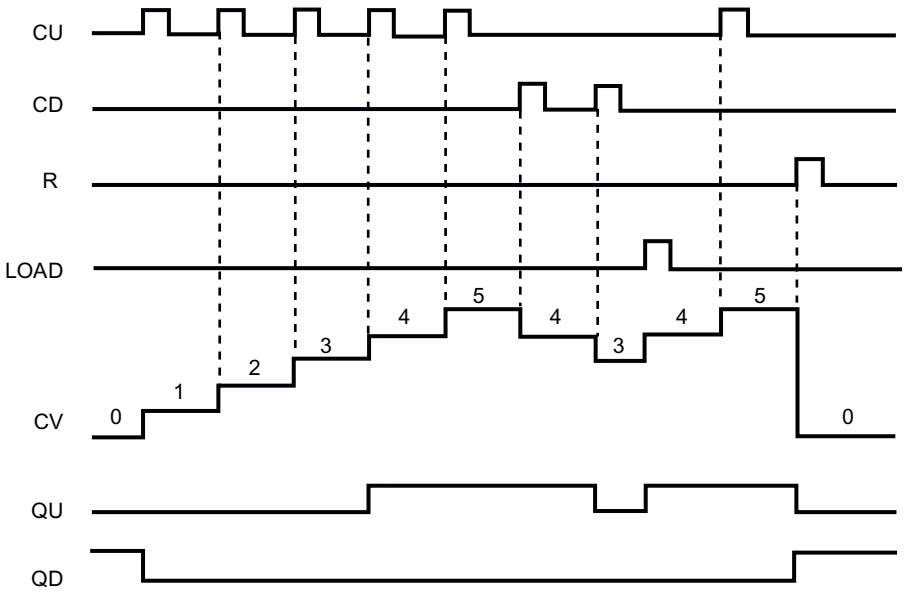
CTU: CTU se incrementa en 1 cuando el valor del parámetro CU cambia de 0 a 1. Si el valor del parámetro CV (valor de contaje actual) es mayor o igual al valor del parámetro PV (valor de contaje predeterminado), el parámetro de salida del contador Q = 1. Si el valor del parámetro de reset R cambia de 0 a 1, el valor de contaje actual se pone a 0. La figura siguiente muestra un cronograma de la instrucción CTU con un valor de contaje de entero sin signo (donde PV = 3).



CTD: CTD se decrementa en 1 cuando el valor del parámetro CD cambia de 0 a 1. Si el valor del parámetro CV (valor de contaje actual) es menor o igual a 0, el parámetro de salida del contador Q = 1. Si el valor del parámetro LOAD cambia de 0 a 1, el valor del parámetro PV (valor predeterminado) se carga en el contador como nuevo CV (valor de contaje actual). La figura siguiente muestra un cronograma de la instrucción CTD con un valor de contaje de entero sin signo (donde PV = 3).



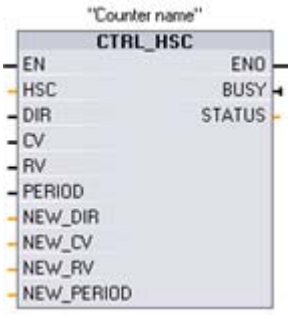
CTUD: CTUD se incrementa o decrementa en 1 cuando el estado lógico de las entradas de contaje ascendente (CU) o descendente (CD) cambia de 0 a 1. Si el valor del parámetro CV (valor de contaje actual) es mayor o igual al valor del parámetro PV (valor predeterminado), el parámetro de salida del contador QU = 1. Si el valor del parámetro CV es menor o igual a cero, el parámetro de salida del contador QD = 1. Si el valor del parámetro LOAD cambia de 0 a 1, el valor del parámetro PV (valor predeterminado) se carga en el contador como nuevo CV (valor de contaje actual). Si el valor del parámetro de reset R cambia de 0 a 1, el valor de contaje actual se pone a 0. La figura siguiente muestra un cronograma de la instrucción CTUD con un valor de contaje de entero sin signo (donde PV = 4).



6.1.3.2 Instrucción CTRL_HSC

La instrucción CTRL_HSC permite controlar los contadores rápidos utilizados para contar eventos que ocurren más rápidamente que la frecuencia de ejecución del OB. La frecuencia de contaje de las instrucciones CTU, CTD y CTUD está limitada por la frecuencia de ejecución del OB en el que están contenidas. Encontrará más información sobre las frecuencias de entrada de reloj máximas del HSC en los datos técnicos (Página 325) de la CPU.

Una aplicación típica de los contadores rápidos es el contaje de impulsos generados por un encoder rotativo de control de movimiento.



Toda instrucción CTRL_HSC utiliza una estructura almacenada en un bloque de datos para conservar los datos. El bloque de datos se asigna al disponer la instrucción CTRL_HSC en el editor.

Cree un "Nombre de contador" propio para designar el bloque de datos contador y describir el objetivo de este contador en el proceso.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
HSC	IN	HW_HSC	Identificador del HSC
DIR	IN	Bool	1 = solicitar nuevo sentido de contaje
CV	IN	Bool	1 = solicitar activación del nuevo valor del contador
RV	IN	Bool	1 = solicitar activación del nuevo valor de referencia
PERIOD	IN	Bool	1 = solicitar activación del nuevo periodo (sólo para el modo de medición de frecuencia)
NEW_DIR	IN	Int	Nuevo sentido: 1= hacia delante -1= hacia atrás
NEW_CV	IN	Dint	Nuevo valor del contador
NEW_RV	IN	Dint	Nuevo valor de referencia
NEW_PERIOD	IN	Int	Nuevo periodo en segundos: 0,01, 0,1 ó 1 (sólo para el modo de medición de frecuencia)
BUSY	OUT	Bool	Función ocupada
STATUS	OUT	Word	Código de condición de ejecución

Los contadores rápidos deben configurarse en la configuración de dispositivos PLC del proyecto antes de poder utilizarlos en el programa. Al configurar los dispositivos HSC se seleccionan el modo de contaje, los conectores de E/S, la asignación de alarmas y el funcionamiento como contador rápido o dispositivo para medir la frecuencia de pulsos. Los contadores rápidos pueden operarse con o sin control del programa.

Numerosos parámetros de configuración de los contadores rápidos se ajustan sólo en la "Configuración de dispositivos" del proyecto. Algunos parámetros de los contadores rápidos se inicializan en la "Configuración de dispositivos" del proyecto, pero se pueden modificar luego bajo el control del programa.

Los parámetros de la instrucción CTRL_HSC permiten controlar el programa del proceso de contaje:

- Ajustar el sentido de contaje al valor NEW_DIR
- Ajustar el valor de contaje actual al valor NEW_CV
- Ajustar el valor de referencia al valor NEW_RV
- Ajustar el periodo (para el modo de medición de frecuencia) al valor NEW_PERIOD

Si las siguientes marcas booleanas están puestas a 1 cuando se ejecuta la instrucción CTRL_HSC, el valor NEW_xxx correspondiente se carga en el contador. Las peticiones múltiples (varias marcas se activan simultáneamente) se procesan en una sola ejecución de la instrucción CTRL_HSC.

- DIR = 1 es una petición para cargar un valor NEW_DIR, 0 = ningún cambio
- CV = 1 es una petición para cargar un valor NEW_CV, 0 = ningún cambio
- RV = 1 es una petición para cargar un valor NEW_RV, 0 = ningún cambio
- PERIOD = 1 es una petición para cargar un valor NEW_PERIOD, 0 = ningún cambio

Generalmente, la instrucción CTRL_HSC se inserta en un OB de alarma de proceso que se ejecuta cuando se dispara el evento de alarma de proceso del contador. Por ejemplo, si un evento CV=RV dispara la alarma del contador, un OB de alarma de proceso ejecuta la instrucción CTRL_HSC y puede cambiar el valor de referencia cargando un valor NEW_RV.

El valor de contaje actual no está disponible en los parámetros de CTRL_HSC. La dirección de la memoria imagen de proceso que almacena el valor de contaje actual se asigna al configurar el hardware del contador rápido. La lógica del programa puede utilizarse para leer directamente el valor de contaje. El valor devuelto al programa será el contaje correcto en el instante en el que se ha leído el contador. El contador continuará contando eventos rápidos. Por tanto, el valor de contaje real puede cambiar antes de que el programa finalice un proceso utilizando un valor de contaje antiguo.

Detalles de los parámetros de CTRL_HSC:

- Si no se solicita la actualización de un parámetro, se ignoran los valores de entrada correspondientes.
- El parámetro DIR es válido sólo si el sentido de contaje se ajusta a "Programa de usuario (control interno de sentido)". La forma de utilizar este parámetro se determina en la configuración de dispositivos HSC.
- En un HSC S7-1200 en la CPU o en la Signal Board, el parámetro BUSY siempre está puesto a 0.

Códigos de condición: En caso de error, ENO se pone a 0 y la salida STATUS contiene un código de condición.

Valor de STATUS (W#16#...)	Descripción
0	Sin error
80A1	El identificador HSC no direcciona un HSC
80B1	Valor de NEW_DIR no permitido
80B2	Valor de NEW_CV no permitido
80B3	Valor de NEW_RV no permitido
80B4	Valor de NEW_PERIOD no permitido

6.1.3.3 Funcionamiento del contador rápido

Un contador rápido (HSC) puede utilizarse como entrada para un encoder rotativo incremental. El encoder rotativo ofrece un número determinado de valores de contaje por revolución, así como un impulso de reset que ocurre una vez por revolución. El o los relojes y el impulso de reset del encoder suministran las entradas para el contador rápido.

El primero de los valores predeterminados se carga en el HSC y las salidas se activan durante el periodo en el que el contaje actual es menor que el valor predeterminado. El HSC pone a disposición una alarma cuando el contaje actual es igual al valor predeterminado, al ocurrir un reset y también al producirse un cambio de sentido.

Cuando el contaje actual es igual al valor predeterminado y se presenta un evento de alarma, se carga un nuevo valor predeterminado y se activa el siguiente estado para las salidas. Cuando ocurre el evento de alarma de reset, se activan el primer valor predeterminado y los primeros estados de las salidas y se repite el ciclo.

Puesto que las alarmas ocurren con una frecuencia mucho menor que la frecuencia de contaje del HSC, es posible implementar un control preciso de las operaciones rápidas con un impacto relativamente bajo en el ciclo de la CPU. El método de asociar alarmas permite cargar cada valor predeterminado nuevo en un subprograma por separado, lo que simplifica el control del estado. (Altenativamente, todos los eventos de alarma se pueden ejecutar en una solo subprograma.)

Seleccionar las funciones del HSC

Todos los HSCs funcionan de la misma manera en el mismo modo de operación del contador. Hay cuatro tipos básicos de HSCs, a saber:

- Contador de fase simple con control interno del sentido de contaje
- Contador de fase simple con control externo del sentido de contaje
- Contador de dos fases con 2 entradas de reloj
- Contador A/B

Todo tipo de HSC puede utilizarse con o sin entrada de reset. Cuando se activa la entrada de reset (con algunas restricciones, v. la tabla siguiente), el valor actual se borra y se mantiene borrado hasta que se desactive la entrada de reset.

- Función de frecuencia: Algunos modos del HSC (Modo de contaje) permiten configurarlo de manera que notifique la frecuencia en vez del contaje actual de impulsos. Hay tres periodos de medición de frecuencia disponibles: 0,01, 0,1 ó 1,0 segundos.

  El periodo de medición de frecuencia determina cada cuánto calcula y notifica el HSC un nuevo valor de frecuencia. La frecuencia notificada es un valor promedio determinado por el número total de contajes en el último periodo de medición. Si la frecuencia cambia rápidamente, el valor notificado será el valor medio entre la frecuencia más alta y más baja registrada durante el periodo de medición. La frecuencia se indica siempre en hertzios (impulsos por segundo), independientemente del ajuste del periodo de medición de frecuencia.

- Modos y entradas de contador: La tabla siguiente muestra las entradas utilizadas para las funciones de reloj, control de sentido y reset asociadas al HSC.

  Una misma entrada no se puede utilizar para dos funciones diferentes. Sin embargo, cualquier entrada que no se esté utilizando en el modo actual del HSC se puede usar para otro fin. Por ejemplo, si el HSC1 está en un modo que utiliza entradas integradas, pero que no usa el reset externo (I0.3), la entrada I0.3 puede utilizarse para alarmas de flanco o para el HSC2.

Descripción			Asignación de entradas predeterminada			Función
HSC	HSC1	Integrado o Signal Board o supervisión PTO 0[1]	I0.0 I4.0 PTO 0 Impulso	I0.1 I4.1 PTO 0 Sentido	I0.3 I4.3 -	
	HSC:	Integrado o Signal Board o supervisión PTO 1[1]	I0.2 I4.2 PTO 1 Impulso	I0.3 I4.3 PTO 1 Sentido	I0.1 I4.1 -	
	HSC3[2]	Integrado	I0.4	I0.5	I0.7	
	HSC4[3]	Integrado	I0.6	I0.7	I0.5	
	HSC5[4]	Integrado o Signal Board	I1.0 I4.0	I1.1 I4.1	I1.2 I4.3	
	HSC6[4]	Integrado o Signal Board	I1.3 I4.2	I1.4 I4.3	I1.5 I4.1	
Modo	Contador de fase simple con control interno del sentido de contaje		Reloj	-	-	Contaje o frecuencia
					Reset	Contaje
	Contador de fase simple con control externo del sentido de contaje		Reloj	Sentido	-	Contaje o frecuencia
					Reset	Contaje

Descripción		Asignación de entradas predeterminada			Función
	Contador de dos fases con 2 entradas de reloj	Reloj adelante	Reloj atrás	-	Contaje o frecuencia
				Reset	Contaje
	Contador en cuadratura (fases A/B)	Fase A	Fase B	-	Contaje o frecuencia
				Fase Z	Contaje
	Supervisión de trenes de impulsos (PTO)[1]	Reloj	Sentido	-	Contaje

1 La supervisión de trenes de impulsos utiliza siempre las funciones de reloj y sentido. Si la salida PTO correspondiente está configurada sólo para impulsos, la salida de sentido se debería ajustar generalmente para el contaje adelante.

2 HSC3 con una entrada de reset no es posible para la CPU 1211C, que soporta sólo 6 entradas integradas.

3 HSC4 no es posible para la CPU 1211C, que soporta sólo 6 entradas integradas.

4 HSC5 y HSC6 sólo son soportados por la CPU 1211C y CPU 1212C si está instalada una Signal Board.

Acceso al valor actual del HSC

La CPU almacena el valor actual de cada HSC en una dirección de entrada (I). La tabla siguiente muestra las direcciones predeterminadas asignadas al valor actual de cada HSC. La dirección I del valor actual se puede cambiar modificando las propiedades de la CPU en la "Configuración de dispositivos".

Contador rápido	Tipo de datos	Dirección predeterminada
HSC1	Dint	ID1000
HSC2	Dint	ID1004
HSC3	Dint	ID1008
HSC4	Dint	ID1012
HSC5	Dint	ID1016
HSC6	Dint	ID1020

Las E/S digitales asignadas a dispositivos HSC no se pueden forzar permanentemente

Las E/S digitales utilizadas por los contadores rápidos se asignan durante la configuración de dispositivos. Si se asignan direcciones de E/S digitales a estos dispositivos, los valores de las direcciones de E/S asignadas no podrán ser modificados por la función de forzado permanente de la tabla de observación.

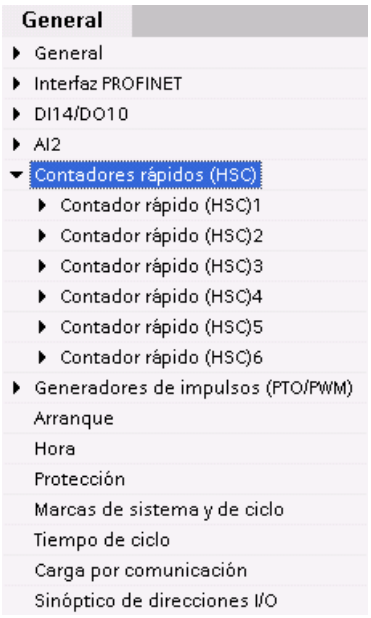
6.1.3.4 Configuración del HSC

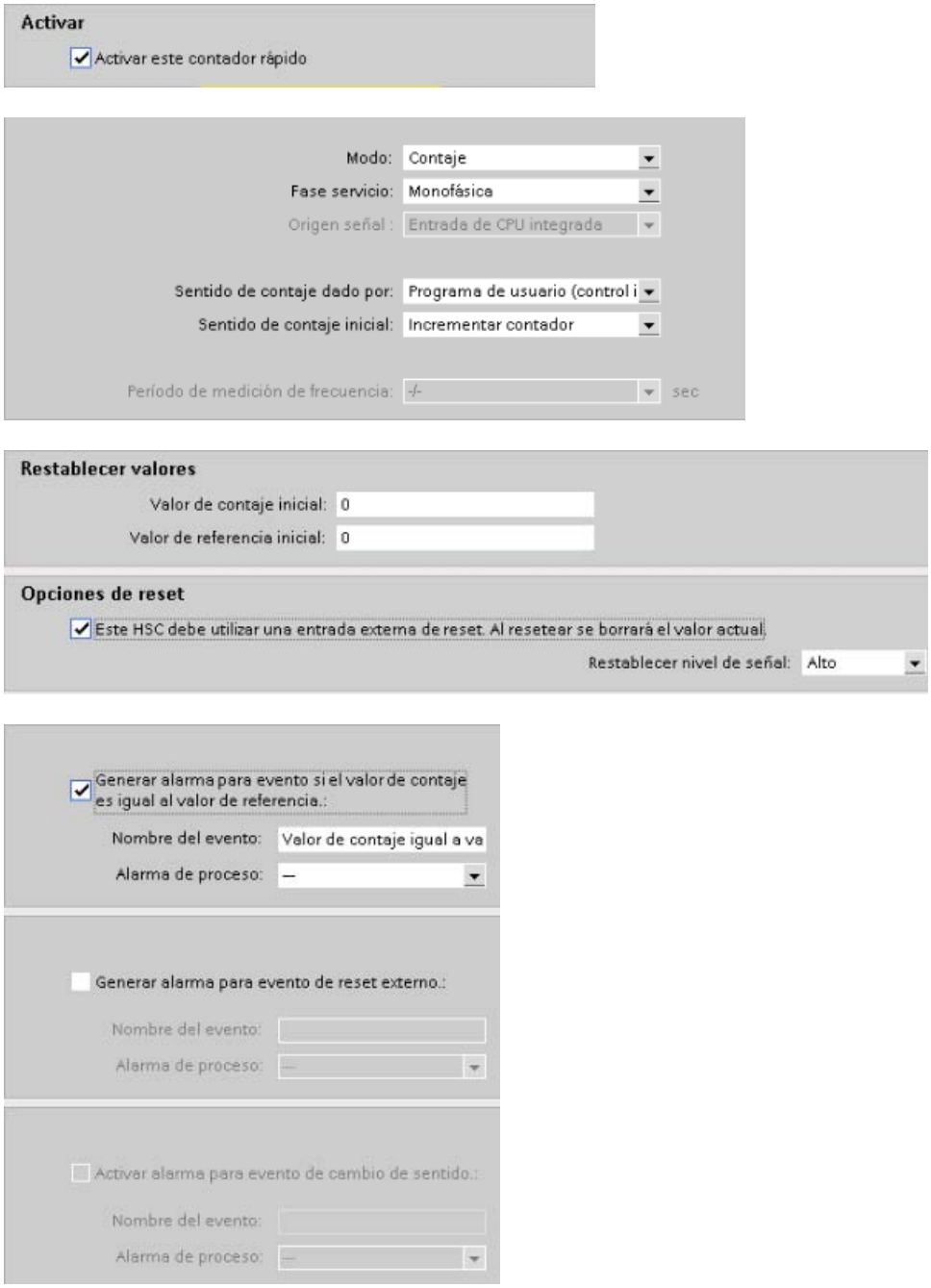
La CPU permite configurar hasta 6 contadores rápidos. Las "Propiedades" de la CPU se editan para configurar los parámetros de cada HSC.

Los parámetros de los contadores rápidos se configuran editando las "Propiedades" de la CPU.

Tras habilitar el HSC se deben configurar los demás parámetros, tales como la función del contador, los valores iniciales, las opciones de reset y los eventos de alarma.

Una vez configurado el HSC, se utiliza la instrucción CTRL_HSC en el programa de usuario para controlar el funcionamiento del HSC.




Activar
Activar este contador rápido
Modo:
Conteje
Fase servicio:
Monofásica
Origen señal :
Entrada de CPU integrada
Sentido de conteje dado por:
Programa de usuario (control i
Sentido de conteje inicial:
Incrementar contador
Período de medición de frecuencia:
-/-
sec
Restablecer valores
Valor de conteje inicial:
0
Valor de referencia inicial:
0
Opciones de reset
Este HSC debe utilizar una entrada externa de reset. Al resetear se borrará el valor actual.
Restablecer nivel de señal:
Alto
Generar alarma para evento si el valor de conteje es igual al valor de referencia.:
Nombre del evento:
Valor de conteje igual a va
Alarma de proceso:
—
Generar alarma para evento de reset externo.:
Nombre del evento:
Alarma de proceso:
—
Activar alarma para evento de cambio de sentido.:
Nombre del evento:
Alarma de proceso:
—

6.1.4 Comparación



KOP FUP

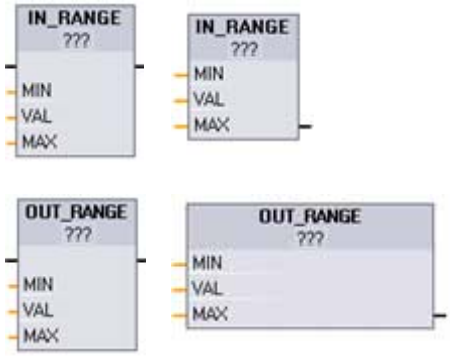
Las instrucciones de comparación se utilizan para comparar dos valores de un mismo tipo de datos. Si la comparación de contactos KOP es TRUE (verdadera), se activa el contacto. Si la comparación de cuadros FUP es TRUE (verdadera), la salida del cuadro es TRUE.

Tras hacer clic en la instrucción en el editor de programación, es posible seleccionar el tipo de comparación y el tipo de datos en las listas desplegables respectivas.

Tipo de relación	La comparación se cumple si:
==	IN1 es igual a IN2
<>	IN1 es diferente de IN2
>=	IN1 es mayor o igual a IN2
<=	IN1 es menor o igual a IN2
>	IN1 es mayor que IN2
<	IN1 es menor que IN2

Parámetro	Tipo de datos	Descripción
IN1, IN2	SInt, Int, DInt, USInt, UInt, UDInt, Real, LReal, String, Char, Time, DTL, constante	Valores que deben compararse

Valor dentro del rango y Valor fuera del rango



KOP FUP

Las instrucciones IN_RANGE (Valor dentro del rango) y OUT_RANGE (Valor fuera del rango) permiten comprobar si un valor de entrada está dentro o fuera de un rango de valores especificado. Si la comparación es TRUE (verdadera), la salida del cuadro es TRUE.

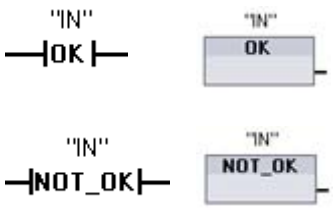
Los parámetros de entrada MIN, VAL y MAX deben tener un mismo tipo de datos.

Tras hacer clic en la instrucción en el editor de programación, el tipo de datos se puede seleccionar en las listas desplegables.

Tipo de relación	La comparación es TRUE (verdadera) si:
IN_RANGE	MIN <= VAL <= MAX
OUT_RANGE	VAL < MIN o VAL > MAX

Parámetro	Tipo de datos	Descripción
MIN, VAL, MAX	SInt, Int, DInt, USInt, UInt, UDInt, Real, constante	Entradas de comparación

Instrucciones "Comprobar validez" y "Comprobar invalidez"



KOP FUP

Las instrucciones OK (Comprobar validez) y NOT_OK (Comprobar invalidez) permiten comprobar si un valor de referencia de entrada es un número real válido según la especificación IEEE 754. Si el contacto KOP es TRUE (verdadero), se activa el contacto y conduce corriente. Si el cuadro FUP es TRUE (verdadero), la salida del cuadro es TRUE.

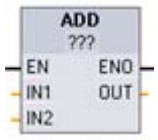
Un valor Real o LReal no es válido si es +/- INF (infinito), NaN (no es un número) o si es un valor desnormalizado. Un valor desnormalizado es un número muy próximo a cero. La CPU sustituye un valor desnormalizado por cero en los cálculos.

Instrucción	La comprobación del número Real es TRUE (verdadera) si:
OK	El valor de entrada es un número Real válido
NOT_OK	El valor de entrada no es un número Real válido

Parámetro	Tipo de datos	Descripción
IN	Real, LReal	Datos de entrada

6.1.5 Funciones matemáticas

Instrucciones "Sumar", "Restar", "Multiplicar" y "Dividir"



Las instrucciones matemáticas con cuadros se utilizan para programar las operaciones matemáticas básicas:

- ADD: Sumar (IN1 + IN2 = OUT)
- SUB: Restar (IN1 - IN2 = OUT)
- MUL: Multiplicar (IN1 * IN2 = OUT)
- DIV: Dividir (IN1 / IN2 = OUT)

  Una operación de división de enteros trunca la parte fraccionaria del cociente y produce un valor de salida entero.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Nota

Los parámetros IN1, IN2 y OUT de las instrucciones matemáticas básicas deben tener un mismo tipo de datos.

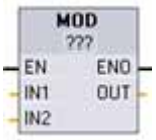
Parámetro	Tipo de datos	Descripción
IN1, IN2	SInt, Int, DInt, USInt, UInt, UDInt, Real, LReal, constante	Entradas de la operación matemática
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real, LReal	Salida de la operación matemática

Si está habilitada (EN = 1), la instrucción matemática realiza la operación indicada en los valores de entrada (IN1 e IN2) y almacena el resultado en la dirección de memoria que indica el parámetro de salida (OUT). Una vez finalizada correctamente la operación, la instrucción pone ENO a 1.

Estado de ENO	Descripción
1	Sin error
0	El resultado de la operación matemática quedaría fuera del rango numérico válido del tipo de datos seleccionado. Se devuelve la parte menos significativa del resultado que quepa en el tamaño de destino.
0	División por 0 (IN2 = 0): El resultado es indefinido y se devuelve cero.
0	Real/LReal: Si uno de los valores de entrada es NaN (no es un número), se devuelve NaN.
0	ADD Real/LReal: Si ambos valores IN son INF con signos diferentes, la operación no está permitida y se devuelve NaN.
0	SUB Real/LReal: Si ambos valores IN son INF con signos iguales, la operación no está permitida y se devuelve NaN.

Estado de ENO	Descripción
0	MUL Real/LReal: Si un valor IN es cero y el otro es INF, la operación no está permitida y se devuelve NaN.
0	DIV Real/LReal: Si ambos valores IN son cero o INF, la operación no está permitida y se devuelve NaN.

6.1.5.1 Instrucción "Obtener resto de división"



La instrucción MOD (Obtener resto de división) se utiliza para la operación matemática IN1 modulo IN2. La operación IN1 MOD IN2 = IN1 - (IN1 / IN2) = parámetro OUT.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Nota

Los parámetros IN1, IN2 y OUT deben tener un mismo tipo de datos.

Parámetro	Tipo de datos	Descripción
IN1 e IN2	Int, DInt, USInt, UInt, UDInt, constante	Entradas modulo
OUT	Int, DInt, USInt, UInt, UDInt	Salida modulo

Estado de ENO	Descripción
1	Sin error
0	Valor IN2 = 0, el valor cero se asigna a OUT

Instrucción "Generar complemento a dos"



La instrucción NEG (Generar complemento a dos) permite invertir el signo aritmético del valor del parámetro IN y almacenar el resultado en el parámetro OUT.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Nota

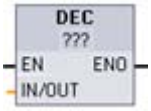
Los parámetros IN y OUT deben tener un mismo tipo de datos.

Parámetro	Tipo de datos	Descripción
IN	SInt, Int, DInt, Real, LReal, constante	Entrada de la operación matemática
OUT	SInt, Int, DInt, Real, LReal	Salida de la operación matemática

Estado de ENO	Descripción
1	Sin error
0	El resultado está fuera del rango numérico válido del tipo de datos seleccionado. Ejemplo de SInt: NEG (-128) arroja el resultado +128 que excede el límite máximo del tipo de datos.

Instrucciones "Incrementar" y "Decrementar"





Las Instrucciones INC (Incrementar) y DEC (Decrementar) se utilizan para:

- Incrementar un valor de número entero con o sin signo

  INC (Incrementar): Valor del parámetro IN/OUT +1 = valor del parámetro IN/OUT
- Decrementar un valor de número entero con o sin signo

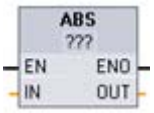
  DEC (Decrementar): Valor del parámetro IN/OUT - 1 = valor del parámetro IN/OUT

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Parámetro	Tipo de datos	Descripción
IN/OUT	SInt, Int, DInt, USInt, UInt, UDInt	Entrada/salida de la operación matemática

Estado de ENO	Descripción
1	Sin error
0	El resultado está fuera del rango numérico válido del tipo de datos seleccionado. Ejemplo de SInt: INC (127) arroja el resultado -128 que excede el límite máximo del tipo de datos.

Instrucción "Calcular valor absoluto"



La instrucción ABS (Calcular valor absoluto) permite calcular el valor absoluto de un entero con signo o número real indicado en el parámetro IN y almacenar el resultado en el parámetro OUT.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Nota

Los parámetros IN y OUT deben tener un mismo tipo de datos.

Parámetro	Tipo de datos	Descripción
IN	SInt, Int, DInt, Real, LReal	Entrada de la operación matemática
OUT	SInt, Int, DInt, Real, LReal	Salida de la operación matemática

Estado de ENO	Descripción
1	Sin error
0	El resultado de la operación aritmética está fuera del rango numérico válido del tipo de datos seleccionado. Ejemplo de SInt: ABS (-128) arroja el resultado +128 que excede el límite máximo del tipo de datos.

Instrucciones "Determinar mínimo" y "Determinar máximo"



Las instrucciones MIN (Determinar mínimo) y MAX (Determinar máximo) se utilizan del siguiente modo:

- MIN compara el valor de dos parámetros IN1 e IN2 y asigna el valor mínimo (menor) al parámetro OUT.
- MAX compara el valor de dos parámetros IN1 e IN2 y asigna el valor máximo (mayor) al parámetro OUT.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Nota

Los parámetros IN1, IN2 y OUT deben tener un mismo tipo de datos.

Parámetro	Tipo de datos	Descripción
IN1, IN2	SInt, Int, DInt, USInt, UInt, UDInt, Real, constante	Entradas de la operación matemática
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real	Salida de la operación matemática

Estado de ENO	Descripción
1	Sin error
0	Sólo para el tipo de datos Real: • Una o ambas entradas no son un número Real (NaN). • La salida OUT resultante es +/- INF (infinito).

Instrucción "Ajustar valor límite"

La instrucción "Ajustar valor límite" permite comprobar si el valor del parámetro IN está dentro del rango de valores especificado por los parámetros MIN y MAX. El valor OUT se conecta al valor MIN o MAX si el valor IN está fuera de este rango.



- Si el valor del parámetro IN está dentro del rango indicado, el valor de IN se almacena en el parámetro OUT.
- Si el valor del parámetro IN está fuera del rango indicado, el valor OUT es entonces el valor del parámetro MIN (si el valor IN es menor que el valor MIN) o del parámetro MAX (si el valor IN es mayor que el valor MAX).

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Nota

Los parámetros MIN, IN, MAX y OUT deben tener un mismo tipo de datos.

Parámetro	Tipo de datos	Descripción
MIN, INy MAX	SInt, Int, DInt, USInt, UInt, UDInt, Real, constante	Entradas de la operación matemática
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real	Salida de la operación matemática

Estado de ENO	Descripción
1	Sin error
0	Real: Si uno o varios de los valores de MIN, IN y MAX es NaN (no es un número), se devuelve NaN.
0	Si MIN es mayor que MAX, el valor IN se asigna a OUT.

Instrucciones matemáticas en coma flotante

Las instrucciones en coma flotante sirven para programar operaciones matemáticas utilizando los tipos de datos Real o LReal:

- SQR: Calcular cuadrado (IN ^{2} = OUT)
- SQRT: Calcular raíz cuadrada (√IN = OUT)
- LN: Calcular logaritmo natural (LN(IN) = OUT)
- EXP: Calcular valor exponencial (e ^{IN} =OUT), donde la base e = 2.71828182845904523536
- SIN: Calcular valor de seno (seno(IN radianes) = OUT)
- COS: Calcular valor de coseno (coseno(IN radianes) = OUT)
- TAN: Calcular valor de tangente (tangente(IN radianes) = OUT)
- ASIN: Calcular valor de arcoseno (arcoseno(IN) = OUT radianes), donde seno(OUT radianes) = IN
- ACOS: Calcular valor de arcocoseno (arcocoseno(IN) = OUT radianes), donde coseno(OUT radianes) = IN
- ATAN: Calcular valor de arcotangente (arcotangente(IN) = OUT radianes), donde tangente(OUT radianes) = IN
- FRAC: Determinar decimales (parte fraccionaria del número en coma flotante IN = OUT)
- EXPT: Elevar a potencia (IN1 ^{IN2} = OUT)





Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable. Los parámetros IN1 y OUT de la instrucción EXPT son siempre números reales. Es posible seleccionar el tipo de datos del parámetro del exponente IN2.

Parámetro	Tipo de datos	Descripción
IN, IN1	Real, LReal, constante	Entradas
IN2	SInt, Int, DInt, USInt, UInt,UDInt, Real, LReal, constante	Entrada de la instrucción EXPT
OUT	Real, LReal	Salidas

Estado de ENO	Instrucción	Condición	Resultado (OUT)
1	Todas	Sin error	Resultado válido
0	SQR	El resultado excede el rango Real/LReal válido	+INF
		IN es +/- NaN (no es un número)	+NaN

Estado de ENO	Instrucción	Condición	Resultado (OUT)
	SQRT	IN es negativo	-NaN
		IN es +/- INF (infinito) o +/- NaN	+/- INF o +/- NaN
	LN	IN es 0,0, negativo, -INF o -NaN	-NaN
		IN es +INF o +NaN	+INF o +NaN
	EXP	El resultado excede el rango Real/LReal válido	+INF
		IN es +/- NaN	+/- NaN
	SIN, COS, TAN	IN es +/- INF o +/- NaN	+/- INF o +/- NaN
	ASIN, ACOS	IN está fuera del rango válido de -1,0 a +1,0	+NaN
		IN es +/- NaN	+/- NaN
	ATAN	IN es +/- NaN	+/- NaN
	FRAC	IN es +/- INF o +/- NaN	+NaN
	EXPT	IN1 es +INF e IN2 no es -INF	+INF
		IN1 es negativo o -INF	+NaN si IN2 es Real/LReal, -INF en caso contrario
		IN1 o IN2 es +/- NaN	+NaN
		IN1 es 0,0 e IN2 es Real/LReal (sólo)	+NaN

6.1.6 Desplazamiento

Instrucciones "Copiar valor" y "Copiar área"



Las instrucciones de desplazamiento permiten copiar elementos de datos a otra dirección de memoria y convertir un tipo de datos en otro. El proceso de desplazamiento no modifica los datos de origen.

- MOVE: Copia un elemento de datos almacenado en una dirección indicada a una dirección diferente
- MOVE_BLK: Desplazamiento interruptible que copia un área de elementos de datos a otra dirección
- UMOVE_BLK: Desplazamiento no interruptible que copia un área de elementos de datos a otra dirección

MOVE		
Parámetro	**Tipo de datos**	**Descripción**
IN	SInt, Int, DInt, USInt, UInt, UDInt, Real, LReal, Byte, Word, DWord, Char, Array, Struct, DTL, Time	Dirección de origen
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real, LReal, Byte, Word, DWord, Char, Array, Struct, DTL, Time	Dirección de destino

MOVE_BLK, UMOVE_BLK		
Parámetro	**Tipo de datos**	**Descripción**
IN	SInt, Int, DInt, USInt, UInt, UDInt, Real, Byte, Word, DWord	Dirección de origen inicial
COUNT	UInt	Número de elementos de datos que deben copiarse
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real, Byte, Word, DWord	Dirección de destino inicial

Nota

Reglas para las operaciones de copia de datos

- Para copiar el tipo de datos Bool, utilice las instrucciones SET_BF, RESET_BF, R, S o Bobina de relé, salida (KOP)
- Para copiar un solo tipo de datos simple, utilice MOVE
- Para copiar una matriz de un tipo de datos simple, utilice MOVE_BLK o UMOVE_BLK
- Para copiar una estructura, utilice MOVE
- Para copiar una cadena, utilice S_CONV
- Para copiar un solo carácter en una cadena, utilice MOVE
- Las instrucciones MOVE_BLK y UMOVE_BLK no pueden utilizarse para copiar matrices o estructuras en las áreas de memoria I, Q o M.

La instrucción MOVE copia un elemento de datos individual de la dirección de origen que indica el parámetro IN en la dirección de destino que indica el parámetro OUT.

Las instrucciones MOVE_BLK y UMOVE_BLK tienen un parámetro COUNT adicional. COUNT especifica cuántos elementos de datos se copian. El número de bytes por elemento copiado depende del tipo de datos asignado a los nombres de variables de los parámetros IN y OUT en la tabla de variables PLC.

Las instrucciones MOVE_BLK y UMOVE_BLK se diferencian en la forma de procesar las alarmas:

- Los eventos de alarma **se ponen en cola de espera y se procesan** durante la ejecución de MOVE_BLK. Utilice la instrucción MOVE_BLK si los datos contenidos en la dirección de destino del desplazamiento no se utilizan en un OB de alarma. Si se utilizan, los datos de destino no tienen que ser coherentes. Si se interrumpe una instrucción MOVE_BLK, el último elemento de datos desplazado estará completo y será coherente en la dirección de destino. La instrucción MOVE_BLK se reanuda una vez finalizada la ejecución del OB de alarma.
- Los eventos de alarma **se ponen en cola de espera pero no se procesarán** hasta que no finalice la ejecución de UMOVE_BLK. Utilice la instrucción UMOVE_BLK si la operación de desplazamiento debe finalizarse y los datos de destino deben ser coherentes antes de la ejecución de un OB de alarma. Encontrará más información en el apartado Coherencia de datos (Página 96).

ENO siempre es verdadero tras ejecutarse la instrucción MOVE.

Estado de ENO	Condición	Resultado
1	Sin error	Todos los elementos de COUNT se han copiado correctamente
0	El rango de origen (IN) o destino (OUT) excede el área de memoria disponible	Se copian los elementos que quepan. No se copian elementos parciales.

Instrucciones de relleno





Las instrucciones FILL_BLK y UFILL_BLK se utilizan del siguiente modo:

- FILL_BLK: La instrucción "Rellenar área" rellena de forma interruptible un rango de direcciones con copias de un determinado elemento de datos.
- UFILL_BLK: La instrucción "Rellenar área sin interrupciones" rellena de forma no interruptible un rango de direcciones con copias de un determinado elemento de datos.

Parámetro	Tipo de datos	Descripción
IN	SInt, Int, DIntT, USInt, UInt, UDInt, Real, BYTE, Word, DWord	Dirección de origen de los datos
COUNT	USInt, UInt	Número de elementos de datos que deben copiarse
OUT	SInt, Int, DIntT, USInt, UInt, UDInt, Real, BYTE, Word, DWord	Dirección de destino de los datos

Nota

Reglas para las operaciones de rellenar área

- Para rellenar con el tipo de datos BOOL, utilice las instrucciones SET_BF, RESET_BF, R, S o Bobina de relé, salida (KOP)
- Para rellenar con un solo tipo de datos simple, utilice MOVE
- Para rellenar una matriz con un tipo de datos simple, utilice FILL_BLK o UFILL_BLK
- Para rellenar un solo carácter en una cadena, utilice MOVE
- Las instrucciones FILL_BLK y UFILL_BLK no pueden utilizarse para rellenar matrices en las áreas de memoria I, Q o M.

Las instrucciones FILL_BLK y UFILL_BLK copian el elemento de datos de origen IN en el destino, cuya dirección inicial se indica en el parámetro OUT. El proceso de copia se repite y un área de direcciones adyacentes se rellena hasta que el número de copias es igual al parámetro COUNT.

Las instrucciones FILL_BLK y FILL_BLK se diferencian en la forma de procesar las alarmas:

- Los eventos de alarma **se ponen en cola de espera y se procesan** durante la ejecución de FILL_BLK. Utilice la instrucción FILL_BLK si los datos contenidos en la dirección de destino del desplazamiento no se utilizan en un OB de alarma. Si se utilizan, los datos de destino no tienen que ser coherentes.
- Los eventos de alarma **se ponen en cola de espera pero no se procesarán** hasta que no finalice la ejecución de UFILL_BLK. Utilice la instrucción UFILL_BLK si la operación de desplazamiento debe finalizarse y los datos de destino deben ser coherentes antes de la ejecución de un OB de alarma.

Estado de ENO	Condición	Resultado
1	Sin error	El elemento IN se ha copiado correctamente a todos los destinos de COUNT
0	El rango de destino (OUT) excede el área de memoria disponible	Se copian los elementos que quepan. No se copian elementos parciales.

6.1.6.1 Instrucción "Cambiar disposición"



La instrucción SWAP (Cambiar disposición) permite invertir el orden de los bytes de elementos de dos y cuatro bytes. El orden de los bits no se modifica dentro de los distintos bytes. ENO es siempre TRUE (verdadero) tras ejecutarse la instrucción SWAP.

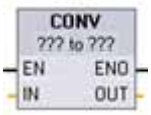
Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Parámetro	Tipo de datos	Descripción
IN	Word, DWord	Bytes de datos ordenados en IN
OUT	Word, DWord	Bytes de datos en orden inverso en OUT

	Ejemplo: Parámetro IN = MB0 antes de ejecutar SWAP				Ejemplo: Parámetro OUT = MB4 tras ejecutar SWAP			
Dirección	MB0	MB1			MB4	MB5		
W#16#1234	12	34			34	12		
WORD	MSB	LSB			MSB	LSB		
Dirección	MB0	MB1	MB2	MB3	MB4	MB5	MB6	MB7
DW#16#12345678	12	34	56	78	78	56	34	12
DWORD	MSB			LSB	MSB			LSB

6.1.7 Convertir

Instrucción "Convertir valor"



La instrucción CONVERT (Convertir valor) permite convertir un elemento de un tipo de datos a otro. Haga clic debajo del nombre del cuadro y seleccione los tipos de datos de IN y OUT en la lista desplegable.

Tras haber seleccionado el tipo de datos que se desea convertir, las conversiones posibles aparecen en la lista desplegable (convertir a). Las conversiones de y a BCD16 están limitadas al tipo de datos Int. Las conversiones de y a BCD32 están limitadas al tipo de datos DInt.

Haga clic debajo del nombre del cuadro y seleccione los tipos de datos en las listas desplegables.

Parámetro	Tipo de datos	Descripción
IN	SInt, Int, DInt, USInt, UInt, UDInt, Byte, Word, DWord, Real, LReal, Bcd16, Bcd32	Valor de IN
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Byte, Word, DWord, Real, LReal, Bcd16, Bcd32	Valor de IN convertido al nuevo tipo de datos

Estado de ENO	Descripción	Resultado de OUT
1	Sin error	Resultado válido
0	IN es +/- INF o +/- NaN	+/- INF o +/- NaN
0	El resultado excede el rango válido del tipo de datos de OUT	OUT se ajusta a los bytes menos significativos de IN

Instrucciones "Redondear número" y "Truncar a entero doble"



ROUND convierte un número real en un entero. La fracción del número real se redondea al número entero más cercano (IEEE - redondear al número más cercano). Si el número Real se encuentra exactamente entre dos enteros (p. ej. 10,5), el número Real se redondeará al entero par. Ejemplo, ROUND (10,5) = 10 ó ROUND (11,5) = 12.



TRUNC convierte un número real en un entero. La parte fraccionaria del número real se trunca a cero (IEEE - redondear hacia cero).

Parámetro	Tipo de datos	Descripción
IN	Real, LReal	Número en coma flotante en la entrada
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real, LReal	Salida redondeada o truncada

Estado de ENO	Descripción	Resultado de OUT
1	Sin error	Resultado válido
0	IN es +/- INF o +/- NaN	+/- INF o +/- NaN

Instrucciones "Crear el siguiente número entero superior a partir del número en coma flotante" y "Crear el siguiente número entero inferior a partir del número en coma flotante"



La instrucción CEIL (Crear el siguiente número entero superior a partir del número en coma flotante) convierte un número real en el siguiente entero mayor o igual a ese número real (IEEE - redondear hacia el infinito positivo).



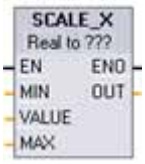
La instrucción FLOOR (Crear el siguiente número entero inferior a partir del número en coma flotante) convierte un número real en el siguiente entero menor o igual a ese número real (IEEE - redondear hacia el infinito negativo).

Parámetro	Tipo de datos	Descripción
IN	Real, LReal	Número en coma flotante en la entrada
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real, LReal	Salida convertida

Estado de ENO	Descripción	Resultado de OUT
1	Sin error	Resultado válido
0	IN es +/- INF o +/- NaN	+/- INF o +/- NaN

6.1.7.1 Instrucciones "Escalar" y "Normalizar"

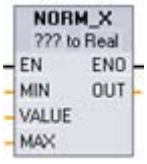
Instrucciones "Escalar" y "Normalizar"



La instrucción SCALE_X (Escalar) escala el parámetro VALUE real normalizado (donde 0,0 <= VALUE <= 1,0) al tipo de datos y rango de valores especificados por los parámetros MIN y MAX:

OUT = VALUE (MAX - MIN) + MIN

Para SCALE_X, los parámetros MIN, MAX y OUT deben tener un mismo tipo de datos.



La instrucción NORM_X (Normalizar) normaliza el parámetro VALUE dentro del rango de valores especificado por los parámetros MIN y MAX:

OUT = (VALUE - MIN) / (MAX - MIN), donde (0,0 <= OUT <= 1,0)

Para NORM_X, los parámetros MIN, VALUE y MAX deben tener un mismo tipo de datos.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Parámetro	Tipo de datos	Descripción
MIN	SInt, Int, DInt, USInt, UInt, UDInt, Real	Entrada que indica el valor mínimo del rango
VALUE	SCALE_X: Real NORM_X: SInt, Int, DInt, USInt, UInt, UDInt, Real	Valor de entrada que se debe escalar o normalizar
MAX	SInt, Int, DInt, USInt, UInt, UDInt, Real	Entrada que indica el valor máximo del rango
OUT	SCALE_X: SInt, Int, DInt, USInt, UInt, UDInt, Real NORM_X: Real	Valor de salida escalado o normalizado

Nota

El parámetro VALUE de SCALE_X debe estar limitado a (0,0 <= VALUE <= 1,0)

Si el parámetro VALUE es menor que 0,0 o mayor que 1,0:

- La operación de escala lineal puede producir valores OUT menores que el valor del parámetro MIN o mayores que el del parámetro MAX en el caso de valores OUT comprendidos en el rango de valores del tipo de datos de OUT. La ejecución de SCALE_X pone ENO = TRUE en estos casos.
- Es posible generar números escalados no comprendidos en el rango del tipo de datos de OUT. En estos casos, el parámetro OUT se ajusta a un valor intermedio igual a la parte menos significativa del número real escalado antes de la conversión final al tipo de datos de OUT. La ejecución de SCALE_X pone ENO = FALSE en este caso.

El parámetro VALUE de NORM_X debe estar limitado a (MIN <= VALUE <= MAX)

Si el parámetro VALUE es menor que MIN o mayor que MAX, la operación de escala lineal puede producir valores OUT normalizados menores que 0,0 o mayores que 1,0. La ejecución de NORM_X pone ENO = TRUE en este caso.

Estado de ENO	Condición	Resultado de OUT
1	Sin error	Resultado válido
0	El resultado excede el rango válido del tipo de datos de OUT	Resultado intermedio: La parte menos significativa del número real antes de la conversión final al tipo de datos de OUT.
0	Parámetros MAX <= MIN	SCALE_X: La parte menos significativa del número Real VALUE que debe rellenar el tamaño de OUT. NORM_X: VALUE en el tipo de datos VALUE ampliado para rellenar una palabra doble.
0	Parámetro VALUE = +/- INF o +/- NaN	VALUE se escribe en OUT

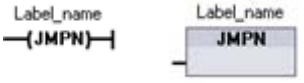
6.1.8 Control del programa

Instrucciones de salto y etiquetas

Las operaciones de control del programa permiten un control de la secuencia de ejecución en función de determinadas condiciones:



JMP: Si fluye corriente a una bobina JMP (KOP) o si se cumple el cuadro JMP (FUP), la ejecución del programa continúa con la primera instrucción que le sigue a la etiqueta indicada.



JMPN: Si no fluye corriente a una bobina JMP (KOP) o si el cuadro JMP no se cumple (FUP), la ejecución del programa continúa con la primera instrucción que le sigue a la etiqueta indicada.



Etiqueta: Etiqueta de destino de una instrucción de salto JMP o JMPN.

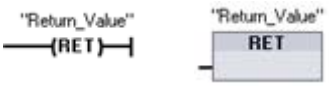
KOP FUP

Parámetro	Tipo de datos	Descripción
Label_name	Identificador de la etiqueta	Identificador de las instrucciones de salto y etiqueta correspondiente al destino de salto

Los nombres de las etiquetas se crean tecleando directamente en la instrucción LABEL. Los nombres disponibles para el campo del nombre de JMP y JMPN se pueden seleccionar mediante el símbolo de ayuda del parámetro. El nombre de la etiqueta también puede teclearse directamente en la instrucción JMP o JMPN.

Instrucción de control de ejecución "Retroceder" (RET)

KOP **FUP**



La instrucción RET (Retroceder) permite finalizar la ejecución del bloque actual.

Parámetro	Tipo de datos	Descripción
Return_Value	Bool	El parámetro "Return_value" de la instrucción RET se asigna a la salida ENO del cuadro de llamada de bloque en el bloque que efectúa la llamada.

La instrucción RET opcional sirve para finalizar la ejecución del bloque actual. Sólo si fluye corriente a la bobina RET (LAD) o si se cumple la entrada del cuadro RET (FUP), la ejecución del programa del bloque actual finalizará en ese punto y las instrucciones posteriores a la instrucción RET no se ejecutarán. Si el bloque actual es un OB, se ignora el parámetro "Return_Value". Si el bloque actual es un FB o FC, el valor del parámetro "Return_Value" se devuelve a la rutina que efectúa la llamada como valor ENO del cuadro llamado.

No es necesario introducir manualmente la instrucción RET como última instrucción de un bloque. Esto se efectúa automáticamente. Un solo bloque puede comprender varias instrucciones RET.

Procedimiento para utilizar la instrucción RET en un bloque lógico FC (ejemplo):

1. Cree un proyecto nuevo y agregue una FC:
2. Edite la FC:
   - Agregue instrucciones del árbol de instrucciones.
   - Agregue una instrucción RET, incluyendo uno de los siguientes valores para el parámetro "Return_Value":

     TRUE, FALSE o una posición de memoria que indique el valor de retorno requerido.
   - Agregue más instrucciones.
3. Llame la FC desde el bloque MAIN [OB1].

La entrada EN del cuadro FC del bloque lógico MAIN se debe cumplir para comenzar la ejecución de la FC.

El valor que indica la instrucción RET en la FC se encontrará en la salida ENO del cuadro FC del bloque lógico tras ejecutarse la FC para la que fluye corriente a la instrucción RET.

6.1.9 Operaciones lógicas

Instrucciones Y, O y O-exclusiva



Y: Combinación Y lógica de tipos de datos BYTE, WORD y DWORD

O: Combinación O lógica de tipos de datos BYTE, WORD y DWORD

XOR: Combinación O-exclusiva lógica de tipos de datos BYTE, WORD y DWORD

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Parámetro	Tipo de datos	Descripción
IN1, IN2	Byte, Word, DWord	Entradas lógicas
OUT	Byte, Word, DWord	Salida lógica

La selección del tipo de datos ajusta los parámetros IN1, IN2 y OUT a un mismo tipo de datos. Los valores de bit correspondientes de IN1 e IN2 se combinan para producir un resultado lógico binario en el parámetro OUT. ENO es siempre TRUE (verdadero) tras ejecutarse estas instrucciones.

Instrucción "Complemento a uno"

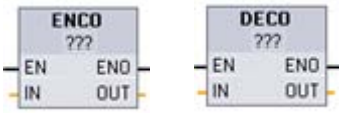


La instrucción INV permite obtener el complemento a uno binario del parámetro IN. El complemento a uno se forma invirtiendo los valores de los distintos bits del parámetro IN (es decir, cambiando todo 0 a 1 y todo 1 a 0). ENO es siempre TRUE (verdadero) tras ejecutarse esta instrucción.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Parámetro	Tipo de datos	Descripción
IN	SInt, Int, DInt, USInt, UInt, UDInt, Byte, Word, DWord	Elemento que debe invertirse
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Byte, Word, DWord	Salida invertida

Instrucciones "Codificar" y "Decodificar"



ENCO codifica un patrón de bits a un número binario.

DECO descodifica un número binario a un patrón de bits.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Parámetro	Tipo de datos	Descripción
IN	ENCO: Byte, Word, DWord DECO: UInt	ENCO: Patrón de bits que debe codificarse DECO: Valor que debe descodificarse
OUT	ENCO: Int DECO: Byte, Word, DWord	ENCO: Valor codificado DECO: Patrón de bits descodificado

La instrucción ENCO (Codificar) convierte el parámetro IN al número binario correspondiente al bit activado menos significativo del parámetro IN y deposita el resultado en el parámetro OUT. Si el parámetro IN es 0000 0001 ó 0000 0000, el valor 0 se deposita en OUT. Si el valor del parámetro IN es 0000 0000, ENO adopta el estado lógico FALSE (falso).

La instrucción DECO (Descodificar) descodifica un número binario del parámetro IN, poniendo a "1" el bit correspondiente en el parámetro OUT (todos los demás bits se ponen a 0). ENO es siempre TRUE (verdadero) tras ejecutarse la instrucción DECO.

Seleccionando el tipo de datos Byte, Word o DWord para el parámetro OUT de la instrucción DECO se restringe el rango utilizable del parámetro IN. Si el valor del parámetro IN excede el rango utilizable, se ejecuta una operación modulo para extraer los bits menos significativos que se muestran abajo.

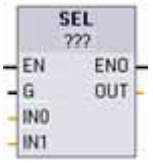
Rango del parámetro IN de DECO:

- 3 bits (valores 0-7) IN se utilizan para activar 1 bit en un byte OUT
- 4 bits (valores 0-15) IN se utilizan para activar 1 bit en una palabra OUT
- 5 bits (valores 0-31) IN se utilizan para activar 1 bit en una palabra doble OUT

Valor IN de DECO		Valor OUT de DECO (descodificar un bit)
		Byte OUT (8 bits):
Mín. IN	0	00000001
Máx. IN	7	10000000
		Word OUT (16 bits):
Mín. IN	0	0000000000000001
Máx. IN	15	1000000000000000
		DWord OUT: (32 bits):
Mín. IN	0	00000000000000000000000000000001
Máx. IN	31	10000000000000000000000000000000

Estado de ENO	Condición	Resultado (OUT)
1	Sin error	Número de bit válido
0	IN es cero	OUT se pone a cero

Instrucciones "Seleccionar" (SEL) y "Multiplexar" (MUX)





- La instrucción SEL (Seleccionar) asigna uno de dos valores de entrada al parámetro OUT, dependiendo del valor del parámetro G.
- La instrucción MUX (Multiplexar) asigna uno de varios valores de entrada al parámetro OUT, dependiendo del valor del parámetro K. Si el parámetro K excede el rango válido, el valor del parámetro ELSE se asigna al parámetro OUT.

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

SEL	Tipo de datos	Descripción
G	Bool	Interruptor selector: • FALSE para IN0 • TRUE para IN1
IN0, IN1	SInt, Int, DInt, USInt, UInt, UDInt, Real, Byte, Word, DWord, Time, Char	Entradas
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real, Byte, Word, DWord, Time, Char	Salida

MUX	Tipo de datos	Descripción
K	UInt	Valor selector: • 0 para IN0 • 1 para IN1 • ...
IN0, IN1, ...	SInt, Int, DInt, USInt, UInt, UDInt, Real, Byte, Word, DWord, Time, Char	Entradas
ELSE	SInt, Int, DInt, USInt, UInt, UDInt, Real, Byte, Word, DWord, Time, Char	Entrada del valor sustitutivo (opcional)
OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real, Byte, Word, DWord, Time, Char	Salida

Las variables de entrada y salida deben tener un mismo tipo de datos.

- La instrucción SEL selecciona siempre entre dos valores IN.
- La instrucción MUX tiene dos parámetros IN cuando se inserta por primera vez en el editor de programación. No obstante, se puede ampliar agregando más parámetros IN.

Utilice los métodos siguientes para agregar y quitar parámetros de entrada de la instrucción MUX:

- Para agregar una entrada, + haga clic con el botón derecho del ratón en el conector de entrada de un parámetro IN existente y seleccione el comando "Insertar entrada".
- Para quitar una entrada, haga clic con el botón derecho del ratón en el conector de entrada de un parámetro IN existente (si hay más de las dos entradas originales) y seleccione el comando "Borrar".

Códigos de condición: ENO es siempre TRUE (verdadero) tras ejecutarse la instrucción SEL.

Estado de ENO (MUX)	Condición de MUX	Resultado OUT de MUX
1	Sin error	El valor IN seleccionado se asigna a OUT
0	K es mayor o igual al número de parámetros IN	No se ha indicado ELSE: OUT no se modifica Se ha indicado ELSE: el valor ELSE se asigna a OUT

6.1.10 Instrucciones de desplazamiento y rotación

Instrucciones de desplazamiento



Las instrucciones de desplazamiento permiten desplazar el patrón de bits del parámetro IN. El resultado se deposita en el parámetro OUT. El parámetro N indica el número de bits desplazados:

- SHR: Desplazar patrón de bits hacia la derecha
- SHL: Desplazar patrón de bits hacia la izquierda

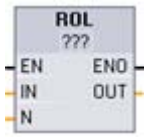
Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Parámetro	Tipo de datos	Descripción
IN	Byte, Word, DWord	Patrón de bits que debe desplazarse
N	UInt	Número de bits que deben desplazarse
OUT	Byte, Word, DWord	Patrón de bits después del desplazamiento

- Si N=0, no se realiza ningún desplazamiento y el valor de IN se asigna a OUT.
- Los ceros se desplazan a los bits que quedan vacíos tras el desplazamiento.
- Si el número de posiciones que deben desplazarse (N) excede el número de bits en el valor de destino (8 para Byte, 16 para Word, 32 para DWord), todos los valores de bit originales se desplazarán hacia fuera y se reemplazarán por ceros (cero se asigna a OUT).
- ENO es siempre TRUE (verdadero) en las operaciones de desplazamiento.

Ejemplo de SHL para datos en formato Word: Desplazar ceros desde el lado izquierdo			
IN	1110 0010 1010 1101	Valor de OUT antes del primer desplazamiento:	1110 0010 1010 1101
		Después del primer desplazamiento a la izquierda:	1100 0101 0101 1010
		Después del segundo desplazamiento a la izquierda:	1000 1010 1011 0100
		Después del tercer desplazamiento a la izquierda:	0001 0101 0110 1000

Instrucciones de rotación



Las instrucciones de rotación permiten rotar el patrón de bits del parámetro IN. El resultado se deposita en el parámetro OUT. El parámetro N define el número de bits rotados.

- ROR: Rotar patrón de bits hacia la derecha
- ROL: Rotar patrón de bits hacia la izquierda

Haga clic debajo del nombre del cuadro y seleccione un tipo de datos en la lista desplegable.

Parámetro	Tipo de datos	Descripción
IN	Byte, Word, DWord	Patrón de bits que debe rotarse
N	UInt	Número de bits que deben rotarse
OUT	Byte, Word, DWord	Patrón de bits después de la rotación

- Si N=0, no se realiza ninguna rotación y el valor de IN se asigna a OUT.
- Los bits rotados hacia fuera en un lado del valor de destino se rotan hacia el otro lado, por lo que no se pierden los valores de bit originales.
- Si el número de bits que deben rotarse (N) excede el número de bits en el valor de destino (8 para Byte, 16 para Word, 32 para DWord), la rotación se efectúa de todas maneras.
- ENO es siempre TRUE (verdadero) tras ejecutarse las instrucciones de rotación.

Ejemplo de ROR para datos en formato WORD: Rotar bits hacia fuera a la derecha y hacia dentro a la izquierda			
IN	0100 0000 0000 0001	Valor de OUT antes de la primera rotación:	0100 0000 0000 0001
		Después de la primera rotación a la derecha:	1010 0000 0000 0000
		Después de la segunda rotación a la derecha:	0101 0000 0000 0000

6.2 Instrucciones avanzadas

6.2.1 Parámetros de error comunes de las instrucciones avanzadas

En las descripciones de las instrucciones avanzadas se describen los errores en tiempo de ejecución que pueden ocurrir en relación con las distintas instrucciones. Además de estos errores, también son posibles los errores comunes indicados a continuación. Cuando se ejecuta un bloque lógico y ocurre uno de los errores comunes, la CPU pasará a estado operativo STOP a menos que las instrucciones GetError o GetErrorID se hayan utilizado en ese bloque lógico para crear una reacción programada al error.

Valor del código de condición (W#16#....)	Descripción
8022	Área demasiado pequeña para la entrada
8023	Área demasiado pequeña para la salida
8024	Área de entrada no válida
8025	Área de salida no válida
8028	Asignación del bit de entrada no válida
8029	Asignación del bit de salida no válida
8030	El área de salida es un DB de sólo lectura
803A	El DB no existe

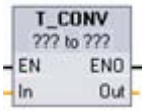
6.2.2 Instrucciones de reloj y calendario

Instrucciones de fecha y hora

Las instrucciones de fecha y hora se utilizan para programar cálculos de calendario y hora.

- T_CONV convierte el tipo de datos de un valor de hora: (Time a DInt) o (DInt a Time)
- T_ADD suma valores Time y DTL: (Time + Time = Time) o (DTL + Time = DTL)
- T_SUB resta valores Time y DTL: (Time - Time = Time) o (DTL - Time = DTL)
- T_DIFF provee la diferencia entre dos valores DTL como valor Time: DTL - DTL = Time

Tipo de datos	Tamaño (bits)	Rangos válidos
Time	32 Almacenado como	T#-24d_20h_31m_23s_648ms hastaT#24d_20h_31m_23s_647ms -2.147.483.648 ms hasta +2.147.483.647 ms
Estructura de datos DTL		
Año: UInt	16	1970 a 2554
Mes: USInt	8	1 a 12
Día: USInt	8	1 a 31
Día de la semana: USInt	8	1=domingo a 7=sábado
Hora: USInt	8	0 a 23
Minuto: USInt	8	0 a 59
Segundo: USInt	8	0 a 59
Nanosegundos: UDInt	32	0 a 999.999.999



T_CONV (Convertir tiempos) convierte un tipo de datos Time a un tipo de datos DInt, o viceversa.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	DInt, Time	Entrada que indica el valor Time o Dint
OUT	OUT	DInt, Time	Valor Dint o Time convertido

Seleccione los tipos de datos de IN y OUT en las listas desplegables debajo del nombre de la instrucción.



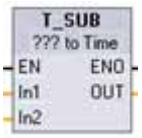
T_ADD (Sumar tiempos) suma el valor de la entrada IN1 (tipos de datos DTL o Time) al valor Time de la entrada IN2. El valor DTL o Time resultante se deposita en el parámetro OUT.

Son posibles dos operaciones con estos tipos de datos, a saber:

- Time + Time = Time
- DTL + Time = DTL

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN1	IN	DTL, Time	Valor DTL o Time
IN2	IN	Time	Valor Time que debe sumarse
OUT	OUT	DTL, Time	Suma de DTL o Time

Seleccione el tipo de datos de IN1 en la lista desplegable debajo del nombre de la instrucción. La selección del tipo de datos de IN1 ajusta también el tipo de datos del parámetro OUT.



T_SUB (Restar tiempos) resta el valor Time de IN2 del valor de IN1 (valor DTL o Time). La diferencia se deposita como tipo de datos DTL o Time en el parámetro OUT.

Son posibles dos operaciones con estos tipos de datos, a saber:

- Time - Time = Time
- DTL - Time = DTL

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN1	IN	DTL, Time	Valor DTL o Time
IN2	IN	Time	Valor Time que debe restarse
OUT	OUT	DTL, Time	Diferencia de DTL o Time

Seleccione el tipo de datos de IN1 en la lista desplegable debajo del nombre de la instrucción. La selección del tipo de datos de IN1 ajusta también el tipo de datos del parámetro OUT.



T_DIFF (Diferencia de hora) resta el valor DTL de IN2 del valor DTL de IN1. La diferencia se deposita como tipo de datos Time en el parámetro OUT.

- DTL - DTL = Time

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN1	IN	DTL	Valor DTL
IN2	IN	DTL	Valor DTL que debe restarse
OUT	OUT	Time	Diferencia de hora

Códigos de condición: ENO = 1 significa que no ha ocurrido ningún error. ENO = 0 y parámetro OUT = 0 errores:

- Valor DTL no válido
- Valor Time no válido

Instrucciones de reloj

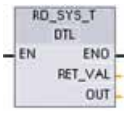
Las instrucciones de reloj sirven para ajustar y leer el reloj del sistema PLC. El tipo de datos DTL pone a disposición valores de fecha y hora.

Estructura de DTL	Tamaño	Rangos válidos
Año: UInt	16 bits	1970 a 2554
Mes: USInt	8 bits	1 a 12
Día: USInt	8 bits	1 a 31
Día de la semana: USInt	8 bits	1=domingo a 7=sábado
Hora: USInt	8 bits	0 a 23
Minuto: USInt	8 bits	0 a 59
Segundo: USInt	8 bits	0 a 59
Nanosegundos: UDInt	32 bits	0 a 999.999.999



La instrucción WR_SYS_T (Escribir hora del sistema) ajusta la hora del reloj del PLC a un valor DTL en el parámetro IN. Este valor de hora no incluye la diferencia con respecto a la hora local ni tampoco al horario de verano.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	DTL	Hora que debe ajustarse en el reloj del sistema PLC
RET_VAL	OUT	Int	Código de condición de ejecución



La instrucción RD_SYS_T (Leer hora del sistema) lee la hora del sistema actual del PLC. Este valor de hora no incluye la diferencia con respecto a la hora local ni tampoco al horario de verano.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
RET_VAL	OUT	Int	Código de condición de ejecución
OUT	OUT	DTL	Hora del sistema PLC actual



RD_LOC_T (Leer hora local) lee la hora local actual del PLC como tipo de datos DTL.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
RET_VAL	OUT	Int	Código de condición de ejecución
OUT	OUT	DTL	Hora local

- La hora local se calcula utilizando la diferencia con respecto a la zona horaria y al horario de verano que se ajusta en la "Configuración de dispositivos" del reloj del PLC.
- La configuración de la zona horaria es un offset de la hora del sistema UTC (Coordinated Universal Time u Hora Universal Coordinada).
- La configuración del horario de verano especifica el mes, semana, día y hora de comienzo del horario de verano.
- La configuración del horario estándar especifica el mes, semana, día y hora de comienzo del horario estándar.
- La diferencia con respecto a la zona horaria se aplica siempre al valor de hora del sistema. La diferencia con respecto al horario de verano se aplica únicamente si el horario de verano está en vigor.

Códigos de condición: ENO = 1 significa que no ha ocurrido ningún error. ENO = 0 significa que ha ocurrido un error de ejecución. El código de condición se indica en la salida RET_VAL.

RET_VAL (W#16#....)	Descripción
0000	Sin error
8080	Hora local no disponible
8081	Valor de año no válido
8082	Valor de mes no válido
8083	Valor de día no válido
8084	Valor de hora no válido
8085	Valor de minuto no válido
8086	Valor de segundo no válido
8087	Valor de nanosegundo no válido
80B0	Ha fallado el reloj de tiempo real

6.2.3 Instrucciones con cadenas y caracteres

6.2.3.1 Sinopsis del tipo de datos String

Tipo de datos STRING

Los datos String se almacenan como encabezado de 2 bytes seguido de 254 bytes de caracteres en código ASCII. Un encabezado String contiene dos longitudes. El primer byte contiene la longitud máxima que se indica entre corchetes cuando se inicializa una cadena o 254 (ajuste predeterminado). El segundo byte del encabezado es la longitud actual, es decir, el número de caracteres válidos de la cadena. La longitud actual debe ser menor o igual a la longitud máxima. El número de bytes almacenados que ocupa el formato String es 2 bytes mayor que la longitud máxima.

Inicialización de los datos String

Los datos de entrada y salida String deben inicializarse como cadenas válidas en la memoria antes de ejecutar cualquier instrucción con cadenas.

Datos String válidos

Una cadena válida tiene una longitud máxima que debe ser mayor que cero pero menor que 255. La longitud actual debe ser menor o igual a la longitud máxima.

Las cadenas no pueden asignarse a áreas de memoria I ni Q.

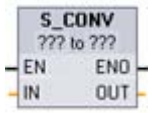
Encontrará más información en: Formato del tipo de datos String (Página 65)

6.2.3.2 Instrucciones de conversión de cadenas

Conversión de cadenas en valores y de valores en cadenas

Las siguientes instrucciones permiten convertir cadenas de caracteres numéricos en valores numéricos, y viceversa:

- S_CONV convierte una cadena numérica en un valor numérico, o viceversa.
- STRG_VAL convierte una cadena numérica en un valor numérico con opciones de formato.
- VAL_STRG convierte un valor numérico en una cadena numérica con opciones de formato.



S_CONV (Convertir cadena de caracteres) convierte una cadena de caracteres en un valor correspondiente, o viceversa. La instrucción S_CONV no tiene opciones de formato de salida. Gracias a ello, la instrucción S_CONV es más simple pero menos flexible que las instrucciones STRG_VAL y VAL_STRG.

Seleccione los tipos de datos de los parámetros en las listas desplegables.

S_CONV (Convertir cadena en valor)

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	String	Entrada que contiene la cadena de caracteres
OUT	OUT	String, SInt, Int, DInt, USInt, UInt, UDInt, Real	Valor numérico resultante

La conversión del parámetro IN que contiene la cadena comienza en el primer carácter y continúa hasta el final de la cadena, o bien hasta que se encuentra el primer carácter que no sea "0" a "9", "+", "-" o ".". El resultado se deposita en la ubicación que indica el parámetro OUT. Si el valor numérico resultante no está comprendido en el rango del tipo de datos de OUT, el parámetro OUT se pone a 0 y ENO adopta el estado lógico FALSE (falso). De lo contrario, el parámetro OUT contendrá un resultado válido y ENO adoptará el estado lógico TRUE (verdadero).

Reglas de formato de las cadenas de entrada:

- Si se utiliza un punto decimal en la cadena IN, es preciso utilizar el carácter ".".
- Las comas "," utilizadas como separadores de miles a la izquierda del punto decimal están permitidas, aunque se ignoran.
- Los espacios iniciales se ignoran.
- Sólo se soporta la representación en coma fija. Los caracteres "e" y "E" no se reconocen como notación exponencial.

S_CONV (Convertir valor en cadena)

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	String, SInt, Int, DInt, USInt, UInt, UDInt, Real	Entrada que contiene el valor numérico
OUT	OUT	String	Cadena de caracteres resultante

Un valor entero, entero sin signo o en coma flotante de la entrada IN se convierte en una cadena de caracteres correspondiente que se deposita en OUT. El parámetro OUT debe referenciar una cadena válida antes de ejecutarse la conversión. Una cadena válida consta de una longitud de cadena máxima en el primer byte, la longitud de cadena actual en el segundo byte y los caracteres de la cadena actuales en los siguientes bytes. La cadena convertida sustituye los caracteres de la cadena OUT comenzando en el primer carácter y ajusta el byte de longitud actual de la cadena OUT. El byte de longitud máxima de la cadena OUT no se modifica.

El número de caracteres que se sustituyen depende del tipo de datos del parámetro IN y del valor numérico. El número de caracteres sustituidos no debe exceder la longitud de la cadena depositada en el parámetro OUT. La longitud máxima (primer byte) de la cadena OUT debe ser mayor o igual al número máximo esperado de caracteres convertidos.

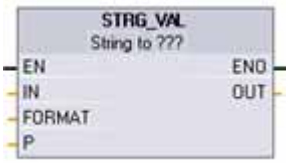
La tabla siguiente muestra las longitudes de cadena máximas posibles requeridas para los distintos tipos de datos soportados.

Tipo de datos IN	Número máximo de caracteres convertidos en la cadena OUT	Ejemplo	Longitud total de la cadena incluyendo los bytes de longitud máxima y actual
USInt	3	255	5
SInt	4	-128	6
UInt	5	65535	7
Int	6	-32768	8
UDInt	10	4294967295	12
DInt	11	-2147483648	13

Reglas de formato de las cadenas de salida:

- Los valores que se escriben en el parámetro OUT aparecen sin signo "+" inicial.
- Se utiliza la representación en coma fija (no la notación exponencial).
- El carácter de punto "." se utiliza para representar el punto decimal si el parámetro IN tiene el tipo de datos Real.

Instrucción STRG_VAL



STRG_VAL (Convertir valor en cadena) convierte una cadena de caracteres numéricos en un número entero o en coma flotante correspondiente. La conversión comienza en el offset de carácter P de la cadena IN y continúa hasta su final, o bien hasta que se encuentra el primer carácter que no sea "+", "-", ".", ",", "e", "E" o "0" a "9". El resultado se deposita en la posición que indica el parámetro OUT.

El parámetro P también se devuelve como contaje de offset en la cadena original en la posición donde finalizó la conversión. Los datos String deben inicializarse antes de la ejecución como cadena válida en la memoria.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	String	Cadena de caracteres ASCII que debe convertirse
FORMAT	IN	Word	Opciones de formato de salida
P	IN_OUT	UInt	IN: Índice al primer carácter que debe convertirse (primer carácter = 1) OUT: Índice al siguiente carácter tras finalizar el proceso de conversión
OUT	OUT	SInt, Int, DInt, USInt, UInt, UDInt, Real	Valor numérico convertido

Parámetro FORMAT de STRG_VAL

El parámetro FORMAT de la instrucción STRG_VAL se define a continuación. Los bits no utilizados deben ponerse a cero.

Bit 16							Bit 8	Bit 7							Bit 0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	f	r

f = Formato de notación
1= Notación exponencial
0 = Notación en coma fija

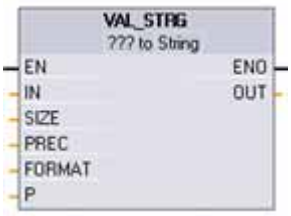
r = Formato de punto decimal
1 = "," (coma)
0 = "." (punto)

FORMAT (W#16#)	Formato de notación	Representación del punto decimal
0000 (estándar)	Coma fija	"."
0001		","
0002	Exponencial	"."
0003		","
0004 a FFFF	Valores no válidos	

Reglas para la conversión STRG_VAL:

- Si el carácter de punto "." se utiliza como punto decimal, las comas "," a la izquierda del punto decimal se interpretan como separadores de miles. Las comas están permitidas, aunque se ignoran.
- Si el carácter de coma "," se utiliza como punto decimal, los puntos "." a la izquierda del punto decimal se interpretan como separadores de miles. Estos puntos están permitidos, aunque se ignoran.
- Los espacios iniciales se ignoran.

Instrucción VAL_STRG



VAL_STRG (Convertir valor en cadena) convierte un valor entero, entero sin signo o en coma flotante en la cadena de caracteres correspondiente. El valor que indica el parámetro IN se convierte a una cadena referenciada por el parámetro OUT. El parámetro OUT debe ser una cadena válida antes de ejecutar la conversión.

La cadena convertida sustituye los caracteres en la cadena OUT, comenzando en el contaje de offset de carácter P hasta el número de caracteres que indica el parámetro SIZE. El número de caracteres de SIZE no debe exceder la longitud de la cadena depositada en el parámetro OUT, contando a partir de la posición de carácter P. Esta instrucción permite incorporar caracteres numéricos a una cadena de texto. Por ejemplo, la cifra "120" puede incorporarse a la cadena "Presión bomba = 120 psi".

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	SInt, Int, DInt, USInt, UInt, UDInt, Real	Valor que debe convertirse
SIZE	IN	USInt	Número de caracteres que deben escribirse en la cadena OUT
PREC	IN	USInt	Precisión o tamaño de la parte fraccionaria. Esto no incluye el punto decimal.
FORMAT	IN	Word	Opciones de formato de salida
P	IN_OUT	UInt	IN: Índice al primer carácter de la cadena OUT que debe convertirse (primer carácter = 1) OUT: Índice al siguiente carácter de la cadena OUT tras la sustitución
OUT	OUT	String	Cadena convertida

El parámetro PREC indica la precisión o el número de dígitos de la parte fraccionaria de la cadena. Si el parámetro IN es un número entero, PREC indica la posición del punto decimal. Por ejemplo, si el valor es 123 y PREC = 1, el resultado es "12.3". La precisión máxima soportada para el tipo de datos REAL es 7 dígitos.

Si el parámetro P es mayor que el tamaño actual de la cadena OUT, se agregan espacios hasta la posición P y el resultado se añade al final de la cadena. La conversión finaliza si se alcanza la longitud máxima de la cadena OUT.

Parámetro FORMAT de VAL_STRG

El parámetro FORMAT de la instrucción VAL_STRG se define a continuación. Los bits no utilizados deben ponerse a cero.

Bit 16							**Bit 8**	**Bit 7**							**Bit 0**
0	0	0	0	0	0	0	0	0	0	0	0	0	s	f	r

s = Carácter de signo — 1= usar los signos "+" y "-"
0 = usar sólo el signo "-"

f = Formato de notación — 1= Notación exponencial
0 = Notación en coma fija

r = Formato de punto decimal — 1 = "," (coma)
0 = "." (punto)

FORMAT (WORD)	Carácter de signo	Formato de notación	Representación del punto decimal
W#16#0000	Sólo "-"	Coma fija	"."
W#16#0001			","
W#16#0002		Exponencial	"."
W#16#0003			","
W#16#0004	"+" y "-"	Coma fija	"."
W#16#0005			","
W#16#0006		Exponencial	"."
W#16#0007			","
W#16#0008 a W#16#FFFF	Valores no válidos		

Reglas de formato de la cadena del parámetro OUT:

- Si el tamaño de la cadena convertida es menor que el especificado, se insertan espacios en blanco iniciales en el extremo izquierdo de la cadena.
- Si el bit de signo del parámetro FORMAT es FALSE (falso), los valores de los tipos de datos USINT y SINT se escriben en el búfer de salida sin el signo "+" inicial. El "-" signo se utiliza en caso necesario.
  <espacios iniciales><dígitos sin ceros iniciales>'.'<dígitos PREC>
- Si el bit de signo es TRUE (verdadero), los valores de los tipos de datos USINT y SINT se escriben en el búfer de salida siempre con un carácter de signo inicial.
  <espacios iniciales><signo><dígitos sin ceros iniciales>'.'<dígitos PREC>
- Si el parámetro FORMAT está ajustado a notación exponencial, los valores del tipo de datos REAL se escriben en el búfer de salida de la siguiente manera:
  <espacios iniciales><signo><dígito> '.' <dígitos PREC>'E' <signo><dígitos sin cero inicial>
- Si el parámetro FORMAT está ajustado a notación en coma fija, los valores de los tipos de datos INT, USINT y REAL se escriben en el búfer de salida de la siguiente manera:
  <espacios iniciales><signo><dígitos sin ceros iniciales>'.'<dígitos PREC>
- Los ceros a la izquierda del punto decimal (con excepción del dígito adyacente a éste) se suprimen.
- Los valores a la derecha del punto decimal se redondean para que se correspondan con el número de dígitos a la derecha del punto decimal que indica el parámetro PREC.
- La cadena de salida debe ser como mínimo tres bytes más grande que el número de dígitos a la derecha del punto decimal.
- Los valores se justifican a la derecha en la cadena de salida.

Condiciones que notifica ENO

Si ocurre un error durante la operación de conversión, se devolverán los siguientes resultados:

- ENO se pone a 0.
- OUT se pone a 0 o como se muestra en los ejemplos de conversión de una cadena en un valor.
- OUT no se modifica o como se muestra en los ejemplos cuando OUT es una cadena.

Estado de ENO	Descripción
1	Sin error
0	Parámetro no permitido o no válido; p. ej. acceso a un DB que no existe
0	Cadena no permitida; la longitud máxima es 0 ó 255
0	Cadena no permitida; la longitud actual excede la longitud máxima
0	El valor numérico convertido es demasiado grande para el tipo de datos de OUT indicado
0	El tamaño máximo de la cadena del parámetro OUT debe ser lo suficientemente grande para aceptar el número de caracteres que indica el parámetro SIZE, comenzando en el parámetro P de posición de carácter.
0	Valor de P no permitido; P=0 o P es mayor que la longitud actual de la cadena
0	El parámetro SIZE debe ser mayor que el parámetro PREC

Ejemplos de S_CONV (Convertir cadena en valor)

Cadena IN	Tipo de datos de OUT	Valor de OUT	ENO
"123"	Int/DInt	123	TRUE
"-00456"	Int/DInt	-456	TRUE
"123.45"	Int/DInt	123	TRUE
"+2345"	Int/DInt	2345	TRUE
"00123AB"	Int/DInt	123	TRUE
"123"	Real	123.0	TRUE
"123.45"	Real	123.45	TRUE
"1.23e-4"	Real	1.23	TRUE
"1.23E-4"	Real	1.23	TRUE
"12,345.67"	Real	12345.67	TRUE
"3.4e39"	Real	3.4	TRUE
"-3.4e39"	Real	-3.4	TRUE
"1.17549e-38"	Real	1.17549	TRUE
"12345"	SInt	0	FALSE
"A123"	N/A	0	FALSE
""	N/A	0	FALSE
"++123"	N/A	0	FALSE
"+-123"	N/A	0	FALSE

Ejemplos de S_CONV (Convertir valor en cadena)

Tipo de datos	Valor de IN	Cadena OUT	ENO
UInt	123	"123"	TRUE
UInt	0	"0"	TRUE
UDInt	12345678	"12345678"	TRUE
Real	-INF	"INF"	FALSE
Real	+INF	"INF"	FALSE
Real	NaN	"NaN"	FALSE

Ejemplos de conversión STRG_VAL

Cadena IN	FORMAT (W#16#....)	Tipo de datos de OUT	Valor de OUT	ENO
"123"	0000	Int/DInt	123	TRUE
"-00456"	0000	Int/DInt	-456	TRUE
"123.45"	0000	Int/DInt	123	TRUE
"+2345"	0000	Int/DInt	2345	TRUE
"00123AB"	0000	Int/DInt	123	TRUE
"123"	0000	Real	123.0	TRUE
"-00456"	0001	Real	-456.0	TRUE
"+00456"	0001	Real	456.0	TRUE
"123.45"	0000	Real	123.45	TRUE
"123.45"	0001	Real	12345.0	TRUE
"123,45"	0000	Real	12345.0	TRUE
"123,45"	0001	Real	123.45	TRUE
".00123AB"	0001	Real	123.0	TRUE
"1.23e-4"	0000	Real	1.23	TRUE
"1.23E-4"	0000	Real	1.23	TRUE
"1.23E-4"	0002	Real	1.23E-4	TRUE
"12,345.67"	0000	Real	12345.67	TRUE
"12,345.67"	0001	Real	12.345	TRUE
"3.4e39"	0002	Real	+INF	TRUE
"-3.4e39"	0002	Real	-INF	TRUE
"1.1754943e-38" (o menor)	0002	Real	0.0	TRUE
"12345"	N/A	SInt	0	FALSE
"A123"	N/A	N/A	0	FALSE
""	N/A	N/A	0	FALSE
"++123"	N/A	N/A	0	FALSE
"+-123"	N/A	N/A	0	FALSE

Ejemplos de conversión VAL_STRG

Los ejemplos se basan en una cadena OUT que se inicializa de la manera siguiente:

"Current Temp = xxxxxxxxxx C"
El carácter "x" representa caracteres de espacio asignados al valor convertido.

Tipo de datos	Valor de IN	P	SIZE	FORMAT (W#16#....)	PREC	Cadena OUT	ENO
UInt	123	16	10	0000	0	Current Temp = xxxxxxx123 C	TRUE
UInt	0	16	10	0000	2	Current Temp = xxxxxx0.00 C	TRUE
UDInt	12345678	16	10	0000	3	Current Temp = x12345.678 C	TRUE
UDInt	12345678	16	10	0001	3	Current Temp = x12345,678 C	TRUE
Int	123	16	10	0004	0	Current Temp = xxxxxx+123 C	TRUE
Int	-123	16	10	0004	0	Current Temp = xxxxxx-123 C	TRUE
Real	-0.00123	16	10	0004	4	Current Temp = xxx-0.0012 C	TRUE
Real	-0.00123	16	10	0006	4	Current Temp = -1.2300E-3 C	TRUE
Real	-INF	16	10	N/A	4	Current Temp = xxxxxx-INF C	FALSE
Real	+INF	16	10	N/A	4	Current Temp = xxxxxx+INF C	FALSE
Real	NaN	16	10	N/A	4	Current Temp = xxxxxxxNaN C	FALSE
UDInt	12345678	16	6	N/A	3	Current Temp = xxxxxxxxxx C	FALSE

6.2.3.3 Instrucciones con cadenas

El programa de control puede utilizar las siguientes instrucciones con cadenas y caracteres para crear avisos para displays de operador e históricos del proceso.

Errores comunes de todas las operaciones String

Las operaciones String que se ejecutan con las condiciones String no permitidas o no válidas indicadas a continuación arrojan como resultado ENO = 0 y una salida string null. Las condiciones de error que ocurren para una instrucción en particular se indican debajo de la descripción de la operación.

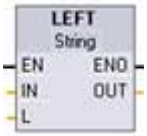
ENO	Condición	OUT
0	La longitud actual de IN1 excede la longitud máxima de IN1 o la longitud actual de IN2 excede la longitud máxima de IN2 (cadena no válida)	La longitud actual se pone a 0
	La longitud máxima de IN1, IN2 u OUT excede el rango de memoria asignado	
	La longitud máxima de IN1, IN2 u OUT es 0 ó 255 (longitud no permitida)	



LEN: Determinar la longitud de una cadena de caracteres



CONCAT: Concatenar dos cadenas



LEFT: Leer los caracteres izquierdos de una cadena



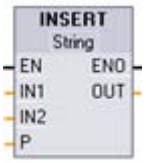
RIGHT: Leer los caracteres derechos de una cadena



MID: Leer los caracteres centrales de una cadena



FIND: Buscar caracteres en la cadena



INSERT: Insertar caracteres en la cadena



DELETE: Borrar caracteres de la cadena



REPLACE: Reemplazar caracteres de una cadena

Instrucción LEN

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	String	Cadena de entrada
OUT	OUT	UInt	Número de caracteres válidos de la cadena IN

LEN (Determinar la longitud de una cadena de caracteres) indica la longitud actual de la cadena IN en la salida OUT. Una cadena vacía tiene una longitud cero. La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No hay condición de cadena no válida	Longitud de cadena válida

Instrucción CONCAT

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN1	IN	String	Cadena de entrada 1
IN2	IN	String	Cadena de entrada 2
OUT	OUT	String	Cadena combinada (cadena 1 + cadena 2)

CONCAT (Concatenar dos cadenas) combina los parámetros String de IN1 e IN2 para formar una cadena que se deposita en OUT. Después de la concatenación, la cadena IN1 es la parte izquierda y, la cadena IN2, la parte derecha de la cadena combinada. La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No se han detectado errores	Caracteres válidos
0	La cadena resultante tras la concatenación excede la longitud máxima de la cadena OUT	Los caracteres de la cadena resultante se copian hasta alcanzarse la longitud máxima de OUT

Instrucción LEFT

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	String	Cadena de entrada
L	IN	Int	Longitud de la subcadena que debe crearse utilizando los caracteres L en el extremo izquierdo de la cadena IN
OUT	OUT	String	Cadena de salida

LEFT (Leer los caracteres izquierdos de una cadena) crea una subcadena formada por los primeros caracteres L del parámetro de cadena IN.

- Si L es mayor que la longitud actual de la cadena IN, OUT devuelve la cadena IN completa.
- Si la entrada contiene una cadena vacía, OUT devuelve una cadena vacía.

La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No se han detectado errores	Caracteres válidos
0	L es menor o igual a 0	La longitud actual se pone a 0
	La longitud (L) de la subcadena que debe copiarse excede la longitud máxima de la cadena OUT	Los caracteres se copian hasta alcanzarse la longitud máxima de OUT

Instrucción RIGHT

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	String	Cadena de entrada
L	IN	Int	Longitud de la subcadena que debe crearse utilizando los caracteres L en el extremo derecho de la cadena IN
OUT	OUT	String	Cadena de salida

RIGHT (Leer los caracteres derechos de una cadena) provee los últimos caracteres L de una cadena.

- Si L es mayor que la longitud actual de la cadena IN, el parámetro OUT devuelve la cadena IN completa.
- Si la entrada contiene una cadena vacía, OUT devuelve una cadena vacía.

La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No se han detectado errores	Caracteres válidos
0	L es menor o igual a 0	La longitud actual se pone a 0
	La longitud (L) de la subcadena que debe copiarse excede la longitud máxima de la cadena OUT	Los caracteres se copian hasta alcanzarse la longitud máxima de OUT

Instrucción MID

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	String	Cadena de entrada
L	IN	Int	Longitud de la subcadena que debe crearse utilizando caracteres L de la cadena IN a partir de la posición de carácter P
P	IN	Int	Posición del primer carácter de la subcadena que debe copiarse: P= 1 si debe ser el carácter inicial de la cadena IN
OUT	OUT	String	Cadena de salida

MID (Leer los caracteres centrales de una cadena) provee la parte central de una cadena. La subcadena central tiene una longitud de L caracteres y comienza en la posición de carácter P (inclusive).

Si la suma de L y P excede la longitud actual del parámetro String de IN, se devuelve una subcadena que comienza en la posición de carácter P y que continúa hasta el final de la cadena IN. La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No se han detectado errores	Caracteres válidos
0	L o P es menor o igual a 0	La longitud actual se pone a 0
	P excede la longitud máxima de IN	
	La longitud (L) de la subcadena que debe copiarse excede la longitud máxima de la cadena OUT	Los caracteres se copian, comenzando en la posición P, hasta alcanzarse la longitud máxima de OUT

Instrucción DELETE

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN	IN	String	Cadena de entrada
L	IN	Int	Número de caracteres que deben borrarse
P	IN	Int	Posición del primer carácter que debe borrarse: El primer carácter de la cadena IN tiene el número de posición 1
OUT	OUT	String	Cadena de salida

DELETE (Borrar caracteres de la cadena) borra L caracteres de la cadena IN. El borrado de caracteres comienza en la posición de carácter P (inclusive) y la subcadena restante se deposita en el parámetro OUT.

- Si L es igual a cero, OUT devuelve la cadena de entrada.
- Si la suma de L y P es mayor que la longitud de la cadena de entrada, la cadena se borra hasta el final.

La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No se han detectado errores	Caracteres válidos
0	P excede la longitud actual de IN	IN se copia en OUT sin borrarse caracteres
	L es menor que 0 o P es menor o igual a 0	La longitud actual se pone a 0
	La cadena resultante tras borrar los caracteres excede la longitud máxima de la cadena OUT	Los caracteres de la cadena resultante se copian hasta alcanzarse la longitud máxima de OUT

INSERT

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN1	IN	String	Cadena de entrada 1
IN2	IN	String	Cadena de entrada 2
P	IN	Int	Última posición de carácter en la cadena IN1 antes del punto de inserción de la cadena IN2. El primer carácter de la cadena IN1 tiene el número de posición 1.
OUT	OUT	String	Cadena resultante

INSERT (Insertar caracteres en la cadena) inserta la cadena IN2 en la cadena IN1. La inserción comienza tras el carácter de la posición P. La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No se han detectado errores	Caracteres válidos
0	P excede la longitud de IN1	IN2 se concatena con IN1 inmediamente después del último carácter de IN1
	P es menor o igual a 0	La longitud actual se pone a 0
	La cadena resultante tras la inserción excede la longitud máxima de la cadena OUT	Los caracteres de la cadena resultante se copian hasta alcanzarse la longitud máxima de OUT

REPLACE

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN1	IN	String	Cadena de entrada
IN2	IN	String	Cadena de caracteres de reemplazo
L	IN	Int	Número de caracteres que deben reemplazarse
P	IN	Int	Posición del primer carácter que debe reemplazarse
OUT	OUT	String	Cadena resultante

REPLACE (Reemplazar caracteres de una cadena) reemplaza caracteres L de la cadena IN1. La sustitución comienza en la posición de carácter P (inclusive) de la cadena IN1. Los caracteres de reemplazo provienen de la cadena IN2.

- Si el parámetro L es igual a cero, la cadena IN2 se inserta en la posición P de la cadena IN1 sin que se borre ningún carácter de la cadena IN1.
- Si P es igual a uno, los primeros caracteres L de la cadena IN1 se reemplazan por caracteres de la cadena IN2.

La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No se han detectado errores	Caracteres válidos
0	P excede la longitud de IN1	IN2 se concatena con IN1 inmediamente después del último carácter de IN1
	P cabe en IN1, pero menos de L caracteres permanecen en IN1	IN2 reemplaza los caracteres finales de IN1 comenzando en la posición P
	L es menor que 0 o P es menor o igual a 0	La longitud actual se pone a 0
	La cadena resultante tras la sustitución excede la longitud máxima de la cadena OUT	Los caracteres de la cadena resultante se copian hasta alcanzarse la longitud máxima de OUT

FIND

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
IN1	IN	String	Buscar en este cadena
IN2	IN	String	Buscar este cadena
OUT	OUT	Int	Posición de carácter de la cadena IN1, primer resultado de búsqueda

FIND (Buscar caracteres en la cadena) busca la posición de carácter de la subcadena o el carácter que indica IN2 en la cadena IN1. La búsqueda comienza en el lado izquierdo. La posición de carácter del primer resultado encontrado en la cadena IN2 se devuelve en OUT. Si la cadena IN2 no se encuentra en la cadena IN1, se devuelve cero. La tabla siguiente muestra los códigos de condición de la instrucción.

ENO	Condición	OUT
1	No se han detectado errores	Posición de carácter válida
0	IN2 es mayor que IN1	La posición de carácter se pone a 0

6.2.4 Instrucciones de control del programa

6.2.4.1 Instrucción "Reiniciar la vigilancia del tiempo de ciclo"



La instrucción RE_TRIGR (Reiniciar la vigilancia del tiempo de ciclo) sirve para prolongar el tiempo máximo permitido antes de que el temporizador de vigilancia del ciclo genere un error.

La instrucción RE_TRIGR se utiliza para reiniciar el temporizador de vigilancia del ciclo durante un único ciclo. De esta manera, el tiempo de ciclo máximo se prolonga un periodo de tiempo de ciclo máximo desde la última ejecución de la función RE_TRIGR.

La CPU restringe el uso de la instrucción RE_TRIGR al ciclo del programa, p. ej. al OB1 y las funciones llamadas desde el ciclo del programa. Esto significa que se inicializa el temporizador de vigilancia y ENO = EN si RE_TRIGR se llama desde cualquier OB de la lista de OBs de ciclo.

ENO = FALSE y el temporizador de vigilancia no se inicializa si RE_TRIGR se ejecuta desde un OB de arranque, de alarma o de error.

Ajustar el tiempo de ciclo máximo del PLC

El tiempo de ciclo máximo puede ajustarse en la configuración de dispositivos PLC en "Tiempo de ciclo".

Vigilancia del tiempo de ciclo	Valor mínimo	Valor máximo	Valor predeterminado
Tiempo de ciclo máximo	1 ms	6000 ms	150 ms

Timeout de vigilancia

Si el tiempo de ciclo máximo finaliza antes de haberse completado el ciclo, se generará un error. Si el OB 80 (bloque lógico de tratamiento de errores) se incluye en el programa de usuario, el PLC lo ejecuta. En el OB 80 es posible agregar lógica para crear una reacción especial. Si no se incluye el OB 80, se ignora la primera condición de timeout.

Si ocurre un segundo timeout de tiempo de ciclo máximo en ese mismo ciclo del programa (valor del tiempo de ciclo máximo multiplicado por 2), se disparará un error y el PLC cambiará a estado operativo STOP.

En el estado operativo STOP se detiene la ejecución del programa mientras continúan las comunicaciones y los diagnósticos del sistema PLC.

6.2.4.2 Instrucción "Parar ciclo del PLC"



La instrucción STP (Parar ciclo del PLC) cambia el PLC a estado operativo STOP. Cuando el PLC está en estado operativo STOP, se detienen la ejecución del programa de usuario y las actualizaciones físicas desde la memoria imagen de proceso.

Encontrará más información en: Configurar las salidas en una transición de RUN a STOP (Página 54)

Si EN = TRUE (verdadero), el PLC pasa a estado operativo STOP, se detiene la ejecución del programa y el estado de ENO carece de importancia. De lo contrario, EN = ENO = 0.

6.2.4.3 Instrucciones GET_ERROR

Las instrucciones GET_ERROR proporcionan información acerca de errores de ejecución de bloques de programa. Si se ha insertado una instrucción GetError o GetErrorID en el bloque lógico, los errores del programa podrán tratarse en el bloque de programa.

GET_ERROR



GET_ERROR indica que ha ocurrido un error de ejecución de un bloque y rellena una estructura de datos de error predefinida con información detallada acerca del error.

Parámetro	Tipo de datos	Descripción
ERROR	ErrorStruct	Estructura de datos del error: Es posible cambiar el nombre de la estructura pero no sus elementos.

Elemento de datos ErrorStruct	Tipo de datos	Descripción
ERROR_ID	Word	Identificador del error
FLAGS	Byte	Siempre puesto a 0.
REACTION	Byte	Reacción al error: • 0 = Ignorar; no se ha escrito nada (error de escritura) • 1 = Sustituir: se ha utilizado 0 para el valor de entrada (error de lectura) • 2 = Omitir la instrucción
BLOCK_TYPE	Byte	Tipo de bloque en el que ha ocurrido el error: • 1 = OB • 2 = FC • 3 = FB
PAD_0	Byte	Byte de relleno interno para la alineación; será 0
CODE_BLOCK_NUMBER	UInt	Número de bloque en el que ha ocurrido el error

Elemento de datos ErrorStruct	Tipo de datos	Descripción
ADDRESS	UDInt	Posición de memoria interna de la instrucción en la que ha ocurrido el error
MODE	Byte	Mapeo interno de cómo se interpretarán los campos restantes que debe utilizar STEP 7 Basic
PAD_1	Byte	Byte de relleno interno para la alineación; no se utiliza, será 0
OPERAND_NUMBER	UInt	Número de operando de la instrucción interna
POINTER_NUMBER_ LOCATION	UInt	(A) Ubicación del puntero de la instrucción interna
SLOT_NUMBER_SCOPE	UInt	(B) Ubicación de almacenamiento en la memoria interna
AREA	Byte	(C) Área de memoria referenciada cuando ocurrió el error: • L: 16#40 – 4E, 86, 87, 8E, 8F, C0 – CE • I: 16#81 • Q: 16#82 • M: 16#83 • DB: 16#84, 85, 8A, 8B
PAD_2	Byte	Byte de relleno interno para la alineación; no se utiliza, será 0
DB_NUMBER	UInt	(D) DB referenciado cuando ocurrió el error de DB, 0 en los demás casos
OFFSET	UDInt	(E) Offset de bit referenciado cuando ocurrió el error (ejemplo: 12 = byte 1, bit 4)

GET_ERR_ID



GET_ERR_ID indica que ha ocurrido un error de ejecución de bloque de programa y notifica la ID (identificación) del error.

Parámetro	Tipo de datos	Descripción
ID	Word	Valores de identificador del error del elemento ERROR_ID de ErrorStruct

ERROR_ID hexadecimal	ERROR_ID decimal	Error de ejecución de bloque de programa
2503	9475	Error de puntero no inicializado
2522	9506	Error de lectura de operando fuera de rango
2523	9507	Error de escritura de operando fuera de rango
2524	9508	Error de lectura de área no válida
2525	9509	Error de escritura de área no válida
2528	9512	Error de lectura de alineación de datos (alineación de bit incorrecta)
2529	9513	Error de escritura de alineación de datos (alineación de bit incorrecta)

ERROR_ID hexadecimal	ERROR_ID decimal	Error de ejecución de bloque de programa
2530	9520	DB protegido contra escritura
253A	9530	El DB global no existe
253C	9532	Versión incorrecta o la FC no existe
253D	9533	La instrucción no existe
253E	9534	Versión incorrecta o el FB no existe
253F	9535	La instrucción no existe
2575	9589	Error de profundidad de anidamiento del programa
2576	9590	Error de asignación de datos locales
2942	10562	La entrada física no existe
2943	10563	La salida física no existe

Funcionamiento

De forma predeterminada, la CPU reacciona a un error de ejecución de bloque registrando un error en el búfer de diagnóstico y cambiando a estado operativo STOP. No obstante, si se insertan una o más instrucciones GET_ERROR o GET_ERR_ID en un bloque lógico, éste puede tratar los errores en el bloque. En este caso, la CPU no cambia a estado operativo STOP y tampoco registra un error en el búfer de diagnóstico. En su lugar, la información de error se deposita en la salida de la instrucción GET_ERROR o GET_ERR_ID. Es posible leer la información de error detallada con la instrucción GET_ERROR, o bien sólo el identificador del error con la instrucción GET_ERR_ID. Normalmente, el primer error es el más importante; los errores siguientes son sólo consecuencias del primer error.

La primera ejecución de una instrucción GET_ERROR o GET_ERR_ID en un bloque devuelve el primer error detectado durante la ejecución del bloque. Este error puede haber ocurrido en cualquier punto entre el inicio del bloque y la ejecución de la instrucción GET_ERROR o GET_ERR_ID. Las ejecuciones posteriores de GET_ERROR o GET_ERR_ID devuelven el primer error desde la ejecución anterior de GET_ERROR o GET_ERR_ID. El historial de errores no se almacena y la ejecución de cualquiera de estas instrucciones rearma el sistema PLC de manera que pueda detectar el error siguiente.

El tipo de datos ErrorStruct que utiliza la instrucción GET_ERROR puede agregarse en el editor del bloque de datos y en la interfaz del bloque, de manera que la lógica del programa pueda acceder a estos valores. Seleccione ErrorStruct en la lista desplegable de tipos de datos para agregar esta estructura. Es posible crear varios ErrorStructs utilizando nombres unívocos. No es posible cambiar el nombre de los elementos de un ErrorStruct.

Condición de error indicada por ENO

Si EN = TRUE y se ejecuta GET_ERROR o GET_ERR_ID, entonces:

- ENO = TRUE indica que ha ocurrido un error de ejecución del bloque lógico y que hay un error de datos
- ENO = FALSE indica que no ha ocurrido ningún error de ejecución del bloque lógico

Es posible conectar la lógica del programa de reacción a errores a ENO que se activa cuando ocurre un error. Si existe un error, sus datos se almacenan en el parámetro de salida, donde el programa puede acceder a ellos.

GET_ERROR y GET_ERR_ID pueden utilizarse para enviar información de error desde el bloque que se está ejecutando (bloque llamado) a un bloque invocante. Coloque la instrucción en el último segmento del bloque de programa llamado para notificar el estado de ejecución final del bloque llamado.

6.2.5 Instrucciones de comunicación

6.2.5.1 Comunicación Ethernet abierta

Comunicación Ethernet abierta con conexión/desconexión automática (TSEND_C y TRCV_C)

Nota

El procesamiento de las instrucciones TSEND_C y TRCV_C puede tardar un tiempo indeterminado. Para garantizar que estas instrucciones se procesen en cada ciclo, es preciso llamarlas siempre desde el ciclo del programa principal, p. ej. desde un OB de ciclo o un bloque lógico llamado desde el ciclo del programa. **No** llame estas instrucciones desde un OB de alarma de proceso, OB de alarma de retardo, OB de alarma cíclica, OB de error de tiempo ni OB de arranque.

Encontrará más información sobre cómo transferir datos con estas instrucciones en el apartado Coherencia de datos (Página 96).

Descripción de TSEND_C

TSEND_C establece una conexión TCP o ISO on TCP con un interlocutor, envía datos y puede deshacer la conexión. Una vez configurada y establecida la conexión, la CPU la mantiene y la vigila automáticamente. TSEND_C combina las funciones de TCON, TDISCON y TSEND.

El tamaño mínimo de los datos que pueden transmitirse con la instrucción TSEND_C es un byte.

Nota

El ajuste predeterminado del parámetro LEN (LEN = 0) utiliza el parámetro DATA para determinar la longitud de los datos que se están transmitiendo. Asegúrese de que los datos (DATA) transmitidos por la instrucción TSEND_C tienen el mismo tamaño que el parámetro DATA de la instrucción TRCV_C.

Las funciones siguientes describen la operación de la instrucción TSEND_C:

- Para establecer una conexión, ejecute TSEND_C con CONT = 1.
- Una vez establecida correctamente la conexión, TSEND_C activa el parámetro DONE durante un ciclo.
- Para deshacer la conexión, ejecute TSEND_C con CONT = 0. La conexión se interrumpirá inmediatamente. Esto afecta también la estación receptora. La conexión se cierra allí y pueden perderse los datos del búfer de recepción.
- Para enviar datos a través de una conexión establecida, ejecute TSEND_C cuando se produzca un flanco ascendente en REQ. Tras una operación de envío correcta, TSEND_C activa el parámetro DONE durante un ciclo.
- Para establecer una conexión y enviar datos, ejecute TSEND_C con CONT = 1 y REQ = 1. Tras una operación de envío correcta, TSEND_C activa el parámetro DONE durante un ciclo.

Descripción de TRCV_C

TRCV_C establece una conexión TCP o ISO on TCP con una CPU interlocutora, recibe datos y puede deshacer la conexión. Una vez configurada y establecida la conexión, la CPU la mantiene y la vigila automáticamente. La instrucción TRCV_C combina las funciones de las instrucciones TCON, TDISCON y TRCV.

El tamaño mínimo de los datos que pueden recibirse con la instrucción TRCV_C es un byte. La instrucción TRCV_C no soporta la transmisión de datos booleanos ni de matrices booleanas.

Nota

El ajuste predeterminado del parámetro LEN (LEN = 0) utiliza el parámetro DATA para determinar la longitud de los datos que se están transmitiendo. Asegúrese de que los datos (DATA) transmitidos por la instrucción TSEND_C tienen el mismo tamaño que el parámetro DATA de la instrucción TRCV_C.

Las funciones siguientes describen la operación de la instrucción TRCV_C:

- Para establecer una conexión, ejecute TRCV_C con el parámetro CONT = 1.
- Para recibir datos, ejecute TRCV_C con el parámetro EN_R = 1. TRCV_C recibe los datos continuamente si los parámetros EN_R = 1 y CONT = 1.
- Para deshacer la conexión, ejecute TRCV_C con el parámetro CONT = 0. La conexión se deshace inmediatamente y pueden perderse datos.

Modos de recepción

TRCV_C utiliza los mismos modos de recepción que la instrucción TRCV. La tabla siguiente muestra cómo se introducen los datos en el área de recepción.

Variante de protocolo	Entrada de datos en el área de recepción	Parámetro "connection_type"
TCP	Recepción de datos con la longitud especificada	B#16#11
ISO on TCP	Controlado por protocolo	B#16#12

Nota

Debido al procesamiento asíncrono de TSEND_C, es preciso conservar la coherencia de los datos en el área de emisión hasta que el parámetro DONE o ERROR adopta el valor TRUE.

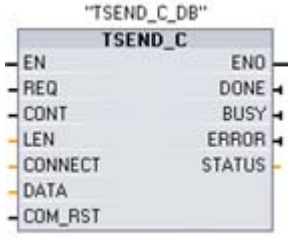
Si el parámetro DONE de la instrucción TSEND_C tiene el estado TRUE, significa que los datos se han enviado correctamente. Sin embargo, no significa que la CPU interlocutora haya leído realmente el búfer de recepción.

Debido al procesamiento asíncrono de TRCV_C, los datos en el área de recepción sólo son coherentes si el parámetro DONE = 1.

La tabla siguiente muestra la relación entre los parámetros BUSY, DONE y ERROR.

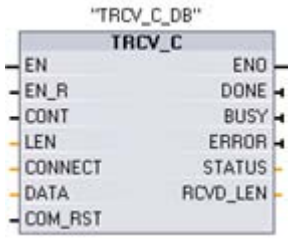
BUSY	DONE	ERROR	Descripción
TRUE	Irrelevante	Irrelevante	La tarea se está procesando.
FALSE	TRUE	FALSE	La tarea se ha ejecutado correctamente.
FALSE	FALSE	TRUE	La tarea se ha finalizado con un error. La causa del error se indica en el parámetro STATUS.
FALSE	FALSE	FALSE	No se ha asignado ninguna tarea nueva.

Parámetros de TSEND_C



Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	INPUT	Bool	El parámetro de control REQ inicia la tarea de transmisión con la conexión descrita en CONNECT cuando se detecta un flanco ascendente.
CONT	INPUT	Bool	• 0: desconectar • 1: establecer y mantener la conexión
LEN	INPUT	Int	Número máximo de bytes que deben enviarse. (El ajuste predeterminado es 0, es decir, el parámetro DATA determina la longitud de los datos por enviar).
CONNECT	IN_OUT	Parám TCON	Puntero a la descripción de la conexión
DATA	IN_OUT	Variante	Área de emisión; contiene la dirección y la longitud de los datos por enviar.
COM_RST	IN_OUT	Bool	• 1: Reinicio completo del bloque de función; se deshace la conexión existente.
DONE	OUTPUT	Bool	• 0: Tarea no iniciada aún o en proceso. • 1: Tarea finalizada sin errores.
BUSY	OUTPUT	Bool	• 0: Tarea finalizada. • 1: Tarea no finalizada aún. No se puede iniciar una tarea nueva.
ERROR	OUTPUT	Bool	• 1: Ha ocurrido un error durante el procesamiento. STATUS proporciona información detallada sobre el tipo de error.
STATUS	OUTPUT	Word	Información de error

Parámetros de TRCV_C



Parámetro	Tipo de parámetro	Tipo de datos	Descripción
EN_R	IN	Bool	Parámetro de control habilitado para recibir: Si EN_R = 1, TRCV_C está listo para recibir. La tarea de recepción se procesa.
CONT	IN	Bool	Parámetro de control CONT: • 0: desconectar • 1: establecer y mantener la conexión
LEN	IN	Int	Longitud del área de recepción en bytes. (El ajuste predeterminado es 0, es decir, el parámetro DATA determina la longitud de los datos por enviar).
CONNECT	IN_OUT	Parám TCON	Puntero a la descripción de la conexión
DATA	IN_OUT	Variante	El área de recepción contiene la dirección inicial y la longitud máxima de los datos recibidos.
COM_RST	IN_OUT	Bool	• 1: Reinicio completo del bloque de función; se deshace la conexión existente.
DONE	OUT	Bool	• 0: Tarea no iniciada aún o en proceso. • 1: Tarea finalizada sin errores.
BUSY	OUT	Bool	• 0: Tarea finalizada. • 1: Tarea no finalizada aún. No se puede iniciar una tarea nueva.
ERROR	OUT	Bool	• 1: Ha ocurrido un error durante el procesamiento. STATUS proporciona información detallada sobre el tipo de error.
STATUS	OUT	Word	Información de error
RCVD_LEN	OUT	Int	Cantidad de datos (en bytes) recibida realmente

Parámetros ERROR y STATUS

ERROR	STATUS (W#16#...)	Descripción
0	0000	Tarea ejecutada sin errores
0	7000	No se está procesando ninguna tarea
0	7001	Iniciar procesamiento de la tarea, estableciendo la conexión, esperando al interlocutor
0	7002	Enviando o recibiendo datos
0	7003	Deshaciendo la conexión
0	7004	Conexión establecida y vigilada, no se está procesando ninguna tarea
1	8085	El parámetro LEN es mayor que el valor máximo admisible
1	8086	El parámetro CONNECT está fuera del rango admisible
1	8087	Se ha alcanzado el número máximo de conexiones; no es posible establecer más conexiones
1	8088	El parámetro LEN excede el área de memoria especificada en DATA; el área de memoria para la recepción es demasiado pequeña
1	8089	El parámetro CONNECT no apunta a un bloque de datos.
1	8091	Se ha excedido la profundidad de anidamiento máxima
1	809A	El parámetro CONNECT apunta a un campo que no concuerda con la longitud de la descripción de la conexión.
1	809B	La "local_device_id" indicada en la descripción de la conexión no concuerda con la CPU.
1	80A1	Error de comunicación: • La conexión indicada no se ha establecido todavía • La conexión indicada se está deshaciendo; no es posible transferir a través de esta conexión • La interfaz se está reinicializando
1	80A3	Se está intentando deshacer una conexión no existente
1	80A4	La dirección IP del interlocutor remoto de la conexión no es válida. Por ejemplo, la dirección IP del interlocutor remoto es igual a la dirección IP del interlocutor local.
1	80A7	Error de comunicación: TDISCON se ha llamado antes de finalizar TCON (TDISCON debe deshacer primero por completo la conexión referenciada por la ID)
1	80B2	El parámetro CONNECT apunta a un bloque de datos generado con la palabra clave UNLINKED
1	80B3	Parámetros incoherentes: • Error en la descripción de la conexión • El puerto local (parámetro local_tsap_id) ya existe en una descripción de conexión diferente • La ID indicada en la descripción de la conexión no concuerda con la ID especificada como parámetro

ERROR	STATUS (W#16#...)	Descripción
1	80B4	Si se utiliza ISO on TCP (connection_type = B#16#12) para establecer una conexión pasiva, el código de condición 80B4 advierte de que el TSAP introducido no cumple uno de los siguientes requisitos para la dirección: • Si la longitud del TSAP local es 2 y el valor de la ID TSAP es E0 o E1 (hexadecimal) para el primer byte, el segundo byte deberá ser 00 ó 01. • Si la longitud del TSAP local es 3 o superior y el valor de la ID TSAP es E0 o E1 (hexadecimal) para el primer byte, el segundo byte deberá ser 00 ó 01 y todos los demás bytes deberán ser caracteres ASCII válidos. • Si la longitud del TSAP local es 3 o superior y el valor del primer byte de la ID TSAP no es E0 ni E1 (hexadecimal), todos los demás bytes de la ID TSAP deberán ser caracteres ASCII válidos. Los caracteres ASCII válidos son valores de byte comprendidos entre 20 y 7E (hexadecimal).
1	80C3	Se están utilizando todos los recursos de conexión.
1	80C4	Error de comunicación temporal: • La conexión no se puede establecer en estos momentos • La interfaz está recibiendo nuevos parámetros • La instrucción TDISCON está deshaciendo la conexión configurada
1	8722	Parámetro CONNECT: Área de origen no válida: el área no existe en el DB
1	873A	Parámetro CONNECT: Imposible acceder a la descripción de la conexión (p. ej. porque el DB no está disponible)
1	877F	Parámetro CONNECT: Error interno, p. ej. referencia no válida a ANY

Comunicación Ethernet abierta con control de conexión/desconexión

Nota

El procesamiento de las instrucciones TCON, TDISCON, TSEND y TRCV puede tardar un tiempo indeterminado. Para garantizar que estas instrucciones se procesen en cada ciclo, es preciso llamarlas siempre desde el ciclo del programa principal, p. ej. desde un OB de ciclo o un bloque lógico llamado desde el ciclo del programa. **No** llame estas instrucciones desde un OB de alarma de proceso, OB de alarma de retardo, OB de alarma cíclica, OB de error de tiempo ni OB de arranque.

Comunicación Ethernet mediante los protocolos TCP e ISO on TCP

Estas instrucciones del programa controlan el proceso de comunicación:

- TCON sirve para establecer una conexión.
- TSEND y TRCV permiten enviar y recibir datos.
- TDISCON deshace la conexión.

El tamaño mínimo de los datos que pueden transmitirse o recibirse con las instrucciones TSEND y TRCV es un byte. La instrucción TRCV no soporta la transmisión de datos booleanos ni de matrices booleanas. Encontrará más información sobre cómo transferir datos con estas instrucciones en el apartado Coherencia de datos (Página 96).

Nota

El ajuste predeterminado del parámetro LEN (LEN = 0) utiliza el parámetro DATA para determinar la longitud de los datos que se están transmitiendo. Asegúrese de que los datos (DATA) transmitidos por la instrucción TSEND tienen el mismo tamaño que el parámetro DATA de la instrucción TRCV.

Ambos interlocutores ejecutan la instrucción TCON para configurar y establecer la conexión. El punto final activo y el punto final pasivo de la comunicación se especifican mediante parámetros. Una vez configurada y establecida la conexión, la CPU la mantiene y la vigila automáticamente.

Si la conexión se deshace p. ej. debido a una interrupción de la línea o por el interlocutor remoto, el interlocutor activo intenta restablecer la conexión configurada. No es necesario volver a ejecutar TCON.

Una conexión existente se deshace y la conexión configurada se elimina cuando se ejecuta la instrucción TDISCON o cuando la CPU pasa a estado operativo STOP. Para configurar y restablecer la conexión es preciso ejecutar TCON de nuevo.

Descripción de la función

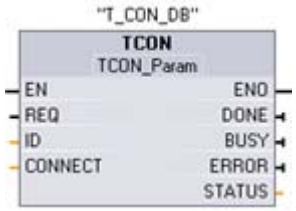
TCON, TDISCON, TSEND y TRCV funcionan de forma asíncrona, con lo que el procesamiento de la tarea abarca varias ejecuciones de la instrucción.

Por ejemplo, una tarea para configurar y establecer una conexión se inicia ejecutando un instrucción TCON con el parámetro REQ = 1. Después se utilizan ejecuciones adicionales de TCON para vigilar la tarea y comprobar si ha finalizado con el parámetro DONE.

La tabla siguiente muestra la relación entre los parámetros BUSY, DONE y ERROR. Utilice la tabla para determinar el estado actual de la tarea.

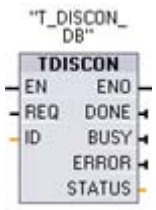
BUSY	DONE	ERROR	Descripción
TRUE	Irrelevante	Irrelevante	La tarea se está procesando.
FALSE	TRUE	FALSE	La tarea se ha ejecutado correctamente.
FALSE	FALSE	TRUE	La tarea se ha finalizado con un error. La causa del error se indica en el parámetro STATUS.
FALSE	FALSE	FALSE	No se ha asignado ninguna tarea nueva.

TCON



Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	El parámetro de control REQUEST inicia la tarea para establecer la conexión que indica ID. La tarea comienza cuando se produce un flanco ascendente.
ID	IN	CONN_OUC (Word)	Referencia a la conexión que debe establecerse con el interlocutor remoto, o bien entre el programa de usuario y la capa de comunicación del sistema operativo. La ID debe ser idéntica al parámetro ID asociado en la descripción de la conexión local. Rango de valores: W#16#0001 a W#16#0FFF
CONNECT	IN_OUT	Parám TCON	Puntero a la descripción de la conexión
DONE	OUT	Bool	Parámetro de estado DONE: • 0: Tarea no iniciada aún o en proceso • 1: Tarea ejecutada sin errores
BUSY	OUT	Bool	BUSY = 1: Tarea no finalizada aún BUSY = 0: Tarea finalizada
ERROR	OUT	Bool	Parámetro de estado ERROR: ERROR = 1: Ha ocurrido un error al procesar la tarea. STATUS proporciona información detallada sobre el tipo de error.
STATUS	OUT	Word	Parámetro de estado STATUS: Información de error

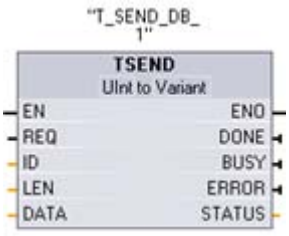
TDISCON



TCP e ISO on TCP: TDISCON deshace una conexión entre la CPU y un interlocutor.

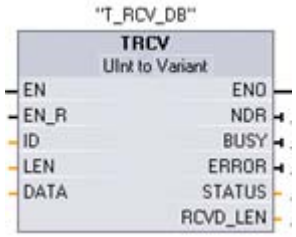
Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	El parámetro de control REQUEST inicia la tarea para establecer la conexión que indica ID. La tarea comienza cuando se produce un flanco ascendente.
ID	IN	CONN_OUC (Word)	Referencia a la conexión que debe deshacerse con el interlocutor remoto, o bien entre el programa de usuario y el nivel de comunicación del sistema operativo. La ID debe ser idéntica al parámetro ID asociado en la descripción de la conexión local. Rango de valores: W#16#0001 a W#16#0FFF
DONE	OUT	Bool	Parámetro de estado DONE: • 0: Tarea no iniciada aún o en proceso • 1: Tarea ejecutada sin errores
BUSY	OUT	Bool	BUSY = 1: Tarea no finalizada aún BUSY = 0: Tarea finalizada
ERROR	OUT	Bool	ERROR = 1: Ha ocurrido un error durante el procesamiento.
STATUS	OUT	Word	Código de error

TSEND



Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	El parámetro de control REQUEST inicia la tarea de transmisión cuando se produce un flanco ascendente. Los datos se transfieren desde el área que indican los parámetros DATA y LEN.
ID	IN	CONN_OUC (Word)	Referencia a la conexión asociada. La ID debe ser idéntica al parámetro ID asociado en la descripción de la conexión local. Rango de valores: W#16#0001 a W#16#0FFF
LEN	IN	Int	Número máximo de bytes que deben enviarse con la tarea
DATA	IN_OUT	Variante	Puntero al área de los datos que deben enviarse: Área de emisión; contiene la dirección y longitud. La dirección hace referencia a: • La memoria imagen de proceso de las entradas • La memoria imagen de proceso de las salidas • Una marca • Un bloque de datos
DONE	OUT	Bool	Parámetro de estado DONE: • 0: Tarea no iniciada aún o en proceso. • 1: Tarea finalizada sin errores.
BUSY	OUT	Bool	• BUSY = 1: La tarea no ha finalizado aún. No se puede iniciar una tarea nueva. • BUSY = 0: Tarea finalizada.
ERROR	OUT	Bool	Parámetro de estado ERROR: ERROR = 1: Ha ocurrido un error durante el procesamiento. STATUS proporciona información detallada sobre el tipo de error
STATUS	OUT	Word	Parámetro de estado STATUS: Información de error

TRCV



Parámetro	Tipo de parámetro	Tipo de datos	Descripción
EN_R	IN	Bool	Parámetro de control habilitado para recibir: Si EN_R = 1, TRCV está listo para recibir. La tarea de recepción se está procesando.
ID	IN	CONN_OUC (Word)	Referencia a la conexión asociada. La ID debe ser idéntica al parámetro ID asociado en la descripción de la conexión local. Rango de valores: W#16#0001 a W#16#0FFF
LEN	IN	Int	Longitud del área de recepción en bytes (el ajuste predeterminado es 0, es decir, el parámetro DATA determina la longitud de los datos por recibir).
DATA	IN_OUT	Variante	Puntero a los datos recibidos: Área de recepción que contiene la dirección y longitud. La dirección hace referencia a: • La memoria imagen de proceso de las entradas • La memoria imagen de proceso de las salidas • Una marca • Un bloque de datos
NDR	OUT	Bool	Parámetro de estado NDR: • NDR = 0: Tarea no iniciada aún o en proceso. • NDR = 1: Tarea finalizada correctamente.
BUSY	OUT	Bool	• BUSY = 1: La tarea no ha finalizado aún. No se puede iniciar una tarea nueva. • BUSY = 0: Tarea finalizada.
ERROR	OUT	Bool	ERROR=1: Ha ocurrido un error durante el procesamiento. STATUS proporciona información detallada sobre el tipo de error.
STATUS	OUT	Word	Información de error
RCVD_LEN	OUT	Int	Cantidad de datos (en bytes) recibida realmente

Área de recepción

La instrucción TRCV escribe los datos recibidos en un área de recepción especificada por las dos variables siguientes:

- Puntero al comienzo del área
- Longitud del área

Nota

El ajuste predeterminado del parámetro LEN (LEN = 0) utiliza el parámetro DATA para determinar la longitud de los datos que se están transmitiendo. Asegúrese de que los datos (DATA) transmitidos por la instrucción TSEND tienen el mismo tamaño que el parámetro DATA de la instrucción TRCV.

La tabla siguiente muestra cómo TRCV introduce los datos recibidos en el área de recepción.

Variante de protocolo	Entrada de datos en el área de recepción	Parámetro "connection_type"
TCP	Recepción de datos con la longitud especificada	B#16#11
ISO on TCP	Controlado por protocolo	B#16#12

Tan pronto como se hayan recibido todos los datos de la tarea, TRCV los transferirá al área de recepción y pondrá NDR a 1.

Códigos de condición de TCON

ERROR	STATUS (W#16#...)	Significado
0	0000	La conexión se ha establecido correctamente
0	7000	No se está procesando ninguna tarea
0	7001	Iniciar el procesamiento de la tarea, estableciendo la conexión
0	7002	Llamada intermedia (REQ es irrelevante), estableciendo la conexión
1	8086	El parámetro ID está fuera del rango admisible.
1	8087	Se ha alcanzado el número máximo de conexiones; no es posible establecer más conexiones
1	809B	La "local_device_id" indicada en la descripción de la conexión no concuerda con la CPU.
1	80A1	El usuario ya está utilizando el puerto o conexión
1	80A2	El sistema está utilizando el puerto local o remoto
1	80A3	Se está intentando restablecer una conexión existente
1	80A4	La dirección IP del punto final remoto de la conexión no es válida; puede ser que concuerde con la dirección IP local
1	80A7	Error de comunicación: TDISCON se ha ejecutado antes de finalizar TCON. TDISCON debe deshacer primero por completo la conexión referenciada por la ID.

ERROR	STATUS (W#16#...)	Significado
1	80B3	Parametrización incoherente: Error agrupado para los códigos de error W#16#80A0 hasta W#16#80A2, W#16#80A4, W#16#80B4 hasta W#16#80B9
1	80B4	Si se utiliza ISO on TCP (connection_type = B#16#12) para establecer una conexión pasiva, el código de condición 80B4 advierte de que el TSAP introducido no cumple uno de los siguientes requisitos para la dirección: • Si la longitud del TSAP local es 2 y el valor de la ID TSAP es E0 o E1 (hexadecimal) para el primer byte, el segundo byte deberá ser 00 ó 01. • Si la longitud del TSAP local es 3 o superior y el valor de la ID TSAP es E0 o E1 (hexadecimal) para el primer byte, el segundo byte deberá ser 00 ó 01 y todos los demás bytes deberán ser caracteres ASCII válidos. • Si la longitud del TSAP local es 3 o superior y el valor del primer byte de la ID TSAP no es E0 ni E1 (hexadecimal), todos los demás bytes de la ID TSAP deberán ser caracteres ASCII válidos. Los caracteres ASCII válidos son valores de byte comprendidos entre 20 y 7E (hexadecimal).
1	80B5	Error en el parámetro active_est
1	80B6	Error de parametrización en el parámetro connection_type
1	80B7	Error en uno de los parámetros siguientes: block_length, local_tsap_id_len, rem_subnet_id_len, rem_staddr_len, rem_tsap_id_len, next_staddr_len
1	80B8	Los parámetros de la descripción de la conexión local y el parámetro ID son diferentes
1	80C3	Se están utilizando todos los recursos de conexión.
1	80C4	Error de comunicación temporal: • La conexión no se puede establecer en estos momentos. • La interfaz está recibiendo nuevos parámetros. • La instrucción TDISCON está deshaciendo la conexión configurada.

Códigos de condición de TDISCON

ERROR	STATUS (W#16#...)	Significado
0	0000	La conexión se ha deshecho correctamente
0	7000	No se está procesando ninguna tarea
0	7001	Inicio del procesamiento de la tarea, deshaciendo la conexión
0	7002	Llamada intermedia (REQ es irrelevante), deshaciendo la conexión
1	8086	El parámetro ID está fuera del rango de direcciones admisible.
1	80A3	Se está intentando deshacer una conexión no existente
1	80C4	Error de comunicación temporal: La interfaz está recibiendo nuevos parámetros o la conexión se está estableciendo.

Códigos de condición de TSEND

ERROR	STATUS (W#16#...)	Significado
0	0000	Tarea de transmisión finalizada sin errores
0	7000	No se está procesando ninguna tarea
0	7001	Inicio del procesamiento de la tarea, enviando los datos: Durante este procesamiento, el sistema operativo accede a los datos del área de emisión DATA.
0	7002	Llamada intermedia (REQ es irrelevante), procesando la tarea: El sistema operativo accede a los datos del área de emisión DATA durante este procesamiento.
1	8085	El parámetro LEN es mayor que el valor máximo admisible.
1	8086	El parámetro ID está fuera del rango de direcciones admisible
1	8088	El parámetro LEN excede el área de memoria especificada en DATA
1	80A1	Error de comunicación: • La conexión indicada no se ha establecido todavía • La conexión indicada se está deshaciendo. No es posible transmitir datos a través de esta conexión. • La interfaz se está reinicializando.
1	80C3	Falta interna de recursos: Ya se está procesando un bloque con esta ID en una clase de prioridad diferente.
1	80C4	Error de comunicación temporal: • La conexión con el interlocutor no se puede establecer en estos momentos. • La interfaz está recibiendo nuevos parámetros o la conexión se está estableciendo.

Códigos de condición de TRCV

ERROR	STATUS (W#16#...)	Significado
0	0000	Se han aceptado datos nuevos: La longitud actual de los datos recibidos se muestra en RCVD_LEN.
0	7000	El bloque no está listo para la recepción
0	7001	El bloque está listo para la recepción, se ha activado la tarea de recepción.
0	7002	Llamada intermedia, se está procesando la tarea de recepción: Durante este proceso se escriben datos en el área de recepción. Por este motivo puede ocurrir un error y ocasionar datos incoherentes en el área de recepción.
1	8085	El parámetro LEN excede el valor máximo admisible o el valor del parámetro LEN o DATA fue modificado desde la primera llamada.
1	8086	El parámetro ID está fuera del rango de direcciones admisible
1	8088	El área de recepción es demasiado pequeña: El valor de LEN excede el área de recepción especificada en DATA.

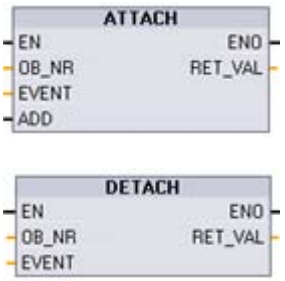
ERROR	STATUS (W#16#...)	Significado
1	80A1	Error de comunicación: • La conexión indicada no se ha establecido todavía • La conexión indicada se está deshaciendo. La tarea de recepción no es posible a través de esta conexión. • La interfaz está recibiendo nuevos parámetros.
1	80C3	Falta interna de recursos: Ya se está procesando un bloque con esta ID en una clase de prioridad diferente.
1	80C4	Error de comunicación temporal: • La conexión con el interlocutor no se puede establecer en estos momentos. • La interfaz está recibiendo nuevos ajustes de parámetros o la conexión se está estableciendo.

6.2.5.2 Instrucciones de comunicación punto a punto

El capítulo Comunicación punto a punto (PtP) (Página 269) ofrece información detallada sobre las instrucciones PtP y los módulos de comunicación.

6.2.6 Instrucciones con alarmas

6.2.6.1 Instrucciones ATTACH y DETACH



Las instrucciones ATTACH y DETACH sirven para activar y desactivar subprogramas controlados por eventos de alarma.

- ATTACH habilita la ejecución de un OB de alarma para un evento de alarma de proceso.
- DETACH inhibe la ejecución de un OB de alarma para un evento de alarma de proceso.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
OB_NR	IN	Int	Identificador del bloque de organización: Seleccione uno de los OBs de alarma de proceso que fueron creados utilizando la función "Agregar nuevo bloque". Haga doble clic en el campo de parámetro. A continuación, haga clic en el símbolo de ayuda para ver los OBs disponibles.
EVENT	IN	DWord	Identificador del evento: Seleccione uno de los eventos de alarma de proceso habilitados en la configuración de dispositivos PLC para las entradas digitales o los contadores rápidos. Haga doble clic en el campo de parámetro. A continuación, haga clic en el símbolo de ayuda para ver los eventos disponibles.
ADD (sólo ATTACH)	IN	Bool	ADD = 0 (ajuste predeterminado): Este evento reemplaza a todas las asignaciones de eventos anteriores de este OB. ADD = 1: Este evento se agrega a las asignaciones de eventos anteriores de este OB.
RET_VAL	OUT	Int	Código de condición de ejecución

Eventos de alarma de proceso

La CPU soporta los siguientes eventos de alarma de proceso:

- Eventos de flanco ascendente (todas las entradas digitales integradas en la CPU, más las entradas digitales de la Signal Board)
  - Un flanco ascendente ocurre cuando la entrada digital cambia de OFF a ON como reacción a una modificación de la señal de un aparato de campo conectado a la entrada.
- Eventos de flanco desscendente (todas las entradas digitales integradas en la CPU y toda entrada de la Signal Board)
  - Un flanco descendente ocurre cuando la entrada digital cambia de ON a OFF.
- Eventos en los que el valor actual del contador rápido (HSC) = valor de referencia (CV = RV) (HSC 1 a 6)
  - Una alarma CV = RV de un HSC se genera cuando el contaje actual cambia de un valor adyacente al valor que concuerda exactamente con un valor de referencia establecido previamente.
- Eventos de cambio de sentido del HSC (HSC 1 a 6)
  - Un evento de cambio de sentido ocurre cuando se detecta que el sentido de contaje del HSC cambia de ascendente a descendente, o viceversa.
- Eventos de reset externo del HSC (HSC 1 a 6)
  - Algunos modos del HSC permiten asignar una entrada digital como reset externo para poner a cero el valor de contaje del HSC. Un evento de reset externo del HSC ocurre cuando esta entrada cambia de OFF a ON.

Habilitar eventos de alarma de proceso en la configuración de dispositivos

Las alarmas de proceso deben habilitarse durante la configuración de dispositivos. La casilla de habilitación de eventos se debe activar en la configuración de eventos para un canal de entrada digital o un HSC si este evento debe asignarse durante la configuración o en runtime.

Opciones de las casillas de verificación en la configuración de dispositivos PLC:

- Entrada digital
  - Habilitar detección de flancos ascendentes
  - Habilitar detección de flancos descendentes
- Contador rápido (HSC)
  - Habilitar esta contador rápido para su uso
  - Generar alarma si el valor del contador es igual al valor de referencia
  - Generar alarma en caso de evento de reset externo
  - Generar alarma en caso de evento de cambio de sentido

Agregar OBs de alarma de proceso nuevos al programa de usuario

De forma predeterminada, ningún OB está asignado a un evento cuando éste se habilita por primera vez. Esto se indica mediante la etiqueta "<no conectado>" correspondiente a "Alarma de proceso:" en la configuración de dispositivos. Sólo los OBs de alarma de proceso pueden asignarse a un evento de alarma de proceso. Todos los OBs de alarma de proceso existentes aparecen en la lista desplegable "Alarma de proceso:". Si no se lista ningún OB, es preciso crear un OB de "Alarma de proceso" como se indica a continuación. En la rama "Bloques de programa" del árbol del proyecto:

1. Haga doble clic en "Agregar nuevo bloque", seleccione "Bloque de organización (OB)" y elija "Alarma de proceso".
2. Opcionalmente, puede cambiar el nombre del OB, elegir el lenguaje de programación (KOP o FUP) y seleccionar el número de bloque (cambiar a modo manual y seleccionar un número de bloque diferente del propuesto).
3. Edite el OB y agregue la reacción programada que debe ejecutarse cuando ocurra el evento. Es posible llamar FCs y FBs desde este OB, hasta una profundidad de anidamiento de cuatro niveles.

Parámetro OB_NR

Todos los nombres de OB de alarma de proceso existentes aparecen en la lista desplegable "Alarma de proceso:" de la configuración de dispositivos y en la lista desplegable OB_NR del parámetro ATTACH/DETACH.

Parámetro EVENT

Si está habilitado un evento de alarma de proceso, se le asigna un nombre predeterminado y unívoco. Este nombre se puede cambiar editando el campo de edición "Nombre de evento:", pero debe ser un nombre unívoco. Los nombres de eventos se convierten en nombres de variables en la tabla de variables "Constantes" y aparecen en la lista desplegable del parámetro EVENT en los cuadros de las instrucciones ATTACH y DETACH. El valor de la variable es un número interno utilizado para identificar el evento.

Funcionamiento general

Todo evento de hardware puede asignarse a un OB de alarma de proceso que se pondrá en cola de espera para ser ejecutado cuando ocurra el evento de alarma de proceso. El OB puede asignarse al evento durante la configuración o en runtime.

Es posible asignar o cancelar la asignación de un OB a un evento habilitado al realizar la configuración. Para asignar un OB a un evento durante la configuración, abra la lista desplegable "Alarma de proceso:" (haciendo clic en el botón de flecha abajo en el lado derecho) y seleccione un OB en la lista de OBs de alarma de proceso disponibles. Seleccione el nombre de OB deseado en esta lista, o bien elija "<no conectado>" para cancelar la asignación.

También es posible asignar o deshacer la asignación de un evento de alarma de proceso habilitado en runtime. Utilice las instrucciones ATTACH o DETACH en runtime (varias veces en caso necesario) para asignar o cancelar la asignación de un evento de alarma de proceso al OB respectivo. Si ningún OB está asignado actualmente (debido a que se ha seleccionado "<no conectado>" en la configuración de dispositivos o como resultado de la ejecución de la instrucción DETACH), se ignorará el evento de alarma de proceso habilitado.

Instrucción DETACH

La instrucción DETACH permite deshacer la asignación de uno o todos los eventos de un OB en particular. Si se especifica un EVENT, se cancelará la asignación sólo de este evento al OB_NR indicado. Todos los demás eventos asignados actualmente a este OB_NR permanecerán asignados. Si no se especifica ningún EVENT, se deshace la asignación de todos los eventos asignados actualmente al OB_NR.

Códigos de condición

RET_VAL (W#16#....)	Estado de ENO	Descripción
0000	1	Sin error
0001	0	No hay ninguna asignación que pueda deshacerse (sólo DETACH)
8090	0	El OB no existe
8091	0	Tipo de OB incorrecto
8093	0	El evento no existe

6.2.6.2 Instrucciones para iniciar y cancelar alarmas de retardo

El procesamiento de alarmas de retardo se puede iniciar y cancelar con las instrucciones SRT_DINT y CAN_DINT, respectivamente. Toda alarma de retardo es un evento único que ocurre al cabo del tiempo de retardo indicado. Si el evento de retardo se cancela antes de que transcurra el tiempo de retardo, no ocurrirá la alarma.



SRT_DINT inicia una alarma de retardo que llama un OB (bloque de organización) una vez transcurrido el tiempo de retardo especificado en el parámetro DTIME.



CAN_DINT cancela una alarma de retardo ya iniciada. El OB de alarma de retardo no se ejecuta en este caso.

Parámetros de SRT_DINT

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
OB_NR	IN	Int	Bloque de organización (OB) que debe ejecutarse tras un tiempo de retardo: Seleccione uno de los OBs de alarma de retardo creados utilizando la función "Agregar nuevo bloque" del árbol del proyecto. Haga doble clic en el campo de parámetro. A continuación, haga clic en el símbolo de ayuda para ver los OBs disponibles.
DTIME	IN	Time	Tiempo de retardo (1 hasta 60000 ms) Para crear tiempos de retardo más prolongados es posible utilizar p. ej. un contador dentro de un OB de alarma de retardo.
SIGN	IN	Word	El S7-1200 no lo utiliza. Se acepta cualquier valor.
RET_VAL	OUT	Int	Código de condición de ejecución

Parámetros de CAN_DINT

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
OB_NR	IN	Int	Identificador del OB de alarma de retardo. Es posible utilizar un número de OB o un nombre simbólico.
RET_VAL	OUT	Int	Código de condición de ejecución

Funcionamiento

La instrucción SRT_DINT especifica un tiempo de retardo, inicia el temporizador de retardo interno y asigna un OB de alarma de retardo al evento de timeout de retardo. Una vez transcurrido el tiempo de retardo especificado, se genera una alarma que dispara la ejecución del OB de alarma de retardo asociado. Una alarma de retardo iniciada puede cancelarse antes de que transcurra el tiempo de retardo especificado, ejecutando para ello la instrucción CAN_DINT. No puede haber más de cuatro eventos de alarma de retardo y de alarma cíclica activos.

Agregar OBs de alarma de retardo al proyecto

Los OBs de alarma de retardo son los únicos que pueden asignarse a las instrucciones SRT_DINT y CAN_DINT. Un proyecto nuevo no contiene aún OBs de alarma de retardo. Es preciso agregar OBs de alarma de retardo al proyecto. Para crear un OB de alarma de retardo, proceda del siguiente modo:

1. Haga doble clic en "Agregar nuevo bloque" en la rama "Bloques de programa" del árbol del proyecto, seleccione "Bloque de organización (OB)" y elija "Alarma de retardo".
2. Es posible cambiar el nombre del OB, así como seleccionar el lenguaje de programación y el número de bloque. Cambie al modo de numeración manual si desea asignar un número de bloque diferente del propuesto automáticamente.
3. Edite el OB de alarma de retardo y cree la reacción programada que debe ejecutarse cuando ocurra el evento de timeout de retardo. Es posible llamar FCs y FBs desde el OB de alarma de retardo, hasta una profundidad de anidamiento de cuatro niveles.
4. Los nuevos nombres de los OBs de alarma de retardo estarán disponibles al editar el parámetro OB_NR de las instrucciones SRT_DINT y CAN_DINT.

Códigos de condición

RET_VAL (W#16#...)	Descripción
0000	No ha ocurrido ningún error
8090	Parámetro OB_NR incorrecto
8091	Parámetro DTIME incorrecto
80A0	La alarma de retardo no se ha iniciado

6.2.6.3 Instrucciones para inhibir y habilitar el procesamiento de alarmas

Las instrucciones DIS_AIRT y EN_AIRT sirven para inhibir y habilitar el procesamiento de alarmas.



DIS_AIRT retarda el procesamiento de eventos de alarma nuevos. DIS_AIRT puede ejecutarse más de una vez en un OB. El sistema operativo cuenta las ejecuciones de DIS_AIRT. Cada ejecución permanece activa hasta que es cancelada específicamente por una instrucción EN_AIRT o hasta que se termina de procesar el OB actual.

Una vez habilitadas nuevamente, se procesan las alarmas que ocurrieron cuando estaba activa la instrucción DIS_AIRT, o bien se procesan tan pronto como se haya ejecutado el OB actual.



EN_AIRT habilita el procesamiento de eventos de alarma inhibidos anteriormente con la instrucción DIS_AIRT. Toda ejecución de DIS_AIRT debe ser cancelada por una ejecución de EN_AIRT. Por ejemplo, si el procesamiento de alarmas se ha inhibido cinco veces con cinco ejecuciones de DIS_AIRT, éstas deben cancelarse con cinco ejecuciones de EN_AIRT.

Las ejecuciones de EN_AIRT deben ocurrir en un mismo OB, o bien en una FC o FB llamado desde el mismo OB, antes de poder habilitar las alarmas nuevamente para este OB.

El parámetro RET_VAL indica el número de veces que se ha inhibido el procesamiento de alarmas. Éste es el número de ejecuciones de DIS_AIRT en la cola de espera. El procesamiento de alarmas sólo se puede habilitar nuevamente cuando el parámetro RET_VAL = 0.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
RET_VAL	OUT	Int	Número de retardos = número de ejecuciones de DIS_AIRT en la cola de espera.

6.2.7 Control PID



La instrucción "PID_Compact" ofrece un regulador PID con función de optimización automática para los modos automático y manual.

Encontrará más información acerca de la instrucción PID_Compact en la Ayuda en pantalla del TIA Portal.

6.2.8 Instrucciones de Motion Control

Las instrucciones de Motion Control utilizan un bloque de datos tecnológico asociado y el PTO (tren de impulsos) de la CPU para controlar el movimiento de un eje. Encontrará más información acerca de las instrucciones de Motion Control en la Ayuda en pantalla de STEP 7 Basic.

ATENCIÓN
La frecuencia de pulsos máxima de los generadores de impulsos de salida es 100 KHz para las salidas digitales de la CPU y 20 KHz para las de la Signal Board. Sin embargo, STEP 7 Basic no alerta cuando se configura un eje que, a una velocidad o frecuencia máximas, excede esta limitación de hardware. Ello podría ocasionar problemas en la aplicación. Por tanto, asegúrese de que no se exceda la frecuencia de pulsos máxima del hardware.



MC_Power habilita e inhibe un eje de control de movimiento.



MC_Reset resetea todos los errores de control de movimiento. Se acusan todos los errores de control de movimiento que pueden acusarse.



MC_Home establece la relación entre el programa de control del eje y el sistema de posicionamiento mecánico del eje.



MC_Halt cancela todos los procesos de movimiento y detiene el movimiento del eje. La posición de parada no está definida.



MC_MoveJog ejecuta el modo jog para fines de test y arranque.



MC_MoveAbsolute inicia el movimiento hacia una posición absoluta. La tarea finaliza cuando se alcanza la posición de destino.



MC_MoveRelative inicia un movimiento de posicionamiento relativo a la posición inicial.



MC_MoveVelocity hace que el eje se mueva a la velocidad indicada.

Nota

Los trenes de impulsos no pueden ser utilizados por otras instrucciones del programa de usuario

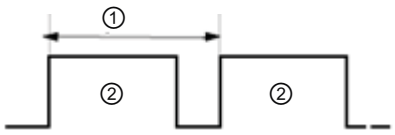
Si las salidas de la CPU o Signal Board se configuran como generadores de impulsos (para su utilización con la PWM o instrucciones de Motion Control básicas), las direcciones de las salidas correspondientes (Q0.0, Q0.1, Q4.0 y Q4.1) se eliminarán de la memoria Q y no podrán utilizarse para ningún otro fin en el programa de usuario. Si el programa de usuario escribe un valor en una salida utilizada como generador de impulsos, la CPU no escribirá ese valor en la salida física.

6.2.9 Instrucción "Impulso"

6.2.9.1 Instrucción CTRL_PWM

La instrucción CTRL_PWM (Controlar modulación del ancho de pulso) ofrece un tiempo de ciclo fijo con un ciclo de trabajo variable. La salida PWM se ejecuta continuamente tras haberse iniciado a la frecuencia indicada (tiempo de ciclo).

La duración de impulso varía según sea necesario para obtener el control deseado.



① Tiempo de ciclo
② Duración de impulso

La duración de impulso puede expresarse en centésimos del tiempo de ciclo (0 – 100), milésimos (0 – 1000), diezmilésimos (0 – 10000) o formato analógico S7. La duración de impulso puede variar entre 0 (sin impulso, siempre off) y escala completa (sin impulso, siempre on).

Puesto que la salida PWM puede variar entre 0 y escala completa, ofrece una salida digital que, en numerosos aspectos, es similar a una salida analógica. Por ejemplo, la salida PWM puede utilizarse para controlar la velocidad de un motor (desde "paro" hasta "a toda velocidad") o la posición de una válvula (desde "cerrada" hasta "totalmente abierta").

Hay dos generadores de impulsos disponibles para controlar las salidas de impulsos rápidos: PWM y PTO (tren de impulsos). Las instrucciones de Motion Control utilizan PTO. Cada generador de impulsos puede asignarse a PWM o PTO, pero no a ambos simultáneamente.

Los dos generadores de impulsos se mapean en las salidas digitales específicas como muestra la tabla siguiente. Es posible utilizar las salidas integradas de la CPU o las salidas opcionales de la Signal Board. La tabla siguiente muestra los números de las salidas (suponiendo que se utiliza la configuración predeterminada de las salidas). Si se ha modificado la numeración de las salidas, sus números serán los que se hayan asignado. Independientemente de ello, PTO1/PWM1 utiliza las dos primeras salidas digitales, en tanto que PTO2/PWM2 utiliza las dos salidas digitales siguientes, bien sea en la CPU o en la Signal Board acoplada. Tenga en cuenta que PWM sólo requiere una salida, mientras que PTO puede utilizar opcionalmente dos salidas por canal. Si una salida no se requiere para una función de impulsos, estará disponible para otros usos.

Descripción	Asignación de salidas predeterminada		
		Impulso	Sentido
PTO 1	Integrada en la CPU	Q0.0	Q0.1
	Signal Board	Q4.0	Q4.1
PWM 1	Integrada en la CPU	Q0.0	--
	Signal Board	Q4.0	--
PTO 2	Integrada en la CPU	Q0.2	Q0.3
	Signal Board	Q4.2	Q4.3
PWM 2	Integrada en la CPU	Q0.2	--
	Signal Board	Q4.2	--

Configurar un canal de impulsos para PWM

Para preparar la modulación de ancho de pulsos (PWM), configure primero un canal de impulsos en la configuración de dispositivos, seleccionando la CPU, luego el generador de impulsos (PTO/PWM) y elija PWM1 o PWM2. Habilite el generador de impulsos (casilla de verificación). Si está habilitado un generador de impulsos, se le asigna un nombre predeterminado y unívoco. Este nombre puede cambiarse editando el campo de edición "Nombre:", pero debe ser un nombre unívoco. Los nombres de los generadores de impulsos habilitados se convierten en variables en la tabla de variables "Constantes" y están disponibles para ser utilizados como parámetro PWM de la instrucción CTRL_PWM.

ATENCIÓN
La frecuencia de pulsos máxima de los generadores de impulsos de salida es 100 KHz para las salidas digitales de la CPU y 20 KHz para las de la Signal Board. Sin embargo, STEP 7 Basic no alerta cuando se configura un eje que, a una velocidad o frecuencia máximas, excede esta limitación de hardware. Ello podría ocasionar problemas en la aplicación. Por tanto, asegúrese de que no se exceda la frecuencia de pulsos máxima del hardware.

Es posible cambiar el nombre del generador de impulsos, agregar un comentario y asignar parámetros como se indica a continuación:

- Generador de impulsos utilizado: PWM o PTO (seleccione PWM)
- Fuente de salida: salidas integradas en la CPU o Signal Board
- Base de tiempo: milisegundos o microsegundos
- Formato de la duración de impulso:
  - Centésimos (0 a 100)
  - Milésimos (0 a 1000)
  - Diezmilésimos (0 a 10000)
  - Formato analógico S7 (0 a 27648)
- Tiempo de ciclo: Introduzca el valor del tiempo de ciclo. Este valor sólo se puede modificar en la "Configuración de dispositivos".
- Duración de impulso inicial: Introduzca la duración de impulso inicial. El valor de la duración de impulso puede modificarse en runtime.

Direcciones de salida



Dirección inicial: Introduzca la dirección de palabra Q en la que desea depositar el valor de la duración de impulso. La dirección predeterminada es QW1000 para PWM1 y QW1002 para PWM2. El valor de esta dirección controla el ancho del impulso y se inicializa al valor de la "Duración de impulso inicial:" indicado arriba cada vez que la CPU pasa de STOP a RUN. Este valor de palabra Q puede cambiarse en runtime para modificar la duración de impulso.

Parámetro	Tipo de parámetro	Tipo de datos	Valor inicial	Descripción
PWM	IN	Word	0	Identificador PWM: Los nombres de los generadores de impulsos habilitados se convierten en variables en la tabla de variables "Constantes" y están disponibles para ser utilizados como parámetro PWM.
ENABLE	IN	Bool		1= iniciar generador de impulsos 0 = parar generador de impulsos
BUSY	OUT	Bool	0	Función ocupada
STATUS	OUT	Word	0	Código de condición de ejecución

Funcionamiento

La instrucción CTRL_PWM utiliza un bloque de datos (DB) para almacenar la información de parámetros. Cuando se inserta una instrucción CTRL_PWM en el editor de programación, se asigna un DB. El usuario no modifica por separado los parámetros del bloque de datos, sino que la instrucción CTRL_PWM los controla.

Determine el generador de impulsos habilitado que desea utilizar, utilizando su nombre de variable para el parámetro PWM.

Cuando la entrada EN es TRUE (verdadera), la instrucción PWM_CTRL inicia o detiene el PWM identificado, según el valor de la entrada ENABLE. El valor de la dirección de salida de palabra Q asociada indica la duración de impulso.

Puesto que el S7-1200 procesa la petición cuando se ejecuta la instrucción CTRL_PWM, el parámetro BUSY siempre notificará FALSE (falso) en las CPUs S7-1200.

Si se detecta un error, ENO se pone a FALSE y el parámetro STATUS contiene un código de condición.

La duración de impulso se pone al valor inicial ajustado en la configuración de dispositivos cuando el PLC cambia por primera vez al estado operativo RUN. Los valores se escriben en la dirección de palabra Q especificada en la configuración de dispositivos ("Direcciones de salida" / "Dirección inicial:") de la forma requerida para cambiar la duración de impulso. Para escribir la duración de impulso deseada en la palabra Q apropiada se utiliza una instrucción de desplazamiento, conversión, matemática o un cuadro PID. El valor de palabra Q debe estar comprendido en el rango válido (porcentaje, milésimos, diezmilésimos o formato analógico S7).

Códigos de condición

Valor de STATUS	Descripción
0	Sin error
80A1	El identificador PWM no direcciona un PWM válido

Las E/S digitales asignadas a PWM y PTO no se pueden forzar permanentemente

Las E/S digitales utilizadas por los dispositivos con modulación del ancho de pulso (PWM) y tren de impulsos (PTO) se asignan durante la configuración de dispositivos. Si se asignan direcciones de E/S digitales a estos dispositivos, los valores de las direcciones de E/S asignadas no podrán ser modificados por la función de forzado permanente de la tabla de observación.

Los trenes de impulsos no pueden ser utilizados por otras instrucciones del programa de usuario

Si las salidas de la CPU o Signal Board se configuran como generadores de impulsos (para su utilización con la PWM o instrucciones de Motion Control básicas), las direcciones de las salidas correspondientes (Q0.0, Q0.1, Q4.0 y Q4.1) se eliminarán de la memoria Q y no podrán utilizarse para ningún otro fin en el programa de usuario. Si el programa de usuario escribe un valor en una salida utilizada como generador de impulsos, la CPU no escribirá ese valor en la salida física.

6.3 Instrucciones de la librería global

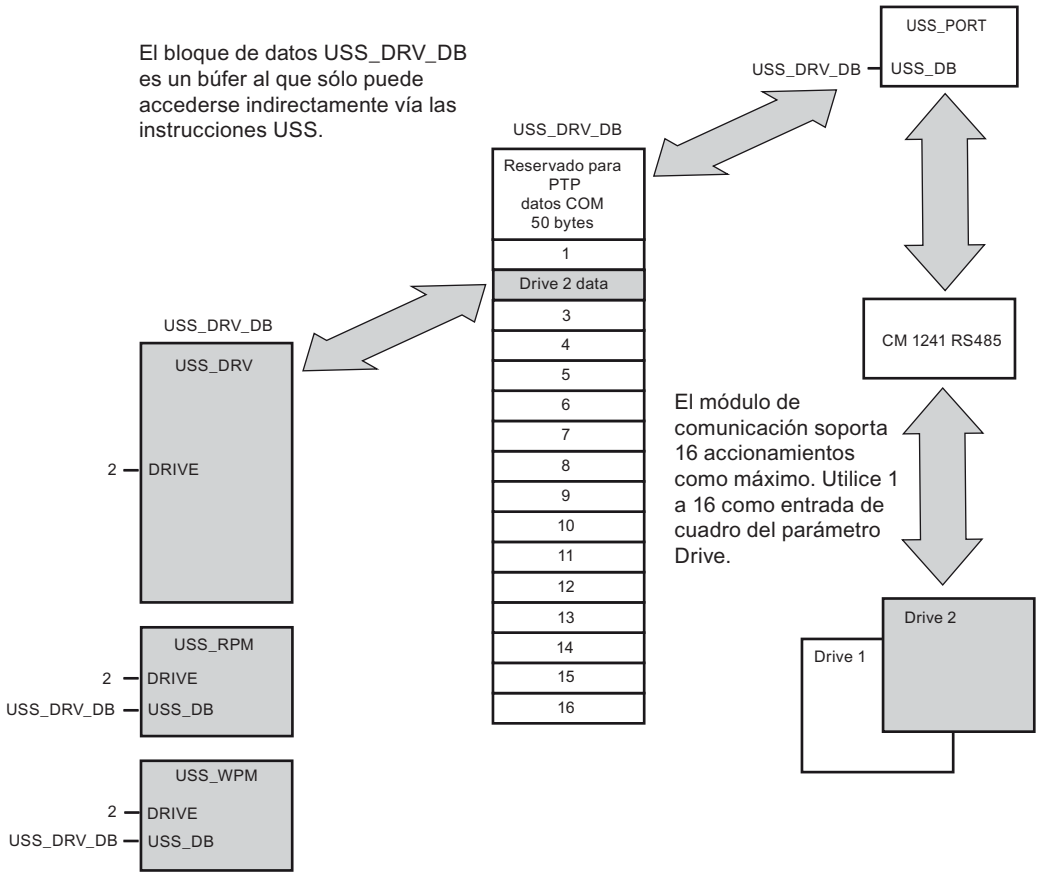
6.3.1 USS

La librería del protocolo USS permite controlar accionamientos Siemens que soportan el protocolo USS. Estas instrucciones incluyen funciones diseñadas especialmente para utilizar el protocolo USS para la comunicación con el accionamiento. El módulo CM 1241 RS485 se comunica con los accionamientos a través de puertos RS485. El accionamiento físico y los parámetros de lectura/escritura pueden controlarse con la librería USS.

6.3.1.1 Requisitos para utilizar el protocolo USS

La librería contiene 1 FB y 3 FCs que soportan el protocolo USS. Todo módulo de comunicación CM 1241 RS485 soporta como máximo 16 accionamientos.

Un solo bloque de datos instancia ofrece almacenamiento temporal y búferes para todos los accionamientos de la red USS conectados con cada módulo de comunicación PtP que se instale. Las funciones USS de estos accionamientos comparten la información en este bloque de datos.



Todos los accionamientos (máx. 16) conectados a un solo CM 1241 RS485 pertenecen a una misma red USS. Todos los accionamientos conectados a diferentes CM 1241 RS485 pertenecen a diferentes redes USS. Puesto que el S7-1200 soporta tres dispositivos CM 1241 RS485 como máximo, pueden existir tres redes USS como máximo, cada una de ellas con 16 accionamientos como máximo, con lo que se soporta un número total de 48 accionamientos USS.

Toda red USS se gestiona utilizando un bloque de datos unívoco (para tres redes USS que utilicen tres dispositivos CM 1241 RS485 se requieren tres bloques de datos). Todas las instrucciones asociadas a una red USS deben compartir dicho bloque de datos. Esto incluye todas las instrucciones USS_DRV, USS_PORT, USS_RPM y USS_WPM utilizadas para controlar todos los accionamientos de una red USS.

La instrucción USS_DRV es un bloque de función (FB). Cuando la instrucción USS_DRV se coloca en el editor, es preciso indicar qué DB debe asignarse a ese FB en el diálogo "Opciones de llamada". Si se trata de la primera instrucción USS_DRV de este programa para esta red USS, es posible aceptar la asignación de DB predeterminada (o cambiar el nombre a discreción). Entonces se crea el nuevo DB. No obstante, si no es la primera instrucción USS_DRV de este canal, es preciso utilizar la lista desplegable del diálogo "Opciones de llamada" para seleccionar el DB que fue asignado previamente a esta red USS.

Las instrucciones USS_PORT, USS_RPM y USS_WPM son funciones (FCs). A estas FCs no se les asigna ningún DB cuando se colocan en el editor. En cambio, es preciso asignar el DB adecuado a la entrada "USS_DB" de estas instrucciones (haciendo doble clic en el campo del parámetro y luego clic en el símbolo de ayuda para ver los DBs disponibles).

La función USS_PORT gestiona la comunicación real entre la CPU y los accionamientos vía el módulo de comunicación PtP. Cada llamada a esta función gestiona una comunicación con un accionamiento. El programa debe llamar esta función lo suficientemente rápido para impedir un timeout de comunicación por parte de los módulos. Esta función puede llamarse desde el OB principal o desde cualquier OB de alarma.

El bloque de función USS_DRV permite al programa acceder a un accionamiento determinado en la red USS. Sus entradas y salidas representan el estado y los controles del accionamiento. Si la red comprende 16 accionamientos, el programa debe tener como mínimo 16 llamadas de USS_DRV, es decir, una para cada accionamiento. Estos bloques deben llamarse a la velocidad necesaria para controlar las funciones del accionamiento.

El bloque de función USS_DRV sólo se puede llamar desde el OB principal.

⚠ PRECAUCIÓN

USS_DRV, USS_RPM y USS_WPM deben llamarse desde el OB principal. USS_PORT puede llamarse desde un OB cualquiera (generalmente desde un OB de alarma de retardo).

Si no se impide la interrupción de USS_PORT podrían producirse errores inesperados.

Las funciones USS_RPM y USS_WPM leen y escriben los parámetros operativos del accionamiento remoto. Estos parámetros controlan el funcionamiento interno del accionamiento. Estos parámetros se definen en el manual del accionamiento. El programa puede contener un número cualquiera de estas funciones. No obstante, sólo una petición de lectura o escritura puede estar activa en un accionamiento en un momento determinado. Las funciones USS_RPM y USS_WPM sólo pueden llamarse desde el OB principal.

Calcular el tiempo necesario para la comunicación con el accionamiento

La comunicación con el accionamiento es asíncrona al ciclo del S7-1200. Por lo general, pueden transcurrir varios ciclos del S7-1200 antes de que finalice una transacción de comunicación con un accionamiento.

El intervalo de USS_PORT es el tiempo necesario para una transacción con un accionamiento. La tabla siguiente muestra el intervalo de USS_PORT mínimo para cada velocidad de transferencia. Si la función USS_PORT se llama más frecuentemente que el intervalo de USS_PORT, no se incrementará el número de transacciones. El intervalo de timeout del accionamiento es el tiempo disponible para una transacción si, debido a errores de comunicación, se requieren 3 intentos para finalizar la transacción. De forma predeterminada, la librería del protocolo USS realiza automáticamente 2 reintentos por transacción.

Velocidad de transferencia	Intervalo mínimo calculado para la llamada de USS_PORT (milisegundos)	Intervalo de timeout por accionamiento (milisegundos)
1200	790	2370
2400	405	1215
4800	212.5	638
9600	116.3	349
19200	68.2	205
38400	44.1	133
57600	36.1	109
115200	28.1	85

6.3.1.2 Instrucción USS_DRV

La instrucción USS_DRV intercambia datos con el accionamiento creando peticiones e interpretando las respuestas del accionamiento. Para cada accionamiento debe utilizarse un bloque de función propio. No obstante, todas las funciones USS asociadas con una red USS y el módulo de comunicación PtP deben utilizar el mismo bloque de datos instancia. Es preciso crear el nombre del DB cuando se inserta la primera instrucción USS_DRV. Este DB creado al insertar la instrucción por primera vez se reutiliza posteriormente.

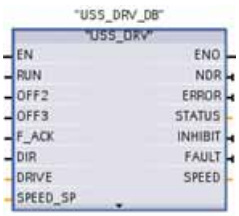
Cuando la instrucción USS_DRV se ejecuta por primera vez, el accionamiento que indica la dirección USS (parámetro DRIVE) se inicializa en el DB instancia. Después de esta inicialización, las ejecuciones siguientes de USS_PORT pueden iniciar la comunicación con el accionamiento en este número de accionamiento.

Si se modifica el número del accionamiento, el PLC debe cambiar de STOP a RUN con objeto de inicializar el DB instancia. Los parámetros de entrada se configuran en el búfer de mensajes USS TX y las salidas se leen de un búfer de respuesta válido "anterior" (si existe). Durante la ejecución de USS_DRV no se transmiten datos. Los accionamientos se comunican cuando se ejecuta USS_PORT. USS_DRV configura únicamente los mensajes que deben enviarse e interpreta los datos que puedan haberse recibido de una petición anterior.

El sentido de rotación del accionamiento se puede controlar utilizando la entrada DIR (BOOL) o el signo (positivo o negativo) con la entrada SPEED_SP (REAL). La tabla siguiente indica cómo interactúan estas entradas para determinar el sentido del accionamiento, suponiendo que el motor está cableado para la rotación adelante.

SPEED_SP	DIR	Sentido del accionamiento
Valor > 0	0	Atrás
Valor > 0	1	Adelante
Valor < 0	0	Adelante
Valor < 0	1	Atrás

KOP (vista predeterminada)



KOP (vista ampliada)



Haga clic en el lado inferior del cuadro para ampliarlo y ver todos los parámetros.

Los parámetros que aparecen atenuados son opcionales, por lo que no es necesario asignarlos.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
RUN	IN	Bool	Bit de arranque del accionamiento: Si es TRUE (verdadera), esta entrada habilita el accionamiento para que funcione a la velocidad predeterminada.
OFF2	IN	Bool	Bit de parada eléctrica: Si es FALSE (falso), este bit hace que el accionamiento marche en inercia hasta parar sin frenar.
OFF3	IN	Bool	Bit de parada rápida – Si es FALSE (falso), este bit ocasiona una parada rápida frenando el accionamiento, en vez de que marche en inercia hasta parar.
F_ACK	IN	Bool	Bit de acuse de fallo – Este bit se activa para resetear el bit de fallo en un accionamiento. Este bit se activa tras haberse solucionado el fallo para indicar al accionamiento que no tiene que seguir notificando el fallo anterior.
DIR	IN	Bool	Control de sentido del accionamiento – Este bit se activa para indicar que el sentido es hacia delante (SPEED_SP positiva).
DRIVE	IN	USInt	Dirección del accionamiento: Esta entrada es la dirección del accionamiento USS. El rango válido está comprendido entre el accionamiento 1 y el 16.
PZD_LEN	IN	USInt	Longitud de palabra – Este el número de palabras de los datos PZD. Los valores válidos son 2, 4, 6 u 8 palabras. El ajuste predeterminado es 2.
SPEED_SP	IN	Real	Consigna de velocidad – Esta es la velocidad del accionamiento expresada como porcentaje de la frecuencia configurada. Un valor positivo indica el sentido hacia delante (si DIR es TRUE).
CTRL3	IN	UInt	Palabra de control 3 – Valor escrito en un parámetro configurable por el usuario en el accionamiento. El usuario debe configurarlo en el accionamiento. Es un parámetro opcional.
CTRL4	IN	UInt	Palabra de control 4 – Valor escrito en un parámetro configurable por el usuario en el accionamiento. El usuario debe configurarlo en el accionamiento. Es un parámetro opcional.
CTRL5	IN	UInt	Palabra de control 5 – Valor escrito en un parámetro configurable por el usuario en el accionamiento. El usuario debe configurarlo en el accionamiento. Es un parámetro opcional.
CTRL6	IN	UInt	Palabra de control 6 – Valor escrito en un parámetro configurable por el usuario en el accionamiento. El usuario debe configurarlo en el accionamiento.
CTRL7	IN	UInt	Palabra de control 7 – Valor escrito en un parámetro configurable por el usuario en el accionamiento. El usuario debe configurarlo en el accionamiento. Es un parámetro opcional.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
CTRL8	IN	UInt	Palabra de control 8 – Valor escrito en un parámetro configurable por el usuario en el accionamiento. El usuario debe configurarlo en el accionamiento. Es un parámetro opcional.
NDR	OUT	Bool	Nuevos datos listos – Si es TRUE (verdadero), el bit indica que las salidas contienen datos de una petición de comunicación nueva.
ERROR	OUT	Bool	Ha ocurrido un error – Si es TRUE (verdadero), indica que ha ocurrido un error y la salida STATUS es válida. Todas las demás salidas se ponen a cero cuando ocurre un error. Los errores de comunicación se notifican sólo en las salidas ERROR y STATUS de la instrucción USS_PORT.
STATUS	OUT	UInt	Valor de estado de la petición. Indica el resultado del ciclo. Esta no es una palabra de estado devuelta del accionamiento.
RUN_EN	OUT	Bool	Funcionamiento habilitado – Este bit indica si está funcionando el accionamiento.
D_DIR	OUT	Bool	Sentido del accionamiento – Este bit indica si el accionamiento está funcionando hacia delante.
INHIBIT	OUT	Bool	Accionamiento inhibido – Este bit indica el estado del bit de inhibición del accionamiento.
FAULT	OUT	Bool	Fallo del accionamiento – Este bit indica que el accionamiento ha registrado un fallo. El usuario debe corregir el problema y activar el bit F_ACK para borrar este bit si está activado.
SPEED	OUT	REAL	Velocidad actual del accionamiento (valor escalado de la palabra de estado 2 del accionamiento) – Valor de velocidad del accionamiento expresado como porcentaje de la velocidad configurada.
STATUS1	OUT	UInt	Palabra de estado 1 del accionamiento – Este valor contiene bits de estado fijos de un accionamiento.
STATUS3	OUT	UInt	Palabra de estado 3 del accionamiento – Este valor contiene una palabra de estado configurable por el usuario en el accionamiento.
STATUS4	OUT	UInt	Palabra de estado 4 del accionamiento – Este valor contiene una palabra de estado configurable por el usuario en el accionamiento.
STATUS5	OUT	UInt	Palabra de estado 5 del accionamiento – Este valor contiene una palabra de estado configurable por el usuario en el accionamiento.
STATUS6	OUT	UInt	Palabra de estado 6 del accionamiento – Este valor contiene una palabra de estado configurable por el usuario en el accionamiento.
STATUS7	OUT	UInt	Palabra de estado 7 del accionamiento – Este valor contiene una palabra de estado configurable por el usuario en el accionamiento.
STATUS8	OUT	UInt	Palabra de estado 8 del accionamiento – Este valor contiene una palabra de estado configurable por el usuario en el accionamiento.

6.3.1.3 Instrucción USS_PORT

La instrucción USS_PORT gestiona la comunicación en la red USS. Generalmente, el programa contiene sólo una función USS_PORT por cada módulo de comunicación PtP. Cada llamada de esta función gestiona una transferencia hacia o desde un accionamiento. El programa debe ejecutar la función USS_PORT con suficiente frecuencia para impedir timeouts del accionamiento. Todas las funciones USS asociadas a una red USS y a un módulo de comunicación PtP deben utilizar el mismo bloque de datos instancia. USS_PORT se llama generalmente desde un OB de alarma de retardo para impedir timeouts del accionamiento y para que las actualizaciones de datos USS más recientes estén disponibles para las llamadas de USS_DRV.

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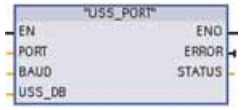

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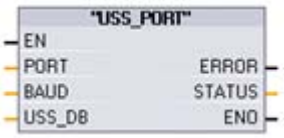

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
PORT	IN	Puerto	Módulo de comunicación PtP. Identificador: Constante que puede referenciarse en la ficha "Constantes" de la tabla de variables predeterminadas.
BAUD	IN	Dint	Velocidad de transferencia que debe usarse para la comunicación USS.
USS_DB	IN	Dint	Referencia al DB instancia que se crea e inicializa cuando se inserta una instrucción USS_DRV en el programa.
ERROR	OUT	Bool	Si es TRUE (verdadero), este parámetro indica que ha ocurrido un error y la salida STATUS es válida.
STATUS	OUT	UInt	Valor de estado de la petición. Indica el resultado del ciclo o inicialización. Encontrará más información acerca de algunos códigos de estado en la variable "USS_Extended_Error".

6.3.1.4 Instrucción USS_RPM

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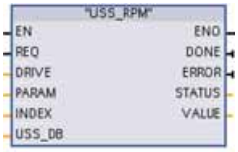

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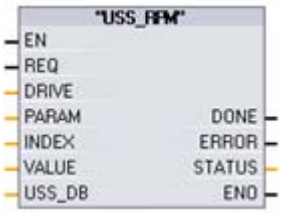

La instrucción USS_RPM lee un parámetro del accionamiento. Todas las funciones USS asociadas a una red USS y a un módulo de comunicación PtP deben utilizar el mismo bloque de datos. USS_RPM debe llamarse desde el OB principal.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Enviar petición: Si es TRUE (verdadero), indica que se desea una nueva petición de lectura. Esto se ignora si la petición para este parámetro ya está pendiente.
DRIVE	IN	USInt	Dirección del accionamiento: Esta entrada es la dirección del accionamiento USS. El rango válido está comprendido entre el accionamiento 1 y el 16.
PARAM	IN	UInt	Número de parámetro: Esta entrada designa el parámetro del accionamiento que se escribe. El rango de este parámetro está comprendido entre 0 y 2047. Para más información sobre cómo acceder a los parámetros que excedan este rango, consulte el manual del accionamiento.
INDEX	IN	UInt	Índice de parámetro: Esta entrada designa el índice de parámetro del accionamiento que se escribirá. Valor de 16 bits en el que el byte menos significativo es el valor de índice real en un rango de 0 a 255. El accionamiento también puede utilizar el byte más significativo. Este byte es específico del accionamiento. Para más información, consulte el manual del accionamiento.
USS_DB	IN	Variante	Referencia al DB instancia que se crea e inicializa cuando se inserta una instrucción USS_DRV en el programa.
VALUE	IN	Word, Int, UInt, DWord, DInt, UDInt, Real	Valor del parámetro que se ha leído y que es válido sólo si el bit DONE es TRUE (verdadero).
DONE	OUT	Bool	Listo: Si es TRUE (verdadero), indica que la salida VALUE contiene el valor del parámetro de lectura solicitado anteriormente. Este bit se activa cuando USS_DRV detecta los datos de respuesta de lectura del accionamiento. Este bit se desactiva en los casos siguientes: • Los datos de respuesta se solicitan mediante otra consulta USS_RPM O • En la segunda de las dos llamadas siguientes de USS_DRV

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
ERROR	OUT	Bool	Ha ocurrido un error – Si es TRUE (verdadero), indica que ha ocurrido un error y la salida STATUS es válida. Todas las demás salidas se ponen a cero cuando ocurre un error. Los errores de comunicación se notifican sólo en las salidas ERROR y STATUS de la instrucción USS_PORT.
STATUS	OUT	UInt	Este es el valor de estado de la petición. Indica el resultado de la petición de lectura. Encontrará más información acerca de algunos códigos de estado en la variable "USS_Extended_Error".

6.3.1.5 Instrucción USS_WPM

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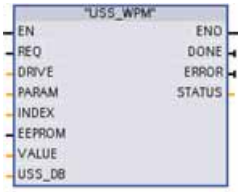

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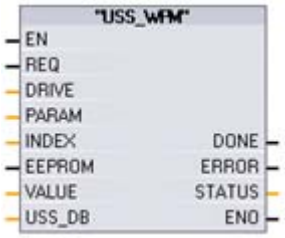

La instrucción USS_WPM modifica un parámetro en el accionamiento. Todas las funciones USS asociadas a una red USS y a un módulo de comunicación PtP deben utilizar el mismo bloque de datos. USS_WPM debe llamarse desde el OB principal.

Nota

Operaciones de escritura en EEPROM

No utilice excesivamente la operación de escritura permanente en EEPROM. Minimice el número de operaciones de escritura en EEPROM para prolongar la vida útil de la EEPROM.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Enviar petición: Si es TRUE (verdadero), indica que se desea una nueva petición de escritura. Esto se ignora si la petición para este parámetro ya está pendiente.
DRIVE	IN	USInt	Dirección del accionamiento: Esta entrada es la dirección del accionamiento USS. El rango válido está comprendido entre el accionamiento 1 y el 16.
PARAM	IN	UInt	Número de parámetro: Esta entrada designa el parámetro del accionamiento que se escribe. El rango de este parámetro está comprendido entre 0 y 2047. Para más información sobre cómo acceder a los parámetros que excedan este rango, consulte el manual del accionamiento.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
INDEX	IN	UInt	Índice de parámetro: Esta entrada designa el índice de parámetro del accionamiento que se escribirá. Valor de 16 bits en el que el byte menos significativo es el valor de índice real en un rango de 0 a 255. El accionamiento también puede utilizar el byte más significativo. Este byte es específico del accionamiento. Para más información, consulte el manual del accionamiento.
EEPROM	IN	Bool	Guardar en la EEPROM del accionamiento: Si es TRUE (verdadero), las operaciones de escritura en el parámetro del accionamiento se guardarán en la EEPROM de éste. Si es FALSE (falso), la operación de escritura será temporal por lo que no se conservará tras desconectar y volver a conectar la alimentación del accionamiento.
VALUE	IN	Word, Int, UInt, DWord, DInt, UDInt, Real	Valor del parámetro en el que se debe escribir. Debe ser válido en la transición de REQ.
USS_DB	IN	Variante	Referencia al DB instancia que se crea e inicializa cuando se inserta una instrucción USS_DRV en el programa.
DONE	OUT	Bool	Listo: Si es TRUE (verdadero), indica que la entrada VALUE se ha escrito en el accionamiento. Este bit se activa cuando USS_DRV detecta los datos de respuesta de escritura del accionamiento. Este bit se desactiva en los casos siguientes: La confirmación del accionamiento de que ha finalizado la operación de escritura se solicita mediante otra consulta USS_WPM, o bien en la segunda de las dos llamadas siguientes de USS_DRV.
ERROR	OUT	Bool	Ha ocurrido un error: Si es TRUE (verdadero), indica que ha ocurrido un error y la salida STATUS es válida. Todas las demás salidas se ponen a cero cuando ocurre un error. Los errores de comunicación se notifican sólo en las salidas ERROR y STATUS de la instrucción USS_PORT.
STATUS	OUT	UInt	Este es el valor de estado de la petición. Indica el resultado de la petición de escritura. Encontrará más información acerca de algunos códigos de estado en la variable "USS_Extended_Error".

6.3.1.6 Códigos de estado USS

La salida STATUS de las funciones USS devuelve los códigos de estado de estas funciones.

Valor de STATUS (W#16#....)	Descripción
0000	Sin error
8180	La longitud de la respuesta del accionamiento no concuerda con los caracteres recibidos del accionamiento. El número de accionamiento en el que ha ocurrido el error se devuelve en la variable "USS_Extended_Error". La descripción de los errores avanzados aparece a continuación de esta tabla.
8181	El parámetro VALUE no es un tipo de datos WORD, REAL o DWORD
8182	El usuario ha introducido un parámetro en formato WORD y se ha recibido una respuesta en formato DWORD o REAL del accionamiento
8183	El usuario ha introducido un parámetro en formato DWORD o REAL y se ha recibido una respuesta en formato WORD del accionamiento
8184	El telegrama de respuesta del accionamiento tiene una suma de verificación incorrecta. El número de accionamiento en el que ha ocurrido el error se devuelve en la variable "USS_Extended_Error". La descripción de los errores avanzados aparece a continuación de esta tabla.
8185	Dirección del accionamiento no válida (rango de direcciones válidas: 1-16)
8186	Consigna de velocidad fuera del rango válido (rango de SP de velocidad válido: -200% a 200%)
8187	Un número de accionamiento incorrecto ha respondido a la petición enviada. El número de accionamiento en el que ha ocurrido el error se devuelve en la variable "USS_Extended_Error". La descripción de los errores avanzados aparece a continuación de esta tabla.
8188	Se ha indicado una longitud de palabra PZD no permitida (rango válido = 2, 4, 6 u 8 palabras)
8189	Se ha indicado una velocidad de transferencia no permitida
818A	Otra petición para este accionamiento está utilizando el canal de petición de parámetros
818B	El accionamiento no ha respondido a las peticiones ni reintentos. El número de accionamiento en el que ha ocurrido el error se devuelve en la variable "USS_Extended_Error". La descripción de los errores avanzados aparece a continuación de esta tabla.
818C	El accionamiento ha devuelto un error avanzado relativo a la petición de parámetros. La descripción de los errores avanzados aparece a continuación de esta tabla.
818D	El accionamiento ha devuelto un error de acceso no permitido respecto a la petición de parámetros. Para más información sobre la limitación de acceso a los parámetros, consulte el manual del accionamiento.
818E	El accionamiento no se ha inicializado: Este código de error se devuelve a USS_RPM o USS_WPM si USS_DRV no se ha llamado por lo menos una vez para este accionamiento. De esta manera se impide que la inicialización de USS_DRV en el primer ciclo sobrescriba una petición pendiente de lectura o escritura de los parámetros, puesto que inicializa el accionamiento como entrada nueva. Para corregir este error, llame USS_DRV para este número de accionamiento.
80Ax-80Fx	Errores específicos que devuelven los FBs de comunicación PtP (punto a punto) llamados por la librería USS: La librería USS no modifica estos códigos de error que se definen en las descripciones de la instrucción PtP.

Códigos de error avanzados de los accionamientos USS

Los accionamientos USS soportan accesos de lectura y escritura a los parámetros internos de los accionamientos. Esta función permite controlar y configurar el accionamiento de forma remota. Las operaciones de acceso a los parámetros del accionamiento pueden fallar debido a errores tales como valores fuera de rango o peticiones no permitidas del modo actual del accionamiento. El accionamiento genera un código de error cuyo valor se devuelve en la variable "USS_Extended_Error" del DB instancia de USS_DRV. Este valor del código de error es válido únicamente para la última ejecución de una instrucción USS_RPM o USS_WPM. El código de error del accionamiento se deposita en la variable "USS_Extended_Error" si el código STATUS tiene el valor hexadecimal 818C. El valor del código de error de "USS_Extended_Error" depende del modelo de accionamiento. Los códigos de error avanzados para las operaciones de lectura y escritura de parámetros se describen en el manual del accionamiento.

6.3.2 MODBUS

6.3.2.1 MB_COMM_LOAD

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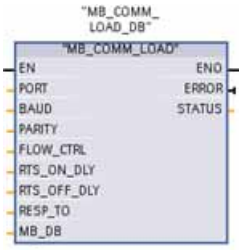

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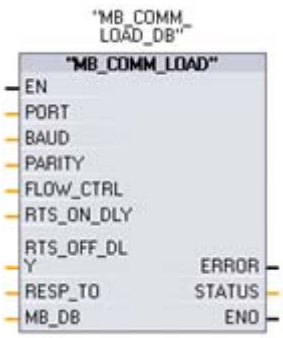

La instrucción MB_COMM_LOAD configura un puerto del módulo de comunicación punto a punto (PtP) CM 1241 RS485 o CM 1241 RS232 para la comunicación vía el protocolo Modbus RTU.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
PORT	IN	UInt	Identificador del puerto de comunicación: Tras haber instalado el módulo CM en la configuración de dispositivos, el identificador de puerto aparece en la lista desplegable disponible en la conexión PORT del cuadro. Esta constante también se puede referenciar en la ficha "Constantes" de la tabla de variables predeterminadas.
BAUD	IN	UDInt	Selección de la velocidad de transferencia: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200 Los demás valores no son válidos.
PARITY	IN	UInt	Selección de paridad: • 0 – Ninguna • 1 – Impar • 2 – Par

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
FLOW_CTRL	IN	UInt	Selección del control de flujo: • 0 – (ajuste predeterminado) Sin control de flujo • 1 – Control de flujo por hardware con RTS siempre ON (no es aplicable a los puertos RS485) • 2 - Control de flujo por hardware con RTS conmutado
RTS_ON_DLY	IN	UInt	Selección de retardo RTS ON: • 0 – (ajuste predeterminado) Sin retardo desde RTS ON hasta que se transmite el primer carácter del mensaje • 1 a 65535 – Retardo en milisegundos desde RTS ON hasta que se transmite el primer carácter del mensaje (no es aplicable a los puertos RS-485). Los retardos RTS se aplican siempre independientemente de la selección de FLOW_CTRL.
RTS_OFF_DLY	IN	UInt	Selección de retardo RTS OFF: • 0 – (ajuste predeterminado) Sin retardo desde el último carácter transmitido hasta que se desactiva RTS • 1 a 65535 – Retardo en milisegundos desde el último carácter transmitido hasta que se desactiva RTS (no es aplicable a los puertos RS-485). Los retardos RTS se aplican siempre independientemente de la selección de FLOW_CTRL.
RESP_TO	IN	UInt	Timeout de respuesta: Tiempo en milisegundos permitido por el MB_MASTER para la respuesta del esclavo. Si el esclavo no responde en este tiempo, MB_MASTER repetirá la petición o la finalizará con un error si se ha enviado el número de reintentos indicado. 5 ms a 65535 ms (valor predeterminado = 1000ms).
MB_DB	IN	Variante	Referencia al bloque de datos instancia que utilizan las instrucciones MB_MASTER o MB_SLAVE. Una vez insertadas las instrucciones MB_SLAVE o MB_MASTER en el programa, el identificador de DB aparece en la lista desplegable disponible en la conexión MB_DB del cuadro.
ERROR	OUT	Bool	Error: • 0 – No se ha detectado ningún error • 1 – Indica que se ha detectado un error y el código de error depositado en el parámetro STATUS es válido
STATUS	OUT	Word	Código de error de configuración del puerto

MB_COMM_LOAD se ejecuta para configurar un puerto para el protocolo Modbus RTU. Una vez configurado el puerto, la comunicación se realiza en el Modbus ejecutando las instrucciones MB_SLAVE o MB_MASTER.

MB_COMM_LOAD se debería llamar una vez para inicializar el puerto. Sólo es necesario volver a llamar MB_COMM_LOAD si debe cambiar uno de los parámetros de comunicación. Es posible llamar MB_COMM_LOAD desde un OB de arranque y ejecutar esta instrucción una vez, o bien utilizar la marca de sistema del primer ciclo con el fin de iniciar la llamada para ejecutarla una vez.

Es preciso utilizar una instancia de MB_COMM_LOAD para configurar cada uno de los puertos de todo módulo de comunicación utilizado para la comunicación Modbus. Un bloque de datos instancia MB_COMM_LOAD unívoco se debe asignar a cada puerto utilizado. La CPU S7-1200 está limitada a 3 módulos de comunicación.

Un bloque de datos instancia se asigna cuando las instrucciones MB_MASTER o MB_SLAVE se insertan en el programa. Este bloque de datos instancia se referencia cuando se especifica el parámetro MB_DB de la instrucción MB_COMM_LOAD.

Valor de STATUS (W#16#....)	Descripción
0000	Sin error
8180	ID de puerto no válida
8181	Velocidad de transferencia no válida
8182	Paridad no válida
8183	Valor de control de flujo no válido
8184	Valor de timeout de respuesta no válido
8185	Puntero MB_DB incorrecto al DB instancia para un MB_MASTER o MB_SLAVE

6.3.2.2 MB_MASTER

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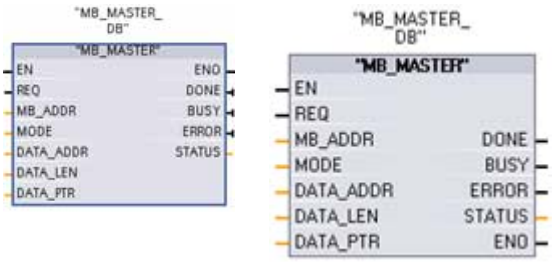


La instrucción MB_MASTER permite al programa comunicarse como maestro Modbus utilizando un puerto del módulo de comunicación punto a punto (PtP) CM 1241 RS485 o CM 1241 RS232. Es posible acceder a los datos de uno o más esclavos Modbus.

Un bloque de datos instancia se asigna cuando la instrucción MB_MASTER se inserta en el programa. El nombre de este bloque de datos instancia MB_MASTER se utiliza cuando se especifica el parámetro MB_DB de la instrucción MB_COMM_LOAD.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Entrada que indica la petición: • 0 – Ninguna petición • 1 – Petición de transmitir datos a uno o varios esclavos Modbus
MB_ADR	IN	USInt	Dirección de estación Modbus RTU: Rango de direcciones válidas: 0 a 247 El valor 0 está reservado para enviar un mensaje Broadcast a todos los esclavos Modbus. Los códigos de función Modbus 05, 06, 15 y 16 son los únicos que se soportan para el Broadcast.
MODE	IN	USInt	Selección de modo: Determina el tipo de petición: lectura, escritura o diagnóstico Los detalles se indican en la tabla de funciones Modbus que aparece más abajo.
DATA_ADDR	IN	UDInt	Dirección inicial en el esclavo: Determina la dirección inicial de los datos a los que debe accederse en el esclavo Modbus. Las direcciones válidas se indican en la tabla de funciones Modbus que aparece más abajo.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
DATA_LEN	IN	UInt	Longitud de datos: Determina el número de bits o palabras a las que debe accederse en esta petición. Las longitudes válidas se indican en la tabla de funciones Modbus que aparece más abajo.
DATA_PTR	IN	Variante	Puntero a los datos: Apunta a la dirección del DB en la CPU de los datos que se están escribiendo o leyendo. El tipo de DB no puede tener el atributo "Sólo con direccionamiento simbólico". Tenga en cuenta la indicación relativa a DATA_PTR que aparece más abajo.
NDR	OUT	Bool	Nuevos datos listos: • 0 – Transacción no finalizada • 1 – Indica que la instrucción MB_MASTER ha finalizado la transacción solicitada con el o los esclavos Modbus
BUSY	OUT	Bool	Ocupado: • 0 – No hay ninguna transacción MB_MASTER en curso • 1 – Transacción MB_MASTER en curso
ERROR	OUT	Bool	Error: • 0 – No se ha detectado ningún error • 1 – Indica que se ha detectado un error y el código de error depositado en el parámetro STATUS es válido
STATUS	OUT	Word	Código de condición de ejecución

Reglas de comunicación del maestro Modbus

- MB_COMM_LOAD debe ejecutarse para configurar un puerto antes de que la instrucción MB_MASTER pueda comunicarse con ese puerto.
- Si un puerto debe utilizarse para iniciar peticiones de maestro Modbus, MB_SLAVE no podrá utilizar este puerto. Una o más instancias de ejecución de MB_MASTER pueden utilizarse en este puerto.
- Las instrucciones Modbus no utilizan eventos de alarma de comunicación para controlar el proceso de comunicación. El programa debe consultar la instrucción MB_MASTER para transmitir y recibir condiciones completas.
- Si el programa opera un maestro Modbus y utiliza MB_MASTER para enviar una petición a un esclavo, MB_MASTER se deberá seguir ejecutando hasta que se devuelva la respuesta del esclavo.
- Todas las ejecuciones de MB_MASTER para un determinado puerto deben llamarse desde un mismo OB (o clase de prioridad de OB).

Parámetro REQ

Si el valor de REQ es FALSE (falso), no hay ninguna petición.

Si el valor de REQ es TRUE (verdadero), hay una petición de transmitir datos a uno o varios esclavos Modbus.

Esta entrada debe recibir suministro de un contacto disparado por un flanco ascendente en la primera llamada de la ejecución de MB_MASTER. El impulso disparado por flancos llama una vez la petición de transmisión. Todas las entradas se capturan y no se modifican durante una petición y respuesta disparadas por esta entrada.

MB_MASTER inicia internamente una máquina de estados para asegurarse de que ninguna otra MB_MASTER pueda lanzar una petición hasta que no haya finalizado esta petición.

Además, si la misma instancia de la llamada del FB MB_MASTER se ejecuta nuevamente con la entrada REQ = TRUE (verdadero) antes de que se finalice la petición, no se realizarán más transmisiones. No obstante, en cuanto finalice la petición, se lanzará otra petición si MB_MASTER se ejecuta con la entrada REQ puesta a TRUE.

Los parámetros DATA_ADDR y MODE seleccionan el tipo de función Modbus

DATA_ADDR (dirección Modbus inicial en el esclavo): Determina la dirección inicial de los datos a los que debe accederse en el esclavo Modbus.

MB_MASTER utiliza la entrada MODE en vez de una entrada de código de función. La combinación de MODE y el rango de direcciones Modbus determinan el código de función utilizado en el mensaje Modbus real. La tabla siguiente muestra la correlación entre el parámetro MODE de MBUS_MASTER, el código de función Modbus y el rango de direcciones Modbus.

Funciones Modbus de MB_MASTER				
	Parámetro de dirección DATA_ADDR Modbus	Tipo de dirección	Parámetro de longitud de datos DATA_LEN Modbus	Función Modbus
Modo 0				
Leer	00001 a 09999	Bits de salida	1 a 2000	01H
	10001 – 19999	Bits de entrada	1 a 2000	02H
	30001 - 39999	Registros de entrada	1 a 125	04H
	40001 a 49999 400001 a 465536 (ampliado)	Registros de retención	1 a 125	03H
Modo 1				
Escribir	00001 a 09999	Bits de salida	1 (bit individual)	05H
	40001 a 49999 400001 a 465536 (ampliado)	Registros de retención	1 (palabra individual)	06H
	00001 a 09999	Bits de salida	2 a 1968	15H
	40001 a 49999 400001 a 465536 (ampliado)	Registros de retención	2 a 123	16H

Funciones Modbus de MB_MASTER				
Modo 2				
Algunos esclavos Modbus no soportan la escritura en bits o palabras individuales con las funciones Modbus 05H y 06H. En estos casos, el modo 2 se utiliza para forzar la escritura en bits o palabras individuales utilizando las funciones Modbus 15H y 16H.				
Escribir	00001 a 09999	Bits de salida	1 a 1968	15H
	40001 a 49999 400001 a 465536 (ampliado)	Registros de retención	1 a 123	16H
Modo 11 • Lee una palabra contadora de eventos del esclavo Modbus referenciado como entrada a MB_ADDR • En un esclavo Modbus S7-1200 Siemens, este contador se incrementa cada vez que el esclavo recibe una petición de lectura o escritura (no Broadcast) válida de un maestro Modbus. • El valor devuelto se almacena en la dirección de palabra especificada como entrada a DATA_PTR. • Para este modo no se requiere un DATA_LEN válido.				
Modo 80 • Verifica el estado de comunicación del esclavo Modbus referenciado como entrada a MB_ADDR • El ajuste del bit de salida NDR de la instrucción MB_MASTER indica que el esclavo Modbus direccionado ha respondido con datos de respuesta apropiados. • No se devuelven datos al programa. • Para este modo no se requiere un DATA_LEN válido.				
Modo 81 • Inicializa el contador de eventos (devuelto por el modo 11) en el esclavo Modbus referenciado como entrada a MB_ADDR • El ajuste del bit de salida NDR de la instrucción MB_MASTER indica que el esclavo Modbus direccionado ha respondido con datos de respuesta apropiados. • No se devuelven datos al programa. • Para este modo no se requiere un DATA_LEN válido.				

Parámetro DATA_PTR

El parámetro DATA_PTR apunta a la dirección de origen local o de destino (la dirección de la CPU S7-1200) de los datos que se están escribiendo o leyendo, respectivamente. Si la instrucción MB_MASTER se utiliza para crear un maestro Modbus, es preciso crear un bloque de datos global que permita almacenar las operaciones de lectura y escritura en los esclavos Modbus.

Nota

El parámetro DATA_PTR debe referenciar un tipo de bloque de datos global que haya sido creado sin el atributo "Sólo con direccionamiento simbólico".

La casilla de verificación "Sólo con direccionamiento simbólico" se debe desactivar al agregar un bloque de datos nuevo para crear un tipo de DB global clásico.

Estructuras del bloque de datos para el parámetro DATA_PTR

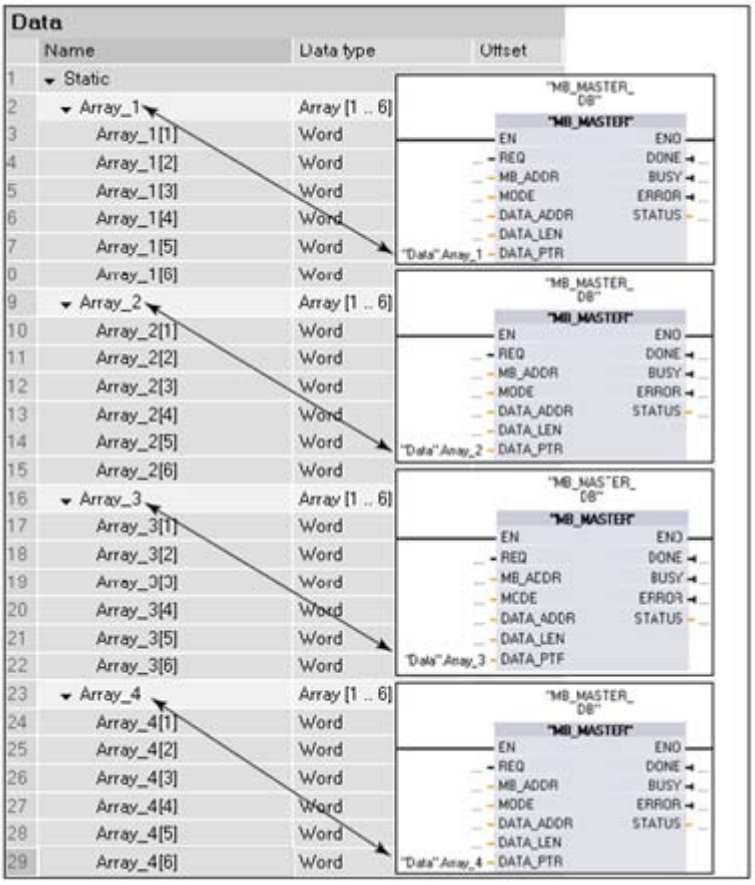
- Estos tipos de datos son válidos para la **lectura de palabras** de las direcciones Modbus 30001 a 39999, 40001 a 49999 y 400001 a 465536, así como para la **escritura de palabras** en las direcciones Modbus 40001 a 49999 y 400001 a 465536.
  - Matriz estándar de tipos de datos WORD, UINT o INT como se indica más abajo.
  - Estructura WORD, UINT o INT con nombres, en la que todo elemento tiene un nombre unívoco y un tipo de datos de 16 bits.
  - Estructura compleja con nombres, en la que todo elemento tiene un nombre unívoco y un tipo de datos de 16 ó 32 bits.
- Para la lectura y escritura de bits de las direcciones Modbus 00001 a 09999 y 10001 a 19999.
  - Matriz estándar de tipos de datos booleanos.
  - Estructura booleana con nombres que incluye variables booleanas con nombres unívocos.
- Aunque no es imprescindible, se recomienda que cada instrucción MB_MASTER tenga un área propia en un bloque de datos global. El motivo de esta recomendación es que la posibilidad de que se corrompan los datos aumenta si varias instrucciones MB_MASTER están leyendo y escribiendo en la misma área de un bloque de datos global.
- No es necesario que las áreas de datos de DATA_PTR se encuentren en el mismo bloque de datos global. Es posible crear un bloque de datos con varias áreas para lecturas Modbus, uno para escrituras Modbus, o bien uno para cada estación esclava.
- Todas las matrices del ejemplo que aparece abajo se crean como matrices en base 1 [1 … ##]. Estas matrices se podrían haber creado como matrices en base 0 [0 … ###] o una mezcla de base 0 y base 1.

Ejemplo de instrucciones MB_MASTER que acceden a bloques de datos globales DATA_PTR

El ejemplo del bloque de datos global que aparece abajo utiliza 4 matrices de 6 palabras con nombres unívocos para almacenar los datos de peticiones Modbus. Aunque las matrices de este ejemplo son de igual tamaño, pueden tener un tamaño cualquiera. Aquí se muestran con un mismo tamaño para simplificar los ejemplos. Cada matriz también se podría reemplazar por una estructura de datos que incluya nombres de variables más descriptivos y tipos de datos mixtos. La descripción del parámetro HR_DB de la instrucción MB_SLAVE instruction (Página 231) ofrece ejemplos de estructuras de datos alternativas.

Los ejemplos de la instrucción MB_MASTER que aparecen abajo muestran sólo el parámetro DATA_PTR y no los demás parámetros necesarios. El objetivo de estos ejemplos es mostrar cómo la instrucción MB_MASTER utiliza el bloque de datos DATA_PTR.

Las flechas indican cómo las distintas matrices se asocian a diferentes instrucciones MB_MASTER.



El primer elemento de cualquier matriz o estructura es siempre el primer origen o destino de cualquier actividad de lectura o escritura Modbus. Todos los casos descritos abajo se basan en el diagrama de arriba.

Caso 1: Si la primera instrucción MB_MASTER lee 3 palabras de datos de la dirección Modbus 40001 en cualquier esclavo Modbus válido, sucederá lo siguiente:

La palabra de la dirección 40001 se almacena en "Data".Array_1[1].

La palabra de la dirección 40002 se almacena en "Data".Array_1[2].
La palabra de la dirección 40003 se almacena en "Data".Array_1[3].

Caso 2: Si la primera instrucción MB_MASTER lee 4 palabras de datos de la dirección Modbus 40015 en cualquier esclavo Modbus válido, sucederá lo siguiente:
La palabra de la dirección 40015 se almacena en "Data".Array_1[1].
La palabra de la dirección 40016 se almacena en "Data".Array_1[2].
La palabra de la dirección 40017 se almacena en "Data".Array_1[3].
La palabra de la dirección 40018 se almacena en "Data".Array_1[4].

Caso 3: Si la segunda instrucción MB_MASTER lee 2 palabras de datos de la dirección Modbus 30033 en cualquier esclavo Modbus válido, sucederá lo siguiente:
La palabra de la dirección 30033 se almacena en "Data".Array_2[1].
La palabra de la dirección 30034 se almacena en "Data".Array_2[2].

Caso 4: Si la tercera instrucción MB_MASTER escribe 4 palabras de datos en la dirección Modbus 40050 en cualquier esclavo Modbus válido, sucederá lo siguiente:
La palabra de "Data".Array_3[1] se escribe en la dirección Modbus 40050.
La palabra de "Data".Array_3[2] se escribe en la dirección Modbus 40051.
La palabra de "Data".Array_3[3] se escribe en la dirección Modbus 40052.
La palabra de "Data".Array_3[4] se escribe en la dirección Modbus 40053.

Caso 5: Si la tercera instrucción MB_MASTER escribe 3 palabras de datos en la dirección Modbus 40001 en cualquier esclavo Modbus válido, sucederá lo siguiente:
La palabra de "Data".Array_3[1] se escribe en la dirección Modbus 40001.
La palabra de "Data".Array_3[2] se escribe en la dirección Modbus 40002.
La palabra de "Data".Array_3[3] se escribe en la dirección Modbus 40003.

Caso 6: Si la cuarta instrucción MB_MASTER utiliza el modo 11 (consultar contaje de mensajes válidos) de cualquier esclavo Modbus válido, sucederá lo siguiente:
La palabra contadora se almacena en "Data".Array_4[1].

Ejemplo de lectura y escritura de bits utilizando direcciones de palabra como entrada DATA_PTR

Tabla 6- 1 Caso 7: Leer 4 bits de salida comenzando en la dirección Modbus 00001

Valores de entrada de MB_MASTER			Valores del esclavo Modbus	
MB_ADDR	27 (ejemplo de esclavo)		**00001**	**ON**
MODE	0 (lectura)		**00002**	**ON**
DATA_ADDR	00001 (salidas)		**00003**	**OFF**
DATA_LEN	4		**00004**	**ON**
DATA_PTR	"Data".Array_4		00005	ON
			00006	OFF
			00007	ON
			00008	OFF

Valores de "Data".Array_4[1] después de la petición Modbus	
Byte MS (más significativo)	Byte LS (menos significativo)
xxxx-1011	xxxx-xxxx
x indica que no se modifican los datos	

Tabla 6- 2 Caso 8: Leer 12 bits de salida comenzando en la dirección Modbus 00003

Valores de entrada de MB_MASTER			Valores del esclavo Modbus				
MB_ADDR	27 (ejemplo de esclavo)		00001	ON		**00010**	**ON**
MODE	0 (lectura)		00002	ON		**00011**	**OFF**
DATA_ADDR	00003 (salidas)		**00003**	**OFF**		**00012**	**OFF**
DATA_LEN	12		**00004**	**ON**		**00013**	**ON**
DATA_PTR	"Data".Array_4		**00005**	**ON**		**00014**	**OFF**
			00006	**OFF**		00015	ON
			00007	**ON**		00016	ON
			00008	**ON**		00017	OFF
			00009	**OFF**		00018	ON

Valores de "Data".Array_4[1] después de la petición Modbus	
Byte MS	Byte LS
1011-0110	xxxx-0100-
x indica que no se modifican los datos	

Tabla 6- 3 Caso 9: Escribir 5 bits de salida comenzando en la dirección Modbus 00001

Valores de entrada de MB_MASTER			**Salidas del esclavo (antes)**			**Salidas del esclavo (después)**
MB_ADDR	27 (ejemplo de esclavo)		**00001**	**ON**		**OFF**
MODE	1 (escritura)		**00002**	**ON**		ON
DATA_ADDR	00001 (salidas)		**00003**	**OFF**		ON
DATA_LEN	5		**00004**	**ON**		**OFF**
DATA_PTR	"Data".Array_4		**00005**	**ON**		ON
			00006	OFF		No se modifican
			00007	ON		No se modifican
			00008	ON		No se modifican
			00009	OFF		No se modifican

Valores de "Data".Array_4[1] para la petición de escritura Modbus	
Byte MS	Byte LS
xxx1-0110	xxxxx-xxxx
x indica que los datos no se utilizan en la petición Modbus	

Tabla 6- 4 Caso 10: Leer 22 bits de salida comenzando en la dirección Modbus 00003

Valores de entrada de MB_MASTER			**Valores del esclavo Modbus**				
MB_ADDR	27 (ejemplo de esclavo)		00001	ON		**00014**	**ON**
MODE	0 (lectura)		00002	ON		**00015**	**OFF**
DATA_ADDR	00003 (salidas)		**00003**	**OFF**		**00016**	**ON**
DATA_LEN	22		**00004**	**ON**		**00017**	**ON**
DATA_PTR	"Data".Array_4		**00005**	**ON**		**00018**	**OFF**
			00006	**OFF**		**00019**	**ON**
			00007	**ON**		**00020**	**ON**
			00008	**ON**		**00021**	**OFF**
			00009	**ON**		**00022**	**ON**
			00010	**OFF**		**00023**	**ON**
			00011	**OFF**		**00024**	**OFF**
			00012	**ON**		00025	OFF
			00013	**OFF**		00026	ON

Valores de "Data".Array_4[1] después de la petición Modbus	
Byte MS	Byte LS
0111-0110	0110-1010

Valores de "Data".Array_4[2] después de la petición Modbus	
Byte MS	Byte LS
xx01-1011	xxxx-xxxx
x indica que no se modifican los datos	

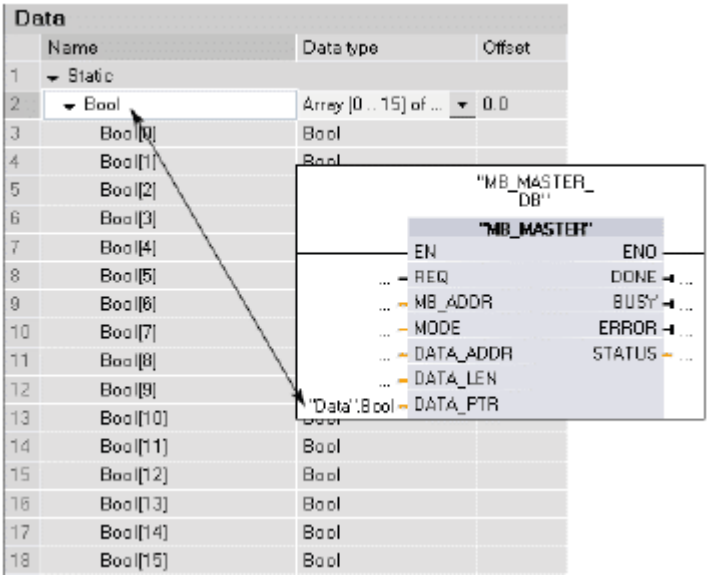
Ejemplo de lectura y escritura de bits utilizando direcciones BOOL como entrada DATA_PTR

Aunque las operaciones de lectura y escritura Modbus en direcciones de bit pueden gestionarse utilizando direcciones de palabra, también es posible configurar las áreas DATA_PTR como tipos de datos booleanos, estructuras o matrices con el fin de ofrecer una correlación uno a uno directa para el primer bit que se lee o escribe utilizando una instrucción MB_MASTER.

Si se utilizan estructuras o matrices booleanas, se recomienda que el tamaño de datos sea un múltiplo de 8 bits (en límites de bytes). Por ejemplo, si se crea una matriz booleana de 10 bits, el software STEP 7 Basic asignará 16 bits (2 bytes) del bloque de datos global para los 10 bits. Dentro del bloque de datos, estos bits se guardarían como byte1 [xxxx xxxx] byte2 [---- --xx], donde x indica las ubicaciones de datos accesibles e – indica las ubicaciones inaccesibles. Aunque se permiten peticiones Modbus con una longitud máxima de 16 bits, los 6 bits superiores se dispondrían en posiciones de memoria del byte 2 no referenciadas y a las que no puede acceder el programa.

Las áreas booleanas pueden crearse como matriz de valores booleanos o estructura de variables booleanas. Ambos métodos funcionan de manera idéntica y se diferencian sólo en la forma como se crean y acceden en el programa.

La siguiente vista del editor de bloques de datos globales muestra una matriz individual de 16 valores booleanos creados en base 0. Esta matriz también se podría haber creado como matriz en base 1. La flecha muestra cómo esta matriz se asocia con una instrucción MB_MASTER.



Los casos 11 y 12 muestran la correlación de las direcciones Modbus con las direcciones de matrices booleanas.

Tabla 6- 5 Caso 11: Escribir 5 bits de salida comenzando en la dirección Modbus 00001

Valores de entrada de MB_MASTER			**Salidas del esclavo (antes)**		**Datos de DATA_PTR**	**Salidas del esclavo (después)**
MB_ADDR	27 (ejemplo de esclavo)		00001	ON	"Data".Bool[0]=FALSE	OFF
MODE	1 (escritura)		00002	ON	"Data".Bool[1]=TRUE	ON
DATA_ADDR	00001 (salidas)		00003	OFF	"Data".Bool[2]=TRUE	ON
DATA_LEN	5		00004	ON	"Data".Bool[3]-FALSE	OFF
DATA_PTR	"Data".Bool		00005	ON	"Data".Bool[4]=FALSE	OFF
			00006	OFF		No se modifican
			00007	ON		No se modifican
			00008	OFF		No se modifican

Tabla 6- 6 Caso 12: Leer 15 bits de salida comenzando en la dirección Modbus 00004

Valores de entrada de MB_MASTER			**Valor del esclavo Modbus**		**Datos de DATA_PTR (después)**
MB_ADDR	27 (ejemplo de esclavo)		00001	ON	
MODE	0 (lectura)		00002	ON	
DATA_ADDR	00003 (salidas)		**00003**	**OFF**	"Data".Bool[0]=FALSE
DATA_LEN	15		**00004**	**ON**	"Data".Bool[1]=TRUE
DATA_PTR	"Data".Bool		**00005**	**ON**	"Data".Bool[2]=TRUE
			00006	**OFF**	"Data".Bool[3]-FALSE
			00007	**ON**	Data".Bool[4]=TRUE
			00008	**ON**	Data".Bool[5]=TRUE
			00009	**ON**	Data".Bool[6]=TRUE
			00010	**OFF**	Data".Bool[7]=FALSE
			00011	**OFF**	Data".Bool[8]=FALSE
			00012	**ON**	Data".Bool[9]=TRUE
			00013	**OFF**	Data".Bool[10]=FALSE
			00014	**ON**	Data".Bool[11]=TRUE
			00015	**OFF**	Data".Bool[12]=FALSE
			00016	**ON**	Data".Bool[13]=TRUE
			00017	**ON**	Data".Bool[14]=TRUE
			00018	OFF	
			00019	ON	

Códigos de condición

Valor de STATUS (W#16#....)	Descripción
0000	Sin error
80C8	El timeout de respuesta indicado (consulte RCVTIME o MSGTIME) es 0.
80D1	El receptor ha lanzado una petición de control de flujo para suspender una transmisión activa y no ha habilitado nuevamente la transmisión en el tiempo de espera indicado. Este error también se genera durante el control de flujo por hardware cuando el receptor no confirma CTS en el tiempo de espera indicado.
80D2	La petición de transmisión se ha cancelado porque no se recibe ninguna señal DSR del DCE.
80E0	El mensaje se ha terminado porque el búfer de recepción está lleno.
80E1	El mensaje se ha terminado debido a un error de paridad.
80E2	El mensaje se ha terminado debido a un error de trama.
80E3	El mensaje se ha terminado debido a un error de desbordamiento.
80E4	El mensaje se ha terminado debido a que la longitud especificada excede el tamaño del búfer total.
8180	ID de puerto no válida
8186	Dirección de estación Modbus no válida
8188	Valor de MODE no válido o modo de escritura para leer sólo área de direcciones del esclavo
8189	Valor de dirección de datos no válido
818A	Valor de longitud de datos no válido
818B	• Puntero no válido al origen/destino de datos local: tamaño incorrecto
818C	Puntero a un tipo de DB de tipo seguro DATA_PTR (debe ser un tipo de DB clásico)
8200	El puerto está ocupado porque está procesando una petición de transmisión

6.3.2.3 MB_SLAVE

La instrucción MB_SLAVE permite al programa comunicarse como esclavo Modbus utilizando un puerto del módulo de comunicación punto a punto (PtP) CM 1241 RS485 o CM 1241 RS232. Un maestro Modbus RTU puede lanzar una petición y el programa responde ejecutando la instrucción MB_SLAVE.

Es preciso asignar un bloque de datos instancia unívoco al insertar la instrucción MB_SLAVE en el programa. El nombre de este bloque de datos instancia MB_SLAVE se utiliza cuando se especifica el parámetro MB_DB de la instrucción MB_COMM_LOAD.

Los códigos de las funciones de comunicación Modbus (1, 2, 4, 5 y 15) pueden leer y escribir bits y palabras directamente en la memoria imagen de proceso de las entradas y salidas del PLC. La tabla siguiente muestra el mapeo de las direcciones Modbus en la memoria imagen de proceso de la CPU.

Funciones Modbus de MB_SLAVE						S7-1200	
Códigos	Función	Área de datos	Rango de direcciones			Área de datos	Dirección de la CPU
01	Leer bits	Salida	1	a	8192	Memoria imagen de proceso de las salidas	Q0.0 a Q1023.7
02	Leer bits	Entrada	10001	a	18192	Memoria imagen de proceso de las entradas	I0.0 a I1023.7
04	Leer palabras	Entrada	30001	a	30512	Memoria imagen de proceso de las entradas	IW0 a IW1022
05	Escribir bit	Salida	1	a	8192	Memoria imagen de proceso de las salidas	Q0.0 a Q1023.7
15	Escribir bits	Salida	1	a	8192	Memoria imagen de proceso de las salidas	Q0.0 a Q1023.7

Los códigos de las funciones de comunicación Modbus (3, 6, 16) utilizan un bloque de datos de registro de retención Modbus propio y unívoco que debe crearse antes de poder especificar el parámetro MB_HOLD_REG de la instrucción MB_SLAVE. La tabla siguiente muestra el mapeo del registro de retención Modbus en la dirección DB MB_HOLD_REG del PLC.

Funciones Modbus de MB_SLAVE				S7-1200	
Códigos	Función	Área de datos	Rango de direcciones	Área de datos DB de la CPU	Dirección DB de la CPU
03	Leer palabras	Registro de retención	40001 a 49999	MB_HOLD_REG	Palabras 1 a 9999
			400001 a 465535		Palabras 1 a 65535
06	Escribir palabra	Registro de retención	40001 a 49999	MB_HOLD_REG	Palabras 1 a 9999
			400001 a 465535		Palabras 1 a 65535
16	Escribir palabras	Registro de retención	40001 a 49999	MB_HOLD_REG	Palabras 1 a 9999
			400001 a 465535		Palabras 1 a 65535

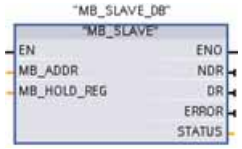
La tabla siguiente muestra las funciones de diagnóstico Modbus soportadas.

Funciones de diagnóstico Modbus de MB_SLAVE en el S7-1200		
Códigos	Subfunción	Descripción
08	0000H	Devolver datos de consulta del test de eco: La instrucción MB_SLAVE responde al maestro Modbus con una palabra de datos que se están recibiendo datos.
08	000AH	Borrar contador de eventos de comunicación: La instrucción MB_SLAVE borra el contador de eventos de comunicación utilizado para la función Modbus 11.
11		Consultar contador de eventos de comunicación: La instrucción MB_SLAVE utiliza un contador de eventos de comunicación interno para registrar el número de peticiones de lectura y escritura Modbus correctas que se envían al esclavo Modbus. El contador no se incrementa con las funciones 8 ni 11, ni tampoco con peticiones Broadcast. Tampoco se incrementa con peticiones que resulten en un error de comunicación (p. ej. errores de paridad o CRC).

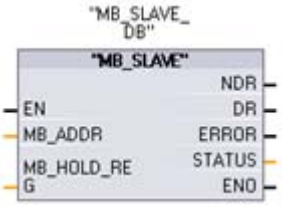
La instrucción MB_SLAVE soporta peticiones de escritura Broadcast de cualquier maestro Modbus, mientras que la petición sea para acceder a direcciones válidas.

Independientemente de la validez de una petición, la instrucción MB_SLAVE no responde a un maestro Modbus como resultado de una petición Broadcast.

KOP



FUP



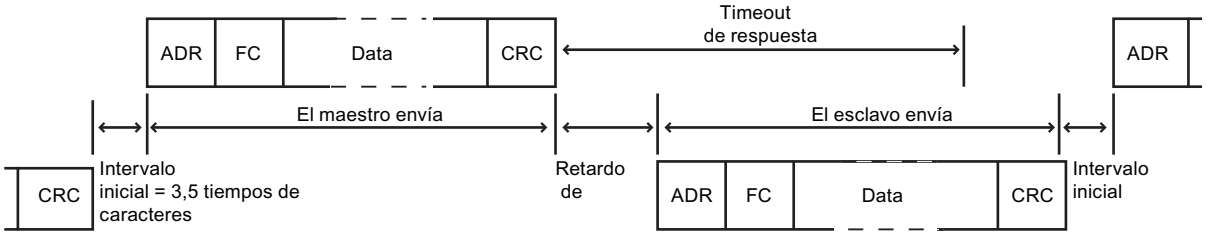
Parámetro	Tipo de parámetro	Tipo de datos	Descripción
MB_ADDR	IN	USINT	Dirección Modbus RTU (1 a 247): Dirección de estación del esclavo Modbus.
MB_HOLD_REG	IN	VARIANT	Puntero al DB del registro de retención Modbus. El DB del registro de retención debe ser un DB global clásico. Consulte la nota relativa a MB_HOLD_REG más abajo.
NDR	OUT	BOOL	Nuevos datos listos: • 0 – No hay datos nuevos • 1 – Indica que el maestro Modbus ha escrito datos nuevos
DR	OUT	BOOL	Lectura de datos: • 0 – No se han leído datos • 1 – Indica que el maestro Modbus ha leído datos
ERROR	OUT	BOOL	Error: • 0 – No se ha detectado ningún error • 1 – Indica que se ha detectado un error y el código de error depositado en el parámetro STATUS es válido.
STATUS	OUT	WORD	Código de error

Reglas de comunicación del esclavo Modbus

- MB_COMM_LOAD debe ejecutarse para configurar un puerto antes de que la instrucción MB_SLAVE pueda comunicarse con ese puerto.
- Si un puerto debe responder como esclavo a un maestro Modbus, MB_MASTER no podrá utilizar este puerto. Sólo se puede utilizar una instancia de MB_SLAVE en un determinado puerto.
- Las instrucciones Modbus no utilizan eventos de alarma de comunicación para controlar el proceso de comunicación. El programa debe controlar el proceso de comunicación consultando la instrucción MB_SLAVE para comprobar si se han finalizado las operaciones de transmisión y recepción.
- La instrucción MB_SLAVE debe ejecutarse periódicamente a una frecuencia que permita responder sin demora a las peticiones entrantes de un maestro Modbus.
- MB_SLAVE se debería llamar en cada ciclo desde un OB de ciclo.

Funcionamiento

MB_SLAVE debe ejecutarse periódicamente para recibir todas las peticiones del maestro Modbus y responder según sea necesario. La frecuencia de ejecución de MB_SLAVE depende del periodo de timeout de respuesta del maestro Modbus. Esto se ilustra en el diagrama siguiente.



El periodo de timeout de respuesta es el tiempo que un maestro Modbus espera hasta el inicio de la respuesta de un esclavo Modbus. Este periodo no está definido en el protocolo Modbus, sino que es un parámetro de todo maestro Modbus. La frecuencia de ejecución (es decir, el tiempo que transcurre entre dos ejecuciones) de MB_SLAVE debe basarse en los parámetros particulares del maestro Modbus. Como mínimo, MB_SLAVE debería ejecutarse dos veces en el periodo de timeout de respuesta del maestro Modbus.

Ejemplos del parámetro MB_HOLD_REG

MB_HOLD_REG es un puntero al bloque de datos del registro de retención Modbus. Este DB se utiliza para retener valores de datos a los que puede acceder un maestro Modbus (con operaciones de lectura o escritura). Es preciso crear el bloque de datos y asignar la estructura del tipo de datos que se debe leer y escribir, antes de poder utilizarlo con la instrucción MB_SLAVE.

Nota

El bloque de datos del registro de retención Modbus debe referenciar un tipo de bloque de datos global que haya sido creado sin el atributo "Sólo con direccionamiento simbólico".

La casilla de verificación "Sólo con direccionamiento simbólico" se debe desactivar al agregar un bloque de datos nuevo para crear un tipo de DB global clásico.

Los registros de retención pueden utilizar las siguientes estructuras de datos DB:

- Matriz estándar de palabras
- Estructura de palabras con nombres
- Estructura compleja con nombres

Los siguientes ejemplos de programación muestran cómo utilizar el parámetro MB_HOLD_REG para gestionar estas estructuras de datos DB.

Ejemplo 1 - Matriz estándar de palabras

Este registro de retención de ejemplo es una matriz de palabras. Las asignaciones de tipos de datos pueden cambiarse a otros tipos en formato de palabra (INT y UINT).

Ventajas:

- Este tipo de estructura del registro de retención puede crearse muy rápida y fácilmente.
- La lógica del programa para acceder a un elemento de datos se simplifica.
-

Desventajas:

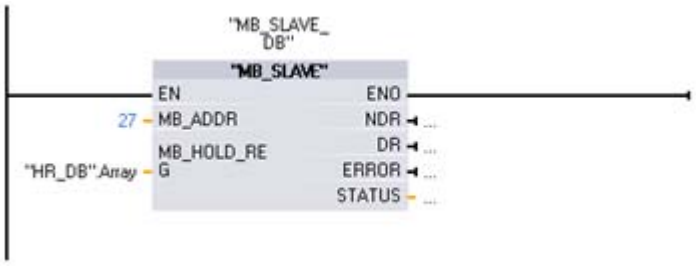
- Aunque todo elemento de matriz puede referenciarse programáticamente según los nombres simbólicos ("HR_DB"."Array"[1] hasta "HR_DB"."Array"[10]), los nombres no describen la función interna de los datos.
- La matriz sólo puede constar de un tipo de datos. Es posible que sea necesario convertir los tipos en un programa de usuario con control de tipo estricto.

Una matriz de palabras se visualiza de la manera siguiente en el editor de bloques de datos.

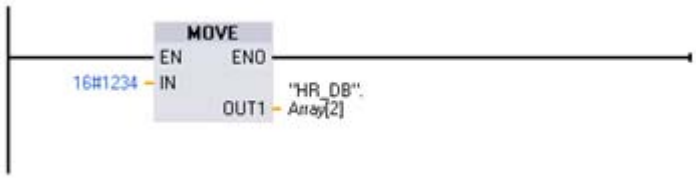
HR_DB

	Name	Data type	Offset	Default value	Initial value	Retain	Comment
1	Static						
2	Array	Array [1..10] of W...	0.0				40001 to 40010
3	Array[1]	Word		W#16#0000	W#16#0000		
4	Array[2]	Word		W#16#0000	W#16#0000		
5	Array[3]	Word		W#16#0000	W#16#0000		
6	Array[4]	Word		W#16#0000	W#16#0000		
7	Array[5]	Word		W#16#0000	W#16#0000		
8	Array[6]	Word		W#16#0000	W#16#0000		
9	Array[7]	Word		W#16#0000	W#16#0000		
10	Array[8]	Word		W#16#0000	W#16#0000		
11	Array[9]	Word		W#16#0000	W#16#0000		
12	Array[10]	Word		W#16#0000	W#16#0000		

La figura siguiente muestra cómo la matriz se asignaría a la entrada MB_HOLD_REG de una instrucción MB_SLAVE.



A todo elemento de la matriz se puede acceder con su nombre simbólico, como se muestra a continuación. En este ejemplo, un valor nuevo se desplaza al segundo elemento de la matriz que corresponde a la dirección Modbus 40002.



Cada una de las palabras de la matriz, según lo definido en el bloque de datos, suministra a la instrucción MB_SLAVE direcciones del registro de retención Modbus. En esta instancia - puesto que la matriz contiene únicamente 10 elementos - hay sólo 10 direcciones del registro de retención Modbus que puede utilizar esta instrucción MB_SLAVE y a las que puede acceder el maestro Modbus.

La correlación entre los nombres de elementos de la matriz y las direcciones Modbus se indica abajo.

"HR_DB".Array[1]	Dirección Modbus 40001
" HR_DB ". Array[2]	Dirección Modbus 40002
" HR_DB ". Array[3]	Dirección Modbus 40003
...	...
" HR_DB ". Array[9]	Dirección Modbus 40009
" HR_DB ".Array [10]	Dirección Modbus 40010

Ejemplo 2 - Estructura de palabras con nombres

Este registro de retención de ejemplo es una serie de palabras con nombres simbólicos descriptivos.

Ventajas:

- Todo elemento de la estructura tiene un nombre descriptivo con un tipo de datos asignado.

Desventajas:

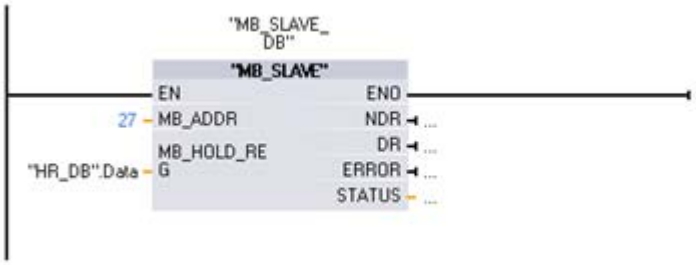
- Para crear este tipo de estructura se requiere más tiempo que para una matriz estándar de palabras.
- Los elementos deben referenciarse adicionalmente de forma simbólica al utilizarlos en el programa de usuario. En tanto que el primer elemento de una matriz simple se referencia como "HR_DB".Array[0], el primer elemento de este tipo se referencia como "HR_DB".Data.Temp_1.

Una estructura de palabras con nombres se visualiza de la manera siguiente en el editor de bloques de datos. Todo elemento tiene un nombre unívoco y puede ser WORD, UINT o INT.

HR_DB

	Name	Data type	Offset	Initial value	Retain	Comment
1	Static					
2	Data	Struct	0.0			
3	Temp_1	Int	0.0	0		40001
4	Temp_2	Int	2.0	0		40002
5	Temp_3	Int	4.0	0		40003
6	Good_Count	Uint	6.0	0		40004
7	Bad_Count	Uint	8.0	0		40005
8	Rework_Count	Uint	10.0	0		40006
9	Line_Stops	Uint	12.0	0		40007
10	Avg_Time	Uint	14.0	0		40008
11	Code_1	Word	16.0	0		40009
12	Code_2	Word	18.0	0		40010

La figura siguiente muestra cómo la estructura de datos que aparece arriba se asignaría a la entrada MB_HOLD_REG de una instrucción MB_SLAVE en el programa.



A todo elemento de la matriz se puede acceder con su nombre simbólico, como se muestra a continuación. En este ejemplo, un valor nuevo se desplaza al segundo elemento de la matriz que corresponde a la dirección Modbus 40002.



La correlación entre los nombres de elementos de datos y las direcciones Modbus se muestra abajo.

"HR_DB".Data.Temp_1	Dirección Modbus 40001
"HR_DB".Data.Temp_2	Dirección Modbus 40002
"HR_DB".Data.Temp_3	Dirección Modbus 40003
"HR_DB".Data.Good_Count	Dirección Modbus 40004
"HR_DB".Data.Bad_Count	Dirección Modbus 40005
"HR_DB".Data.Rework_Count	Dirección Modbus 40006
"HR_DB".Data.Line_Stops	Dirección Modbus 40007
"HR_DB".Data.Avg_Time	Dirección Modbus 40008
"HR_DB".Data.Code_1	Dirección Modbus 40009
"HR_DB".Data.Code_2	Dirección Modbus 40010

Ejemplo 3 - Estructura compleja con nombres

Este registro de retención de ejemplo es una serie de tipos de datos mixtos con nombres simbólicos descriptivos.

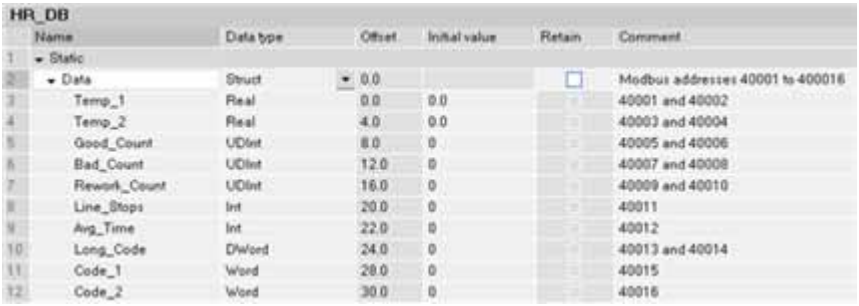
Ventajas:

- Todo elemento de la estructura tiene un nombre descriptivo con un tipo de datos asignado.
- Permite transferir directamente tipos de datos no basados en palabras.

Desventajas:

- Para crear este tipo de estructura se requiere más tiempo que para una matriz estándar de palabras.
- El maestro Modbus debe configurarse de manera que acepte los datos que recibirá del esclavo Modbus. Como muestra la figura siguiente, Temp_1 es un valor real de 4 bytes. El maestro receptor debe poder reconvertir las 2 palabras recibidas al valor real esperado.
- Los elementos deben referenciarse adicionalmente de forma simbólica en el programa. En tanto que el primer elemento de una matriz simple se referencia como "HR_DB".Array[0], el primer elemento de este tipo se referencia como "HR_DB".Data.Temp_1.

Una estructura compleja con nombres se visualiza de la manera siguiente en el editor de bloques de datos. Todo elemento tiene un nombre unívoco con varios tamaños y tipos de datos.



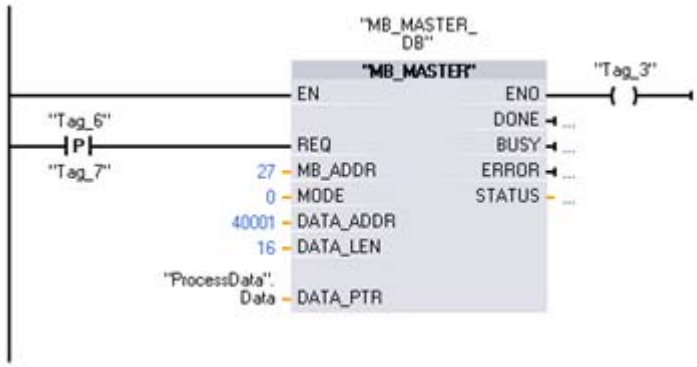
HR_DB

	Name	Data type	Offset	Initial value	Retain	Comment
1	Static					
2	Data	Struct	0.0			Modbus addresses 40001 to 400016
3	Temp_1	Real	0.0	0.0		40001 and 40002
4	Temp_2	Real	4.0	0.0		40003 and 40004
5	Good_Count	UDint	8.0	0		40005 and 40006
6	Bad_Count	UDint	12.0	0		40007 and 40008
7	Rework_Count	UDint	16.0	0		40009 and 40010
8	Line_Stops	Int	20.0	0		40011
9	Avg_Time	Int	22.0	0		40012
10	Long_Code	DWord	24.0	0		40013 and 40014
11	Code_1	Word	28.0	0		40015
12	Code_2	Word	30.0	0		40016

La correlación entre los nombres de elementos de datos y las direcciones Modbus se muestra abajo.

"HR_DB".Data.Temp_1	Direcciones Modbus 40001 y 40002
"HR_DB".Data.Temp_2	Direcciones Modbus 40003 y 40004
"HR_DB".Data.Good_Count	Direcciones Modbus 40005 y 40006
"HR_DB".Data.Bad_Count	Direcciones Modbus 40007 y 40008
"HR_DB".Data.Rework_Count	Direcciones Modbus 40009 y 40010
"HR_DB".Data.Line_Stops	Dirección Modbus 400011
"HR_DB".Data.Avg_Time	Dirección Modbus 400012
"HR_DB".Data.Long_Code	Direcciones Modbus 40013 y 40014
"HR_DB".Data.Code_1	Dirección Modbus 40015
"HR_DB".Data.Code_2	Dirección Modbus 40016

Una CPU S7-1200 que actúa de maestro Modbus puede utilizar la instrucción MB_Master y una estructura de datos idéntica para recibir el bloque de datos de la CPU S7-1200 que actúa de esclavo Modbus. Esta instrucción de maestro Modbus copiará las 16 palabras de datos directamente del bloque de datos HR_DB del esclavo en el bloque de datos ProcessData del maestro, como se muestra a continuación.



ProcessData

	Name	Data type	Offset	Initial value	Retain	Comment
1	Static					
2	Data	Struct	0.0			Modbus addresses 40001 to 400016
3	Temp_1	Real	0.0	0.0		40001 and 40002
4	Temp_2	Real	4.0	0.0		40003 and 40004
5	Good_Count	UDInt	8.0	0		40005 and 40006
6	Bad_Count	UDInt	12.0	0		40007 and 40008
7	Rework_Count	UDInt	16.0	0		40009 and 40010
8	Line_Stops	Int	20.0	0		40011
9	Avg_Time	Int	22.0	0		40012
10	Long_Code	DWord	24.0	0		40013 and 40014
11	Code_1	Word	28.0	0		40015
12	Code_2	Word	30.0	0		40016

Una serie de ubicaciones del bloque de datos Data_PTR del maestro Modbus pueden utilizarse para transferir estructuras iguales o diferentes desde distintos esclavos Modbus.

Códigos de condición

Valor de STATUS (W#16#....)	Descripción	
80C8	El timeout de respuesta indicado (consulte RCVTIME o MSGTIME) es 0	
80D1	El receptor ha lanzado una petición de control de flujo para suspender una transmisión activa y no ha habilitado nuevamente la transmisión en el tiempo de espera indicado. Este error también se genera durante el control de flujo por hardware cuando el receptor no confirma CTS en el tiempo de espera indicado.	
80D2	La petición de transmisión se ha cancelado porque no se recibe ninguna señal DSR del DCE	
80E0	El mensaje se ha terminado porque el búfer de recepción está lleno	
80E1	El mensaje se ha terminado debido a un error de paridad	
80E2	El mensaje se ha terminado debido a un error de trama	
80E3	El mensaje se ha terminado debido a un error de desbordamiento	
80E4	El mensaje se ha terminado debido a que la longitud especificada excede el tamaño del búfer total	
8180	ID de puerto no válida	
8186	Dirección de estación Modbus no válida	
8187	Puntero no válido a MB_HOLD_REG DB	
818C	Puntero a un tipo de DB de tipo seguro MB_HOLD_REG DB (debe ser un tipo de DB clásico)	
	Código de respuesta enviado al maestro Modbus (B#16#..)	
8380	Sin respuesta	Error CRC
8381	01	Código de función no soportado
8382	Sin respuesta	Error de longitud de datos
8383	02	Error de dirección de datos
8384	03	Error de valor de datos
8385	03	Valor de código de diagnóstico de datos no soportado (código de función 08)

PROFINET

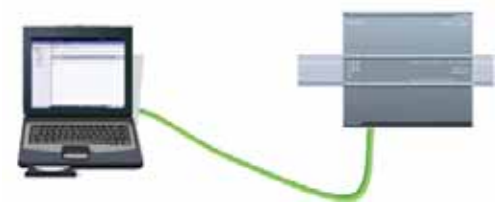
7

La CPU S7-1200 incorpora un puerto PROFINET que soporta las normas Ethernet y de comunicación basada en TCP/IP. La CPU S7-1200 soporta los siguientes protocolos de aplicación:

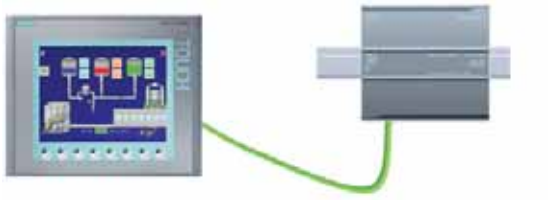
- Transport Control Protocol (TCP)
- ISO on TCP (RFC 1006)

La CPU S7-1200 puede comunicarse con otras CPUs S7-1200, programadoras STEP 7 Basic, dispositivos HMI y dispositivos no Siemens que utilicen protocolos de comunicación TCP estándar. Hay dos formas de comunicación vía PROFINET:

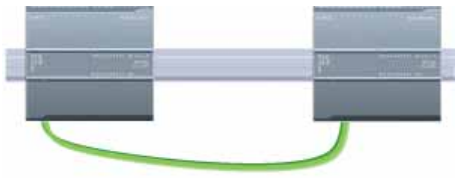
- Conexión directa: La comunicación directa se utiliza para conectar una programadora, dispositivo HMI u otra CPU a una sola CPU.
- Conexión de red: La comunicación de red se utiliza si deben conectarse más de dos dispositivos (p. ej. CPUs, HMIs, programadoras y dispositivos no Siemens).



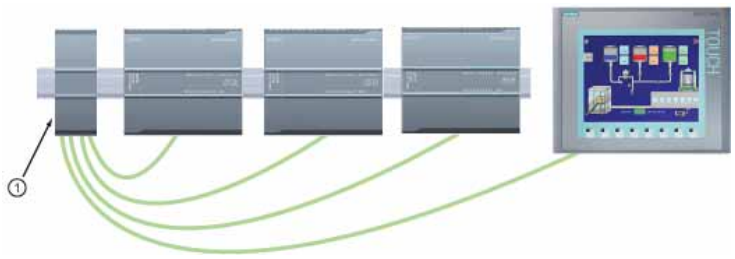
Conexión directa: Programadora conectada a una CPU S7-1200



Conexión directa: HMI conectado a una CPU S7-1200



Conexión directa: Una CPU S7-1200 conectada a otra CPU S7-1200



Conexión de red: Más de dos dispositivos interconectados, utilizando un switch Ethernet CSM1277 ①

Para la conexión directa entre una programadora o un HMI y una CPU no se requiere un switch Ethernet. Un switch Ethernet se requiere para una red que incorpore más de dos CPUs o dispositivos HMI. El switch Ethernet de 4 puertos CSM1277 de Siemens montado en un rack puede utilizarse para conectar las CPUs y los dispositivos HMI. El puerto PROFINET de la CPU S7-1200 no contiene un dispositivo de conmutación Ethernet.

Número máximo de conexiones para el puerto PROFINET

El puerto PROFINET de la CPU soporta las siguientes conexiones simultáneas.

- 3 conexiones para la comunicación entre dispositivos HMI y la CPU
- 1 conexión para la comunicación entre la programadora (PG) y la CPU
- 8 conexiones para la comunicación del programa del S7-1200 utilizando instrucciones del bloque T (TSEND_C, TRCV_C, TCON, TDISCON, TSEN, TRCV)
- 3 conexiones para la comunicación entre una CPU S7-1200 pasiva y una CPU S7 activa
  - La CPU S7 activa utiliza las instrucciones GET y PUT (S7-300 y S7-400) o ETHx_XFER (S7-200).
  - Una conexión S7-1200 activa sólo es posible con las instrucciones del bloque T.

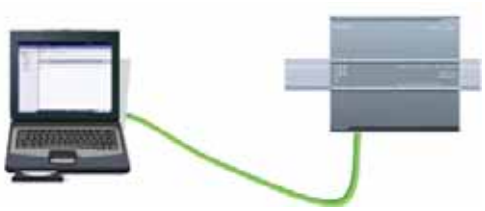
TSAPs o números de puerto restringidos para la comunicación ISO y TCP pasiva

Si la instrucción "TCON" se utiliza para configurar y establecer una conexión pasiva, las siguientes direcciones de puerto están restringidas y no se deben utilizar:

- TSAP ISO (pasivo): 01.00, 01.01, 02.00, 02.01, 03.00, 03.01
- Puerto TCP (pasivo): 5001, 102, 123, 20, 21, 25, 34962, 34963, 34964, 80

7.2 Comunicación con una programadora

Una CPU puede comunicarse con una programadora con STEP 7 Basic en una red.



Al configurar la comunicación entre una CPU y una programadora debe considerarse lo siguiente:

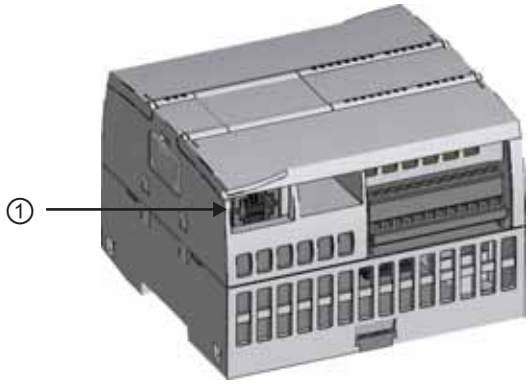
- Configuración/instalación: Es preciso configurar el hardware.
- Para la comunicación entre dos interlocutores no se requiere un switch Ethernet. Un switch Ethernet se requiere sólo si la red comprende más de dos dispositivos.

7.2.1 Establecer la conexión de hardware

Las interfaces PROFINET establecen las conexiones físicas entre una programadora y una CPU. Puesto que la CPU ofrece la función "auto-crossover", es posible utilizar un cable Ethernet estándar o cruzado ("crossover") para la interfaz. Para conectar una programadora directamente a una CPU no se requiere un switch Ethernet.

Para crear la conexión de hardware entre una programadora y una CPU, proceda del siguiente modo:

1. Monte la CPU (Página 29).
2. Conecte el cable Ethernet al puerto PROFINET que se muestra abajo.
3. Conecte el cable Ethernet a la programadora.



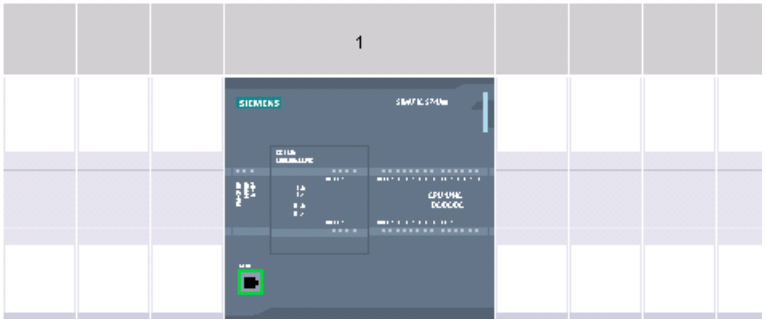
① Puerto PROFINET

Hay una descarga de tracción opcional disponible para reforzar la conexión PROFINET.

7.2.2 Configurar los dispositivos

Si ya se ha creado un proyecto con una CPU, ábralo en el TIA Portal.

En caso contrario, cree un proyecto e inserte una CPU (Página 78) en el rack. En el proyecto que aparece abajo, una CPU se muestra en la "Vista de dispositivos" del TIA Portal.



7.2.3 Asignar direcciones IP (Internet Protocol)

7.2.3.1 Asignar direcciones IP a los dispositivos de programación y red

Si la programadora incorpora una tarjeta adaptadora conectada a la LAN de la instalación (y posiblemente a Internet), la ID de red de la dirección IP y la máscara de subred de la CPU y la tarjeta adaptadora integrada en la programadora deberán ser idénticas. La ID de red es la primera parte de la dirección IP (los tres primeros octetos) (p. ej. **211.154.184**.16) y determina la red IP utilizada. Normalmente, la máscara de subred tiene el valor **255.255.255.0**. No obstante, puesto que el equipo está integrado en una LAN corporativa, la máscara de subred puede tener distintos valores (p. ej. **255.255.254.0**) para configurar subredes unívocas. Al combinar la máscara de subred con la dirección IP del dispositivo en una operación Y matemática se definen los límites de la subred IP.

Nota

En Internet, puesto que las programadoras, dispositivos de red y routers IP se comunican con el mundo entero, es preciso asignar direcciones IP unívocas para evitar conflictos con otros usuarios de la red. Contacte con los especialistas del departamento IT de su empresa, que están familiarizados con la red corporativa, para asignar las direcciones IP.

Si la programadora utiliza una tarjeta adaptadora Ethernet-USB conectada a una red aislada, la ID de red de la dirección IP y la máscara de subred de la CPU y la tarjeta adaptadora Ethernet-USB integrada en la programadora deberán ser exactamente iguales. La ID de red es la primera parte de la dirección IP (los tres primeros octetos) (p. ej. **211.154.184**.16) y determina la red IP utilizada. Normalmente, la máscara de subred tiene el valor **255.255.255.0**. Al combinar la máscara de subred con la dirección IP del dispositivo en una operación Y matemática se definen los límites de la subred IP.

Nota

Una tarjeta adaptadora Ethernet-USB es apropiada si la CPU no debe integrarse en la LAN corporativa. Esta opción es especialmente útil durante la comprobación inicial o los tests de puesta en marcha.

Tarjeta adaptadora de la programadora	Tipo de red	Dirección IP (Internet Protocol)	Máscara de subred
Tarjeta adaptadora integrada	Conectada a la LAN corporativa (y posiblemente a Internet)	La ID de red de la CPU y la tarjeta adaptadora integrada en la programadora deben ser exactamente iguales. La ID de red es la primera parte de la dirección IP (los dos primeros octetos) (p. ej. 211.154.184.16) y determina la red IP utilizada.	La máscara de subred de la CPU y la tarjeta adaptadora integrada deben ser exactamente iguales. Normalmente, la máscara de subred tiene el valor **255.255.255.0**. No obstante, puesto que el equipo está integrado en una LAN corporativa, la máscara de subred puede tener distintos valores (p. ej. **255.255.254.0**) para configurar subredes unívocas. Al combinar la máscara de subred con la dirección IP del dispositivo en una operación Y matemática se definen los límites de la subred IP.
Tarjeta adaptadora Ethernet-USB	Conectada a una red aislada	La ID de red de la CPU y la tarjeta adaptadora Ethernet-USB de la programadora deben ser exactamente iguales. La ID de red es la primera parte de la dirección IP (los dos primeros octetos) (p. ej. 211.154.184.16) y determina la red IP utilizada.	La máscara de subred de la CPU y la tarjeta adaptadora Ethernet-USB deben ser exactamente iguales. Normalmente, la máscara de subred tiene el valor **255.255.255.0**. Al combinar la máscara de subred con la dirección IP del dispositivo en una operación Y matemática se definen los límites de la subred IP.

Asignar o comprobar la dirección IP de la programadora utilizando "Mis sitios de red" (en el Escritorio)

La dirección IP de la programadora se puede asignar o comprobar mediante los siguientes comandos de menú:

- (Clic con el botón derecho del ratón en) "Mis sitios de red"
- "Propiedades"
- (Clic con el botón derecho del ratón en) "Conexión de área local"
- "Propiedades"

En el diálogo "Propiedades de conexión de área local", campo "Esta conexión utiliza los siguientes elementos:", desplácese hasta "Protocolo Internet (TCP/IP)". Haga clic en "Protocolo Internet (TCP/IP)" y luego en el botón "Propiedades". Seleccione "Obtener una dirección IP automáticamente (DHCP)" o "Usar la siguiente dirección IP" (para introducir una dirección IP estática).

Nota

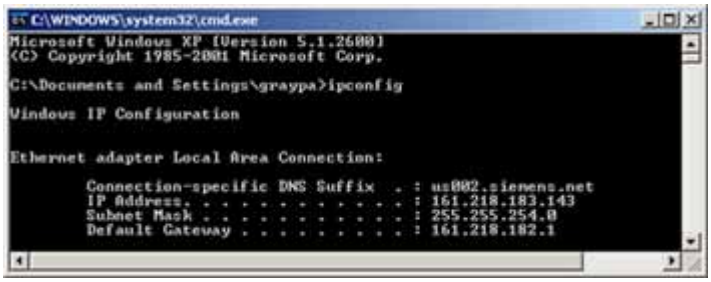
El "Dynamic Host Configuration Protocol" (DHCP o protocolo de configuración dinámica de host) asigna automáticamente una dirección IP a la programadora después del arranque desde el servidor DHCP.

Comprobar la dirección IP de la programadora mediante los comandos "ipconfig" e "ipconfig /all"

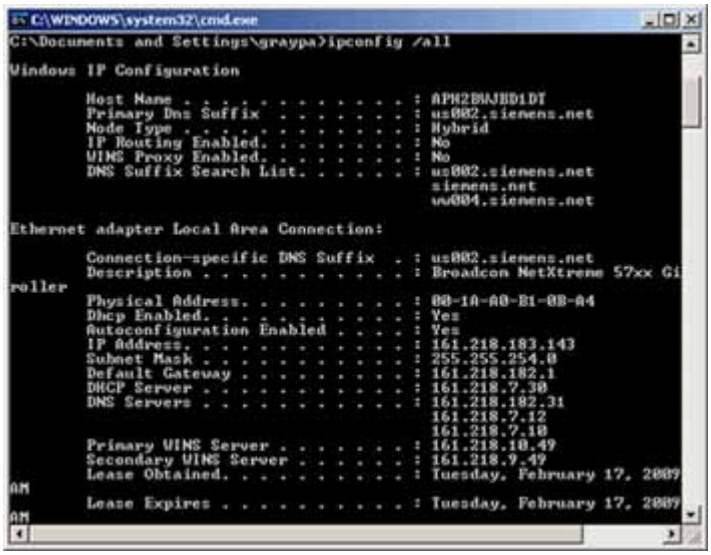
La dirección IP de la programadora y, si es aplicable, la del router IP ("gateway" o pasarela), se puede(n) comprobar a través de los siguientes comandos de menú:

- Botón "Inicio" (en el Escritorio)
- "Ejecutar"

En el campo "Abrir" del diálogo "Ejecutar", introduzca "cmd" y haga clic en el botón "Aceptar". En el diálogo "C:\WINDOWS\system32\cmd.exe" que aparece entonces, introduzca el comando "ipconfig". Un resultado de ejemplo se muestra a continuación:



El comando "ipconfig /all" permite visualizar información adicional. Aquí se indican el tipo de tarjeta adaptadora de la programadora y la dirección Ethernet (MAC):



Asignar una dirección IP a una CPU

Para asignar una dirección IP a una CPU, utilice uno de los métodos siguientes:

- Asignar una dirección IP online
- Configurar una dirección IP en el proyecto

7.2.3.2 Asignar una dirección IP online

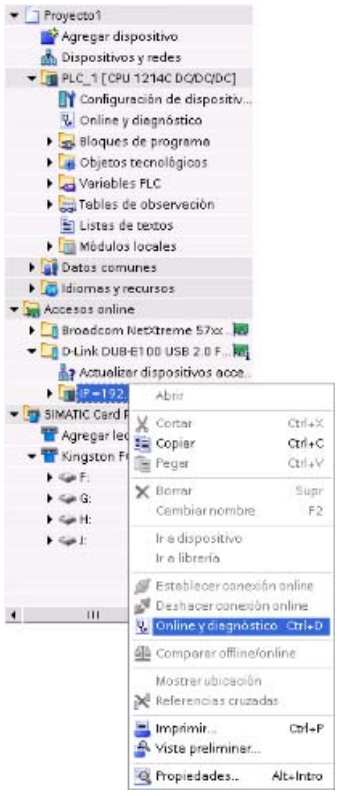
Es posible asignar una dirección IP a un dispositivo de red online. Esto es especialmente útil al configurar los dispositivos por primera vez.

Para asignar una dirección IP online, proceda del siguiente modo:

1. En el "Árbol del proyecto", verifique que la CPU no tiene asignada ninguna dirección IP. Utilice para ello los comandos de menú siguientes:
   - "Accesos online"
   - <Tarjeta adaptadora para la red en la que se encuentra el dispositivo>
   - "Actualizar dispositivos accesibles"

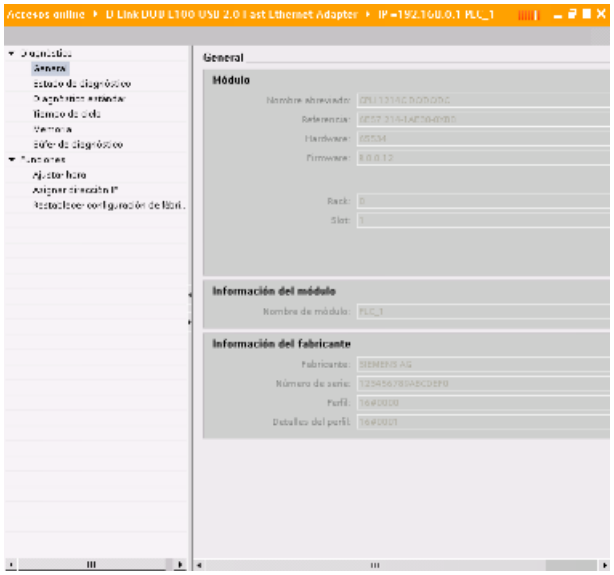


2. Seleccione los siguientes comandos de menú en el "Árbol del proyecto":
   - "Accesos online"
   - <Tarjeta adaptadora para la red en la que se encuentra el dispositivo>
   - "Actualizar dispositivos accesibles"
   - <dirección del dispositivo>
   - "Online y diagnóstico"

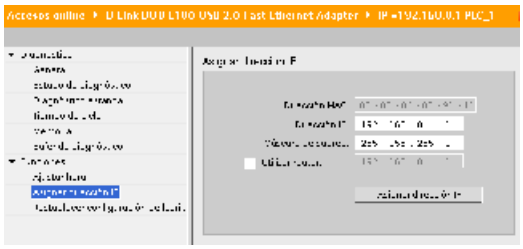


3. Seleccione los siguientes comandos de menú en el diálogo "Online y diagnóstico":

- "Funciones"
- "Asignar dirección IP"



4. Introduzca la nueva dirección IP en el campo "Dirección IP".



5. En el "Árbol del proyecto", verifique que la nueva dirección IP se ha asignado a la CPU. Utilice para ello los comandos de menú siguientes:

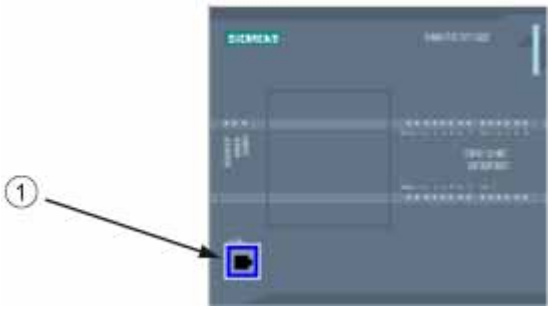
- "Accesos online"
- <Adaptador para la red en la que se encuentra el dispositivo>
- "Actualizar dispositivos accesibles"



7.2.3.3 Configurar una dirección IP en el proyecto

Configurar la interfaz PROFINET

Tras configurar el rack con la CPU (Página 243), es posible configurar los parámetros de la interfaz PROFINET. A este efecto, haga clic en la casilla PROFINET verde en la CPU para seleccionar el puerto PROFINET. La ficha "Propiedades" de la ventana de inspección muestra el puerto PROFINET.



① Puerto PROFINET

Configurar la dirección IP

Dirección Ethernet (MAC): Todo dispositivo de una red PROFINET recibe una dirección MAC (Media Access Control o control de acceso al medio) del fabricante para su identificación. Una dirección MAC consta de seis grupos de dos dígitos hexadecimales, separados por guiones (-) o dos puntos (:), en orden de transmisión (p. ej. 01-23-45-67-89-AB ó 01:23:45:67:89:AB).

Dirección IP: Todo dispositivo debe tener también una dirección IP (Internet Protocol o Protocolo Internet). Esta dirección permite al dispositivo transferir datos a través de una red enrutada y más compleja.

Toda dirección IP se divide en segmentos de ocho bits (octetos) y se expresa en formato decimal separado por puntos (p. ej. 211.154.184.16). La primera parte de la dirección IP se utiliza para la ID de red (¿en qué red se encuentra?) y, la segunda, para la ID del host (unívoca para cada dispositivo de la red). Una dirección IP 192.168.x.y es una designación estándar reconocida como parte de una red privada que no se enruta vía Internet.

Máscara de subred: Una subred es una agrupación lógica de dispositivos de red conectados. Generalmente, los nodos de una subred están próximos físicamente en una red de área local (LAN). Una máscara (denominada "máscara de subred" o "máscara de red") define los límites de una subred IP.

Generalmente, una máscara de subred 255.255.255.0 se adecúa para una red local pequeña. Esto significa que los 3 primeros octetos de todas las direcciones IP de esta red deberían ser iguales. Los diferentes dispositivos de la red se identifican mediante el último octeto (campo de 8 bits). Por ejemplo, es posible asignar la máscara de subred 255.255.255.0 y direcciones IP comprendidas entre 192.168.2.0 y 192.168.2.255 a los dispositivos de una red local pequeña.

La única conexión entre las diferentes subredes se realiza a través de un router. Si se utilizan subredes, es preciso utilizar un router IP.

Router IP: Los routers interconectan las distintas LANs. Si se utiliza un router, un equipo de una LAN puede enviar mensajes a otras redes que, a su vez, pertenezcan a otras LANs. Si el destino de los datos se encuentra fuera de la LAN, el router reenvía los datos a otra red o grupo de redes desde donde pueden transferirse a su destino.

Los routers necesitan direcciones IP para poder transferir y recibir paquetes de datos.



Propiedades de direcciones IP: En la ventana de propiedades, seleccione la entrada de configuración "Dirección Ethernet". El TIA Portal visualiza el diálogo de configuración de direcciones Ethernet, en el que el proyecto de software se asocia a la dirección IP de la CPU que lo recibirá.

Nota

La CPU no tiene una dirección IP preconfigurada. La dirección IP de la CPU se debe asignar manualmente. Si la CPU está conectada a un router de la red, también es preciso introducir la dirección IP del router. Todas las direcciones IP se configuran al cargar el proyecto en el dispositivo.

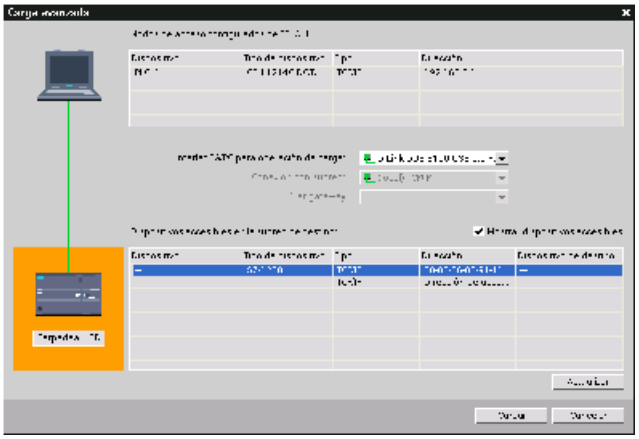
Para más información, consulte el apartado "Asignar direcciones IP a los dispositivos de programación y red".

La tabla siguiente define los parámetros de la dirección IP:

Parámetro		Descripción
Subred	Nombre de la subred a la que está conectada el dispositivo. Haga clic en el botón "Agregar nueva subred" para crear una subred nueva. El ajuste predeterminado es "no conectado". Hay dos tipos de conexión posibles: • El ajuste predeterminado "no conectado" ofrece una conexión local. • Una subred se requiere cuando la red comprende dos o más dispositivos.	
Protocolo IP	Dirección IP	Dirección IP asignada a la CPU
	Máscara de subred	Máscara de subred asignada
	Utilizar router IP	Haga clic en esta casilla de verificación para indicar el uso de un router IP
	Dirección del router	Dirección IP asignada al router (si es aplicable)

7.2.4 Comprobar la red PROFINET

Tras finalizar la configuración, cargue el proyecto en la CPU. Todas las direcciones IP se configuran al cargar el proyecto en el dispositivo.



Asignar una dirección IP a un dispositivo online

La CPU S7-1200 no tiene dirección IP preconfigurada. La dirección IP de la CPU se debe asignar manualmente.

Para asignar una dirección IP a un dispositivo online, consulte el procedimiento paso a paso descrito en "Asignar una dirección IP online".

Para asignar una dirección IP en el proyecto, es preciso configurarla en la "Configuración de dispositivos", guardar la configuración y cargarla en el PLC. Encontrará más información al respecto en "Configurar una dirección IP en el proyecto".

Nota

Las direcciones IP que se hayan asignado online pueden cambiarse utilizando el método de configuración de hardware online u offline.

Si las direcciones IP se han asignado en la configuración hardware offline, las direcciones IP asignadas en el proyecto sólo podrán cambiarse utilizando el método de configuración de hardware offline.

Utilice "Accesos online" para visualizar la dirección IP de la CPU conectada como se muestra a continuación.



① La segunda de dos redes Ethernet de esta programadora

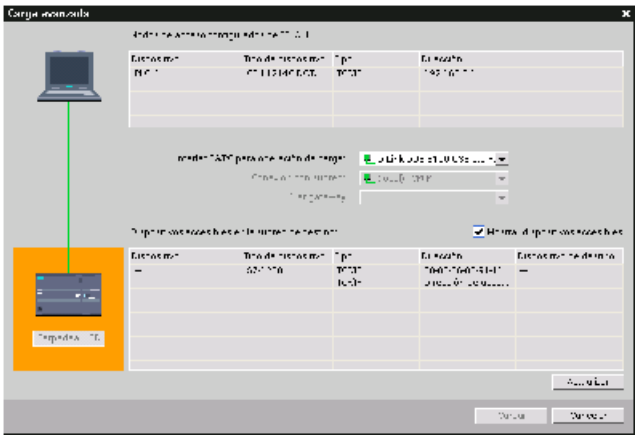
② Dirección IP de la única CPU S7-1200 de esta red Ethernet

Nota

Se visualizan todas las redes configuradas de la programadora. Para visualizar la dirección IP de la CPU S7-1200 deseada es preciso seleccionar la red correcta.

Utilizar el diálogo "Carga avanzada" para comprobar los dispositivos de red conectados

La función de la CPU S7-1200 "Cargar en dispositivo" y su diálogo "Carga avanzada" permiten visualizar todos los dispositivos de red accesibles y verificar si se han asignado direcciones IP unívocas a todos ellos. Para visualizar todos los dispositivos accesibles y disponibles con sus respectivas direcciones MAC e IP asignadas, active la casilla de verificación "Mostrar dispositivos accesibles".



Si el dispositivo de red deseado no se encuentra en esta lista, la comunicación con ese dispositivo se habrá interrumpido por algún motivo. En este caso es preciso examinar el dispositivo y la red para buscar errores de hardware y/o configuración.

7.3 Comunicación entre dispositivos HMI y el PLC



La CPU soporta conexiones PROFINET con dispositivos HMI. Los siguientes requisitos deben considerarse al configurar la comunicación entre CPUs y HMIs:

Configuración/instalación:

- El puerto PROFINET de la CPU debe configurarse para poder establecer una conexión con el HMI.
- El HMI se debe instalar y configurar.
- La información de configuración del HMI forma parte del proyecto de la CPU y se puede configurar y cargar desde el proyecto.
- Para la comunicación entre dos interlocutores no se requiere un switch Ethernet. Un switch Ethernet se requiere sólo si la red comprende más de dos dispositivos.

Nota

El switch Ethernet de 4 puertos CSM1277 de Siemens montado en un rack puede utilizarse para conectar las CPUs y los dispositivos HMI. El puerto PROFINET de la CPU no contiene un dispositivo de conmutación Ethernet.

Funciones soportadas:

- El HMI puede leer/escribir datos en la CPU.
- Es posible disparar mensajes, según la información consultada de la CPU.
- Diagnóstico del sistema

Nota

WinCC Basic y STEP 7 Basic son componentes del TIA Portal. Para más información sobre cómo configurar el HMI, consulte la documentación de WinCC Basic.

Pasos necesarios para configurar la comunicación entre un dispositivo HMI y una CPU

Paso	Tarea
1	Establecer la conexión de hardware Una interfaz PROFINET establece la conexión física entre un dispositivo HMI y una CPU. Puesto que la función "auto-crossover" está integrada en la CPU, es posible utilizar un cable Ethernet estándar o cruzado ("crossover") para la interfaz. Para conectar un HMI a una CPU no se requiere un switch Ethernet. Encontrará más información en "Comunicación con una programadora: Establecer la conexión de hardware" (Página 243).
2	Configurar los dispositivos Encontrará más información en "Comunicación con una programadora: Configurar los dispositivos" (Página 243).
3	Configurar las conexiones de red lógicas entre un dispositivo HMI y una CPU Encontrará más información en "Comunicación entre el HMI y el PLC: Configurar las conexiones de red lógicas entre un dispositivo HMI y una CPU" (Página 255).
4	Configurar una dirección IP en el proyecto Utilice el mismo proceso de configuración. No obstante, es preciso configurar direcciones IP para el HMI y la CPU. Encontrará más información en "Comunicación con una programadora: Configurar una dirección IP en el proyecto" (Página 249).
5	Comprobar la red PROFINET La configuración debe cargarse en cada una de las CPUs. Encontrará más información en "Comunicación con una programadora: Comprobar la red PROFINET" (Página 251).

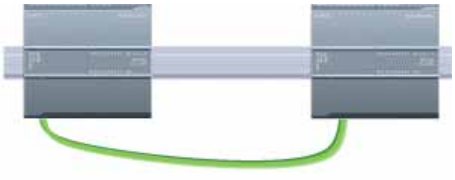
7.3.1 Configurar las conexiones de red lógicas entre un dispositivo HMI y una CPU

Tras configurar el rack con la CPU podrá configurar las conexiones de red.

En el portal "Dispositivos y redes", utilice la "Vista de red" para crear las conexiones de red entre los dispositivos del proyecto. Para crear la conexión Ethernet, seleccione la casilla (Ethernet) verde en la CPU. Arrastre una línea hasta la casilla Ethernet del dispositivo HMI. Suelte el botón del rotón para crear la conexión Ethernet.

Acción	Resultado
Seleccione "Vista de red" para visualizar los dispositivos que deben conectarse.	
Seleccione el puerto de uno de los dispositivos y arrastre la conexión hasta el puerto del otro dispositivo.	
Suelte el botón del ratón para crear la conexión de red.	

7.4 Comunicación entre PLCs



Una CPU puede comunicarse con otra CPU utilizando las instrucciones TSEND_C y TRCV_C.

Considere lo siguiente al configurar la comunicación entre dos CPUs:

- Configuración/instalación: Es preciso configurar el hardware.
- Funciones soportadas: Leer/escribir datos en una CPU interlocutora
- Para la comunicación entre dos interlocutores no se requiere un switch Ethernet. Un switch Ethernet se requiere sólo si la red comprende más de dos dispositivos.

Pasos necesarios para configurar la comunicación entre dos CPUs

Paso	Tarea
1	Establecer la conexión de hardware Una interfaz PROFINET establece la conexión física entre dos CPUs. Puesto que la función "auto-crossover" está integrada en la CPU, es posible utilizar un cable Ethernet estándar o cruzado ("crossover") para la interfaz. Para conectar dos CPUs no se requiere un switch Ethernet. Encontrará más información en "Comunicación con una programadora: Establecer la conexión de hardware".
2	Configurar los dispositivos Es preciso configurar dos proyectos. Cada uno de ellos debe contener una CPU. Encontrará más información en "Comunicación con una programadora: Configurar los dispositivos".
3	Configurar las conexiones de red lógicas entre dos CPUs Encontrará más información en el apartado "Configurar la comunicación entre dos CPUs: Configurar las conexiones de red lógicas entre dos CPUs" (Página 257).
4	Configurar una dirección IP en el proyecto Utilice el mismo proceso de configuración. No obstante, es preciso configurar direcciones IP para dos CPUs (p. ej. PLC_1 y PLC_2). Encontrará más información en "Comunicación con una programadora: Configurar una dirección IP en el proyecto".
5	Configurar los parámetros de transmisión y recepción Las instrucciones TSEND_C y TRCV_C deben configurarse en ambas CPUs para habilitar la comunicación entre ellas. Encontrará más información en el apartado "Configurar la comunicación entre dos CPUs: Configurar los parámetros de transmisión y recepción" (Página 257).
6	Comprobar la red PROFINET La configuración debe cargarse en cada una de las CPUs. Encontrará más información en "Configurar la comunicación entre una programadora y una CPU: Comprobar la red PROFINET".

7.4.1 Configurar las conexiones de red lógicas entre dos CPUs

Tras configurar el rack con la CPU podrá configurar las conexiones de red.

En el portal "Dispositivos y redes", utilice la "Vista de red" para crear las conexiones de red entre los dispositivos del proyecto. Para crear la conexión PROFINET, seleccione la casilla (PROFINET) verde en el primer PLC. Arrastre una línea hasta la casilla PROFINET del segundo PLC. Suelte el botón del rotón para crear la conexión PROFINET.

Acción	Resultado
Seleccione "Vista de red" para visualizar los dispositivos que deben conectarse.	
Seleccione el puerto de uno de los dispositivos y arrastre la conexión hasta el puerto del otro dispositivo.	
Suelte el botón del ratón para crear la conexión de red.	

7.4.2 Configurar los parámetros de transmisión y recepción

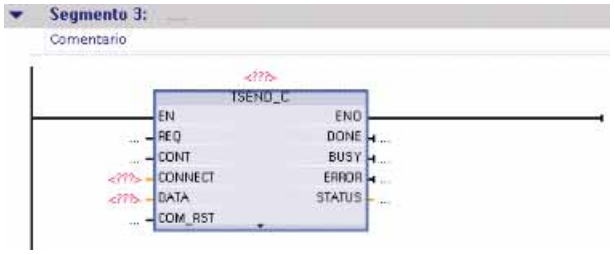
Las comunicaciones vía el bloque de transferencia (bloque T) sirven para establecer conexiones entre dos CPUs. Para que las CPUs puedan intervenir en la comunicación PROFINET es preciso configurar parámetros para transmitir y recibir mensajes. Estos parámetros determinan cómo deben funcionar las comunicaciones al transmitir o recibir mensajes a/de un dispositivo de destino.

7.4.2.1 Configurar los parámetros de transmisión de la instrucción TSEND_C

Instrucción TSEND_C

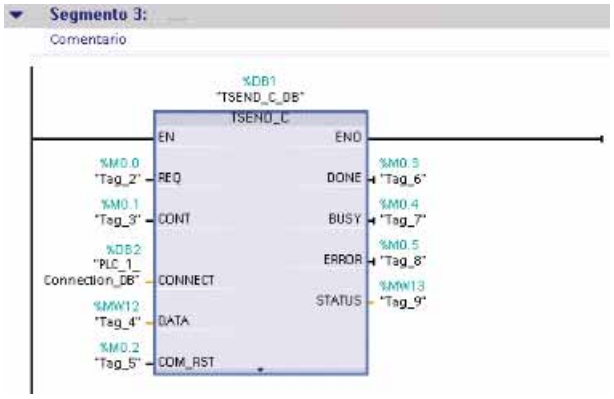
La instrucción TSEND_C (Página 178) crea una conexión con un interlocutor. La conexión se configura, establece y vigila automáticamente hasta que la instrucción ordene que sea desconectada. La instrucción TSEND_C combina las funciones de las instrucciones TCON, TDISCON y TSEND.

En la "Configuración de dispositivos" de STEP 7 Basic es posible configurar cómo la instrucción TSEND_C debe transmitir los datos. Para comenzar, inserte la instrucción en el programa desde la carpeta "Comunicación" en las "Instrucciones avanzadas". La instrucción se visualizará junto con el diálogo "Opciones de llamada" en el que se asigna un DB para almacenar los parámetros de la instrucción TSEND_C.





Como muestra la figura siguiente, es posible asignar posiciones de memoria a las entradas y salidas en la memoria de variables.



Configurar los parámetros generales

Los parámetros de comunicación se configuran en el diálogo "Propiedades" de la instrucción TSEND_C. Este diálogo aparece en el lado inferior de la página cuando se ha seleccionado alguna parte de la instrucción TSEND_C.

Configurar los parámetros de conexión

Toda CPU incorpora un puerto PROFINET que soporta la comunicación PROFINET estándar. Los protocolos Ethernet soportados se describen en los dos tipos de conexión siguientes:

Protocolo	Nombre del protocolo	Uso
RFC 1006	ISO on TCP	Fragmentación y reensamblado de mensajes
TCP	Transport Control Protocol	Transporte de tramas

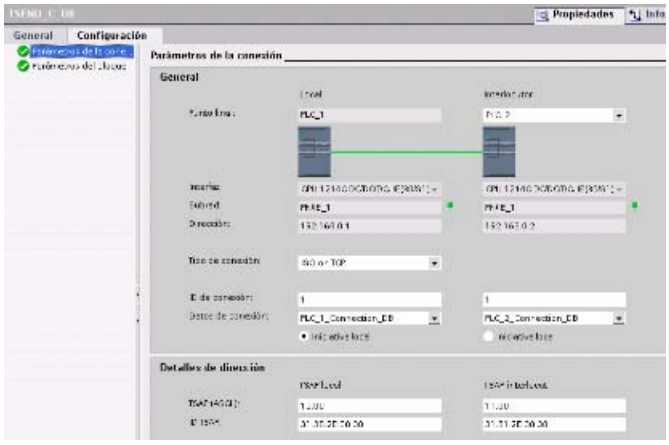
ISO on TCP (RFC 1006)

ISO on TCP es un mecanismo que permite portar aplicaciones ISO a la red TCP/IP. Este protocolo tiene las características siguientes:

- Protocolo de comunicación eficiente vinculado estrechamente al hardware
- Adecuado para cantidades de datos medianas y grandes (hasta 8192 bytes)
- A diferencia de TCP, los mensajes tienen un indicador de fin y están orientados a los mensajes.
- Apto para routing; puede utilizarse en WAN
- Las longitudes de datos dinámicas son posibles.
- Es necesario programar la gestión de datos debido a la interfaz de programación SEND / RECEIVE.

Puesto que utiliza Transport Service Access Points (TSAPs), el protocolo TCP permite establecer varias conexiones con una sola dirección IP (hasta 64K conexiones). Gracias a RFC 1006, los TSAPs identifican unívocamente estas conexiones de puntos finales de comunicación a una dirección IP.

En el área "Detalles de dirección" del diálogo "Parámetros de la conexión" se definen los TSAPs que deben utilizarse. El TSAP de una conexión en la CPU se introduce en el campo "TSAP local". El TSAP asignado a la conexión en la CPU interlocutora se introduce en el campo "TSAP del interlocutor".



Parámetro	Definición
General	
Punto final: Interlocutor	Nombre asignado a la CPU interlocutora (receptora)
Interfaz	Nombre asignado a las interfaces
Subred	Nombre asignado a las subredes
Dirección	Direcciones IP asignadas
Tipo de conexión	Tipo de protocolo Ethernet
ID de conexión	Número de ID
Datos de conexión	Ubicación de almacenamiento de datos de las CPUs local e interlocutora
Establecimiento de conexión activo	Botón de opción para seleccionar la CPU local o interlocutora como conexión activa
Detalles de dirección	
TSAP[1] (ASCII)	TSAPs de las CPUs local e interlocutora en formato ASCII
ID TSAP	TSAPs de las CPUs local e interlocutora en formato hexadecimal

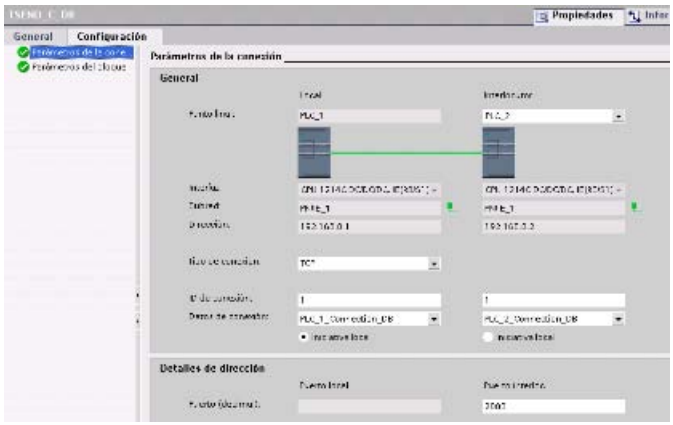
[1] Al configurar una conexión con una CPU S7-1200 para ISO on TCP, utilice sólo caracteres ASCII en la extensión TSAP para los interlocutores pasivos.

Transport Control Protocol (TCP)

TCP es un protocolo estándar descrito por RFC 793: Transmission Control Protocol. El objetivo principal de TCP es ofrecer un servicio de conexión seguro y fiable entre pares de procesos. Este protocolo tiene las características siguientes:

- Protocolo de comunicación eficiente puesto que está vinculado estrechamente al hardware
- Adecuado para cantidades de datos medianas y grandes (hasta 8192 bytes)
- Ofrece numerosas prestaciones más a las aplicaciones, en particular:
  - Recuperación de errores
  - Control de flujo
  - Fiabilidad
- Protocolo orientado a la conexión
- Puede utilizarse muy flexiblemente con sistemas de terceros que soporten únicamente TCP
- Apto para routing
- Son aplicables sólo las longitudes de datos estáticas.
- Los mensajes se acusan.
- Las aplicaciones se direccionan usando números de puerto.

- La mayoría de los protocolos de aplicación (p. ej. TELNET y FTP) utilizan TCP.
- Es necesario programar la gestión de datos debido a la interfaz de programación SEND / RECEIVE.



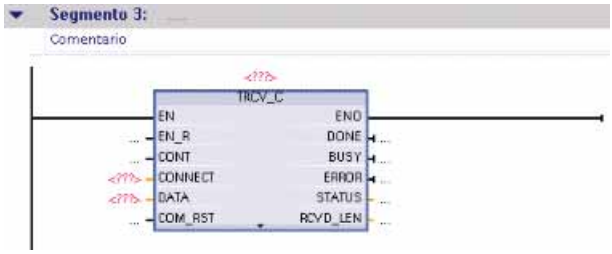
Parámetro	Definición
General	
Punto final: Interlocutor	Nombre asignado a la CPU interlocutora (receptora)
Interfaz	Nombre asignado a las interfaces
Subred	Nombre asignado a las subredes
Dirección	Direcciones IP asignadas
Tipo de conexión	Tipo de protocolo Ethernet
ID de conexión	Número de ID
Datos de conexión	Ubicación de almacenamiento de datos de las CPUs local e interlocutora
Establecimiento de conexión activo	Botón de opción para seleccionar la CPU local o interlocutora como conexión activa
Detalles de dirección	
Puerto (decimal)	Puerto de la CPU interlocutora en formato decimal

7.4.2.2 Configurar los parámetros de recepción de la instrucción TRCV_C

Instrucción TRCV_C

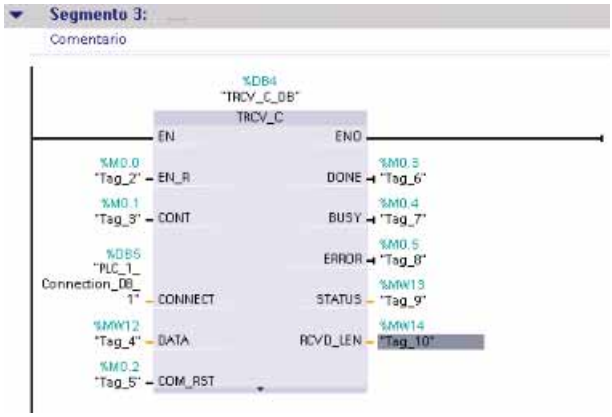
La instrucción TRCV_C (Página 178) crea una conexión con un interlocutor. La conexión se configura, establece y vigila automáticamente hasta que la instrucción ordene que sea desconectada. La instrucción TRCV_C combina las funciones de las instrucciones TCON, TDISCON y TRCV.

Desde la configuración de la CPU en STEP 7 Basic es posible configurar cómo la instrucción TRCV_C debe recibir los datos. Para comenzar, inserte la instrucción en el programa desde la carpeta "Comunicación" en las "Instrucciones avanzadas". La instrucción se visualizará junto con el diálogo "Opciones de llamada" en el que se asigna un DB para almacenar los parámetros de la instrucción TRCV_C.





Como muestra la figura siguiente, es posible asignar posiciones de memoria a las entradas y salidas en la memoria de variables.



Configurar los parámetros generales

Los parámetros de comunicación se configuran en el diálogo "Propiedades" de la instrucción TRCV_C. Este diálogo aparece en el lado inferior de la página cuando se ha seleccionado alguna parte de la instrucción TRCV_C.

Configurar los parámetros de conexión

Toda CPU incorpora un puerto PROFINET que soporta la comunicación PROFINET estándar. Los protocolos Ethernet soportados se describen en los dos tipos de conexión siguientes:

Protocolo	Nombre del protocolo	Uso
RFC 1006	ISO on TCP	Fragmentación y reensamblado de mensajes
TCP	Transport Control Protocol	Transporte de tramas

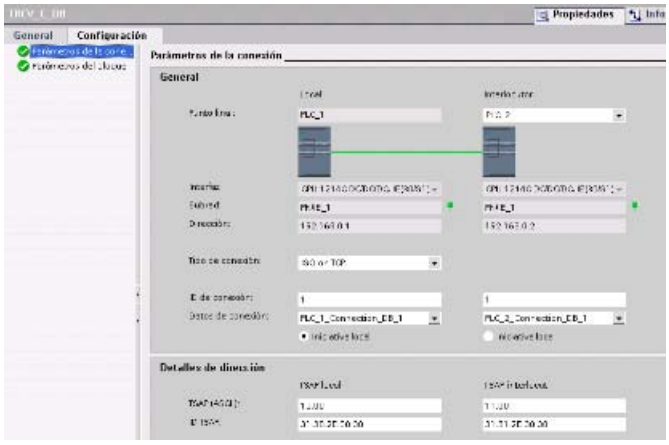
ISO on TCP (RFC 1006)

ISO on TCP es un mecanismo que permite portar aplicaciones ISO a la red TCP/IP. Este protocolo tiene las características siguientes:

- Protocolo de comunicación eficiente vinculado estrechamente al hardware
- Adecuado para cantidades de datos medianas y grandes (hasta 8192 bytes)
- A diferencia de TCP, los mensajes tienen un indicador de fin y están orientados a los mensajes.
- Apto para routing; puede utilizarse en WAN
- Las longitudes de datos dinámicas son posibles.
- Es necesario programar la gestión de datos debido a la interfaz de programación SEND / RECEIVE.

Puesto que utiliza Transport Service Access Points (TSAPs), el protocolo TCP permite establecer varias conexiones con una sola dirección IP (hasta 64K conexiones). Gracias a RFC 1006, los TSAPs identifican unívocamente estas conexiones de puntos finales de comunicación a una dirección IP.

En el área "Detalles de dirección" del diálogo "Parámetros de la conexión" se definen los TSAPs que deben utilizarse. El TSAP de una conexión en la CPU se introduce en el campo "TSAP local". El TSAP asignado a la conexión en la CPU interlocutora se introduce en el campo "TSAP del interlocutor".



Parámetro	Definición
General	
Punto final: Interlocutor	Nombre asignado a la CPU interlocutora (receptora)
Interfaz	Nombre asignado a las interfaces
Subred	Nombre asignado a las subredes
Dirección	Direcciones IP asignadas
Tipo de conexión	Tipo de protocolo Ethernet
ID de conexión	Número de ID
Datos de conexión	Ubicación de almacenamiento de datos de las CPUs local e interlocutora
Establecimiento de conexión activo	Botón de opción para seleccionar la CPU local o interlocutora como conexión activa
Detalles de dirección	
TSAP[1] (ASCII)	TSAPs de las CPUs local e interlocutora en formato ASCII
ID TSAP	TSAPs de las CPUs local e interlocutora en formato hexadecimal

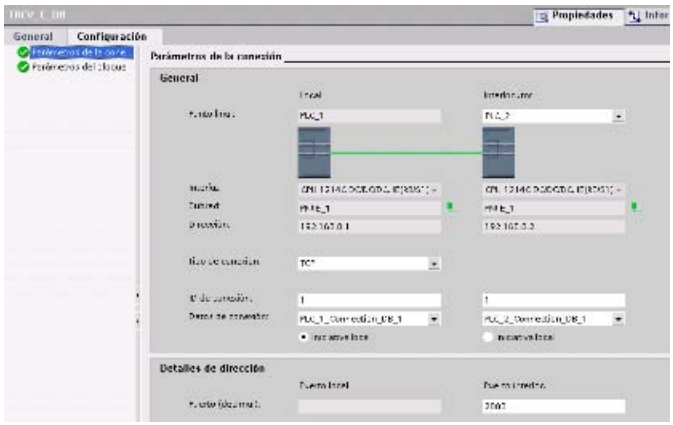
[1] Al configurar una conexión con una CPU S7-1200 para ISO on TCP, utilice sólo caracteres ASCII en la extensión TSAP para los interlocutores pasivos.

Transport Control Protocol (TCP)

TCP es un protocolo estándar descrito por RFC 793: Transmission Control Protocol. El objetivo principal de TCP es ofrecer un servicio de conexión seguro y fiable entre pares de procesos. Este protocolo tiene las características siguientes:

- Protocolo de comunicación eficiente puesto que está vinculado estrechamente al hardware
- Adecuado para cantidades de datos medianas y grandes (hasta 8192 bytes)
- Ofrece numerosas prestaciones más a las aplicaciones, en particular:
  - Recuperación de errores
  - Control de flujo
  - Fiabilidad
- Protocolo orientado a la conexión
- Puede utilizarse muy flexiblemente con sistemas de terceros que soporten únicamente TCP
- Apto para routing
- Son aplicables sólo las longitudes de datos estáticas.
- Los mensajes se acusan.
- Las aplicaciones se direccionan usando números de puerto.

- La mayoría de los protocolos de aplicación (p. ej. TELNET y FTP) utilizan TCP.
- Es necesario programar la gestión de datos debido a la interfaz de programación SEND / RECEIVE.



Parámetro	Definición
General	
Punto final: Interlocutor	Nombre asignado a la CPU interlocutora (receptora)
Interfaz	Nombre asignado a las interfaces
Subred	Nombre asignado a las subredes
Dirección	Direcciones IP asignadas
Tipo de conexión	Tipo de protocolo Ethernet
ID de conexión	Número de ID
Datos de conexión	Ubicación de almacenamiento de datos de las CPUs local e interlocutora
Establecimiento de conexión activo	Botón de opción para seleccionar la CPU local o interlocutora como conexión activa
Detalles de dirección	
Puerto (decimal)	Puerto de la CPU local en formato decimal

7.5 Información de referencia

7.5.1 Localizar la dirección Ethernet (MAC) en la CPU

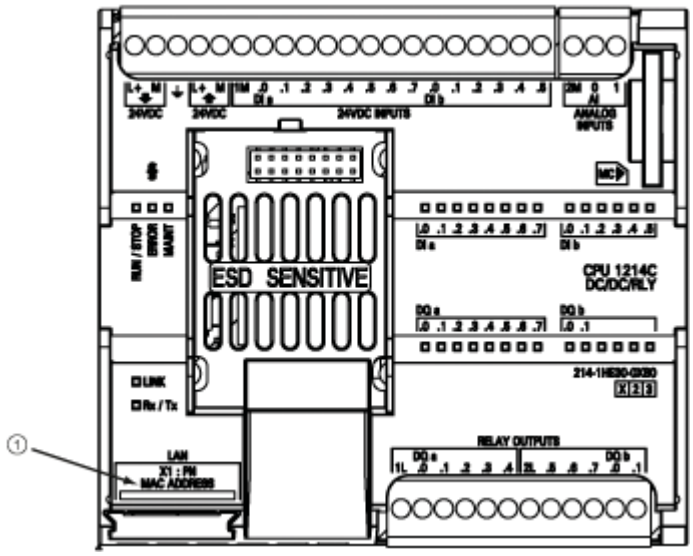
En las redes PROFINET, una dirección MAC (Media Access Control o control de acceso al medio) es un identificador que el fabricante asigna a las tarjetas adaptadoras para su identificación. Generalmente, una dirección MAC codifica el número de identificación registrado del fabricante.

El formato estándar (IEEE 802.3) permite imprimir direcciones MAC de forma amigable y consta de seis grupos de dos dígitos hexadecimales, separados por guiones (-) o dos puntos (:), en orden de transmisión (p. ej. 01-23-45-67-89-ab ó 01:23:45:67:89:ab).

Nota

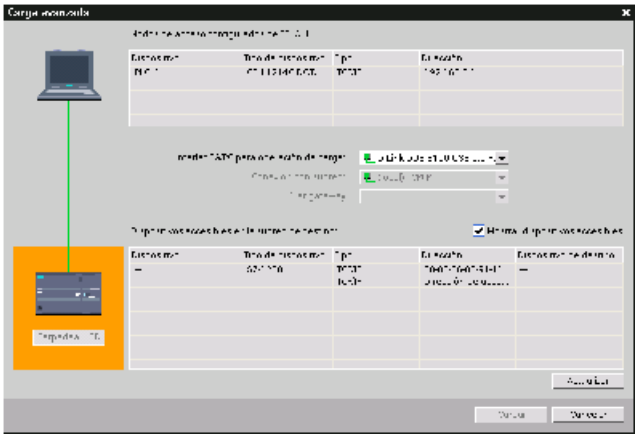
Toda CPU se suministra de fábrica con una dirección MAC unívoca y permanente. La dirección MAC de la CPU no se puede cambiar.

La dirección MAC está impresa en la esquina inferior izquierda en el frente de la CPU. Para ver la dirección MAC es necesario abrir las tapas inferiores del bloque de terminales.



① Dirección MAC

Inicialmente, la CPU no tiene dirección IP, sino sólo una dirección MAC ajustada de fábrica. Para la comunicación PROFINET es necesario que todos los dispositivos tengan asignada una dirección IP unívoca.



La función de la CPU "Cargar en dispositivo" y el diálogo "Carga avanzada en dispositivo" permiten visualizar todos los dispositivos de red accesibles y asegurar que se han asignado direcciones IP unívocas a todos ellos. Este diálogo muestra todos los dispositivos accesibles y disponibles con sus respectivas direcciones MAC e IP asignadas. Las direcciones MAC son especialmente importantes para identificar dispositivos que no disponen de la dirección IP unívoca necesaria.

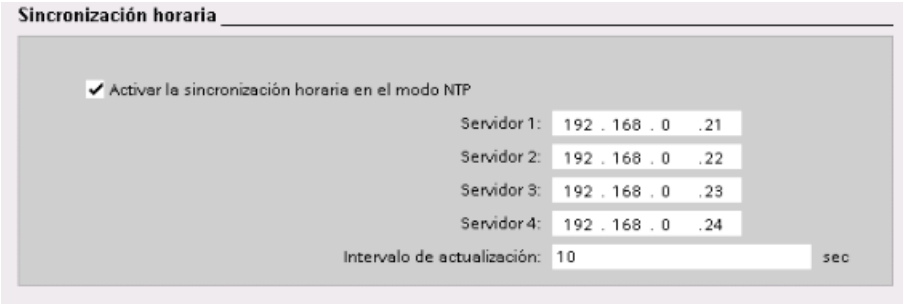
7.5.2 Configurar la sincronización del Network Time Protocol (NTP)

El Network Time Protocol (NTP) es un protocolo ampliamente utilizado para sincronizar los relojes de los sistemas informáticos con los servidores de hora de Internet. Ofrece una precisión típica de menos de un milisegundo en LANs y de hasta pocos milisegundos en WANs. Las configuraciones NTP típicas utilizan varios servidores redundantes y distintas rutas de red para alcanzar una alta precisión y fiabilidad.

La subred NTP funciona con una jerarquía de niveles en la que un número - denominado "stratum" - se asigna a cada nivel. Los servidores stratum 1 (primarios) del nivel más inferior se sincronizan directamente con los servicios de hora nacionales. Los servidores stratum 2 (secundarios) del nivel inmediatamente superior se sincronizan con los servidores stratum 1, etc.

Parámetros de sincronización horaria

En la ventana de propiedades, seleccione la entrada de configuración "Sincronización horaria". El TIA Portal visualiza el diálogo de configuración de la sincronización horaria:



Nota

Todas las direcciones IP se configuran al cargar el proyecto en el dispositivo.

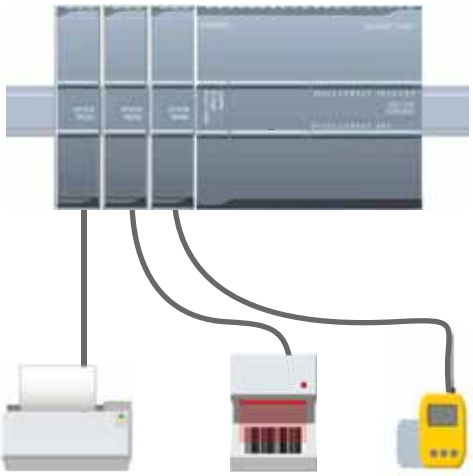
La tabla siguiente define los parámetros de la sincronización horaria:

Parámetro	Definición
Activar la sincronización horaria vía servidores NTP (Network Time Protocol)	Haga clic en la casilla de verificación para activar la sincronización horaria vía servidores NTP.
Servidor 1	Dirección IP asignada al servidor de hora de red 1
Servidor 2	Dirección IP asignada al servidor de hora de red 2
Servidor 3	Dirección IP asignada al servidor de hora de red 3
Servidor 4	Dirección IP asignada al servidor de hora de red 4
Intervalo de sincronización horaria	Valor del intervalo (seg)

Comunicación punto a punto (PtP)

8

La CPU soporta el protocolo punto a punto (PtP) para la comunicación serie basada en caracteres, en la que la aplicación de usuario define e implementa íntegramente el protocolo seleccionado. PtP ofrece una libertad y flexibilidad máximas, pero requiere una implementación exhaustiva en el programa de usuario.



PtP ofrece numerosas posibilidades, a saber:

- Posibilidad de enviar directamente información a un dispositivo externo, p. ej. una impresora
- Posibilidad de recibir información de otros dispositivos, p. ej. lectores de código de barras, lectores RFID, cámaras o sistemas de visión de terceros y muchos dispositivos más
- Posibilidad de intercambiar información (enviar y recibir datos) con otros dispositivos tales como equipos GPS, cámaras o sistemas de visión de terceros, módems radio y muchos más

La comunicación PtP es una comunicación serie que utiliza UARTs estándar para soportar distintas velocidades de transferencia y opciones de paridad. El módulo de comunicación (CM) RS232 o RS485 ofrece la interfaz eléctrica para realizar la comunicación PtP.

STEP 7 Basic ofrece librerías de instrucciones que pueden utilizarse para programar la aplicación. Estas librerías incluyen funciones PtP para los protocolos siguientes:

- Protocolo de accionamientos USS
- Protocolo maestro Modbus RTU
- Protocolo esclavo Modbus RTU

8.2 Utilizar los módulos de comunicación RS232 y RS485

Dos módulos de comunicación (CMs) ofrecen la interfaz para la comunicación PtP: CM 1241 RS485 (Página 357) y CM 1241 RS232 (Página 358). Es posible conectar como máximo tres CMs (de cualquier tipo). El CM se monta a la izquierda de la CPU o de otro CM. Encontrará información detallada acerca del montaje y desmontaje de módulos en el capítulo "Montaje" (Página 33).

Los módulos de comunicación RS232 y RS485 tienen las características siguientes:

- Puerto aislado galvánicamente
- Soporte de protocolos punto a punto
- Configuración y programación mediante instrucciones avanzadas y funciones de librería
- Visualización de la actividad de transmisión y recepción mediante LEDs
- LED de diagnóstico
- Alimentación eléctrica suministrada por la CPU. No necesita conexión a una fuente de alimentación externa.

Para más información, consulte los datos técnicos de los módulos de comunicación (Página 357).

8.3 Configurar los puertos de comunicación

Los módulos de comunicación pueden configurarse de dos maneras:

- Utilizando la configuración de dispositivos en STEP 7 Basic para configurar los parámetros de puerto (velocidad de transferencia y paridad), así como los de transmisión y recepción. Los ajustes de la configuración de dispositivos se guardan permanentemente en la CPU. Estos ajustes se aplican tras desconectar y conectar la alimentación y una transición de RUN a STOP.
- Utilice las instrucciones PORT_CFG, SEND_CFG y RCV_CFG para configurar los parámetros. La configuración del puerto ajustada mediante las instrucciones es válida mientras la CPU esté en modo RUN. La configuración del puerto se inicializa con los valores predeterminados de la configuración del dispositivo tras cambiar a STOP o desconectar y volver a conectar la alimentación.

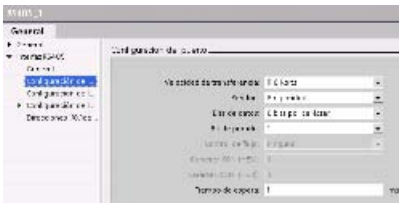
Tras configurar los dispositivos de hardware (Página 77) es preciso ajustar los parámetros de las interfaces de comunicación seleccionando uno de los CMs del rack.

Los parámetros del CM seleccionado se visualizan en la ficha "Propiedades" de la ventana de inspección. Seleccione "Configuración del puerto" para editar los parámetros siguientes:

- Velocidad de transferencia
- Paridad
- Bits de parada
- Control de flujo (sólo RS232)
- Tiempo de espera

A excepción del control de flujo, los parámetros de configuración del puerto son iguales, indistintamente de si se desea configurar un módulo de comunicación RS232 o RS485. Los valores de los parámetros pueden diferir.





También es posible configurar el puerto (o modificar una configuración existente) desde el programa de usuario con la instrucción PORT_CFG (Página 284).

Nota

Los valores de parámetros ajustados mediante la instrucción PORT_CFG en el programa de usuario prevalecen sobre la configuración definida en STEP 7 Basic. El S7-1200 no conserva los parámetros ajustados mediante la instrucción PORT_CFG si se desconecta la alimentación.

Velocidad de transferencia: El valor predeterminado para la velocidad de transferencia es 9,6 Kbits/s. Los ajustes posibles son:

300 baudios	2,4 Kbits	19,2 Kbits	76,8 Kbits
600 baudios	4,8 Kbits	28,4 Kbits	115,2 Kbits
1,2 Kbits	9,6 Kbits	57,6 Kbits	

Paridad: El valor predeterminado para la paridad es "sin paridad". Los ajustes posibles son:

- Sin paridad
- Paridad par
- Paridad impar
- Paridad Mark (poner bit de paridad a 1)
- Paridad Space (poner bit de paridad a 0)

Bits de parada: Es posible ajustar uno o dos bits de parada. El ajuste predeterminado es uno.

Control de flujo: Para el módulo de comunicación RS232 puede seleccionarse el control de flujo por hardware o software de la manera descrita en el apartado "Gestionar el control de flujo (Página 272)". Si se selecciona el control de flujo por hardware, es posible indicar si la señal RTS debe estar siempre ON o si debe conmutarse. Si se selecciona el control de flujo por software, es posible definir los caracteres ASCII para los caracteres XON y XOFF.

El módulo de comunicación RS485 no soporta el control de flujo.

Tiempo de espera: El tiempo de espera especifica el periodo que el módulo de comunicación espera hasta recibir CTS tras confirmar RTS, o bien hasta recibir un XON tras recibir un XOFF, dependiendo del tipo de control de flujo. Si el tiempo de espera transcurre antes de que el módulo de comunicación reciba un CTS o XON esperado, el módulo de comunicación cancelará la operación de transmisión y devolverá un error al programa de usuario. El tiempo de espera se indica en milisegundos. El rango válido está comprendido entre 0 y 65535 milisegundos.

8.4 Gestionar el control de flujo

El control de flujo es un mecanismo que permite regular el intercambio de datos entre un emisor y un receptor para evitar pérdidas de datos. El control de flujo garantiza que un emisor no envíe más información de la que el receptor es capaz de procesar. El control de flujo puede realizarse por hardware o software. El CM RS232 soporta el control de flujo tanto por hardware como por software. El CM RS485 no soporta el control de flujo. El tipo de control de flujo se especifica al configurar el puerto (Página 271) o con la instrucción PORT_CFG.

El control de flujo por hardware funciona a través de las señales de comunicación RTS (Request To Send o petición de transmitir) y CTS (Clear To Send o listo para transmitir). En el caso del CM RS232, la señal RTS se emite desde el pin 7 y la señal CTS se recibe por el pin 8. El CM 1241 es un DTE (Data Terminal Equipment o equipo terminal de datos) que confirma RTS como salida y monitoriza CTS como entrada.

Control de flujo por hardware: RTS conmutado

Si se habilita el control de flujo por hardware con RTS conmutado en un CM RS232, el módulo activa la señal RTS para enviar datos. El módulo vigila la señal CTS para determinar si el receptor puede aceptar datos. Estando activa la señal CTS, el módulo puede transmitir datos mientras que la señal CTS permanezca activa. Si se desactiva la señal CTS, la transmisión debe detenerse.

La transmisión se reanuda cuando se reactiva la señal CTS. Si la señal CTS no se vuelve a activar dentro del tiempo de espera configurado, el módulo cancelará la transmisión y devolverá un error al programa de usuario. El tiempo de espera se especifica en la configuración del puerto (Página 271).

El control de flujo con RTS conmutado es útil para los dispositivos que requieren una señal de que la transmisión está activa. Un ejemplo sería un módem radio que utiliza RTS como señal "Key" para energizar el transmisor de radio. El control de flujo con RTS conmutado no funciona con módems telefónicos estándar. Seleccione la opción "RTS siempre on" para los módems telefónicos.

Control de flujo por hardware: RTS siempre ON

Si se utiliza la opción "RTS siempre on", el CM 1241 activará RTS de forma predeterminada. Un dispositivo (p. ej. un módem telefónico) vigila la señal RTS del CM y la utiliza como CTS (Clear To Send o listo para transmitir). El módem transmitirá al CM sólo si RTS está activo, es decir, cuando el módem telefónico detecte un CTS activo. Si RTS no está activo, el módem telefónico no transmitirá al CM.

Para permitir que el módem envíe datos al CM en cualquier momento, configure el control de flujo por hardware con "RTS siempre ON". De esta manera, el CM activa la señal RTS permanentemente. El CM no desactivará RTS incluso si el módulo no puede aceptar caracteres. El emisor debe garantizar que no se desborde el búfer de recepción del CM.

Uso de las señales DTR (Data Terminal Block Ready) y DSR (Data Set Ready)

El CM activa DTR para cualquier tipo de control de flujo por hardware. El módulo transmite datos sólo cuando se activa la señal DSR. El estado de DSR se evalúa únicamente al comienzo de la transmisión. Si DSR se desactiva tras haberse iniciado la transmisión, ésta no se detendrá.

Control de flujo por software

El control de flujo por software utiliza caracteres especiales en los mensajes para proporcionar el control de flujo. Se trata de caracteres ASCII que representan XON y XOFF.

XOFF indica que una transmisión debe detenerse. XON indica que una transmisión puede reanudarse.

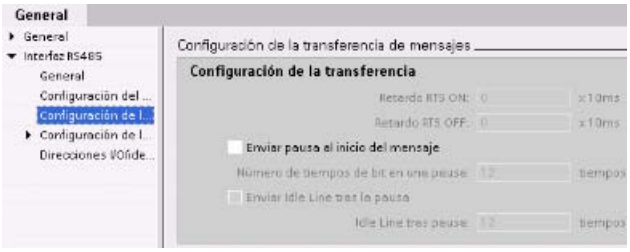
Cuando el emisor recibe un carácter XOFF del receptor, deja de transmitir datos. La transmisión se reanuda cuando el emisor recibe un carácter XON. Si no recibe un carácter XON dentro del tiempo de espera indicado en la configuración del puerto (Página 271), el CM cancelará la transmisión y devolverá un error al programa de usuario.

Para el control de flujo por software se requiere la comunicación dúplex, puesto que el receptor debe poder enviar XOFF al emisor durante una transmisión. El control de flujo por software sólo es posible en los mensajes que contengan únicamente caracteres ASCII. Los protocolos binarios no pueden utilizar el control de flujo por software.

8.5 Configurar los parámetros de transmisión y recepción

Para que el PLC pueda intervenir en la comunicación PtP es preciso configurar parámetros para transmitir y recibir mensajes. Estos parámetros determinan cómo deben funcionar las comunicaciones al transmitir o recibir mensajes a/de un dispositivo de destino.

Configurar los parámetros de transmisión



Durante la configuración del CM se ajusta cómo una interfaz de comunicación debe transmitir datos, definiendo la propiedad "Configuración de la transferencia de mensajes" para el CM seleccionado.

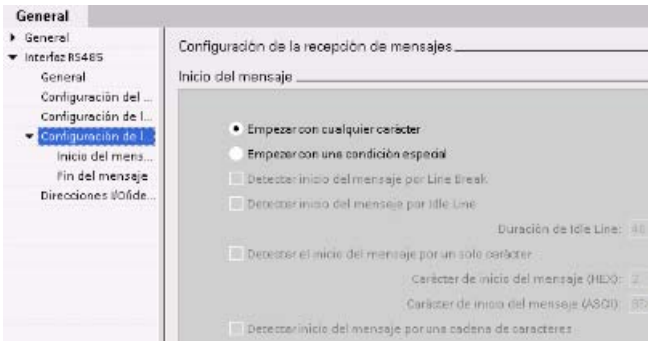
Los parámetros de transmisión de mensajes también se pueden configurar o modificar dinámicamente desde el programa de usuario utilizando la instrucción SEND_CFG (Página 286).

Nota

Los valores de parámetros ajustados mediante la instrucción SEND_CFG en el programa de usuario prevalecen sobre la configuración del puerto. La CPU no conserva los parámetros ajustados mediante la instrucción SEND_CFG si se desconecta la alimentación.

Parámetro	Definición
Retardo RTS ON	Determina el tiempo que debe esperarse tras activar RTS antes de iniciar la transmisión. El rango está comprendido entre 0 y 65535 ms (el valor prederminado es 0). Este parámetro sólo es válido si en la configuración del puerto (Página 271) se ha definido el control de flujo por hardware. CTS se evalúa una vez transcurrido el retardo RTS ON. Este parámetro es aplicable únicamente a los módulos RS232.
Retardo RTS OFF	Determina el tiempo que debe esperarse antes de desactivar RTS tras finalizar la transmisión. El rango está comprendido entre 0 y 65535 ms (el valor prederminado es 0). Este parámetro sólo es válido si en la configuración del puerto (Página 271) se ha definido el control de flujo por hardware. Este parámetro es aplicable únicamente a los módulos RS232.
Enviar pausa al inicio del mensaje Número de bit times en una pausa	Determina que, al inicio de cada mensaje, se enviará una pausa una vez transcurrido el tiempo de retardo RTS ON (si se ha configurado) y si CTS está activo. Es preciso indicar cuántos tiempos de bit ("bit times") constituyen una pausa cuando la línea se mantiene en una condición "Space". El ajuste predeterminado es 12 y el valor máximo es 65535, hasta un límite de ocho segundos.
Enviar Idle Line tras la pausa Idle Line tras pausa	Determina que se enviará una "idle line" tras una pausa al inicio del mensaje. El parámetro "Idle Line tras pausa" indica cuántos tiempos de bit constituyen una "idle line" cuando la línea se mantiene en una condición "Mark". El ajuste predeterminado es 12 y el valor máximo es 65535, hasta un límite de ocho segundos.

Configurar los parámetros de recepción



En la configuración de dispositivos se determina cómo debe recibir datos una interfaz de comunicación, así como detectar el comienzo y fin de un mensaje. Estos parámetros se definen en la configuración de la recepción de mensajes para el CM seleccionado.

Los parámetros de recepción de mensajes también se pueden configurar o modificar dinámicamente desde el programa de usuario utilizando la instrucción RCV_CFG (Página 288).

Nota

Los valores de parámetros ajustados mediante la instrucción RCV_CFG en el programa de usuario prevalecen sobre la configuración del puerto. La CPU no conserva los parámetros ajustados mediante la instrucción RCV_CFG si se desconecta la alimentación.

Encontrará más información en la descripción de la instrucción RCV_CFG.

Parámetros de inicio del mensaje

Es posible determinar cómo el módulo de comunicación debe detectar el inicio de un mensaje. Los caracteres iniciales y los caracteres que contiene el mensaje se depositan en el búfer de recepción hasta que se cumpla una condición final configurada.

Es posible definir varias condiciones de inicio. Todas las condiciones de inicio deberán cumplirse antes de que se considere iniciado el mensaje. Por ejemplo, si se configura un tiempo de "idle line" y un carácter de inicio específico, el CM determinará primero si se cumple el requisito de tiempo de "idle line" y buscará luego el carácter de inicio indicado. Si se recibe algún otro carácter (que no sea el carácter de inicio indicado), el CM reiniciará la búsqueda del inicio del mensaje buscando nuevamente el tiempo de "idle line".

El orden de comprobación de las condiciones de inicio es el siguiente:

- Idle Line
- Line Break
- Caracteres o secuencias de caracteres

Si al comprobar varias condiciones de inicio no se cumple una de ellas, el CM reiniciará la comprobación con la primera condición requerida.

Parámetro	Definición
Carácter de inicio	La condición "Carácter de inicio" indica que, en cuanto se reciba correctamente un carácter en particular, se iniciará el mensaje. Este carácter será el primer carácter del mensaje. Todo carácter que se reciba antes de este carácter específico se descartará.
Empezar con cualquier carácter	La condición "Carácter cualquiera" indica que, en cuanto se reciba correctamente un carácter, se iniciará el mensaje. Este carácter será el primer carácter del mensaje.
Line Break	La condición "Line Break" especifica que la recepción de un mensaje debe comenzar cuando se reciba un carácter de salto de línea.
Idle Line	La condición "Idle Line" especifica que la recepción de un mensaje debe comenzar una vez que la línea de recepción haya estado inactiva o en reposo durante el número de tiempos de bit indicado. Cuando se cumpla esta condición, se iniciará el mensaje.
Condición especial: Detectar el inicio del mensaje por un solo carácter	Determina que un carácter en particular indique el principio de un mensaje. El ajuste predeterminado STX.

Parámetro	Definición
Condición especial: Detectar inicio del mensaje por una cadena de caracteres	Determina que una secuencia de caracteres en particular indica el inicio de un mensaje. Es posible especificar cinco caracteres como máximo para una secuencia. Para cada posición de carácter se indica bien sea un carácter hexadecimal específico, o bien que el carácter se ignore en la comparación de secuencias. Las secuencias entrantes se comparan con las condiciones de inicio configuradas hasta que se cumple una condición de inicio. Una vez que cumplida la secuencia de inicio, se iniciará la evaluación de las condiciones de fin. Es posible configurar como máximo cinco secuencias de caracteres específicas que se pueden habilitar o inhibir según sea necesario. La condición de inicio se cumple cuando se presenta una de las secuencias de caracteres configuradas.
Ejemplo de configuración	 En esta configuración, la condición de inicio se cumple cuando se presenta uno de los patrones siguientes: • Cuando se recibe una secuencia de cinco caracteres en la que el primer carácter es 0x6A y, el quinto, 0x1C. Los caracteres de las posiciones 2, 3 y 4 pueden ser un carácter cualquiera en esta configuración. Tras recibirse el quinto carácter comienza la evaluación de las condiciones de fin. • Cuando se reciben dos caracterse 0x6A consecutivos precedidos de un carácter cualquiera. En este caso, la evaluación de las condiciones de fin comienza tras recibirse el segundo 0x6A (3 caracteres). El carácter que precede el primer 0x6A se incluye en la condición de inicio. Secuencias de ejemplo que cumplirían esta condición de inicio: • <carácter cualquiera> 6A 6A • 6A 12 14 18 1C • 6A 44 A5 D2 1C

Parámetros de fin del mensaje

También es posible definir cómo la interfaz de comunicación debe detectar el fin de un mensaje. Es posible configurar varias condiciones de fin del mensaje. Si se cumple alguna de las condiciones configuradas, finalizará el mensaje.

Es posible especificar simultáneamente varias condiciones de fin. El mensaje finalizará cuando se cumpla alguna de las condiciones de fin. Por ejemplo, es posible especificar una condición de fin con un timeout de fin de mensaje de 300 milisegundos, un timeout entre caracteres de 40 tiempos de bit y una longitud máxima de 50 bytes. El mensaje terminará si la recepción tarda más de 300 milisegundos o si la distancia temporal entre dos caracteres es superior a 40 tiempos de bit o si se reciben 50 bytes.

Parámetro	Definición
Detectar fin del mensaje por tiempo de mensaje excedido	El mensaje finaliza cuando ha transcurrido el tiempo de espera configurado para el fin del mensaje. El periodo de timeout del mensaje comienza cuando se recibe el primer carácter que cumpla los criterios de inicio del mensaje. El valor predeterminado es 200 ms. El rango válido está comprendido entre 0 y 65535 ms.
Detectar fin del mensaje por tiempo de respuesta excedido	El mensaje finaliza cuando ha transcurrido el tiempo de espera configurado para una respuesta antes de que se reciba una secuencia de inicio válida. El periodo de timeout de respuesta comienza cuando finaliza la transmisión. El timeout de respuesta predeterminado es 200 ms. El rango válido está comprendido entre 0 y 65535 ms. Es preciso configurar una condición de fin adicional para indicar el fin real del mensaje.
Detectar fin del mensaje por tiempo excedido entre caracteres	El mensaje finaliza cuando ha transcurrido el timeout máximo configurado entre caracteres consecutivos de un mensaje. El valor predeterminado del tiempo excedido entre caracteres es 12 tiempos de bit y el valor máximo es 65535 tiempos de bit, hasta un límite máximo de ocho segundos.
Detectar fin del mensaje por longitud máxima	El mensaje finaliza cuando se ha recibido el número de caracteres máximo configurado. El ajuste predeterminado es 0 bytes y el valor máximo es 1024 bytes.
Leer longitud del mensaje en el mensaje	El mensaje en sí especifica la longitud del mensaje. El mensaje finaliza cuando se recibe un mensaje con la longitud especificada. El método para especificar e interpretar la longitud del mensaje se describe más adelante.
Detectar fin del mensaje por un carácter	El mensaje finaliza cuando se recibe un carácter especificado.

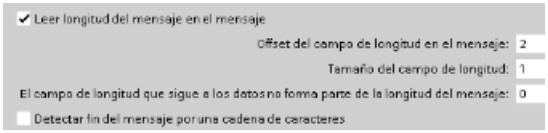
Parámetro	Definición
Detectar fin del mensaje por una cadena de caracteres	El mensaje finaliza cuando se recibe una secuencia de caracteres especificada. Es posible especificar una secuencia de cinco caracteres como máximo. Para cada posición de carácter se indica bien sea un carácter hexadecimal específico, o bien que el carácter se ignore en la comparación de secuencias. Los caracteres iniciales ignorados no forman parte de la condición de fin. Los caracteres finales ignorados forman parte de la condición de fin.
Ejemplo de configuración	 En este caso, la condición de fin se cumple cuando se reciben dos caracteres 0x7A consecutivos, seguidos de dos caracteres cualquiera. El carácter que precede el patrón 0x7A 0x7A no forma parte de la secuencia de caracteres final. Los dos caracteres que le siguen al patrón 0x7A 0x7A se requieren para terminar la secuencia de caracteres final. Aunque los valores de las posiciones de carácter 4 y 5 son irrelevantes, deben recibirse para que se cumpla la condición de fin.

Indicación de la longitud del mensaje dentro del mensaje

Si se selecciona la condición especial en la que la longitud del mensaje se incluye en el mensaje, es preciso indicar tres parámetros que definen la información acerca de la longitud del mensaje.

La estructura real del mensaje varía según el protocolo utilizado. Los tres parámetros son los siguientes:

- n: Posición de carácter (en base 1) dentro del mensaje que inicia el indicador de longitud
- Tamaño de longitud: Número de bytes (uno, dos o cuatro) del indicador de longitud
- Longitud m: Número de caracteres posteriores al indicador de longitud que no se incluyen en el contaje de longitud



Estos campos aparecen en la configuración de la recepción de mensajes de las propiedades del dispositivo.

Ejemplo 1: Considerar un mensaje estructurado según el protocolo siguiente:

STX	Len (n)	Caracteres 3 a 14 contados según la longitud											
		ADR	PKE		INDEX		PWD		STW		HSW		BCC
1	2	3	4	5	6	7	8	9	10	11	12	13	14
STX	0x0C	xx	xxxx		xxxx		xxxx		xxxx		xxxx		xx

Configure los parámetros de longitud de recepción de este mensaje como se indica a continuación:

- n = 2 (la longitud del mensaje comienza con el byte 2.)
- Tamaño de longitud = 1 (la longitud del mensaje se define en un byte.)
- Longitud m = 0 (no hay caracteres adicionales posteriores al indicador de longitud no incluidos en el contaje de longitud. Doce caracteres le siguen al indicador de longitud.)

En este ejemplo, los caracteres 3 a 14 (inclusive) son los caracteres que cuenta Len (n).

Ejemplo 2: Considerar otro mensaje estructurado según el protocolo siguiente:

SD1	Len (n)	Len (n)	SD2	Caracteres 5 a 10 contados según la longitud						FCS	ED
				DA	SA	FA	Unidad de datos=3 bytes				
1	2	3	4	5	6	7	8	9	10	11	12
xx	0x06	0x06	xx	xx	xx	xx	xx	xx	xx	xx	xx

Configure los parámetros de longitud de recepción de este mensaje como se indica a continuación:

- n = 3 (la longitud del mensaje comienza con el byte 3.)
- Tamaño de longitud = 1 (la longitud del mensaje se define en un byte.)
- Longitud m = 3 (tres caracteres posteriores al indicador de longitud no se cuentan en la longitud. En el protocolo de este ejemplo, los caracteres SD2, FCS y ED no se incluyen en el contaje de longitud. Los seis caracteres restantes se incluyen en el contaje de longitud. Por tanto, el número total de caracteres posteriores al indicador de longitud es nueve.)

En este ejemplo, los caracteres 5 a 10 (inclusive) son los caracteres que cuenta Len (n).

8.6 Programar la comunicación PtP

STEP 7 Basic ofrece instrucciones avanzadas que permiten al programa de usuario establecer comunicaciones punto a punto utilizando un protocolo diseñado y definido en el programa de usuario. Estas instrucciones se dividen en dos categorías, a saber:

- Instrucciones de configuración
- Instrucciones de comunicación

Instrucciones de configuración

Para que el programa de usuario pueda intervenir en la comunicación PtP, es preciso configurar el puerto de comunicación y los parámetros para enviar y recibir datos.

El puerto y los mensajes pueden configurarse para todo módulo de comunicación en la configuración de dispositivos o mediante estas instrucciones en el programa de usuario:

- PORT_CFG
- SEND_CFG
- RCV_CFG

Instrucciones de comunicación

Las instrucciones de comunicación PtP permiten al programa de usuario enviar y recibir mensajes a/de los módulos de comunicación. Encontrará más información sobre cómo transferir datos con estas instrucciones en el apartado Coherencia de datos (Página 96).

Todas las funciones PtP funcionan de forma asíncrona. El programa de usuario puede utilizar una arquitectura de sondeo para determinar el estado de las transmisiones y recepciones. SEND_PTP y RCV_PTP pueden ejecutarse simultáneamente. Según sea necesario, los módulos de comunicación depositan los mensajes de transmisión y recepción en un búfer cuyo tamaño máximo es 1024 bytes.

Los módulos de comunicación envían y reciben mensajes a/de los dispositivos punto a punto reales. El protocolo de mensajes se encuentra en un búfer que se recibe de o se envía a un puerto de comunicación específico.	• SEND_PTP • RCV_PTP
Se dispone de instrucciones adicionales que permiten inicializar el búfer de recepción, así como consultar y activar determinadas señales RS232.	• RCV_RST • SGN_GET • SGN_SET

8.6.1 Arquitectura de sondeo

Las instrucciones punto a punto del S7-1200 deben llamarse cíclicamente/periódicamente para comprobar si se han recibido mensajes. Un sondeo de la transmisión notifica al programa de usuario el fin de la transmisión.

Arquitectura de sondeo: maestro

La secuencia típica de un maestro es la siguiente:

1. Una instrucción SEND_PTP inicia una transmisión al módulo de comunicación.
2. La instrucción SEND_PTP se ejecuta en los ciclos posteriores para determinar el progreso de la transmisión.
3. Cuando la instrucción SEND_PTP indica que ha finalizado la transmisión, el programa de usuario se prepara para recibir la respuesta.
4. La instrucción RCV_PTP se ejecuta repetidamente para comprobar si hay una respuesta. Una vez que el CM haya recibido un mensaje de respuesta, la instrucción RCV_PTP copiará la respuesta en la CPU e indicará que se han recibido datos nuevos.
5. El programa de usuario puede procesar la respuesta.
6. Vaya al paso 1 y repita el ciclo.

Arquitectura de sondeo: esclavo

La secuencia típica de un esclavo es la siguiente:

1. El programa de usuario debería ejecutar la instrucción RCV_PTP en cada ciclo.
2. Una vez que el CM haya recibido una petición, la instrucción RCV_PTP indicará que los nuevos datos están listos y la petición se copiará en la CPU.
3. El programa de usuario debería procesar la petición y generar una respuesta.
4. Utilice una instrucción SEND_PTP para enviar la respuesta al maestro.
5. Ejecute repetidamente SEND_PTP para asegurarse de que se realiza la transmisión.
6. Vaya al paso 1 y repita el ciclo.

El esclavo debe llamar RCV_PTP con la suficiente frecuencia para recibir una transmisión del maestro antes de que se produzca un timeout del maestro a la espera de una respuesta. Para realizar esta tarea, el programa de usuario puede llamar RCV_PTP desde un OB de ciclo, previendo un tiempo de ciclo suficiente para recibir una transmisión del maestro antes de que transcurra el periodo de timeout. Si el tiempo de ciclo del OB se ajusta para que pueda ejecutarse dos veces dentro del periodo de timeout del maestro, el programa de usuario debería recibir todas las transmisiones sin pérdidas.

8.7 Instrucciones de comunicación punto a punto

8.7.1 Parámetros comunes de las instrucciones de comunicación punto a punto

Reacción de los LEDs del módulo de comunicación

El módulo de comunicación (CM) dispone de tres indicadores LED, a saber:

- LED de diagnóstico: este LED parpadea en color rojo hasta ser direccionado por la CPU. Tras arrancar la CPU, comprobará los módulos y direccionará el módulo CM. El LED de diagnóstico comienza a parpadear en color verde. Esto significa que la CPU ha direccionado el CM, pero que aún no ha cargado la configuración en él. La configuración se carga en el módulo cuando el programa se carga en la CPU. Una vez cargado el programa en la CPU, el LED de diagnóstico del módulo de comunicación debería encenderse en color verde.
- LED de transmisión: este LED se encuentra encima del LED de recepción. El LED de transmisión se enciende cuando se están enviando datos por el puerto de comunicación.
- LED de recepción: este LED se enciende cuando se están recibiendo datos por el puerto de comunicación.

Resolución de tiempos de bit

Numerosos parámetros se definen en un número de tiempos de bit a la velocidad de transferencia configurada. Si el parámetro se define en tiempos de bit, puede ser independiente de la velocidad de transferencia. Todos los parámetros definidos en unidades de tiempos de bit pueden especificarse hasta un número máximo de 65535. No obstante, el tiempo máximo que puede medir el S7-1200 es 8 segundos.

Parámetro de entrada REQ

Numerosas de las instrucciones de comunicación punto a punto (PtP) utilizan una entrada REQ que inicia la operación en una transición de "low" a "high". El estado lógico de la entrada REQ debe ser "high" (TRUE) durante una ejecución de la instrucción, aunque puede permanecer TRUE durante un tiempo cualquiera. La instrucción no iniciará ninguna operación diferente hasta que no sea llamada con la entrada REQ puesta a FALSE, de manera que pueda inicializar el histórico de la entrada REQ. Esto es necesario para que la instrucción pueda detectar la transición de "low" a "high" para iniciar la siguiente operación.

Cuando se inserta una instrucción PtP, es preciso identificar el DB instancia. Utilice un DB unívoco para cada tipo de instrucción PtP. Todas las instrucciones SEND_PTP para un puerto determinado deben tener un mismo DB instancia, pero SEND_PTP y RCV_PTP deben tener DBs instancia diferentes. Esto garantiza que cada instrucción procese correctamente las entradas tales como REQ.

Parámetro de entrada PORT

En la lista desplegable (asociada a la entrada PORT), seleccione el identificador de puerto del CM que debe operar esta instancia de la instrucción. Este número equivale al "identificador de hardware" en la información de configuración del CM.

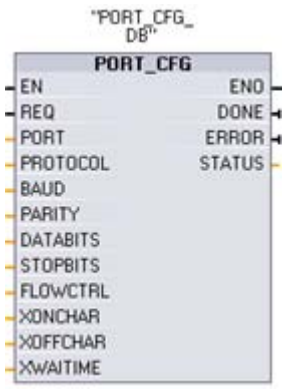
Parámetros de salida NDR, DONE, ERROR y STATUS

- La salida DONE indica que la operación solicitada se ha finalizado sin errores. Esta salida se activa durante un ciclo.
- La salida NDR (New Data Ready) indica que la acción solicitada se ha finalizado sin errores y que se han recibido datos nuevos. Esta salida se activa durante un ciclo.
- La salida ERROR indica que la acción solicitada ha finalizado con un error. Esta salida se activa durante un ciclo.
- La salida STATUS se utiliza para notificar errores o resultados de estado intermedios.
  - Si se activa el bit DONE o NDR, STATUS se pondrá a 0 o a un código de información.
  - Si se activa el bit ERROR, STATUS devolverá un código de error.
  - Si no se activa ninguno de los bits mencionados, la instrucción devolverá resultados que describen el estado actual de la función (p. ej. el estado "ocupado").

Códigos de condición comunes

STATUS (W#16#....)	Descripción
0000	Sin error
8x3A	Puntero no permitido en el parámetro x
8070	Se está utilizando toda la memoria de instancia interna
8080	Número de puerto no permitido
8081	Timeout, error del módulo u otro error interno
8082	Ha fallado la parametrización porque se está parametrizando en segundo plano
8083	Desbordamiento del búfer: El CM ha devuelto un mensaje recibido con una longitud superior a la que permite el parámetro de longitud.
8090	Longitud de mensaje incorrecta, submódulo incorrecto o mensaje no permitido
8091	Versión incorrecta en el mensaje de parametrización
8092	Longitud de registro incorrecta en el mensaje de parametrización

8.7.2 Instrucción PORT_CFG



La instrucción PORT_CFG (Configuración de puerto) permite cambiar los parámetros de puerto (p. ej. la velocidad de transferencia) desde el programa.

La configuración estática inicial del puerto puede ajustarse en las propiedades de la configuración de dispositivos. Como alternativa, es posible utilizar los valores predeterminados. La instrucción PORT_CFG puede ejecutarse en el programa con el fin de modificar la configuración. Los cambios de la configuración de PORT_CFG no se almacenan de forma permanente en la CPU. Los parámetros ajustados en la configuración de dispositivos se restablecen cuando la CPU cambia de RUN a STOP y tras desconectar y volver a conectar la alimentación.

Encontrará más información en Configurar los puertos de comunicación (Página 271) y Gestionar el control de flujo (Página 272).

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Activa el cambio de la configuración cuando se detecta un flanco ascendente en esta entrada.
PORT	IN	PORT	Identificador del puerto de comunicación: Esta dirección lógica es una constante que puede referenciarse en la ficha "Constantes" de la tabla de variables predeterminadas.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
PROTOCOL	IN	UInt	0 - Protocolo de comunicación punto a punto 1..n - Definición futura para protocolos específicos
BAUD	IN	UInt	Velocidad de transferencia del puerto: 1 - 300 baudios 2 - 600 baudios 3 - 1200 baudios 4 - 2400 baudios 5 - 4800 baudios 6 - 9600 baudios 7 - 19200 baudios 8 - 38400 baudios 9 - 57600 baudios 10 - 76800 baudios 11 - 115200 baudios
PARITY	IN	UInt	Paridad del puerto: 1 - Sin paridad 2 - Paridad par 3 - Paridad impar 4- Paridad Mark 5 - Paridad Space
DATABITS	IN	UInt	Bits por carácter: 1 - 8 bits de datos 2 - 7 bits de datos
STOPBITS	IN	UInt	Bits de parada: 1 - 1 bit de parada 2 - 2 bits de parada
FLOWCTRL	IN	UInt	Control de flujo: 1 - Sin control de flujo 2 - XON/XOFF 3 - RTS de hardware siempre ON 4 - RTS de hardware conmutado
XONCHAR	IN	Char	Determina el carácter que se utiliza como carácter XON. Generalmente, es un carácter DC1 (11H). Este parámetro se evalúa sólo si está habilitado el control de flujo.
XOFFCHAR	IN	Char	Determina el carácter que se utiliza como carácter XOFF. Generalmente, es un carácter DC3 (13H). Este parámetro se evalúa sólo si está habilitado el control de flujo.
XWAITIME	IN	UInt	Determina cuánto tiempo se debe esperar un carácter XON tras recibir un carácter XOFF o cuánto tiempo se debe esperar la señal CTS tras habilitar RTC (0 a 65535 ms). Este parámetro se evalúa sólo si está habilitado el control de flujo.
DONE	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición sin error
ERROR	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición con un error
STATUS	OUT	Word	Código de condición de ejecución

STATUS (W#16#....)	Descripción
80A0	El protocolo indicado no existe.
80A1	La velocidad de transferencia indicada no existe.
80A2	La opción de paridad indicada no existe.
80A3	El número de bits de datos indicado no existe.
80A4	El número de bits de parada indicado no existe.
80A5	El tipo de control de flujo indicado no existe.
80A6	El tiempo de espera es 0 y el control de flujo está habilitado
80A7	XON y XOFF son valores no válidos

8.7.3 Instrucción SEND_CFG



La instrucción SEND_CFG (Enviar configuración) permite configurar dinámicamente los parámetros de transmisión serie de un puerto de comunicación punto a punto. Todos los mensajes en cola de espera en un módulo de comunicación (CM) se rechazarán una vez ejecutada la instrucción SEND_CFG.

La configuración estática inicial del puerto puede ajustarse en las propiedades de la configuración de dispositivos. Como alternativa, es posible utilizar los valores predeterminados. La instrucción SEND_CFG puede ejecutarse en el programa con el fin de modificar la configuración. Los cambios de configuración con SEND_CFG no se almacenan de forma permanente en el PLC. Los parámetros ajustados en la configuración de dispositivos se restablecen cuando la CPU cambia de RUN a STOP y tras desconectar y volver a conectar la alimentación. Consulte Configurar los parámetros de transmisión y recepción (Página 274).

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Activa el cambio de configuración cuando se produce un flanco ascendente en esta entrada.
PORT	IN	PORT	Identificador del puerto de comunicación: Esta dirección lógica es una constante que puede referenciarse en la ficha "Constantes" de la tabla de variables predeterminadas.
RTSONDLY	IN	UInt	Número de milisegundos que debe esperarse tras la habilitación de RTS antes de cualquier transmisión de datos Tx. Este parámetro sólo es válido si está habilitado el control de flujo por hardware. 0 - 65535 ms. 0 inhibe la función.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
RTSOFFDLY	IN	UInt	Número de milisegundos que se debe esperar después de la transmisión de datos Tx antes de que se inhiba RTS: Este parámetro sólo es válido si está habilitado el control de flujo por hardware. 0 - 65535 ms. 0 inhibe la función.
BREAK	IN	UInt	Este parámetro indica que se enviará una pausa tras el inicio de cada mensaje durante el número de tiempos de bit indicado. El valor máximo posible es 65535 tiempos de bit. 0 inhibe la función. 8 segundos máx.
IDLELINE	IN	UInt	Este parámetro indica que la línea permanecerá inactiva durante el número de tiempos de bit indicado hasta el inicio de cada mensaje. El valor máximo posible es 65535 tiempos de bit. 0 inhibe la función. 8 segundos máx.
DONE	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición sin error
ERROR	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición con un error
STATUS	OUT	Word	Código de condición de ejecución

STATUS (W#16#....)	Descripción
80B0	No se permite configurar una alarma de transmisión
80B1	El tiempo de pausa excede el valor permitido (2500 tiempos de bit)
80B2	El tiempo de inactividad excede el valor permitido (2500 tiempos de bit)

8.7.4 Instrucción RCV_CFG



La instrucción RCV_CFG (Recibir configuración) permite configurar dinámicamente los parámetros de recepción serie de un puerto de comunicación punto a punto. Esta instrucción configura las condiciones que indican el inicio y fin de un mensaje recibido. Todos los mensajes en cola de espera en un CM se rechazarán cuando se ejecute RCV_CFG.

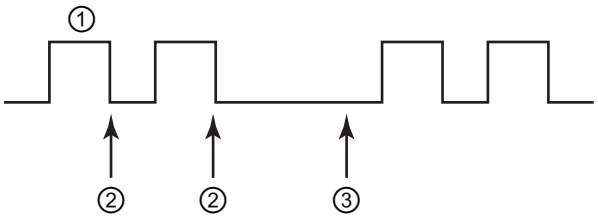
La configuración estática inicial del puerto del CM puede ajustarse en las propiedades de la configuración de dispositivos. Como alternativa, es posible utilizar los valores predeterminados. La instrucción RCV_CFG puede ejecutarse en el programa con el fin de modificar la configuración. Los cambios de configuración con RCV_CFG no se almacenan de forma permanente en el PLC. Los parámetros ajustados en la configuración de dispositivos se restablecen cuando la CPU cambia de RUN a STOP y tras desconectar y volver a conectar la alimentación. Encontrará más información en Configurar los parámetros de recepción (Página 274).

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Activa el cambio de configuración cuando se produce un flanco ascendente en esta entrada.
PORT	IN	PORT	Identificador del puerto de comunicación: Esta dirección lógica es una constante que puede referenciarse en la ficha "Constantes" de la tabla de variables predeterminadas.
CONDITIONS	IN	CONDITIONS	La estructura de datos CONDITIONS indica las condiciones de inicio y fin del mensaje. Estas se describen más abajo.
DONE	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición sin error
ERROR	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición con un error
STATUS	OUT	Word	Código de condición de ejecución

Condiciones de inicio de la instrucción RCV_PTP

La instrucción RCV_PTP utiliza la configuración indicada por la instrucción RCV_CFG para determinar el inicio y fin de los mensajes de comunicación punto a punto. Las condiciones de inicio determinan el inicio de un mensaje. Una o más condiciones de inicio pueden determinar el inicio de un mensaje. Si se especifica más de una condición de inicio, todas las condiciones deberán cumplirse antes de iniciar el mensaje. Condiciones de inicio posibles:

- "Carácter de inicio" indica que, en cuanto se reciba correctamente un carácter en particular, se iniciará el mensaje. Este carácter será el primer carácter del mensaje. Todo carácter que se reciba antes de este carácter específico se descartará.
- "Carácter cualquiera" indica que, en cuanto se reciba correctamente un carácter cualquiera, se iniciará el mensaje. Este carácter será el primer carácter del mensaje.
- "Line Break" especifica que la recepción de un mensaje debe comenzar cuando se reciba un carácter de salto de línea.
- "Idle Line" especifica que la recepción de un mensaje debe comenzar una vez que la línea de recepción haya estado inactiva o en reposo durante el número de tiempos de bit indicado. Cuando se cumpla esta condición, se iniciará el mensaje.



① Caracteres

② Reinicia el temporizador de línea inactiva

③ La línea inactiva se detecta y se inicia la recepción del mensaje

- Secuencias variables: Es posible crear condiciones de inicio basadas en un número variable de secuencias de caracteres (4 como máximo) que comprenden un número variable de caracteres (5 como máximo). Para toda posición de carácter en toda secuencia puede seleccionarse un carácter específico, o bien un carácter comodín, con lo que cualquier carácter cumplirá la condición. Esta condición de inicio puede utilizarse cuando diferentes secuencias de caracteres indican el inicio de un mensaje.

  Considere el siguiente mensaje recibido en código hexadecimal: "68 10 aa 68 bb 10 aa 16" y las secuencias de inicio configuradas que muestra la tabla siguiente. Las secuencias de inicio se comienzan a evaluar al recibirse correctamente el primer carácter 68H. Tras recibirse correctamente el cuarto carácter (el segundo 68H), se cumple la condición de inicio 1. Una vez cumplidas las condiciones de inicio, se iniciará la evaluación de las condiciones de fin.

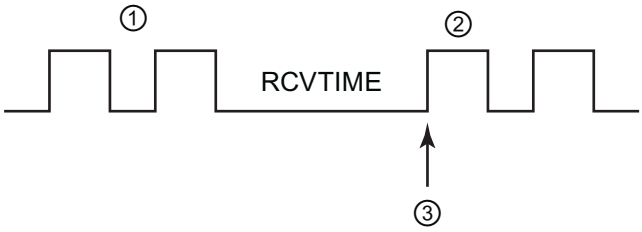
El procesamiento de la secuencia de inicio puede cancelarse debido a distintos errores de paridad, trama o tiempo excedido entre caracteres. Debido a estos errores, no se recibe el mensaje puesto que no se ha cumplido la condición de inicio.

Condición de inicio	Primer carácter	Primer carácter +1	Primer carácter +2	Primer carácter +3	Primer carácter +4
1	68H	xx	xx	68H	xx
2	10H	aaH	xx	xx	xx
3	dcH	aaH	xx	xx	xx
4	e5H	xx	xx	xx	xx

Condiciones de fin de la instrucción RCV_PTP

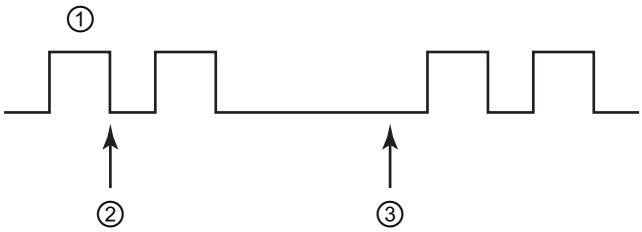
Las condiciones de fin configuradas determinan el fin de un mensaje. La primera aparición de una o más condiciones de fin configuradas determina el fin de un mensaje. Condiciones de fin posibles:

- "Tiempo de respuesta excedido" especifica que un carácter de la respuesta debe recibirse correctamente dentro del tiempo indicado por RCVTIME. El temporizador comenzará a contar en cuanto la transmisión finalice correctamente y el módulo inicie la recepción. Si no se recibe ningún carácter durante el periodo que indica RCVTIME, se devuelve un error a la instrucción RCV_PTP correspondiente. El timeout de respuesta no define una condición de fin específica. Sólo determina que un carácter debe recibirse correctamente dentro del tiempo indicado. Es preciso utilizar una condición de fin distinta para definir la condición de fin de los mensajes de respuesta.



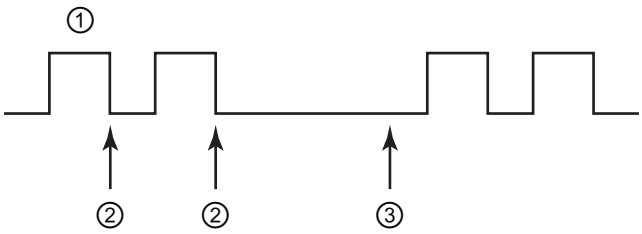
① Caracteres transmitidos
② Caracteres recibidos
③ El primer carácter debe haberse recibirse correctamente hasta este instante

- "Tiempo de mensaje excedido" especifica que un mensaje debe recibirse dentro del tiempo indicado por MSGTIME. El temporizador comenzará a contar tan pronto como se cumpla la condición de inicio indicada.



① Caracteres recibidos
② Se cumple la condición de inicio del mensaje: el temporizador de mensajes arranca
③ El temporizador de mensajes se detiene y finaliza el mensaje

- El tiempo entre caracteres es el periodo medido desde el final de un carácter (el último bit de parada) hasta el final del carácter siguiente. Si el tiempo entre dos caracteres cualquiera excede el número de tiempos de bit configurado, se terminará el mensaje.



① Caracteres recibidos

② Inicializa el temporizador entre caracteres.

③ El temporizador entre caracteres se detiene y finaliza el mensaje con errores

- Longitud máxima: La recepción se detiene una vez que se haya recibido el número de caracteres indicado. Esta condición sirve para impedir un error de desbordamiento del búfer de mensajes.

  Si esta condición de fin se combina con condiciones de fin por tiempo excedido (timeout) y ocurre una condición de timeout, los caracteres válidos recibidos hasta entonces estarán disponibles, aunque no se haya alcanzado la longitud máxima. Esto permite soportar protocolos de longitud variable si sólo se conoce la longitud máxima.

- Condición combinada "N + tamaño de longitud + longitud M". Esta condición de fin puede utilizarse para procesar un mensaje de tamaño variable que contenga un campo de longitud.
  - "N" indica la posición (número de caracteres desde el comienzo del mensaje) donde comienza el campo de longitud. (en base 1)
  - El "Tamaño de longitud" indica el tamaño del campo de longitud. Los valores válidos son 1, 2 ó 4 bytes.
  - La "Longitud M" indica el número de caracteres de fin (posteriores al campo de longitud) que no se incluyen en la longitud del mensaje. Este valor puede utilizarse para indicar la longitud de un campo de suma de verificación cuyo tamaño no se incluye en el campo de longitud.
  - Un ejemplo podría ser un formato de mensaje compuesto por un carácter de inicio, un carácter de dirección, un campo de longitud de un byte, los datos del mensaje, caracteres de suma de verificación y un carácter de fin. Las entradas identificadas con "Len" se corresponden con el parámetro N. El valor de N sería 3, indicando que el byte de longitud se posiciona en el 3er. byte desde el comienzo del mensaje. El valor de "Tamaño de longitud" sería 1, indicando que el valor de la longitud del mensaje está contenido en 1 byte. Los campos de suma de verificación y de los caracteres finales se corresponden con el parámetro "Longitud M". El valor de "Longitud M" sería 3, indicando el número de bytes de los campos de suma de verificación y caracteres.

Car. inicial (1)	Dirección (2)	Len (N) (3)	Mensaje ... (x)		Suma verif. y car. de fin Longitud M x+1 x+2 x+3		
xx	xx	xx	xx	xx	xx	xx	xx

- Caracteres variables: Esta condición de fin puede utilizarse para finalizar la recepción según diferentes secuencias de caracteres. Las secuencias pueden comprender un número variable de caracteres (5 como máximo). Para toda posición de carácter en toda secuencia puede seleccionarse un carácter específico, o bien un carácter comodín, con lo que cualquier carácter cumplirá la condición. Los caracteres iniciales configurados para ser ignorados no deben formar parte del mensaje. Los caracteres finales ignorados deben formar parte del mensaje.

Estructura de los tipos de datos del parámetro CONDITIONS, 1ª parte (condiciones de inicio)

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
STARTCOND	IN	UInt	Indica la condición de inicio: • 01H - Carácter inicial • 02H - Cualquier carácter • 04H - Line Break • 08H - Idle Line • 10H - Secuencia 1 • 20H - Secuencia 2 • 40H - Secuencia 3 • 80H - Secuencia 4
IDLETIME	IN	UInt	Número de tiempos de bit necesario para el timeout por "idle line". Se utiliza únicamente para una condición de "idle line". 0 a 65535
STARTCHAR	IN	Byte	Carácter de inicio utilizado con la condición de carácter de inicio.
STRSEQ1CTL	IN	Byte	Ignorar/comparar el control de cada carácter de la secuencia 1: Estos son los bits de habilitación de cada carácter de la secuencia de inicio. • 01H - Carácter 1 • 02H - Carácter 2 • 04H - Carácter 3 • 08H - Carácter 4 • 10H - Carácter 5 Si se inhibe el bit asociado a un carácter, cualquier carácter será válido en esta posición de la secuencia.
STRSEQ1	IN	Char[5]	Caracteres de inicio de la secuencia 1 (5 caracteres)
STRSEQ2CTL	IN	Byte	Ignorar/comparar el control de cada carácter de la secuencia 2
STRSEQ2	IN	Char[5]	Caracteres de inicio de la secuencia 2 (5 caracteres)
STRSEQ3CTL	IN	Byte	Ignorar/comparar el control de cada carácter de la secuencia 3
STRSEQ3	IN	Char[5]	Caracteres de inicio de la secuencia 3 (5 caracteres)
STRSEQ4CTL	IN	Byte	Ignorar/comparar el control de cada carácter de la secuencia 4
STRSEQ4	IN	Char[5]	Caracteres de inicio de la secuencia 4 (5 caracteres)

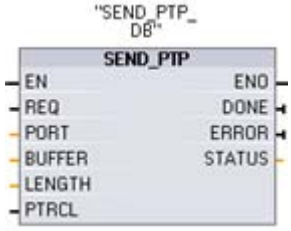
Estructura de los tipos de datos del parámetro CONDITIONS, 2ª parte (condiciones de fin)

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
ENDCOND	IN	UInt	Este parámetro define la condición de fin del mensaje: • 01H -Tiempo de respuesta • 02H -Tiempo del mensaje • 04H - Tiempo excedido entre caracteres • 08H - Longitud máxima • 10H - N + LEN + M • 20H - Secuencia
MAXLEN	IN	UInt	Longitud máxima del mensaje: Se utiliza sólo si está seleccionada la condición de fin "Longitud máxima". 0 a 1023 bytes
N	IN	UInt	Posición de byte dentro del campo de longitud en el mensaje. Se utiliza sólo con la condición de fin N + LEN + M. 1 a 1023 bytes
LENGTHSIZE	IN	UInt	Tamaño del campo de byte (1, 2 ó 4 bytes). Se utiliza sólo con la condición de fin N + LEN + M.
LENGTHM	IN	UInt	Indica el número de caracteres posteriores al campo de longitud que no se incluyen en el valor del campo de longitud. Se utiliza sólo con la condición de fin N + LEN + M. 0 a 255 bytes
RCVTIME	IN	UInt	Indica cuánto tiempo debe esperarse hasta que se reciba el primer carácter. La recepción se terminará con un error si no se recibe correctamente ningún carácter dentro del tiempo indicado. Se utiliza sólo con la condición de fin "Tiempo de respuesta". 0 a 65535 tiempos de bit, 8 segundos máx. Este parámetro no se evalúa realmente como condición de fin, puesto que sólo evalúa las condiciones de inicio. Es preciso seleccionar una condición de fin distinta.
MSGTIME	IN	UInt	Indica cuánto tiempo debe esperarse hasta la recepción completa del mensaje una vez recibido el primer carácter. Este parámetro se utiliza sólo si está seleccionada la condición de fin "Tiempo de mensaje excedido". 0 - 65535 milisegundos
CHARGAP	IN	UInt	Indica el número de tiempos de bit entre caracteres. Si el número de tiempos de bit entre caracteres excede el valor especificado, se cumplirá la condición de fin. Se utiliza sólo con la condición de fin "Tiempo excedido entre caracteres". 0 a 65535 milisegundos
ENDSEQ1CTL	IN	Byte	Ignorar/comparar el control de cada carácter de la secuencia 1: Estos son los bits de habilitación de cada carácter de la secuencia de fin. El carácter 1 es el bit 0, el carácter 2 es el bit 1, …, el carácter 5 es el bit 4. Si se inhibe el bit asociado a un carácter, cualquier carácter será válido en esta posición de la secuencia.
ENDSEQ1	IN	Char[5]	Caracteres de inicio de la secuencia 1 (5 caracteres)

Códigos de condición

STATUS (W#16#....)	Descripción
80C0	Se ha seleccionado una condición de inicio no permitida
80C1	Se ha seleccionado una condición de fin no permitida o no se ha seleccionado ninguna condición de fin
80C2	Hay una alarma de recepción habilitada, pero esto no es posible
80C3	La condición de fin "Longitud máxima" está habilitada y la longitud máxima es 0 ó > 1024
80C4	La longitud calculada está habilitada y N es >= 1023
80C5	La longitud calculada está habilitada y la longitud no es 1, 2 ó 4
80C6	La longitud calculada está habilitada y el valor M es > 255
80C7	La longitud calculada está habilitada y es > 1024
80C8	El timeout de respuesta está habilitado y es igual a cero
80C9	El tiempo excedido entre caracteres está habilitado y es igual a cero ó > 2500
80CA	El timeout por "idle line" está habilitado y es igual a cero ó > 2500
80CB	La secuencia de fin está habilitada, pero todos los caracteres son irrelevantes
80CC	La secuencia de inicio (una cualquiera de 4) está habilitada, pero todos los caracteres son irrelevantes

8.7.5 Instrucción SEND_PTP



La instrucción SEND_PTP (Enviar datos punto a punto) inicia la transferencia de datos. SEND_PTP transfiere el búfer indicado al CM. El programa de la CPU se sigue ejecutando mientras el CM envía los datos a la velocidad de transferencia indicada. Sólo una operación de transmisión puede estar pendiente en un momento dado. El CM devuelve un error si una segunda instrucción SEND_PTP se ejecuta mientras el CM está transmitiendo un mensaje.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Activa la transmisión solicitada cuando se produce un flanco ascendente en esta entrada de habilitación de la transmisión. Esto inicia la transferencia del contenido del búfer al módulo de comunicación punto a punto (CM).
PORT	IN	PORT	Identificador del puerto de comunicación: Esta dirección lógica es una constante que puede referenciarse en la ficha "Constantes" de la tabla de variables predeterminadas.

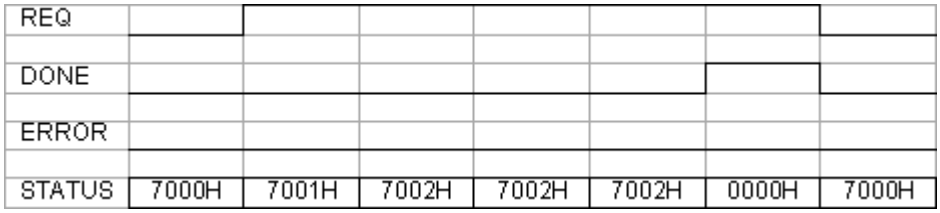
Parámetro	Tipo de parámetro	Tipo de datos	Descripción
BUFFER	IN	Variante	Este parámetro apunta a la dirección inicial del búfer de transmisión. No se soportan los datos booleanos ni las matrices booleanas.
LENGTH	IN	UInt	Longitud de la trama transmitida de bytes Al transmitir una estructura compleja, utilice siempre la longitud 0.
PTRCL	IN	Bool	Este parámetro selecciona el búfer para la comunicación punto a punto normal o los protocolos suministrados por Siemens que están implementados en el CM acoplado. FALSE = operaciones punto a punto controladas por el programa de usuario. (única opción válida)
DONE	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición sin error
ERROR	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición con un error
STATUS	OUT	Word	Código de condición de ejecución

El estado lógico de las salidas DONE y ERROR es FALSE durante la operación de transmisión. Una vez finalizada la operación de transmisión, la salida DONE o ERROR se pone a TRUE durante un ciclo para mostrar el estado de la transmisión. Mientras que DONE o ERROR sea TRUE, la salida STATUS será válida.

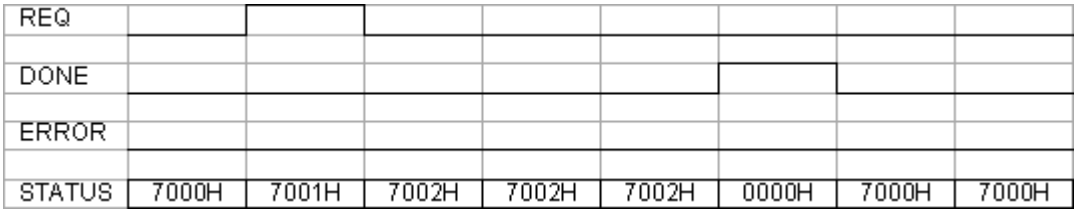
La instrucción devuelve el estado 16#7001 si el módulo de comunicación (CM) acepta los datos transmitidos. Las ejecuciones posteriores de SEND_PTP devuelven 16#7002 si el CM aún está ocupado transmitiendo datos. Una vez finalizada la operación de transmisión, el CM devuelve el estado de transmisión; 16#0000 si no han ocurrido errores. Las ejecuciones posteriores de SEND_PTP con REQ puesto a "low" devuelven el estado 16#7000 (no ocupado).

Relación de los valores de salida respecto a REQ:

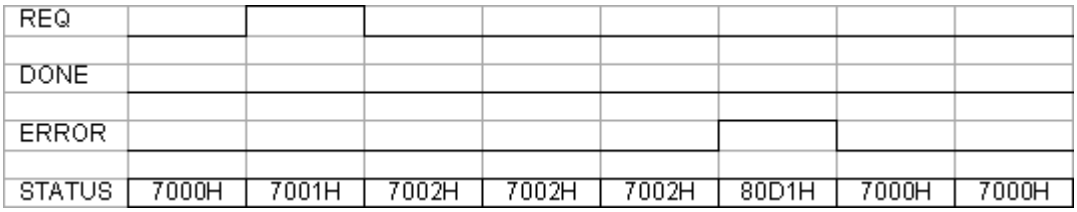
Para esto se supone que la instrucción se llama periódicamente para comprobar el estado del proceso de transmisión. En el diagrama siguiente se supone que la instrucción se llama en cada ciclo (representado por los valores de STATUS).



El diagrama siguiente muestra cómo los parámetros DONE y STATUS son válidos sólo durante un ciclo si la línea REQ se impulsa (durante un ciclo) para iniciar la operación de transmisión.



El diagrama siguiente muestra la relación de los parámetros DONE, ERROR y STATUS cuando se presenta un error.



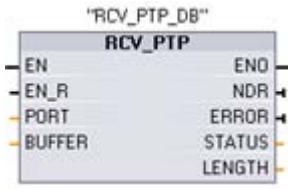
STATUS (W#16#....)	Descripción
80D0	Nueva petición estando activo el transmisor
80D1	Transmisión cancelada debido a que no se ha detectado ningún CTS durante el tiempo de espera
80D2	Transmisión cancelada debido a que no se ha recibido DSR del dispositivo DCE
80D3	Transmisión cancelada debido a desbordamiento de la cola de espera (transmisión de más de 1024 bytes)
7000	No ocupado
7001	Ocupado aceptando una petición (primera llamada)
7002	Ocupado en un sondeo (n-ésima llamada)

Interacción de los parámetros LENGTH y DATA para PTP_SEND

El tamaño mínimo de los datos que pueden transmitirse con la instrucción PTP_SEND es un byte. El parámetro DATA determina el tamaño de los datos por transmitir. Para el parámetro DATA no pueden utilizarse BOOL ni matrices de BOOL.

Parámetro LENGTH	Parámetro DATA	Descripción
LENGTH = 0	No utilizado	Los datos completos se envían según se define en el parámetro DATA. No es necesario especificar el número de bytes transmitidos si LENGTH = 0.
LENGTH > 0	Tipo de datos simple	El valor de LENGTH debe contener el contaje de bytes de este tipo de datos. De lo contrario, no se transferirá nada y se devolverá el error 8088H.
	Estructura	El valor de LENGTH puede contener un contaje de bytes menor que la longitud de bytes completa de la estructura. En este caso, se transferirán sólo los primeros bytes de LENGTH.
	Matriz	El valor de LENGTH puede contener un contaje de bytes menor que la longitud de bytes completa de la matriz. En este caso, se transferirán sólo los elementos de matriz que quepan por completo en los bytes de LENGTH. El valor de LENGTH debe ser un múltiplo del contaje de bytes del elemento de datos. De lo contrario, STATUS = 8088H, ERROR = 1 y la transmisión no se efectuará.
	String	Se transfiere la disposición de memoria completa del formato de cadena. El valor de LENGTH debe incluir bytes para la longitud máxima, la longitud real y los caracteres de cadena. Para el tipo de datos STRING, todas las longitudes y caracteres tienen un tamaño de un byte. Si se utiliza una cadena como parámetro real en el parámetro DATA, el valor de LENGTH también deberá incluir dos bytes para los dos campos de longitud.

8.7.6 Instrucción RCV_PTP



La instrucción RCV_PTP (Recepción punto a punto) comprueba si el CM ha recibido mensajes. Si hay un mensaje disponible, se transferirá del CM a la CPU. Un error devuelve el valor de STATUS apropiado.

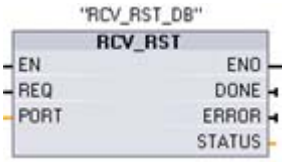
El valor de STATUS es válido si NDR o ERROR es TRUE. El valor de STATUS indica el motivo por el que ha finalizado la recepción en el CM. Generalmente, es un valor positivo que indica que la recepción se ha realizado correctamente y que el proceso ha finalizado de forma normal. Si el valor de STATUS es negativo (es decir, si está activado el bit más significativo del valor hexadecimal), significa que la recepción se ha finalizado debido a un error p. ej. de paridad, trama o desbordamiento.

Todo módulo de comunicación punto a punto puede almacenar como máximo 1 KB en un búfer. Esto podría ser un mensaje grande o varios mensajes pequeños.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
EN_R	IN	Bool	Si esta entrada es TRUE, comprobar si el módulo CM ha recibido mensajes. Si un mensaje se ha recibido correctamente, se transferirá del módulo a la CPU. Si EN_R es FALSE, se comprobará si el CM ha recibido mensajes y se activará la salida STATUS, pero el mensaje no se transferirá a la CPU.
PORT	IN	PORT	Identificador del puerto de comunicación: Esta dirección lógica es una constante que puede referenciarse en la ficha "Constantes" de la tabla de variables predeterminadas.
BUFFER	IN	Variante	Este parámetro apunta a la dirección inicial del búfer de recepción. Este búfer debería ser lo suficientemente grande para recibir el mensaje de longitud máxima. No se soportan los datos booleanos ni las matrices booleanas.
NDR	OUT	Bool	TRUE durante un ciclo cuando se dispone de datos nuevos y la operación ha finalizado sin errores.
ERROR	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la operación con un error
STATUS	OUT	Word	Código de condición de ejecución
LENGTH	OUT	UInt	Longitud del mensaje devuelto (en bytes)

STATUS (W#16#...)	Descripción
0000	No hay ningún búfer disponible
80E0	Mensaje terminado debido a que el búfer de recepción está lleno
80E1	Mensaje terminado debido a un error de paridad
80E2	Mensaje terminado debido a un error de trama
80E3	Mensaje terminado debido a un error de desbordamiento
80E4	Mensaje terminado porque la longitud calculada excede el tamaño del búfer
0094	Mensaje terminado porque se ha recibido la longitud máxima de caracteres
0095	Mensaje terminado debido a timeout del mensaje
0096	Mensaje terminado porque se ha excedido el tiempo entre caracteres
0097	Mensaje terminado debido a timeout de respuesta
0098	Mensaje terminado porque se ha cumplido la condición de longitud "N+LEN+M"
0099	Mensaje terminado porque se ha cumplido la condición de secuencia de fin

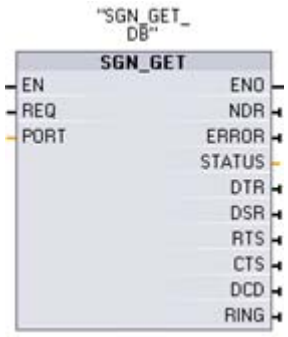
8.7.7 Instrucción RCV_RST



La instrucción RCV_RST (Inicializar receptor) borra el búfer de recepción en el CM.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Activa la inicialización del receptor cuando se produce un flanco ascendente en esta entrada de habilitación
PORT	IN	PORT	Identificador del puerto de comunicación: Este puerto debe determinarse utilizando la direccion lógica del módulo.
DONE	OUT	Bool	Si es TRUE durante un ciclo, indica que la última petición se ha finalizado sin errores.
ERROR	OUT	Bool	Si es TRUE, indica que la última petición se ha finalizado con errores. Además, si esta salida es TRUE, la salida STATUS contendrá los códigos de error respectivos.
STATUS	OUT	Word	Código de error

8.7.8 Instrucción SGN_GET

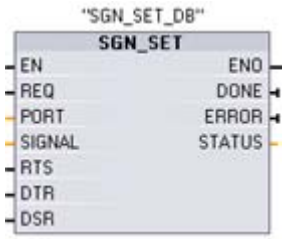


La instrucción SGN_GET (Consultar señales RS232) lee los estados actuales de las señales de comunicación RS232. Esta función es válida sólo para el CM (módulo de comunicación) RS232.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Los valores de las señales RS232 se consultan cuando se produce un flanco ascendente en esta entrada
PORT	IN	PORT	Identificador del puerto de comunicación: Esta dirección lógica es una constante que puede referenciarse en la ficha "Constantes" de la tabla de variables predeterminadas.
NDR	OUT	Bool	TRUE durante un ciclo cuando se dispone de datos nuevos y la operación ha finalizado sin errores
ERROR	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la operación con un error
STATUS	OUT	Word	Código de condición de ejecución
DTR	OUT	Bool	Terminal de datos disponible, módulo listo (salida)
DSR	OUT	Bool	Equipo de datos listo, interlocutor listo (entrada)
RTS	OUT	Bool	Petición de transmitir, módulo listo para transmitir (salida)
CTS	OUT	Bool	Listo para transmitir; el interlocutor puede recibir datos (entrada)
DCD	OUT	Bool	Detección de portadora de datos, nivel de señal de recepción (siempre FALSE, no se soporta)
RING	OUT	Bool	Indicación de timbre, señalización de una llamada entrante (siempre FALSE, no se soporta)

STATUS (W#16#....)	Descripción
80F0	El CM es un módulo RS485; no hay señales disponibles
80F1	Las señales no pueden activarse debido al control de flujo por hardware
80F2	Imposible activar DSR porque el módulo es DTE
80F3	Imposible activar DTR porque el módulo es DCE

8.7.9 Instrucción SGN_SET



La instrucción SGN_SET (Activar señales RS232) activa los estados de las señales de comunicación RS232. Esta función es válida sólo para el CM (módulo de comunicación) RS232.

Parámetro	Tipo de parámetro	Tipo de datos	Descripción
REQ	IN	Bool	Inicia la activación de las señales RS232 cuando se produce un flanco ascendente en esta entrada
PORT	IN	PORT	Identificador del puerto de comunicación: Esta dirección lógica es una constante que puede referenciarse en la ficha "Constantes" de la tabla de variables predeterminadas.
SIGNAL	IN	Byte	Selecciona las señales que deben activarse: (se permiten varias) • 01H = Activar RTS • 02H = Activar DTR • 04H = Activar DSR
RTS	IN	Bool	Petición de transmitir, módulo listo para transmitir el valor que debe ajustarse (TRUE o FALSE)
DTR	IN	Bool	Terminal de datos disponible, módulo listo para transmitir el valor que debe ajustarse (TRUE o FALSE)
DSR	IN	Bool	Equipo de datos listo (aplicable sólo a las interfaces DCE) (no se utiliza)
DONE	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición sin error
ERROR	OUT	Bool	TRUE durante un ciclo tras haberse finalizado la última petición con un error
STATUS	OUT	Word	Código de condición de ejecución

STATUS (W#16#....)	Descripción
80F0	El CM es un módulo RS485; no hay señales que puedan activarse
80F1	Las señales no pueden activarse debido al control de flujo por hardware
80F2	Imposible activar DSR porque el módulo es DTE
80F3	Imposible activar DTR porque el módulo es DCE

8.8 Errores

Valores de retorno de las instrucciones PtP

Toda instrucción PtP tiene tres salidas que indican el estado de finalización:

Parámetro	Tipo de datos	Valor predeterminado	Descripción
DONE	Booleano	FALSE	TRUE durante un ciclo indica que la última petición se ha finalizado sin errores.
ERROR	Booleano	FALSE	TRUE indica que la última petición se ha finalizado con errores. El código de error aplicable aparece en STATUS.
STATUS	Word	0	Dos bytes que contienen la clase y el número de error (si es aplicable). STATUS conserva su valor durante la ejecución de la función.

Errores y clases de errores comunes

Descripción de la clase	Clases de error	Descripción
Configuración del puerto	80Ax	Permite definir errores comunes de configuración del puerto
Configuración de la transmisión	80Bx	Permite definir errores comunes de configuración de la transmisión
Configuración de la recepción	80Cx	Permite definir errores comunes de configuración de la recepción
Tiempo de ejecución de la transmisión	80Dx	Permite definir errores comunes en tiempo de ejecución de la transmisión
Tiempo de ejecución de la recepción	80Ex	Permite definir errores comunes en tiempo de ejecución de la recepción
Procesamiento de señales	80Fx	Permite definir errores comunes en relación con el procesamiento de señales

Errores de configuración del puerto

Evento/ID de error	Descripción
0x80A0	El protocolo indicado no existe
0x80A1	La velocidad de transferencia indicada no existe
0x80A2	La paridad indicada no existe
0x80A3	El número de bits de datos indicado no existe
0x80A4	El número de bits de parada indicado no existe
0x80A5	El tipo de control de flujo indicado no existe

Errores de configuración de la transmisión

Evento/ID de error	Descripción
0x80B0	El protocolo indicado no existe
0x80B1	La velocidad de transferencia indicada no existe
0x80B2	La paridad indicada no existe
0x80B3	El número de bits de datos indicado no existe
0x80B4	El número de bits de parada indicado no existe
0x80B5	El tipo de control de flujo indicado no existe

Errores de configuración de la recepción

Evento/ID de error	Descripción
0x80C0	Error de condición de inicio
0x80C1	Error de condición de fin
0x80C3	Error de longitud máxima
0x80C4	Error del valor N (consulte N+LEN+M)
0x80C5	Error de tamaño de longitud (consulte MAXLEN o N+LEN+M)
0x80C6	Error del valor M (consulte N+LEN+M)
0x80C7	Error del valor N-longitud-M (consulte N+LEN+M)
0x80C8	Error de timeout de respuesta; no se ha recibido ningún mensaje durante el periodo de recepción indicado. (Consulte RCVTIME o MSGTIME)
0x80C9	Error de tiempo excedido entre caracteres (consulte CHARGAP)
0x80CA	Error de timeout por "idle line" (consulte IDLELINE)
0x80CB	Hay una secuencia de fin configurada, pero todos los caracteres son irrelevantes
0x80CC	Hay una secuencia de inicio configurada, pero todos los caracteres son irrelevantes

Errores de procesamiento de señales

Evento/ID de error	Descripción
0x80F0	El CM es un módulo RS485 y no hay señales disponibles
0x80F1	El CM es un módulo RS232, pero no es posible activar señales porque está habilitado el control de flujo por hardware
0x80F2	La señal DSR no se puede activar porque el módulo es un dispositivo DTE

Errores en tiempo de ejecución de la transmisión

Evento/ID de error	Descripción
Límite del búfer	Se ha excedido el búfer de transmisión disponible en total del CP
0x80D0	Se ha recibido una petición nueva estando activo el transmisor
0x80D1	El receptor ha lanzado una petición de control de flujo para suspender una transmisión activa y no ha habilitado nuevamente la transmisión en el tiempo de espera indicado. Este error también se genera durante el control de flujo por hardware cuando el receptor no confirma CTS en el tiempo de espera indicado.
0x80D2	La petición de transmisión se ha cancelado porque no se recibe ninguna señal DSR del DCE
0x80D3	Se ha excedido el búfer de transmisión disponible en total del CP
0x7000	La función de transmisión no está ocupada
0x7001	La función de transmisión está ocupada con la primera llamada
0x7002	La función de transmisión está ocupada con las llamadas posteriores (sondeos tras la primera llamada)

Valores de retorno en el tiempo de ejecución de la recepción

Evento/ID de error	Descripción
0x80E0	El mensaje se ha terminado porque el búfer de recepción está lleno
0x80E1	El mensaje se ha terminado debido a un error de paridad
0x80E2	El mensaje se ha terminado debido a un error de trama
0x80E3	El mensaje se ha terminado debido a un error de desbordamiento
0x80E4	El mensaje se ha terminado debido a que la longitud especificada excede el tamaño del búfer total
0x0094	El mensaje se ha terminado porque se ha recibido la longitud de caracteres máxima (MAXLEN)
0x0095	El mensaje se ha terminado porque el mensaje completo no se ha recibido en el tiempo indicado (MSGTIME)
0x0096	El mensaje se ha terminado porque no se ha recibido el siguiente carácter dentro del tiempo entre caracteres (CHARGAP)
0x0097	El mensaje se ha terminado porque el primer carácter no se ha recibido en el tiempo indicado (RCVTIME)
0x0098	El mensaje se ha terminado porque se ha cumplido la condición de longitud "n+len+m" (N+LEN+M)
0x0099	El mensaje se ha terminado porque se ha cumplido la secuencia de fin (ENDSEQ)

Errores diversos de parámetros

Evento/ID de error	Descripción
0x8n3A	Puntero no permitido en el parámetro n
0x8070	Se está utilizando toda la memoria de instancia interna
0x8080	Número de puerto no válido
0x8082	Ha fallado la parametrización porque ya se está parametrizando en segundo plano
0x8083	Desbordamiento del búfer. El CM ha devuelto más datos de lo permitido.
0x8085	El parámetro LEN está puesto a 0 o excede el valor máximo permitido
0x8088	El parámetro LEN excede el área de memoria especificada en DATA

Herramientas online y diagnóstico

9

9.1 LEDs de estado

La CPU y los módulos de E/S utilizan LEDs para indicar el estado operativo del módulo o de las E/S. La CPU incorpora los siguientes indicadores de estado:

- STOP/RUN
  - Luz naranja permanente indica el estado operativo STOP
  - Luz verde permanente indica el estado operativo RUN
  - Si parpadea (alternando entre verde y naranja), indica que la CPU está arrancando
- ERROR
  - Luz roja intermitente indica un error, p. ej. un error interno de la CPU, de la Memory Card o un error de configuración (los módulos no se corresponden)
  - Luz roja permanente indica que hay un fallo de hardware
- El LED MAINT (mantenimiento) parpadea cuando se inserta una Memory Card. La CPU pasa entonces a estado operativo STOP. Tras cambiar la CPU a estado operativo STOP, realice una de las funciones siguientes para iniciar la evaluación de la Memory Card:
  - Cambiar la CPU a estado operativo RUN
  - Realizar un borrado total (MRES)
  - Desconectar y volver a conectar la alimentación de la CPU

Descripción	STOP/RUN Naranja/verde	ERROR Rojo	MAINT Naranja
Alimentación desconectada	Off	Off	Off
Arranque, autotest, actualización de firmware	Parpadeo (alternando entre naranja y verde)	-	Off
Estado operativo STOP	On (naranja)	-	-
Estado operativo RUN	On (naranja)	-	-
Extracción de la Memory Card	On (naranja)	-	Parpadeo
Error	On (naranja o verde)	Parpadeo	-
Mantenimiento solicitado	On (naranja o verde)	-	On

Descripción	STOP/RUN Naranja/verde	ERROR Rojo	MAINT Naranja
Hardware averiado	On (naranja)	On	Off
Test de LEDs o firmware de la CPU defectuoso	Parpadeo (alternando entre naranja y verde)	Parpadeo	Parpadeo

La CPU incorpora asimismo dos LEDs que indican el estado de la comunicación PROFINET. Abra la tapa del bloque de terminales inferior para ver los LEDs PROFINET.

- Link (verde) se enciende para indicar una conexión correcta
- Rx/Tx (amarillo) se enciende para indicar la actividad de transmisión

La CPU y todos los módulos de señales (SM) digitales incorporan un LED I/O Channel para cada una de las entradas y salidas digitales. El LED I/O Channel (verde) se enciende o apaga para indicar el estado de la entrada o salida en cuestión.

Además, todo SM digital incorpora un LED DIAG que indica el estado del módulo:

- Verde indica que el módulo está operativo
- Rojo indica que el módulo está averiado o no operativo

Todo SM analógico incorpora un LED I/O Channel para cada una de las entradas y salidas analógicas.

- Verde indica que el canal se ha configurado y está activo
- Rojo indica una condición de error de la entrada o salida analógica en cuestión

Además, todo SM analógico incorpora un LED DIAG que indica el estado del módulo:

- Verde indica que el módulo está operativo
- Rojo indica que el módulo está averiado o no operativo

El SM detecta la presencia o ausencia de alimentación del módulo (alimentación de campo en caso necesario).

Descripción	DIAG (Rojo/verde)	I/O Channel (Rojo/verde)
Alimentación de campo desconectada	Rojo intermitente	Rojo intermitente
No se ha configurado o se está actualizando	Verde intermitente	Off
Módulo configurado sin errores	On (verde)	On (verde)
Condición de error	Rojo intermitente	-
Error de E/S (con diagnóstico habilitado)	-	Rojo intermitente
Error de E/S (con diagnóstico inhibido)	-	On (verde)

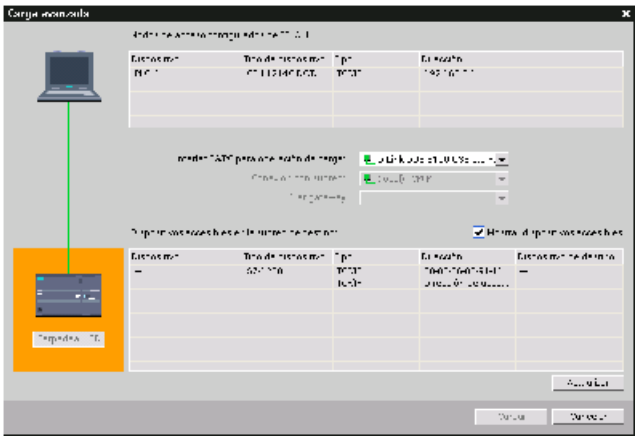
9.2 Establecer una conexión online con una CPU

Una conexión online entre la programadora y un sistema de destino se requiere para cargar programas y datos de ingeniería del proyecto en el sistema de destino, así como para las actividades siguientes:



- Comprobar programas de usuario
- Visualizar y cambiar el estado operativo de la CPU
- Visualizar y ajustar la fecha y hora de la CPU
- Visualizar la información del módulo
- Comparar bloques online y offline
- Diagnosticar el hardware

La Task Card "Herramientas online" permite acceder a los datos del sistema de destino en la vista online o de diagnóstico.



El estado online actual de un dispositivo se indica mediante un símbolo situado a la derecha del dispositivo en el árbol del proyecto.

El color naranja indica una conexión online.

Seleccione "Dispositivos accesibles" para buscar una CPU en la red.



Haga clic en "Conectar online" para establecer una conexión con una CPU en la red.

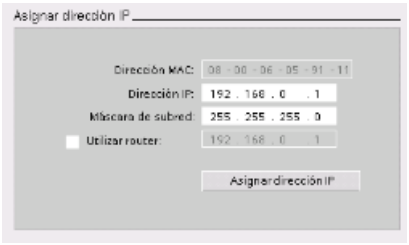
9.3 Ajustar la dirección IP y la hora

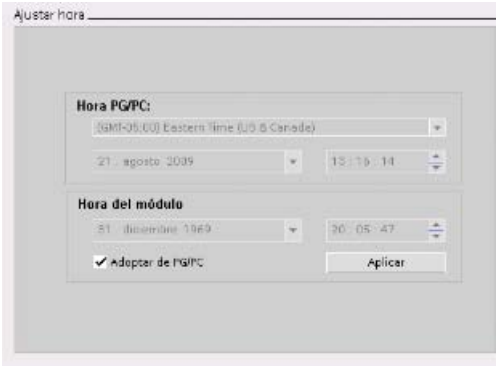
Es posible ajustar la dirección IP y la hora en la CPU online.

Tras establecer una conexión con una CPU online desde el área "Online y diagnóstico", es posible visualizar o cambiar la dirección IP.

Encontrará más información en el apartado Dirección IP (Página 84).

También es posible visualizar o ajustar los parámetros de fecha y hora en la CPU online.





9.4 Panel de control de la CPU online

La Task Card "Panel de control de la CPU" muestra el estado operativo (STOP o RUN) de la CPU online: También indica si la CPU tiene un error o si se están forzando valores. El panel de control de la CPU permite cambiar el estado operativo de una CPU online.

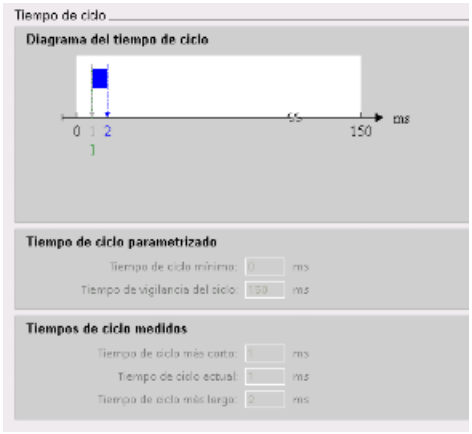


9.5 Vigilar el tiempo de ciclo y la carga de la memoria

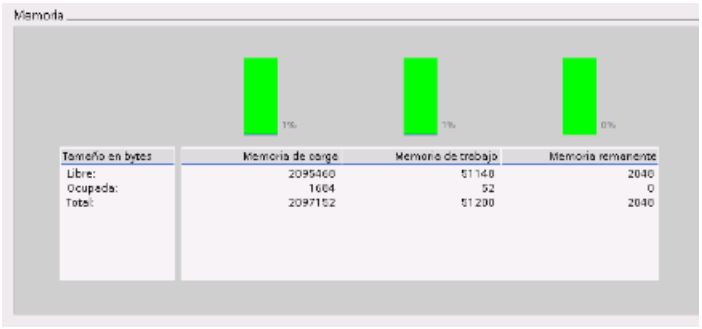
Es posible vigilar el tiempo de ciclo y la carga de la memoria de una CPU online.

Tras establecer una conexión con la CPU online es posible visualizar los siguientes valores medidos:

- Tiempo de ciclo
- Carga de la memoria





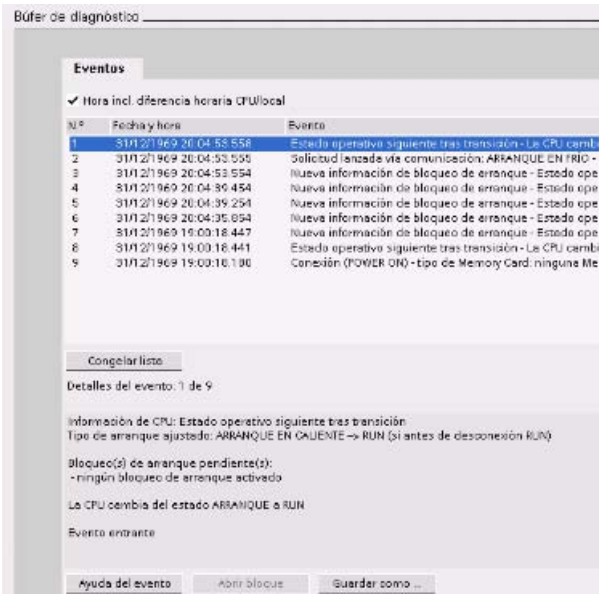




9.6 Visualizar los eventos de diagnóstico de la CPU

El búfer de diagnóstico permite consultar las actividades recientes de la CPU. El búfer de diagnóstico contiene las entradas siguientes:

- Eventos de diagnóstico
- Cambios del estado operativo de la CPU (transiciones a STOP o RUN)



La primera entrada contiene el evento más reciente. Toda entrada del búfer de diagnóstico incluye la fecha y hora de registro del evento, así como una descripción.

El número máximo de entradas depende de la CPU. Se soportan 50 entradas como máximo.

Sólo los 10 eventos más recientes del búfer de diagnóstico se almacenan de forma permanente. Si se restablece la configuración de fábrica de la CPU, se reinicializa el búfer de diagnóstico y se borran sus entradas.

9.7 Tablas de observación del programa de usuario

Una tabla de observación permite observar y forzar datos a medida que la CPU ejecuta el programa. Estos datos pueden ser de la memoria imagen de proceso (I o Q), datos físicos (I_:P o Q_:P), o bien datos M o DB, dependiendo de la función de observación o forzado.

La función de observación no modifica la secuencia del programa. Facilita información sobre la secuencia y los datos del programa en la CPU.

Las funciones de control permiten al usuario controlar la secuencia y los datos del programa. Hay que prestar atención al utilizar las funciones de forzado. Estas funciones pueden influir seriamente en la ejecución del programa de usuario/de sistema. Las tres funciones de control son: forzar, forzar permanentemente y desbloquear salidas en STOP.

La tabla de observación permite realizar las siguientes funciones online:

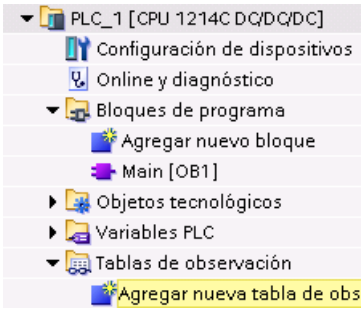
- Observar el estado de las variables
- Forzar los valores de las distintas variables
- Forzar permanentemente una variable a un valor determinado

Es posible seleccionar cuándo se debe observar o forzar la variable:

- Inicio del ciclo: Lee o escribe el valor al inicio del ciclo
- Fin del ciclo: Lee o escribe el valor al final del ciclo
- Cambiar a STOP

Para crear una tabla de observación, proceda del siguiente modo:

1. Haga doble clic en "Agregar nueva tabla de observación" para abrir una tabla de observación nueva.
2. Introduzca el nombre de la variable o agregue una variable a la tabla de observación.



Las siguientes opciones están disponibles para observar variables:

- Observar todos: Este comando inicia la observación de las variables visibles en la tabla de observación activa.
- Observar inmediatamente: Este comando inicia la observación de las variables visibles en la tabla de observación activa. La tabla de observación observa las variables inmediatamente y una sola vez.

Las siguientes opciones están disponibles para forzar variables:

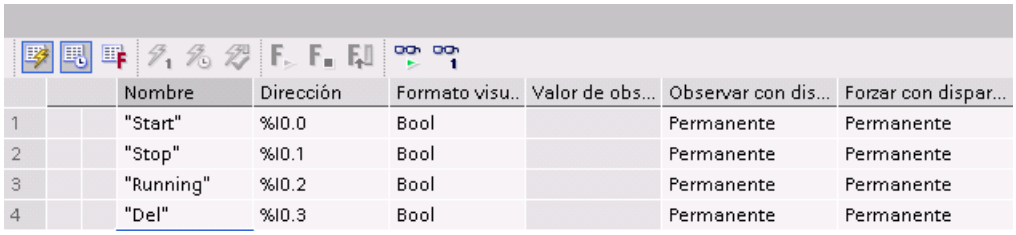
- "Forzar a 0" pone a "0" el valor de una dirección seleccionada.
- "Forzar a 1" pone a "1" el valor de una dirección seleccionada.
- "Forzar inmediatamente" cambia inmediatamente los valores de las direcciones seleccionadas durante un ciclo.

- "Forzar con disparador" cambia los valores de las direcciones seleccionadas.

  Esta función no confirma si las direcciones seleccionadas se han forzado realmente. Si se requiere una confirmación del cambio, utilice la función "Forzar inmediatamente".

- "Habilitar salidas de periferia" desactiva el comando para inhibir las salidas y está disponible sólo cuando la CPU se encuentra en estado operativo STOP.

Para forzar las variables debe existir una conexión online con la CPU.



		Nombre	Dirección	Formato visu..	Valor de obs...	Observar con dis...	Forzar con dispar...
1		"Start"	%I0.0	Bool		Permanente	Permanente
2		"Stop"	%I0.1	Bool		Permanente	Permanente
3		"Running"	%I0.2	Bool		Permanente	Permanente
4		"Del"	%I0.3	Bool		Permanente	Permanente

Las distintas funciones pueden seleccionarse mediante los botones en el lado superior de la tabla de observación.

Introduzca el nombre de la variable que desea observar y seleccione un formato de visualización en la lista desplegable. Si existe una conexión online con la CPU y se hace clic en el botón "Observar", se visualizará el valor real del punto de datos en el campo "Valor de observación".

Utilizar un disparador para observar o forzar variables PLC

Si se utiliza un disparador es posible determinar en qué punto del ciclo debe observarse o forzarse la dirección seleccionada.

Tipo de disparador	Descripción
Permanente	Recoge los datos continuamente
Al inicio del ciclo	Permanente: Recoge los datos continuamente al inicio del ciclo, después de que la CPU lee las entradas
	Único: Recoge los datos al inicio del ciclo, después de que la CPU lee las entradas
Al final del ciclo	Permanente: Recoge los datos continuamente al final del ciclo, antes de que la CPU escribe en las salidas
	Único: Recoge los datos una vez al final del ciclo, antes de que la CPU escribe en las salidas
Transición a STOP	Permanente: Recoge los datos continuamente cuando la CPU pasa a STOP
	Único: Recoge los datos una vez cuando la CPU pasa a STOP

Para modificar una variable PLC en un disparador determinado, seleccione el inicio o final del ciclo.

- Forzar una salida: El mejor evento de disparo para forzar una salida es al final del ciclo, inmediatamente antes de que la CPU escribe en las salidas.

  Observe el valor de las salidas al inicio del ciclo para determinar qué valor se escribe en las salidas físicas. Asimismo, observe las salidas antes de que la CPU escriba los valores en las salidas físicas para comprobar la lógica del programa y compararla con la reacción real de las E/S.

- Forzar una entrada: El mejor evento de disparo para forzar una entrada es al inicio del ciclo, inmediatamente después de que la CPU lee las entradas y antes de que el programa utiliza los valores de entrada.

  Si está forzando entradas al inicio del ciclo, deberá observar el valor de las entradas al final del ciclo para asegurarse de que no ha cambiado desde el principio.. Si los valores son diferentes, es posible que el programa de usuario esté escribiendo en una entrada por error.

Para diagnosticar la causa de una transición a STOP de la CPU, utilice el disparador "Transición a STOP" para capturar los últimos valores de proceso.

Desbloquear las salidas en modo STOP

La tabla de observación permite escribir en las salidas cuando la CPU está en modo STOP. Esta función sirve para comprobar el cableado de las salidas y verificar que el cable conectado a un borne de salida lanza una señal "high" o "low" al terminal del dispositivo de proceso al que está conectado.

⚠ ADVERTENCIA

Aunque la CPU está en estado operativo STOP, la habilitación de una salida física puede activar el punto del proceso a la que está conectada.

El estado de las salidas se puede cambiar en estado operativo STOP si están habilitadas las salidas. Si las salidas están inhibidas, no es posible modificarlas en estado operativo STOP.

- Para habilitar la modificación de las salidas en STOP, seleccione la opción "Habilitar salidas de periferia" del comando "Forzar" del menú "Online", o bien haga clic con el botón derecho del ratón en la fila correspondiente de la tabla de observación.
- Cuando la CPU pasa a estado operativo RUN se inhibe la opción "Habilitar salidas de periferia".
- Si alguna entrada o salida se fuerza permanentemente, la CPU no podrá desbloquear las salidas en estado operativo STOP. Primero es preciso cancelar la función de forzado permanentemente.

Forzar valores permanentemente en la CPU

La CPU permite forzar permanentemente las entradas y salidas. Para ello es preciso indicar la dirección de la entrada o salida física (I_:P o Q_:P) en la tabla de observación e iniciar el forzado permanente.

El valor forzado permanentemente sobrescribe las lecturas de las entradas físicas en el programa. El programa utiliza el valor forzado permanentemente para el procesamiento. Cuando el programa escribe en una salida física, el valor de forzado permanente sobrescribe el de la salida. El valor forzado permanentemente aparece en la salida física y es utilizado por el proceso.

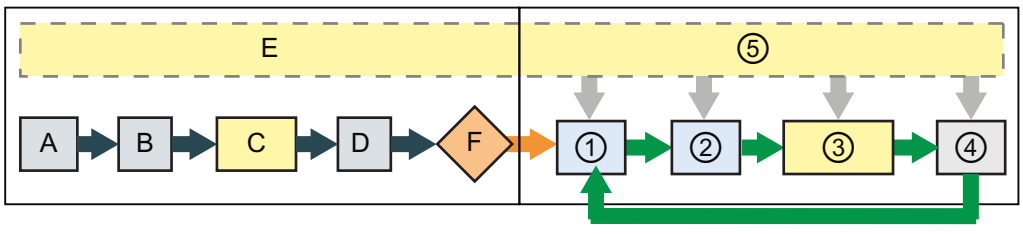
Cuando una entrada o salida se fuerza permanentemente en la tabla de observación, las acciones de forzado permanente se convierten en parte del programa de usuario. Aunque se haya cerrado el software de programación, las selecciones de forzado permanente permanecen activadas en el programa de la CPU hasta que son borradas al establecer una conexión online desde el software de programación y se para la función de forzado permanente. Los programas con entradas y/o salidas forzadas de forma permanente que se hayan cargado en una CPU diferente desde una Memory Card seguirán forzando permanentemente las E/S seleccionadas en el programa.

Si la CPU ejecuta el programa de usuario desde una Memory Card protegida contra escritura, el forzado permanente de una E/S no se puede iniciar ni cambiar desde una tabla de observación, ya que no es posible sobrescribir los valores en el programa de usuario protegido contra escritura. Todo intento de forzar permanentemente los valores protegidos contra escritura generará un error. Si se utiliza una Memory Card para transferir un programa de usuario, los elementos forzados permanentemente en esa Memory Card se transferirán a la CPU.

Nota

Las E/S digitales asignadas al HSC, PWM y PTO no se pueden forzar permanentemente

Las E/S digitales utilizadas por el contador rápido (HSC) y los dispositivos con modulación del ancho de pulso (PWM) y tren de impulsos (PTO) se asignan durante la configuración de dispositivos. Si se asignan direcciones de E/S digitales a dichos dispositivos, los valores de las direcciones de E/S asignadas no podrán modificarse utilizando la función de forzado permanente de la tabla de observación.



Arranque

A La función de forzado permanente no afecta el borrado del área de memoria de las entradas (I).

B La función de forzado permanente no afecta la inicialización de los valores de salida.

C Durante la ejecución de los OBs de arranque, la CPU aplica el valor de forzado permanente cuando el programa de usuario accede a la entrada física.

D El almacenamiento de los eventos de alarma en la cola de espera no se ve afectado.

E La habilitación de escritura en las salidas no se ve afectada.

RUN

① Mientras escribe la memoria de las salidas (Q) en las salidas físicas, la CPU aplica el valor de forzado permanente a medida que se van actualizando las salidas.

② Al leer las entradas físicas, la CPU aplica los valores de forzado permanente inmediatamente antes de copiar las entradas en la memoria I.

③ Durante la ejecución del programa de usuario (OBs de ciclo), la CPU aplica el valor de forzado permanente cuando el programa de usuario accede a la entrada física o escribe en la salida física.

④ La función de forzado permanente no afecta el procesamiento de peticiones de comunicación ni los diagnósticos de autotest.

⑤ El procesamiento de las alarmas en cualquier parte del ciclo no se ve afectado.

Datos técnicos

A

A.1 Datos técnicos generales

Homologaciones

El sistema de automatización S7-1200 cumple las siguientes normas y especificaciones de test. Los criterios de test del sistema de automatización S7-1200 se basan en estas normas y especificaciones de test.

Homologación CE

El sistema de automatización S7-1200 satisface los requisitos y objetivos relacionados con la seguridad según las directivas CE indicadas a continuación y cumple las normas europeas (EN) armonizadas para controladores programables publicadas en los Diarios Oficiales de la Unión Europea.

- Directiva CE 2006/95/CE (Directiva de baja tensión) "Material eléctrico destinado a utilizarse con determinados límites de tensión"
  - EN 61131-2:2007 Autómatas programables - Requisitos y ensayos de los equipos
- Directiva CE 2004/108/CE (Directiva CEM) "Compatibilidad electromagnética"
  - Norma de emisión
    EN 61000-6-4:2007: Entornos industriales
  - Norma de inmunidad
    EN 61000-6-2:2005: Entornos industriales
- Directiva CE 94/9/CE (ATEX) "Equipos y sistemas de protección para uso en atmósferas potencialmente explosivas"
  - EN 60079-15:2005: Tipo de protección 'n'

La Declaración de conformidad CE se encuentra a disposición de las autoridades competentes en:

Siemens AG
IA AS RD ST PLC Amberg
Werner-von-Siemens-Str. 50
D92224 Amberg
Germany

Homologación cULus



Underwriters Laboratories Inc. cumple

- Underwriters Laboratories, Inc.: UL 508 Listed (Industrial Control Equipment)
- Canadian Standards Association: CSA C22.2 Number 142 (Process Control Equipment)

ATENCIÓN
La gama SIMATIC S7-1200 cumple la norma CSA. El logotipo cULus indica que Underwriters Laboratories (UL) ha examinado y certificado el S7-1200 según las normas UL 508 y CSA 22.2 No. 142.

Homologación FM



Factory Mutual Research (FM):
Números de clase 3600 y 3611 de la norma de aprobación
Aprobado para ser utilizado en:
Class I, Division 2, Gas Group A, B, C, D, Temperature Class T4A Ta = 40° C
Class I, Zone 2, IIC, Temperature Class T4 Ta = 40° C

Homologación ATEX



EN 60079-0:2006: Atmósferas explosivas - Requisitos generales

EN 60079-15:2005: Material eléctrico para atmósferas de gas explosivas; Tipo de protección 'n'

II 3 G Ex nA II T4

Las siguientes condiciones especiales deben cumplirse para el uso seguro del S7-1200:

- Los módulos deben montarse en una carcasa apropiada con un grado de protección mínimo de IP54 según EN 60529, considerando las condiciones ambientales en las que se utilizarán los equipos.
- Si, en condiciones nominales, la temperatura excede 70° C en el punto de entrada del cable, o bien 80° C en el punto de derivación de los conductores, la temperatura realmente medida deberá estar comprendida en el rango de temperatura admisible del cable seleccionado.
- Se deberán tomar las medidas necesarias para impedir que se exceda la tensión nominal en más de un 40% a causa de perturbaciones transitorias.

Aprobación C-Tick



El S7-1200 cumple los requisitos de las normas según AS/NZS 2064 (clase A).

Aprobación marina

Los productos S7-1200 se someten con regularidad a pruebas para obtener homologaciones especiales para aplicaciones y mercados específicos. Contacte con el representante de Siemens más próximo para obtener una lista de las homologaciones actuales y los respectivos números de referencia.

Sociedades de clasificación:

- ABS (American Bureau of Shipping)
- BV (Bureau Veritas)
- DNV (Det Norske Veritas)
- GL (Germanischer Lloyd)
- LRS (Lloyds Register of Shipping)
- Class NK (Nippon Kaiji Kyokai)

Entornos industriales

El sistema de automatización S7-1200 está diseñado para ser utilizado en entornos industriales.

Campo de aplicación	Requisitos respecto a la emisión de interferencias	Requisitos respecto a la inmunidad a interferencias
Industrial	EN 61000-6-4:2007	EN 61000-6-2:2005

Compatibilidad electromagnética

La compatibilidad electromagnética (también conocida por sus siglas CEM o EMC) es la capacidad de un dispositivo eléctrico para funcionar de forma satisfactoria en un entorno electromagnético sin causar interferencias electromagnéticas (EMI) sobre otros dispositivos eléctricos de ese entorno.

Compatibilidad electromagnética - Inmunidad según EN 61000-6-2	
EN 61000-4-2 Descargas electrostáticas	Descarga en el aire de 8 kV en todas las superficies Descarga en contactos de 6 kV en las superficies conductoras expuestas
EN 61000-4-3 Campos electromagnéticos radiados	80 a 1000 MHz, 10 V/m, 80% AM a 1 kHz 1-4 a 2,0 GHz, 3 V/m, 80% AM a 1 kHz 2,0 a 2,7 GHz, 1 V/m, 80% AM a 1 kHz
EN 61000-4-4 Transitorios eléctricos rápidos	2 kV, 5 kHz con red de conexión a la alimentación AC y DC 2 kV, 5 kHz con borne de conexión a las E/S
EN 6100-4-5 Inmunidad a ondas de choque	Sistemas AC - 2 kV en modo común, 1kV en modo diferencial Sistemas DC - 2 kV en modo común, 1kV en modo diferencial Para los sistemas DC (señales E/S, sistemas de alimentación DC) se requiere protección externa.
EN 61000-4-6 Perturbaciones conducidas	150 kHz a 80 MHz, 10 V RMS, 80% AM a 1kHz
EN 61000-4-11 Inmunidad a cortes e interrupciones breves	Sistemas AC 0% durante 1 ciclo, 40% durante 12 ciclos y 70% durante 30 ciclos a 60 Hz

Compatibilidad electromagnética - Emisiones conducidas y radiadas según EN 61000-6-4	
Emisiones conducidas EN 55011, clase A, grupo 1 0,15 MHz a 0,5 MHz 0,5 MHz a 5 MHz 5 MHz a 30 MHz	 <79dB (µV) casi cresta; <66 dB (µV) valor medio <73dB (µV) casi cresta; <60 dB (µV) valor medio <73dB (µV) casi cresta; <60 dB (µV) valor medio
Emisiones radiadas EN 55011, clase A, grupo 1 30 MHz a 230 MHz 230 MHz a 1 GHz	 <40dB (µV/m) casi cresta; medida a 10m <47dB (µV/m) casi cresta; medida a 10m

Condiciones ambientales

Condiciones ambientales - Transporte y almacenamiento	
EN 60068-2-2, ensayo Bb, calor seco y EN 60068-2-1, ensayo Ab, frío	-40° C a +70° C
EN 60068230, ensayo Dd, calor húmedo	25° C a 55° C, 95% de humedad
EN 60068-2-14, ensayo Na, choque de temperatura	-40° C a +70° C, tiempo de secado 3 horas, 2 ciclos
EN 60068232, caída libre	0,3 m, 5 veces, embalado para embarque
Presión atmosférica	1080 a 660h Pa (equivale a una altitud de -1000 a 3500m)

Condiciones ambientales - Funcionamiento	
Rango de temperatura ambiente (aire de entrada 25 mm bajo la unidad)	0° C a 55° C en montaje horizontal 0° C a 45° C en montaje vertical 95% de humedad no condensante
Presión atmosférica	1080 to 795 hPa (equivale a una altitud de -1000 a 2000m)
Concentración de contaminantes	$S0_2$: < 0,5 ppm; H_2S: < 0,1 ppm; RH < 60% no condensante
EN 60068214, ensayo Nb, cambio de temperatura	5° C a 55° C, 3° C/minuto
EN 60068227, choque mecánico	15 G, 11 ms impulso, 6 choques en c/u de 3 ejes
EN 6006826, vibración sinusoidal	Montaje en perfil DIN: 3,5 mm de 5 a 9 Hz, 1G de 9 a 150 Hz Montaje en panel: 7,0 mm de 5 a 9 Hz, 2G de 9 a 150 Hz 10 barridos por eje, 1 octava por minuto

Prueba de aislamiento pata alta tensión	
Circuitos nominales de 24 V/5 V Circuitos de 115/230 V a tierra Circuitos de 115/230 V a circuitos de 115/230 V Circuitos de 115 V/230V a circuitos de 24 V/5 V	520 V DC (ensayo de tipo de límites de aislamiento óptico) 1.500 V AC (ensayo de rutina)/1950 V DC (ensayo de tipo) 1.500 V AC (ensayo de rutina)/1950 V DC (ensayo de tipo) 1.500 V AC (ensayo de rutina)/3250 V DC (ensayo de tipo)

Clase de protección

- Clase de protección II según EN 61131-2 (el conductor protector no se requiere)

Grado de protección

- Protección mecánica IP20, EN 60529
- Protege los dedos contra el contacto con alta tensión, según ensayos realizados con sondas estándar. Se requiere protección externa contra polvo, impurezas, agua y objetos extraños de < 12,5mm de diámetro.

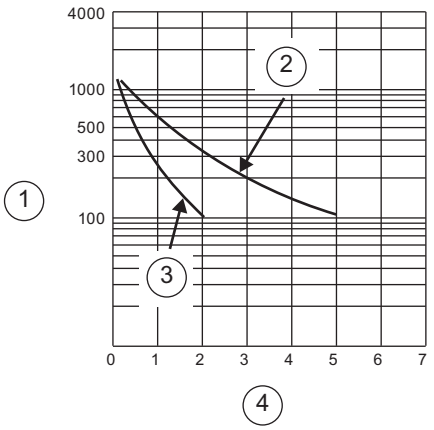
Tensiones nominales

Tensión nominal	Tolerancia
24 V DC	20,4 V DC a 28,8 V DC
120/230 V AC	85 V AC a 264 V AC, 47 a 63 Hz

ATENCIÓN
Cuando un contacto mecánico aplica tensión a una CPU S7-1200, o bien a un módulo de señales digitales, envía una señal "1" a las salidas digitales durante aprox. 50 microsegundos. Considere ésto especialmente si desea utilizar dispositivos que reaccionen a impulsos de breve duración.

Vida útil de los relés

La figura siguiente muestra los datos típicos de rendimiento de los relés suministrados por el comercio especializado. El rendimiento real puede variar dependiendo de la aplicación. Un circuito de protección externo adaptado a la carga permite prolongar la vida útil de los contactos.



① Vida útil (x 10^3 operaciones)
② 250 V AC de carga resistiva
30 V DC de carga resistiva
③ 250 V AC de carga inductiva (p.f.=0,4)
30 V DC de carga inductiva (L/R=7 ms)
④ Intensidad normal de servicio (A)

A.2 CPUs

A.2.1 Datos técnicos de la CPU 1211C

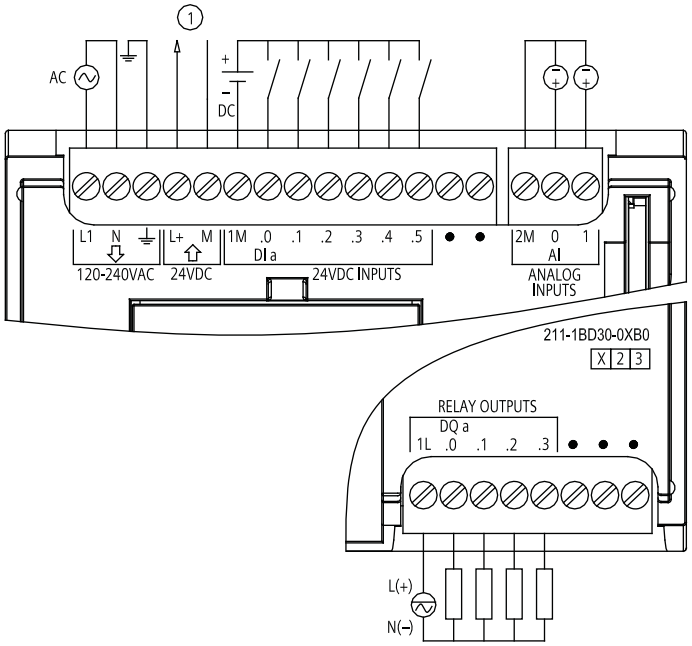
Datos técnicos			
Modelo	**CPU 1211C AC/DC/relé**	**CPU 1211C DC/DC/relé**	**CPU 1211C DC/DC/DC**
Referencia (MLFB)	6ES7 211-1BD30-0XB0	6ES7 211-1HD30-0XB0	6ES7 211-1AD30-0XB0
General			
Dimensiones A x A x P (mm)	90 x 100 x 75		
Peso	420 gramos	380 gramos	370 gramos
Disipación de potencia	10 W	8 W	
Intensidad disponible (bus CM)	750 mA máx. (5 V DC)		
Intensidad disponible (24 V DC)	300 mA máx. (alimentación de sensores)		
Consumo de corriente de las entradas digitales (24 V DC)	4 mA/entrada utilizada		
Características de la CPU			
Memoria de usuario	25 KB de memoria de trabajo / 1 MB de memoria de carga / 2 KB de memoria remanente		
E/S digitales integradas	6 entradas/4 salidas		
E/S analógicas integradas	2 entradas		
Tamaño de la memoria imagen de proceso	1024 bytes de entradas (I)/1024 bytes de salidas (Q)		
Área de marcas (M)	4096 bytes		
Ampliación con módulos de señales	Ninguna		
Ampliación con Signal Boards	1 SB máx.		
Ampliación con módulos de comunicación	3 CMs máx.		
Contadores rápidos	3 en total Fase simple: 3 a 100 kHz Fase en cuadratura: 3 a 80 kHz		
Salidas de impulsos	2		
Entradas de captura de impulsos	6		
Alarmas de retardo/cíclicas	4 en total con resolución de 1 ms		
Alarmas de flanco	6 ascendentes y 6 descendentes (10 y 10 con Signal Board opcional)		
Memory Card	SIMATIC Memory Card (opcional)		
Precisión del reloj en tiempo real	+/- 60 segundos/mes		
Tiempo de respaldo del reloj en tiempo real	10 días típ./6 días mín. a 40°C (condensador de alto rendimiento sin mantenimiento)		
Rendimiento			
Velocidad de ejecución booleana	0,1 µs/instrucción		
Velocidad de ejecución de transferencia de palabras	12 µs/instrucción		

Datos técnicos			
Modelo	**CPU 1211C AC/DC/relé**	**CPU 1211C DC/DC/relé**	**CPU 1211C DC/DC/DC**
Velocidad de ejecución de funciones matemáticas con números reales	18 µs/instrucción		
Comunicación			
Número de puertos	1		
Tipo	Ethernet		
Conexiones	• 3 para HMI • 1 para la programadora • 8 para instrucciones Ethernet en el programa de usuario • 3 para CPU a CPU		
Transferencia de datos	10/100 Mb/s		
Aislamiento (señal externa a lógica del PLC)	Aislado por transformador, 1500 V DC		
Tipo de cable	CAT5e apantallado		
Fuente de alimentación			
Rango de tensión	85 a 264 V AC	20,4 a 28,8 V DC	
Frecuencia de línea	47 a 63 Hz	--	
Intensidad de entrada CPU sólo a carga máx. CPU con todos los accesorios de ampliación a carga máx.	 60 mA a 120 V AC 30 mA a 240 V AC 180 mA a 120 V AC 90 mA a 240 V AC	 300 mA a 24 V DC 900 mA a 24 V DC	
Corriente de irrupción (máx.)	20 A a 264 V AC	12 A a 28,8 V DC	
Aislamiento (potencia de entrada a lógica)	1500 V AC	Sin aislamiento	
Corriente de fuga a tierra, línea AC a tierra funcional	0,5 mA máx.	-	
Tiempo de mantenimiento (pérdida de potencia)	20 ms a 120 V AC 80 ms a 240 V AC	10 ms a 24 V DC	
Fusible interno, no reemplazable por el usuario	3 A, 250 V, de acción lenta		
Alimentación de sensores			
Rango de tensión	20,4 a 28,8 V DC	L+ menos 4 V DC mín.	
Intensidad de salida nominal (máx.)	300 mA (protegido contra cortocircuito)		
Ruido de rizado máx. (<10 MHz)	< 1 V de pico a pico	Igual a la línea de entrada	
Aislamiento (lógica de la CPU a alimentación de sensores)	Sin aislamiento		
Entradas digitales			
Número de entradas	6		
Tipo	Sumidero/fuente (tipo 1 IEC sumidero)		
Tensión nominal	24 V DC a 4 mA, nominal		
Tensión continua admisible	30 V DC, máx.		
Sobretensión transitoria	35 V DC durante 0,5 seg.		
Señal 1 lógica (mín.)	15 V DC a 2,5 mA		

Datos técnicos			
Modelo	**CPU 1211C AC/DC/relé**	**CPU 1211C DC/DC/relé**	**CPU 1211C DC/DC/DC**
Señal 0 lógica (máx.)	5 V DC a 1 mA		
Aislamiento (campo a lógica)	500 V AC durante 1 minuto		
Grupos de aislamiento	1		
Tiempos de filtro	0,2, 0,4, 0,8, 1,6, 3,2, 6,4 y 12,8 ms (seleccionable en grupos de 4)		
Frecuencias de entrada de reloj HSC (máx.) (señal 1 lógica = 15 a 26 V DC)	Fase simple: 100 KHz Fase en cuadratura: 80 KHz		
Número de entradas ON simultáneamente	6		
Longitud de cable (metros)	500 apantallado, 300 no apantallado, 50 apantallado para entradas HSC		
Entradas analógicas			
Número de entradas	2		
Tipo	Tensión (asimétrica)		
Rango	0 a 10 V		
Rango total (palabra de datos)	0 a 27648 (consulte Representación de entradas analógicas para tensión (Página 346))		
Rango de sobreimpulso (palabra de datos)	27.649 a 32.511 (consulte Representación de entradas analógicas para tensión (Página 346))		
Desbordamiento (palabra de datos)	32.512 a 32767 (consulte Representación de entradas analógicas para tensión (Página 346))		
Resolución	10 bits		
Tensión de resistencia al choque máxima	35 V DC		
Alisamiento	Ninguno, débil, medio o fuerte (consulte los tiempos de respuesta de paso en Tiempos de respuesta de las entradas analógicas (Página 346))		
Rechazo de interferencias	10, 50 ó 60 Hz (consulte las frecuencias de muestreo en Tiempos de respuesta de las entradas analógicas (Página 346))		
Impedancia	≥100 KΩ		
Aislamiento (campo a lógica)	Ninguno		
Precisión (25°C / 0 a 55°C)	3,0% / 3,5% de rango máximo		
Rechazo en modo común	40 dB, DC a 60 Hz		
Rango de señales operativo	La tensión de señal más la tensión en modo común debe ser menor que +12 V y mayor que -12 V		
Longitud de cable (metros)	10 m, par trenzado apantallado		
Salidas digitales			
Número de salidas	4		
Tipo	Relé, contacto seco		Estado sólido - MOSFET
Rango de tensión	5 a 30 V DC ó 5 a 250 V AC		20,4 a 28,8 V DC
Señal 1 lógica a intensidad máx.	--		20 V DC mín.
Señal 0 lógica con carga de 10 KΩ	--		0,1 V DC máx.
Intensidad (máx.)	2,0 A		0,5 A
Carga de lámparas	30 W DC/200 W AC		5 W
Resistencia en estado ON	Máx. 0,2 Ω (si son nuevas)		0,6 Ω máx.

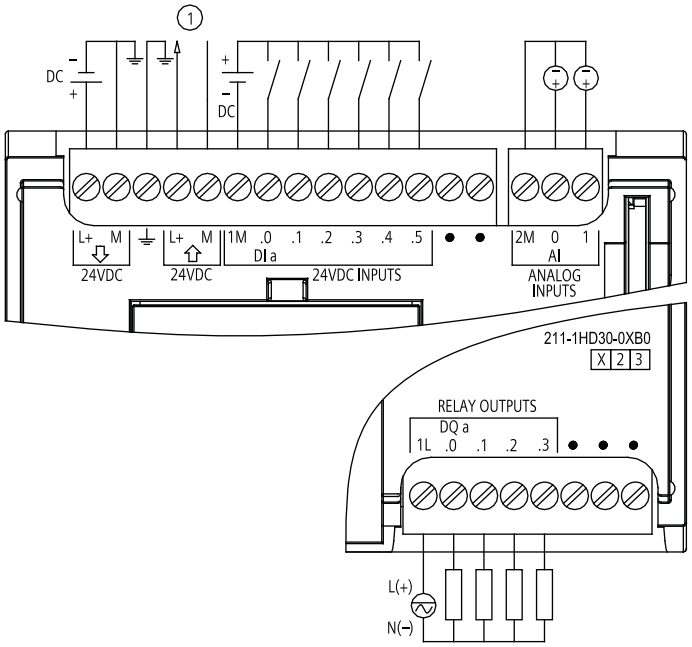
Datos técnicos			
Modelo	**CPU 1211C AC/DC/relé**	**CPU 1211C DC/DC/relé**	**CPU 1211C DC/DC/DC**
Corriente de fuga por salida	--		10 µA máx.
Sobrecorriente momentánea	7 A si están cerrados los contactos		8 A durante máx. 100 ms
Protección contra sobrecargas	No		
Aislamiento (campo a lógica)	1500 V AC durante 1 minuto (bobina a contacto) Ninguno (bobina a lógica)		500 V AC durante 1 minuto
Resistencia de aislamiento	100 MΩ mín. si son nuevas		--
Aislamiento entre contactos abiertos	750 V AC durante 1 minuto		--
Grupos de aislamiento	1		1
Tensión de bloqueo inductiva	--		L+ menos 48 V DC, disipación de 1 W
Retardo de conmutación (Qa.0 a Qa.3)	10 ms máx.		1,0 µs máx., OFF a ON 3,0 µs máx., ON a OFF
Frecuencia de tren de impulsos (Qa.0 y Qa.2)	No recomendado		100 KHz máx., 2 Hz mín.
Vida útil mecánica (sin carga)	10.000.000 ciclos abiertos/cerrados		--
Vida útil de los contactos bajo carga nominal	100.000 ciclos abiertos/cerrados		--
Reacción al cambiar de RUN a STOP	Último valor o valor sustitutivo (valor predeterminado: 0)		
Número de salidas ON simultáneamente	4		
Longitud de cable (metros)	500 apantallado, 150 no apantallado		

Diagramas de cableado



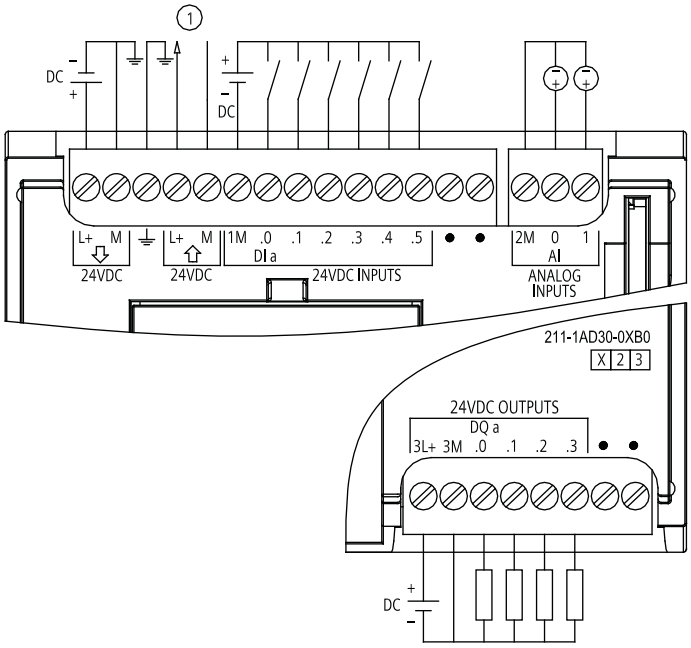
① Alimentación de sensores 24 V DC

Figura A-1 CPU 1211C AC/DC/relé (6ES7 211-1BD30-0XB0)



① Alimentación de sensores 24 V DC

Figura A-2 CPU 1211C DC/DC/relé (6ES7 211-1HD30-0XB0)



① Alimentación de sensores 24 V DC

Figura A-3 CPU 1211C DC/DC/DC (6ES7 211-1AD30-0XB0)

A.2.2 Datos técnicos de la CPU 1212C

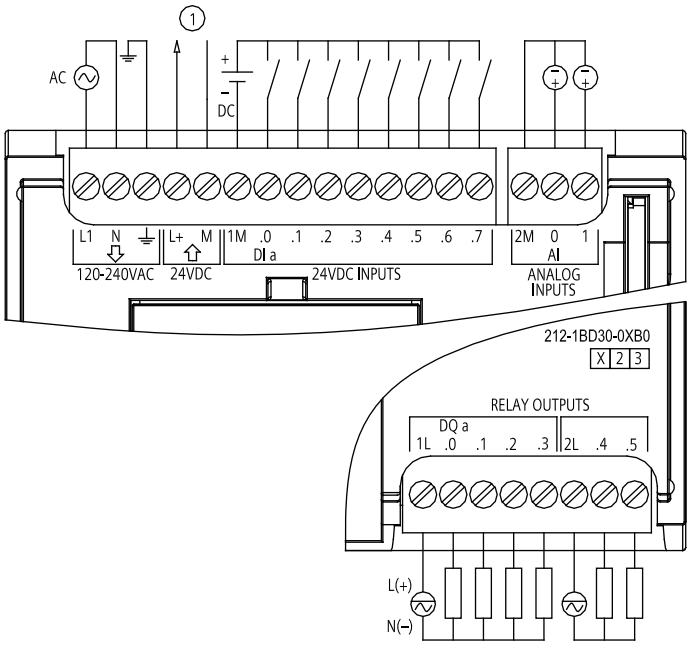
Datos técnicos			
Modelo	**CPU 1212C AC/DC/relé**	**CPU 1212C DC/DC/relé**	**CPU 1212C DC/DC/DC**
Referencia	6ES7 212-1BD30-0XB0	6ES7 212-1HD30-0XB0	6ES7 212-1AD30-0XB0
General			
Dimensiones A x A x P (mm)	90 x 100 x 75		
Peso	425 gramos	385 gramos	370 gramos
Disipación de potencia	11 W	9 W	
Intensidad disponible (SM y bus CM)	1000 mA máx. (5 V DC)		
Intensidad disponible (24 V DC)	300 mA máx. (alimentación de sensores)		
Consumo de corriente de las entradas digitales (24 V DC)	4 mA/entrada utilizada		
Características de la CPU			
Memoria de usuario	25 KB de memoria de trabajo / 1 MB de memoria de carga / 2 KB de memoria remanente		
E/S digitales integradas	8 entradas/6 salidas		
E/S analógicas integradas	2 entradas		
Tamaño de la memoria imagen de proceso	1024 bytes de entradas (I)/1024 bytes de salidas (Q)		
Área de marcas (M)	4096 bytes		
Ampliación con módulos de señales	2 SMs máx.		

Datos técnicos			
Modelo	**CPU 1212C AC/DC/relé**	**CPU 1212C DC/DC/relé**	**CPU 1212C DC/DC/DC**
Ampliación con Signal Boards	1 SB máx.		
Ampliación con módulos de comunicación	3 CMs máx.		
Contadores rápidos	4 en total Fase simple: 3 a 100 kHz y 1 a 30 kHz de frecuencia de reloj Fase en cuadratura: 3 a 80 kHz y 1 a 20 kHz de frecuencia de reloj		
Salidas de impulsos	2		
Entradas de captura de impulsos	8		
Alarmas de retardo/cíclicas	4 en total con resolución de 1 ms		
Alarmas de flanco	8 ascendentes y 8 descendentes (12 y 12 con Signal Board opcional)		
Memory Card	SIMATIC Memory Card (opcional)		
Precisión del reloj en tiempo real	+/- 60 segundos/mes		
Tiempo de respaldo del reloj en tiempo real	10 días típ./6 días mín. a 40°C (condensador de alto rendimiento sin mantenimiento)		
Rendimiento			
Velocidad de ejecución booleana	0,1 µs/instrucción		
Velocidad de ejecución de transferencia de palabras	12 µs/instrucción		
Velocidad de ejecución de funciones matemáticas con números reales	18 µs/instrucción		
Comunicación			
Número de puertos	1		
Tipo	Ethernet		
Conexiones	• 3 para HMI • 1 para la programadora • 8 para instrucciones Ethernet en el programa de usuario • 3 para CPU a CPU		
Transferencia de datos	10/100 Mb/s		
Aislamiento (señal externa a lógica del PLC)	Aislado por transformador, 1500 V DC		
Tipo de cable	CAT5e apantallado		
Fuente de alimentación			
Rango de tensión	85 a 264 V AC	20,4 a 28,8 V DC	
Frecuencia de línea	47 a 63 Hz	--	
Intensidad de entrada CPU sólo a carga máx. CPU con todos los accesorios de ampliación a carga máx.	80 mA a 120 V AC 40 mA a 240 V AC 240 mA a 120 V AC 120 mA a 240 V AC	400 mA a 24 V DC 1200 mA a 24 V DC	
Corriente de irrupción (máx.)	20 A a 264 V AC	12 A a 28,8 V DC	
Aislamiento (potencia de entrada a lógica)	1500 V AC	Sin aislamiento	
Corriente de fuga a tierra, línea AC a tierra funcional	0,5 mA máx.	-	

Datos técnicos			
Modelo	**CPU 1212C AC/DC/relé**	**CPU 1212C DC/DC/relé**	**CPU 1212C DC/DC/DC**
Tiempo de mantenimiento (pérdida de potencia)	20 ms a 120 V AC 80 ms a 240 V AC	10 ms a 24 V DC	
Fusible interno, no reemplazable por el usuario	3 A, 250 V, de acción lenta		
Alimentación de sensores			
Rango de tensión	20,4 a 28,8 V DC	L+ menos 4 V DC mín.	
Intensidad de salida nominal (máx.)	300 mA (protegido contra cortocircuito)		
Ruido de rizado máx. (<10 MHz)	< 1 V de pico a pico	Igual a la línea de entrada	
Aislamiento (lógica de la CPU a alimentación de sensores)	Sin aislamiento		
Entradas digitales			
Número de entradas	8		
Tipo	Sumidero/fuente (tipo 1 IEC sumidero)		
Tensión nominal	24 V DC a 4 mA, nominal		
Tensión continua admisible	30 V DC, máx.		
Sobretensión transitoria	35 V DC durante 0,5 seg.		
Señal 1 lógica (mín.)	15 V DC a 2,5 mA		
Señal 0 lógica (máx.)	5 V DC a 1 mA		
Aislamiento (campo a lógica)	500 V AC durante 1 minuto		
Grupos de aislamiento	1		
Tiempos de filtro	0,2, 0,4, 0,8, 1,6, 3,2, 6,4 y 12,8 ms (seleccionable en grupos de 4)		
Frecuencias de entrada de reloj HSC (máx.) (señal 1 lógica = 15 a 26 V DC)	Fase simple: 100 KHz (Ia.0 a Ia.5) y 30 KHz (Ia.6 a Ia.7) Fase en cuadratura: 80 KHz (Ia.0 a Ia.5) y 20 KHz (Ia.6 a Ia.7)		
Número de entradas ON simultáneamente	8		
Longitud de cable (metros)	500 apantallado, 300 no apantallado, 50 apantallado para entradas HSC		
Entradas analógicas			
Número de entradas	2		
Tipo	Tensión (asimétrica)		
Rango	0 a 10 V		
Rango total (palabra de datos)	0 a 27648 (consulte Representación de entradas analógicas para tensión (Página 346))		
Rango de sobreimpulso (palabra de datos)	27.649 a 32.511 (consulte Representación de entradas analógicas para tensión (Página 346))		
Desbordamiento (palabra de datos)	32.512 a 32767 (consulte Representación de entradas analógicas para tensión (Página 346))		
Resolución	10 bits		
Tensión de resistencia al choque máxima	35 V DC		
Alisamiento	Ninguno, débil, medio o fuerte (consulte los tiempos de respuesta de paso en Tiempos de respuesta de las entradas analógicas (Página 346))		

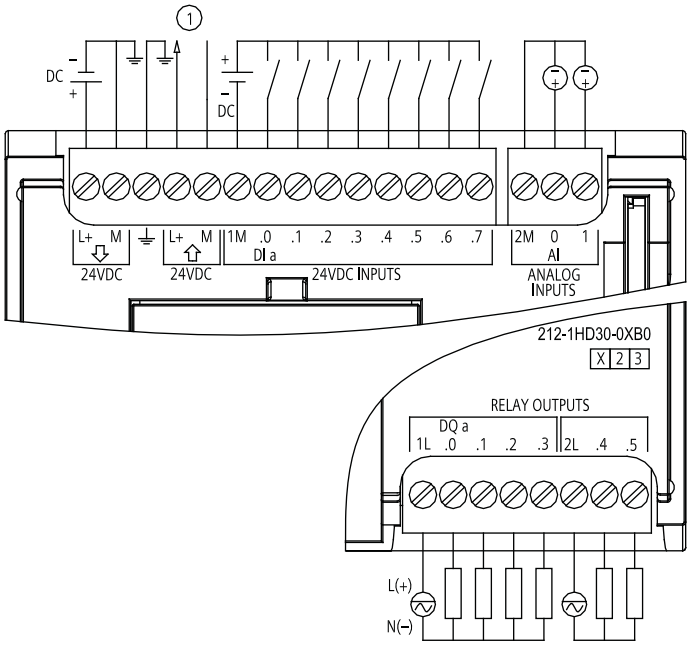
Datos técnicos			
Modelo	**CPU 1212C AC/DC/relé**	**CPU 1212C DC/DC/relé**	**CPU 1212C DC/DC/DC**
Rechazo de interferencias	10, 50 ó 60 Hz (consulte las frecuencias de muestreo en Tiempos de respuesta de las entradas analógicas (Página 346))		
Impedancia	≥100 KΩ		
Aislamiento (campo a lógica)	Ninguno		
Precisión (25°C / 0 a 55°C)	3,0% / 3,5% de rango máximo		
Rechazo en modo común	40 dB, DC a 60 Hz		
Rango de señales operativo	La tensión de señal más la tensión en modo común debe ser menor que +12 V y mayor que -12 V		
Longitud de cable (metros)	10 trenzado y apantallado		
Salidas digitales			
Número de salidas	6		
Tipo	Relé, contacto seco		Estado sólido - MOSFET
Rango de tensión	5 a 30 V DC ó 5 a 250 V AC		20,4 a 28,8 V DC
Señal 1 lógica a intensidad máx.	--		20 V DC mín.
Señal 0 lógica con carga de 10 KΩ	--		0,1 V DC máx.
Intensidad (máx.)	2,0 A		0,5 A
Carga de lámparas	30 W DC/200 W AC		5 W
Resistencia en estado ON	Máx. 0,2 Ω (si son nuevas)		0,6 Ω máx.
Corriente de fuga por salida	--		10 µA máx.
Sobrecorriente momentánea	7 A si están cerrados los contactos		8 A durante máx. 100 ms
Protección contra sobrecargas	No		
Aislamiento (campo a lógica)	1500 V AC durante 1 minuto (bobina a contacto) Ninguno (bobina a lógica)		500 V AC durante 1 minuto
Resistencia de aislamiento	100 MΩ mín. si son nuevas		--
Aislamiento entre contactos abiertos	750 V AC durante 1 minuto		--
Grupos de aislamiento	2		1
Tensión de bloqueo inductiva	--		L+ menos 48 V DC, disipación de 1 W
Retardo de conmutación (Qa.0 a Qa.3)	10 ms máx.		1,0 µs máx., OFF a ON 3,0 µs máx., ON a OFF
Retardo de conmutación (Qa.4 a Qa.5)	10 ms máx.		50 µs máx., OFF a ON 200 µs máx., ON a OFF
Frecuencia de tren de impulsos (Qa.0 y Qa.2)	No recomendado		100 KHz máx., 2 Hz mín.
Vida útil mecánica (sin carga)	10.000.000 ciclos abiertos/cerrados		--
Vida útil de los contactos bajo carga nominal	100.000 ciclos abiertos/cerrados		--
Reacción al cambiar de RUN a STOP	Último valor o valor sustitutivo (valor predeterminado: 0)		
Número de salidas ON simultáneamente	6		
Longitud de cable (metros)	500 apantallado, 150 no apantallado		

Diagramas de cableado



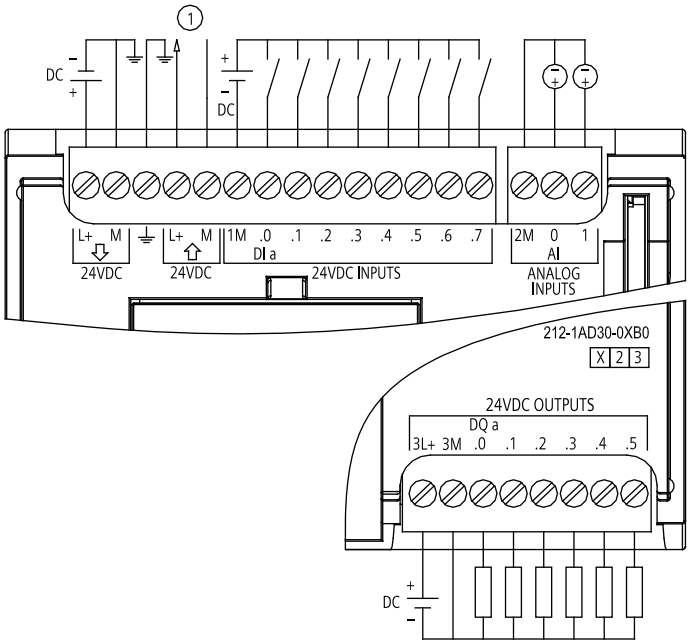
① Alimentación de sensores 24 V DC

Figura A-4 CPU 1212C AC/DC relé (6ES7 212-1BD30-0XB0)



① Alimentación de sensores 24 V DC

Figura A-5 CPU 1212C DC/DC/relé (6ES7 212-1HD30-0XB0)



① Alimentación de sensores 24 V DC

Figura A-6 CPU 1212C DC/DC/DC (6ES7 212-1AD30-0XB0)

A.2.3 Datos técnicos de la CPU 1214C

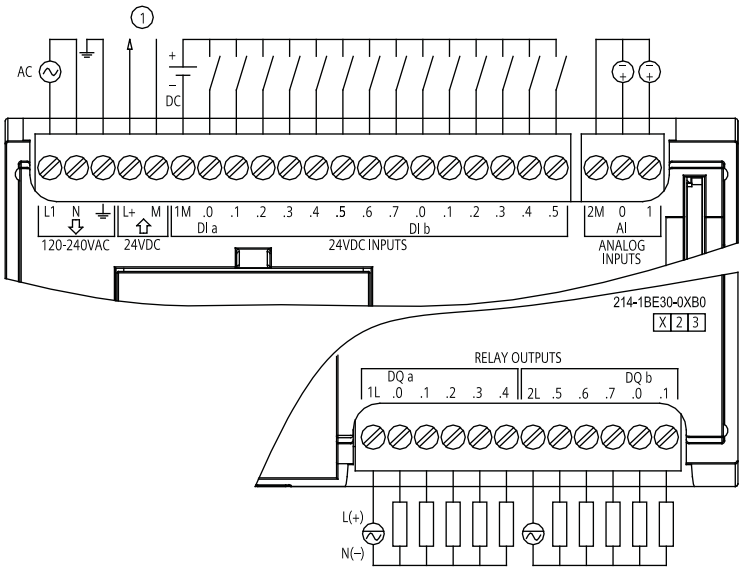
Datos técnicos			
Modelo	**CPU 1214C AC/DC/relé**	**CPU 1214C DC/DC/relé**	**CPU 1214C DC/DC/DC**
Referencia	6ES7 214-1BE30-0XB0	6ES7 214-1HE30-0XB0	6ES7 214-1AE30-0XB0
General			
Dimensiones A x A x P (mm)	110 x 100 x 75		
Peso	475 gramos	435 gramos	415 gramos
Disipación de potencia	14 W	12 W	
Intensidad disponible (SM y bus CM)	1600 mA máx. (5 V DC)		
Intensidad disponible (24 V DC)	400 mA máx. (alimentación de sensores)		
Consumo de corriente de las entradas digitales (24 V DC)	4 mA/entrada utilizada		
Características de la CPU			
Memoria de usuario	50 KB de memoria de trabajo / 2 MB de memoria de carga / 2 KB de memoria remanente		
E/S digitales integradas	14 entradas/10 salidas		
E/S analógicas integradas	2 entradas		
Tamaño de la memoria imagen de proceso	1024 bytes de entradas (I)/1024 bytes de salidas (Q)		
Área de marcas (M)	8192 bytes		
Ampliación con módulos de señales	8 SMs máx.		

Datos técnicos			
Modelo	**CPU 1214C AC/DC/relé**	**CPU 1214C DC/DC/relé**	**CPU 1214C DC/DC/DC**
Ampliación con Signal Boards	1 SB máx.		
Ampliación con módulos de comunicación	3 CMs máx.		
Contadores rápidos	6 en total Fase simple: 3 a 100 kHz y 3 a 30 kHz de frecuencia de reloj Fase en cuadratura: 3 a 80 kHz y 3 a 20 kHz de frecuencia de reloj		
Salidas de impulsos	2		
Entradas de captura de impulsos	14		
Alarmas de retardo/cíclicas	4 en total con resolución de 1 ms		
Alarmas de flanco	12 ascendentes y 12 descendentes (14 y 14 con Signal Board opcional)		
Memory Card	SIMATIC Memory Card (opcional)		
Precisión del reloj en tiempo real	+/- 60 segundos/mes		
Tiempo de respaldo del reloj en tiempo real	10 días típ./6 días mín. a 40°C (condensador de alto rendimiento sin mantenimiento)		
Rendimiento			
Velocidad de ejecución booleana	0,1 µs/instrucción		
Velocidad de ejecución de transferencia de palabras	12 µs/instrucción		
Velocidad de ejecución de funciones matemáticas con números reales	18 µs/instrucción		
Comunicación			
Número de puertos	1		
Tipo	Ethernet		
Conexiones	• 3 para HMI • 1 para la programadora • 8 para instrucciones Ethernet en el programa de usuario • 3 para CPU a CPU		
Transferencia de datos	10/100 Mb/s		
Aislamiento (señal externa a lógica del PLC)	Aislado por transformador, 1500 V DC		
Tipo de cable	CAT5e apantallado		
Fuente de alimentación			
Rango de tensión	85 a 264 V AC	20,4 a 28,8 V DC	
Frecuencia de línea	47 a 63 Hz	--	
Intensidad de entrada CPU sólo a carga máx. CPU con todos los accesorios de ampliación a carga máx.	 100 mA a 120 V AC 50 mA a 240 V AC 300 mA a 120 V AC 150 mA a 240 V AC	 500 mA a 24 V DC 1500 mA a 24 V DC	
Corriente de irrupción (máx.)	20 A a 264 V AC	12 A a 28,8 V DC	
Aislamiento (potencia de entrada a lógica)	1500 V AC	Sin aislamiento	
Corriente de fuga a tierra, línea AC a tierra funcional	0,5 mA máx.	-	

Datos técnicos			
Modelo	**CPU 1214C AC/DC/relé**	**CPU 1214C DC/DC/relé**	**CPU 1214C DC/DC/DC**
Tiempo de mantenimiento (pérdida de potencia)	20 ms a 120 V AC 80 ms a 240 V AC	10 ms a 24 V DC	
Fusible interno, no reemplazable por el usuario	3 A, 250 V, de acción lenta		
Alimentación de sensores			
Rango de tensión	20,4 a 28,8 V DC	L+ menos 4 V DC mín.	
Intensidad de salida nominal (máx.)	400 mA (protegido contra cortocircuito)		
Ruido de rizado máx. (<10 MHz)	< 1 V de pico a pico	Igual a la línea de entrada	
Aislamiento (lógica de la CPU a alimentación de sensores)	Sin aislamiento		
Entradas digitales			
Número de entradas	14		
Tipo	Sumidero/fuente (tipo 1 IEC sumidero)		
Tensión nominal	24 V DC a 4 mA, nominal		
Tensión continua admisible	30 V DC, máx.		
Sobretensión transitoria	35 V DC durante 0,5 seg.		
Señal 1 lógica (mín.)	15 V DC a 2,5 mA		
Señal 0 lógica (máx.)	5 V DC a 1 mA		
Aislamiento (campo a lógica)	500 V AC durante 1 minuto		
Grupos de aislamiento	1		
Tiempos de filtro	0,2, 0,4, 0,8, 1,6, 3,2, 6,4 y 12,8 ms (seleccionable en grupos de 4)		
Frecuencias de entrada de reloj HSC (máx.) (señal 1 lógica = 15 a 26 V DC)	Fase simple: 100 KHz (Ia.0 a Ia.5) y 30 KHz (Ia.6 a Ib.5) Fase en cuadratura: 80 KHz (Ia.0 a Ia.5) y 20 KHz (Ia.6 a Ib.5)		
Número de entradas ON simultáneamente	14		
Longitud de cable (metros)	500 apantallado, 300 no apantallado, 50 apantallado para entradas HSC		
Entradas analógicas			
Número de entradas	2		
Tipo	Tensión (asimétrica)		
Rango	0 a 10 V		
Rango total (palabra de datos)	0 a 27648 (consulte Representación de entradas analógicas para tensión (Página 346))		
Rango de sobreimpulso (palabra de datos)	27.649 a 32.511 (consulte Representación de entradas analógicas para tensión (Página 346))		
Desbordamiento (palabra de datos)	32.512 a 32767 (consulte Representación de entradas analógicas para tensión (Página 346))		
Resolución	10 bits		
Tensión de resistencia al choque máxima	35 V DC		
Alisamiento	Ninguno, débil, medio o fuerte (consulte los tiempos de respuesta de las etapas en Tiempos de respuesta de las entradas analógicas (Página 346))		

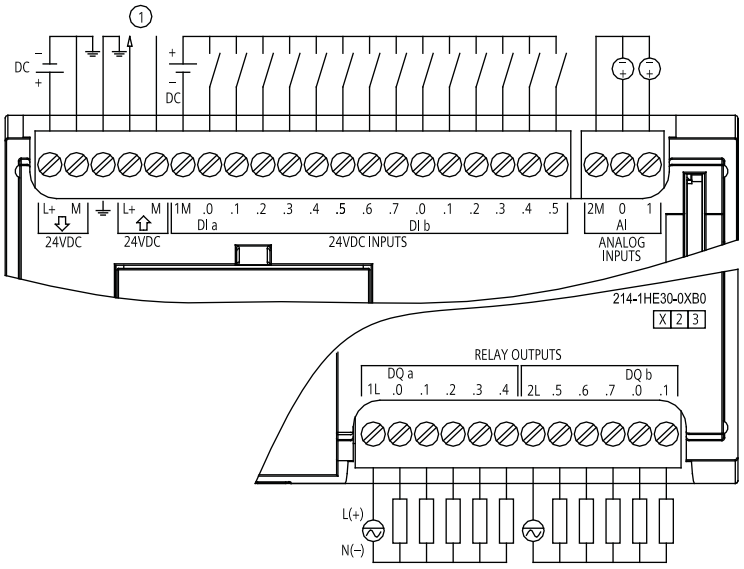
Datos técnicos			
Modelo	**CPU 1214C AC/DC/relé**	**CPU 1214C DC/DC/relé**	**CPU 1214C DC/DC/DC**
Rechazo de interferencias	10, 50 ó 60 Hz (consulte las frecuencias de muestreo en Tiempos de respuesta de las entradas analógicas (Página 346))		
Impedancia	≥100 KΩ		
Aislamiento (campo a lógica)	Ninguno		
Precisión (25°C / 0 a 55°C)	3,0% / 3,5% de rango máximo		
Rechazo en modo común	40 dB, DC a 60 Hz		
Rango de señales operativo	La tensión de señal más la tensión en modo común debe ser menor que +12 V y mayor que -12 V		
Longitud de cable (metros)	10 trenzado y apantallado		
Salidas digitales			
Número de salidas	10		
Tipo	Relé, contacto seco		Estado sólido - MOSFET
Rango de tensión	5 a 30 V DC ó 5 a 250 V AC		20,4 a 28,8 V DC
Señal 1 lógica a intensidad máx.	--		20 V DC mín.
Señal 0 lógica con carga de 10 KΩ	--		0,1 V DC máx.
Intensidad (máx.)	2,0 A		0,5 A
Carga de lámparas	30 W DC/200 W AC		5 W
Resistencia en estado ON	Máx. 0,2 Ω (si son nuevas)		0,6 Ω máx.
Corriente de fuga por salida	--		10 µA máx.
Sobrecorriente momentánea	7 A si están cerrados los contactos		8 A durante máx. 100 ms
Protección contra sobrecargas	No		
Aislamiento (campo a lógica)	1500 V AC durante 1 minuto (bobina a contacto) Ninguno (bobina a lógica)		500 V AC durante 1 minuto
Resistencia de aislamiento	100 MΩ mín. si son nuevas		--
Aislamiento entre contactos abiertos	750 V AC durante 1 minuto		--
Grupos de aislamiento	2		1
Tensión de bloqueo inductiva	--		L+ menos 48 V DC, disipación de 1 W
Retardo de conmutación (Qa.0 a Qa.3)	10 ms máx.		1,0 µs máx., OFF a ON 3,0 µs máx., ON a OFF
Retardo de conmutación (Qa.4 a Qb.1)	10 ms máx.		50 µs máx., OFF a ON 200 µs máx., ON a OFF
Frecuencia de tren de impulsos (Qa.0 y Qa.2)	No recomendado		100 KHz máx., 2 Hz mín.
Vida útil mecánica (sin carga)	10.000.000 ciclos abiertos/cerrados		--
Vida útil de los contactos bajo carga nominal	100.000 ciclos abiertos/cerrados		--
Reacción al cambiar de RUN a STOP	Último valor o valor sustitutivo (valor predeterminado: 0)		
Número de salidas ON simultáneamente	10		
Longitud de cable (metros)	500 apantallado, 150 no apantallado		

Diagramas de cableado



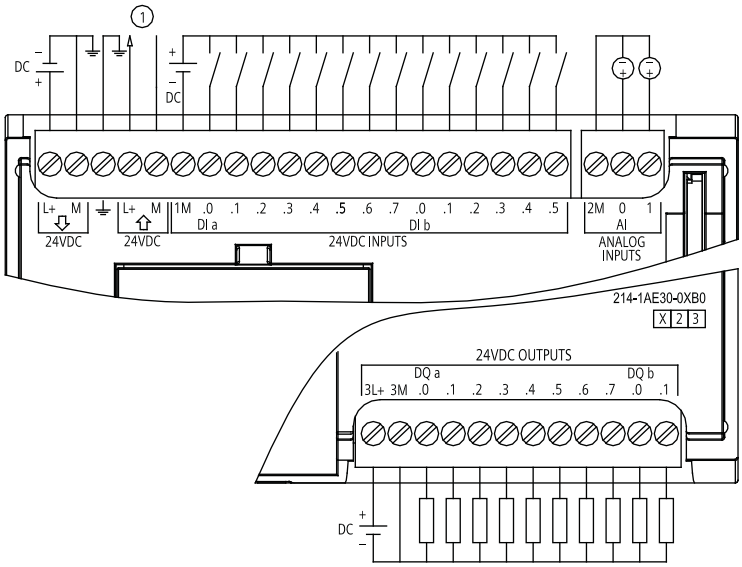
① Alimentación de sensores 24 V DC

Figura A-7 CPU 1214C AC/DC/relé (6ES7 214-1BE30-0XB0)



① Alimentación de sensores 24 V DC

Figura A-8 CPU 1214C DC/DC/relé (6ES7 214-1HE30-0XB0)



① Alimentación de sensores 24 V DC

Figura A-9 CPU 1214C DC/DC/DC (6ES7 214-1AE30-0XB0)

A.3 Módulos de señales digitales (SMs)

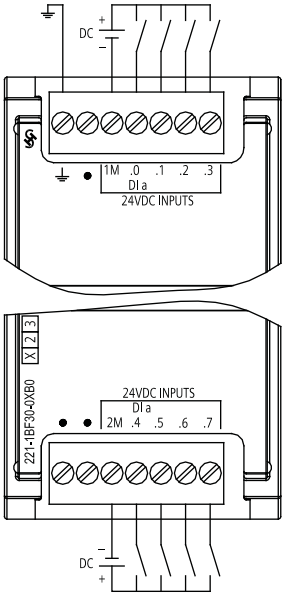
A.3.1 Datos técnicos del módulo de entradas digitales SM 1221

Datos técnicos		
Modelo	**SM 1221 DI 8x24 V DC**	**SM 1221 DI 16x24 VD C**
Referencia	6ES7 221-1BF30-0XB0	6ES7 221-1BH30-0XB0
General		
Dimensiones A x A x P (mm)	45 x 100 x 75	
Peso	170 gramos	210 gramos
Disipación de potencia	1,5 W	2,5 W
Consumo de corriente (bus SM)	105 mA	130 mA
Consumo de corriente (24 V DC)	4 mA/entrada utilizada	4 mA/entrada utilizada
Entradas digitales		
Número de entradas	8	16
Tipo	Sumidero/fuente (tipo 1 IEC sumidero)	
Tensión nominal	24 V DC a 4 mA, nominal	
Tensión continua admisible	30 V DC, máx.	
Sobretensión transitoria	35 V DC durante 0,5 seg.	
Señal 1 lógica (mín.)	15 V DC a 2,5 mA	
Señal 0 lógica (máx.)	5 V DC a 1 mA	

Datos técnicos		
Modelo	**SM 1221 DI 8x24 V DC**	**SM 1221 DI 16x24 VD C**
Aislamiento (campo a lógica)	500 V AC durante 1 minuto	
Grupos de aislamiento	2	4
Tiempos de filtro	0,2, 0,4, 0,8, 1,6, 3,2, 6,4 y 12,8 ms (seleccionable en grupos de 4)	
Número de entradas ON simultáneamente	8	16
Longitud de cable (metros)	500 apantallado, 300 no apantallado	

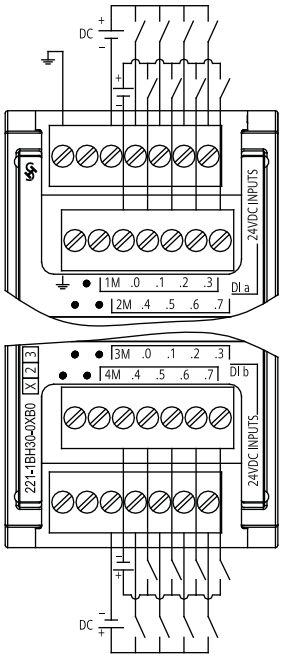
Diagramas de cableado

SM 1221 DI 8 x 24 V DC



6ES7 221-1BF30-0XB0

SM 1221 DI 16 x 24 V DC



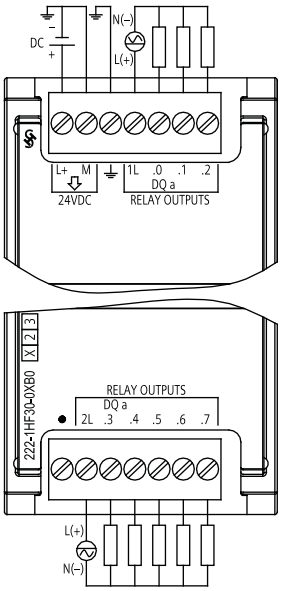
6ES7 221-1BH30-0XB0

A.3.2 Datos técnicos del módulo de salidas digitales SM 1222

Datos técnicos				
Modelo	**SM 1222 DQ 8xrelé**	**SM1222 DQ 16xrelé**	**SM1222 DQ 8x24 V DC**	**SM1222 DQ 16x24 V DC**
Referencia	6ES7 222-1HF30-0XB0	6ES7 222-1HH30-0XB0	6ES7 222-1BF30-0XB0	6ES7 222-1BH30-0XB0
General				
Dimensiones A x A x P (mm)	45 x 100 x 75			
Peso	190 gramos	260 gramos	180 gramos	220 gramos
Disipación de potencia	4,5 W	8,5 W	1,5 W	2,5 W
Consumo de corriente (bus SM)	120 mA	135 mA	120 mA	140 mA
Consumo de corriente (24 V DC)	11 mA/bobina de relé utilizada		--	
Salidas digitales				
Número de salidas	8	16	8	16
Tipo	Relé, contacto seco		Estado sólido - MOSFET	
Rango de tensión	5 a 30 V DC ó 5 a 250 V AC		20,4 a 28,8 V DC	
Señal 1 lógica a intensidad máx.	--		20 V DC mín.	
Señal 0 lógica con carga de 10K Ω	--		0,1 V DC máx.	
Intensidad (máx.)	2,0 A		0,5 A	
Carga de lámparas	30 W DC/200 W AC		5W	
Resistencia en estado ON (contactos)	Máx. 0,2 Ω (si son nuevas)		0,6 Ω máx.	
Corriente de fuga por salida	--		10 µA máx.	
Sobrecorriente momentánea	7 A si están cerrados los contactos		8 A durante máx. 100 ms	
Protección contra sobrecargas	No			
Aislamiento (campo a lógica)	1500 V AC durante 1 minuto (bobina a contacto) Ninguno (bobina a lógica)		500 V AC durante 1 minuto	
Resistencia de aislamiento	100 MΩ mín. si son nuevas		--	
Aislamiento entre contactos abiertos	750 V AC durante 1 minuto		--	
Grupos de aislamiento	2	4	1	1
Intensidad por neutro (máx.)	10 A		4 A	8 A
Tensión de bloqueo inductiva	--		L+ menos 48 V, disipación de 1 W	
Retardo de conmutación	10 ms máx.		50 µs máx. OFF a ON 200 µs máx. ON a OFF	
Vida útil mecánica (sin carga)	10.000.000 ciclos abiertos/cerrados		--	
Vida útil de los contactos bajo carga nominal	100.000 ciclos abiertos/cerrados		--	
Reacción al cambiar de RUN a STOP	Último valor o valor sustitutivo (valor predeterminado: 0)			
Número de salidas ON simultáneamente	8	16	8	16
Longitud de cable (metros)	500 apantallado, 150 no apantallado			

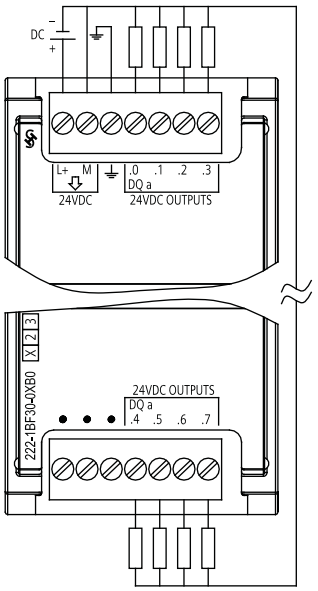
Diagramas de cableado

SM 1222 DQ 8 x relé



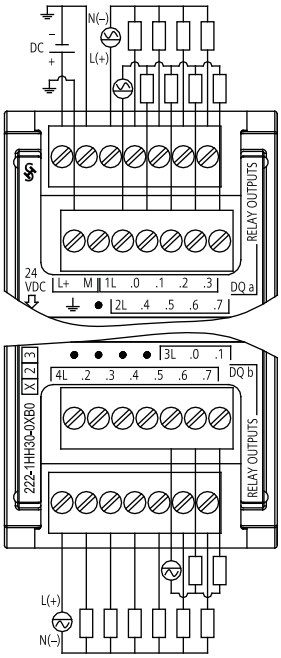
6ES7 222-1HF30-0XB0

SM 1222 DQ 8 x 24 V DC



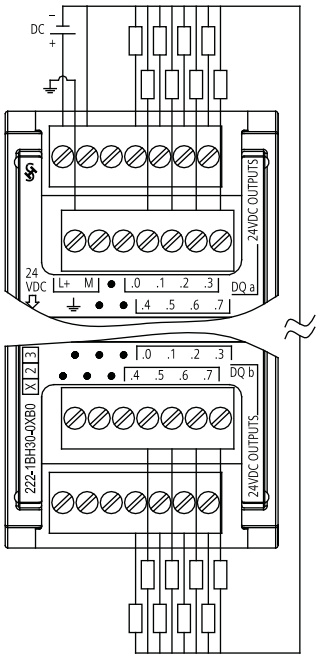
6ES7 222-1BF30-0XB0

SM 1222 DQ 16 x relé



6ES7 222-1HH30-0XB0

SM 1222 DQ 16 x 24 V DC



6ES7 222-1BH30-0XB0

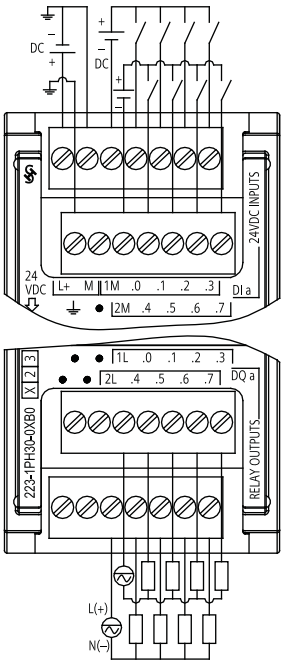
A.3.3 Datos técnicos del módulo de entradas/salidas digitales SM 1223

Datos técnicos				
Modelo	**SM 1223 DI 8x24 V DC, DQ 8xrelé**	**SM 1223 DI 16x24 V DC, DQ 16xrelé**	**SM 1223 DI 8x24 V DC, DQ 8x24 V DC**	**SM 1223 DI 16x24 V DC, DQ16x24 V DC**
Referencia	6ES7 223-1PH30-0XB0	6ES7 223-1PL30-0XB0	6ES7 223-1BH30-0XB0	6ES7 223-1BL30-0XB0
Dimensiones A x A x P (mm)	45 x 100 x 75	70 x 100 x 75	45 x 100 x 75	70 x 100 x 75
Peso	230 gramos	350 gramos	210 gramos	310 gramos
Disipación de potencia	5,5 W	10 W	2,5 W	4,5 W
Consumo de corriente (bus SM)	145 mA	180 mA	145 mA	185 mA
Consumo de corriente (24 V DC)	4 mA/entrada utilizada 11 mA/bobina de relé utilizada		4 mA/entrada utilizada	
Entradas digitales				
Número de entradas	8	16	8	16
Tipo	Sumidero/fuente (tipo 1 IEC sumidero)			
Tensión nominal	24 V DC a 4 mA, nominal			
Tensión continua admisible	30 V DC máx.			
Sobretensión transitoria	35 V DC durante 0,5 seg.			
Señal 1 lógica (mín.)	15 V DC a 2,5 mA			
Señal 0 lógica (máx.)	5 V DC a 1 mA			
Aislamiento (campo a lógica)	500 V AC durante 1 minuto			
Grupos de aislamiento	2	2	2	2
Tiempos de filtro	0,2, 0,4, 0,8, 1,6, 3,2, 6,4 y 12,8 ms, seleccionable en grupos de 4			
Número de entradas ON simultáneamente	8	16	8	16
Longitud de cable (metros)	500 apantallado, 300 no apantallado			
Salidas digitales				
Número de salidas	8	16	8	16
Tipo	Relé, contacto seco		Estado sólido - MOSFET	
Rango de tensión	5 a 30 V DC ó 5 a 250 V AC		20,4 a 28,8 V DC	
Señal 1 lógica a intensidad máx.	--		20 V DC mín.	
Señal 0 lógica con carga de 10 KΩ	--		0,1 V DC, máx.	
Intensidad (máx.)	2,0 A		0,5 A	
Carga de lámparas	30 W DC/200 W AC		5 W	
Resistencia en estado ON (contactos)	Máx. 0,2 Ω (si son nuevas)		0,6 Ω máx.	
Corriente de fuga por salida	--		10 µA máx.	
Sobrecorriente momentánea	7 A si están cerrados los contactos		8 A durante máx. 100 ms	
Protección contra sobrecargas	No			
Aislamiento (campo a lógica)	1500 V AC durante 1 minuto (bobina a contacto) Ninguno (bobina a lógica)		500 V AC durante 1 minuto	
Resistencia de aislamiento	100 MΩ mín. si son nuevas		--	

Datos técnicos				
Modelo	**SM 1223 DI 8x24 V DC, DQ 8xrelé**	**SM 1223 DI 16x24 V DC, DQ 16xrelé**	**SM 1223 DI 8x24 V DC, DQ 8x24 V DC**	**SM 1223 DI 16x24 V DC, DQ16x24 V DC**
Aislamiento entre contactos abiertos	750 V AC durante 1 minuto		--	
Grupos de aislamiento	2	4	1	1
Intensidad por neutro	10A	8 A	4 A	8 A
Tensión de bloqueo inductiva	--		L+ menos 48 V, disipación de 1 W	
Retardo de conmutación	10 ms máx.		50 µs máx. OFF a ON 200 µs máx. ON a OFF	
Vida útil mecánica (sin carga)	10.000.000 ciclos abiertos/cerrados		--	
Vida útil de los contactos bajo carga nominal	100.000 ciclos abiertos/cerrados		--	
Reacción al cambiar de RUN a STOP	Último valor o valor sustitutivo (valor predeterminado: 0)			
Número de salidas ON simultáneamente	8	16	8	16
Longitud de cable (metros)	500 apantallado, 150 no apantallado			

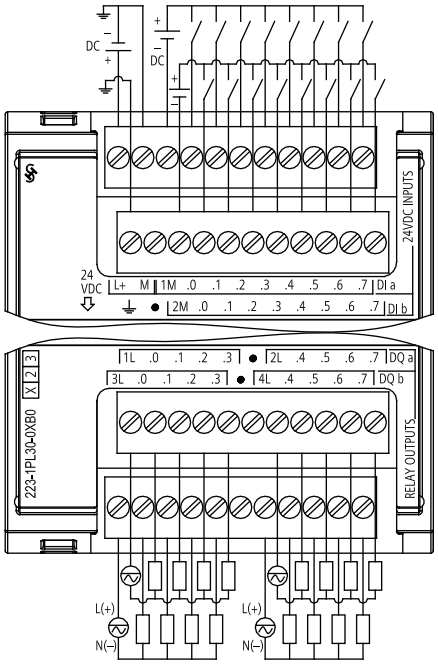
Diagramas de cableado

SM 1223 DI 8 x 24 V DC, DQ 8 x relé



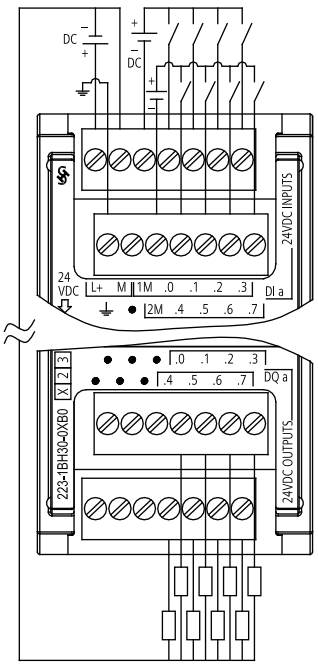
6ES7 223-1PH30-0XB0

SM1223 DI 16 x 24 V DC, DQ 16 x relé



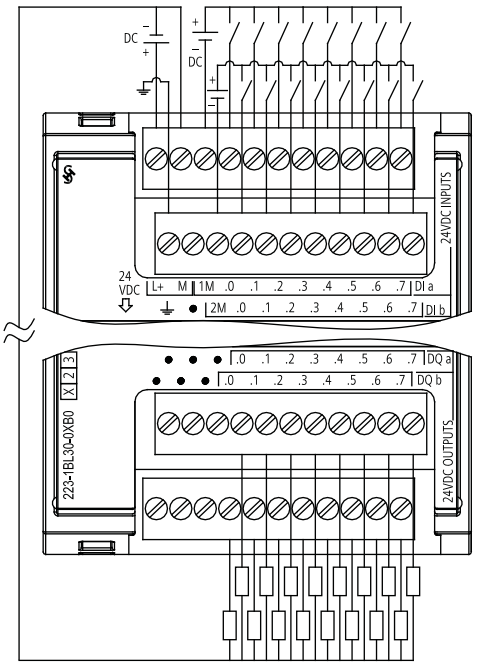
6ES7 223-1PL30-0XB0

SM 1223 DI 8 x 24 V DC, DQ 8 x 24 V DC



6ES7 223-1BH30-0XB0

SM 1223 DI 16 x 24 V DC, DQ 16 x 24 V DC



6ES7 223-1BL30-0XB0

A.4 Módulos de señales analógicos (SMs)

A.4.1 Datos técnicos de los módulos de señales analógicos SM 1231, SM 1232, SM 1234

Datos técnicos			
Modelo	**SM 1231 AI 4x13bit**	**SM 1231 AI 8x13bit**	**SM 1234 AI 4x13bit AQ 2x14bit**
Referencia	6ES7 231-4HD30-0XB0	6ES7 231-4HF30-0XB0	6ES7 234-4HE30-0XB0
General			
Dimensiones A x A x P (mm)	45 x 100 x 75	45 x 100 x 75	45 x 100 x 75
Peso	180 gramos	180 gramos	220 gramos
Disipación de potencia	1,5 W	1,5 W	2,0 W
Consumo de corriente (bus SM)	80 mA	90 mA	80 mA
Consumo de corriente (24 V DC)	45 mA	45 mA	60 mA (sin carga)
Entradas analógicas			
Número de entradas	4	8	4
Tipo	Tensión o intensidad (diferencial): Seleccionable en grupos de 2		
Rango	±10 V, ±5 V, ±2,5 V ó 0 a 20 mA		

Datos técnicos			
Modelo	**SM 1231 AI 4x13bit**	**SM 1231 AI 8x13bit**	**SM 1234 AI 4x13bit AQ 2x14bit**
Rango total (palabra de datos)	-27.648 a 27.648		
Rango de sobreimpulso/subimpulso (palabra de datos)	Tensión: 32.511 a 27.649 / -27.649 a -32.512 Intensidad: 32.511 a 27.649 / 0 a -4864 (Consulte Representación de entradas analógicas para tensión, representación de entradas analógicas para intensidad (Página 346))		
Rebase por exceso/defecto (palabra de datos)	Tensión: 32.767 a 32.512 / -32.513 a -32.768 Intensidad: 32.767 a 32.512 / -4865 a -32.768 (Consulte Representación de entradas analógicas para tensión, representación de entradas analógicas para intensidad (Página 346))		
Resolución	12 bits + bit de signo		
Tensión/intensidad de resistencia al choque máxima	±35 V / ±40 mA		
Alisamiento	Ninguno, débil, medio o fuerte (consulte los tiempos de respuesta de paso en Tiempos de respuesta de las entradas analógicas (Página 346))		
Rechazo de interferencias	400, 60, 50 ó 10 Hz (consulte las frecuencias de muestreo en Tiempos de respuesta de las entradas analógicas (Página 346))		
Impedancia	≥ 9 MΩ (tensión) / 250 Ω (intensidad)		
Aislamiento (campo a lógica)	Ninguno		
Precisión (25°C / 0 a 55°C)	±0,1% / ±0,2% de rango máximo		
Tiempo de conversión analógica/digital	625 µs (rechazo de 400 Hz)		
Rechazo en modo común	40 dB, DC a 60 Hz		
Rango de señales operativo	La tensión de señal más la tensión en modo común debe ser menor que +12 V y mayor que -12 V		
Longitud de cable (metros)	100 metros, trenzado y apantallado		
Diagnóstico			
Rebase por exceso/defecto	Sí[1]	Sí[1]	Sí[1]
Cortocircuito a tierra (sólo en modo de tensión)	No aplicable	No aplicable	Sí en las salidas
Rotura de hilo (sólo en modo de intensidad)	No aplicable	No aplicable	Sí en las salidas
24 V DC, baja tensión	Sí	Sí	Sí

[1] Si se aplica una tensión superior a +30 V DC o inferior a -15 V DC a la entrada, el valor resultante se desconocerá y es posible que no se active el rebase por exceso o por defecto correspondiente.

Datos técnicos			
Modelo	**SM 1232 AQ 2x14bit**	**SM 1232 AQ 4x14bit**	**SM 1234 AI 4x13bit AQ 2x14bit**
Referencia	6ES7 232-4HB30-0XB0	6ES7 232-4HD30-0XB0	6ES7 234-4HE30-0XB0
General			
Dimensiones A x A x P (mm)	45 x 100 x 75	45 x 100 x 75	45 x 100 x 75
Peso	180 gramos	180 gramos	220 gramos
Disipación de potencia	1,5 W	1,5 W	2,0 W

Datos técnicos			
Modelo	**SM 1232 AQ 2x14bit**	**SM 1232 AQ 4x14bit**	**SM 1234 AI 4x13bit AQ 2x14bit**
Consumo de corriente (bus SM)	80 mA	80 mA	80 mA
Consumo de corriente (24 V DC)	45 mA (sin carga)	45 mA (sin carga)	60 mA (sin carga)
Salidas analógicas			
Número de salidas	2	4	2
Tipo	Tensión o intensidad		
Rango	±10 V ó 0 a 20 mA		
Resolución	Tensión: 14 bits; intensidad: 13 bits		
Rango total (palabra de datos)	Tensión: -27.648 a 27.648; intensidad: 0 a 27.648 (Consulte Representación de entradas analógicas para tensión y representación de entradas analógicas para intensidad) (Página 346)		
Precisión (25°C / 0 a 55°C)	±0,3% / ±0,6% de rango máximo		
Tiempo de estabilización (95% del nuevo valor)	Tensión: 300 µS (R), 750 µS (1 uF); intensidad: 600 µS (1 mH), 2 ms (10 mH)		
Impedancia de carga	Tensión: ≥ 1000 Ω; intensidad: ≤ 600 Ω		
Reacción al cambiar de RUN a STOP	Último valor o valor sustitutivo (valor predeterminado: 0)		
Aislamiento (campo a lógica)	Ninguna		
Longitud de cable (metros)	100 metros, trenzado y apantallado		
Diagnóstico			
Rebase por exceso/defecto	Sí	Sí	Sí[1]
Cortocircuito a tierra (sólo en modo de tensión)	Sí	Sí	Sí en las salidas
Rotura de hilo (sólo en modo de intensidad)	Sí	Sí	Sí en las salidas
24 V DC, baja tensión	Sí	Sí	Sí

[1] Si se aplica una tensión superior a +30 V DC o inferior a -15 V DC a la entrada, el valor resultante se desconocerá y es posible que no se active el rebase por exceso o por defecto correspondiente.

Tiempos de respuesta de las entradas analógicas

Respuesta de paso de los módulos analógicos SM (en ms)				
0V a 10V medido a 95%				
Selección de alisamiento	**Frecuencia de rechazo**			
	400 Hz	**60 Hz**	**50 Hz**	**10 Hz**
Ninguno	4	18	22	100
Débil	9	52	63	320
Medio	32	203	241	1200
Fuerte	61	400	483	2410
Frecuencia de muestreo				
• 4 canales	• 0.625	• 4.17	• 5	• 25
• 8 canales	• 1.25	• 4.17	• 5	• 25

Respuesta de paso de entradas analógicas de la CPU (en ms)			
0V a 10V medido a 95%			
Selección de alisamiento	Frecuencia de rechazo		
	60 Hz	50 Hz	10 Hz
Ninguno	63	65	130
Débil	84	93	340
Medio	221	258	1210
Fuerte	424	499	2410
Frecuencia de muestreo	**4.17**	**5**	**25**

Representación de entradas analógicas para tensión

Sistema	Rango de medida de tensión						
Decimal	Hexadecimal	±10 V	±5 V	±2,5 V		0 a 10 V	
32767	7FFF	11,851 V	5,926 V	2,963 V	Rebase por exceso	11,851V	Rebase por exceso
32512	7F00						
32511	7EFF	11,759 V	5,879 V	2,940 V	Rango de sobreimpulso	11,759 V	Rango de sobreimpulso
27649	6C01						
27648	6C00	10 V	5 V	2,5 V	Rango nominal	10 V	Rango nominal
20736	5100	7,5 V	3,75 V	1,875 V		7,5 V	
1	1	361,7 µV	180,8 µV	90,4 µV		361,7 µV	
0	0	0 V	0 V	0 V		0 V	
-1	FFFF					Los valores negativos no se soportan	
-20736	AF00	-7,5 V	-3,75 V	-1,875 V			
-27648	9400	-10 V	-5 V	-2,5 V			
-27649	93FF				Rango de subimpulso		
-32512	8100	-11,759 V	-5,879 V	-2,940 V			
-32513	80FF				Rebase por defecto		
-32768	8000	-11,851 V	-5,926 V	-2,963 V			

Representación de entradas analógicas para intensidad

Sistema	Rango de medida de intensidad		
Decimal	Hexadecimal	0 mA a 20 mA	
32767	7FFF	23,70 mA	Rebase por exceso
32512	7F00		
32511	7EFF	23,52 mA	Rango de sobreimpulso
27649	6C01		
27648	6C00	20 mA	Rango nominal
20736	5100	15 mA	
1	1	723,4 nA	

Sistema	Rango de medida de intensidad		
Decimal	Hexadecimal	0 mA a 20 mA	
0	0	0 mA	
-1	FFFF		Rango de subimpulso
-4864	ED00	-3,52 mA	
-4865	ECFF		Rebase por defecto
-32768	8000		

Representación de salidas analógicas para tensión

Sistema		Rango de salida de tensión	
Decimal	Hexadecimal	± 10 V	
32767	7FFF	V. nota 1	Rebase por exceso
32512	7F00	V. nota 1	
32511	7EFF	11,76 V	Rango de sobreimpulso
27649	6C01		
27648	6C00	10 V	Rango nominal
20736	5100	7,5 V	
1	1	361,7 µ V	
0	0	0 V	
-1	FFFF	-361,7 µ V	
-20736	AF00	-7,5 V	
-27648	9400	-10 V	
-27649	93FF		Rango de subimpulso
-32512	8100	-11,76 V	
-32513	80FF	V. nota 1	Rebase por defecto
-32768	8000	V. nota 1	

[1] . En una condición de rebase por exceso o por defecto, la reacción de las salidas analógicas corresponderá a las propiedades ajustadas en la configuración de dispositivos para el módulo de señales analógico. En el parámetro "Reacción a STOP de la CPU", seleccione: "Aplicar valor sustitutivo" o "Mantener último valor".

Representación de salidas analógicas para intensidad

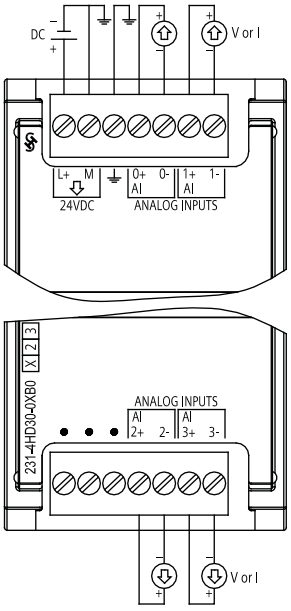
Sistema		Rango de salida de intensidad	
Decimal	Hexadecimal	± 20 mA	
32767	7FFF	V. nota 1	Rebase por exceso
32512	7F00	V. nota 1	
32511	7EFF	23,52 mA	Rango de sobreimpulso
27649	6C01		
27648	6C00	20 mA	Rango nominal
20736	5100	15 mA	
1	1	723,4 nA	

Sistema		Rango de salida de intensidad	
Decimal	**Hexadecimal**	**± 20 mA**	
0	0	0 mA	
-1	FFFF		Rango de subimpulso
-32512	8100		
-32513	80FF	V. nota 1	Rebase por defecto
-32768	8000	V. nota 1	

1. En una condición de rebase por exceso o por defecto, la reacción de las salidas analógicas corresponderá a las propiedades ajustadas en la configuración de dispositivos para el módulo de señales analógico. En el parámetro "Reacción a STOP de la CPU", seleccione: "Aplicar valor sustitutivo" o "Mantener último valor".

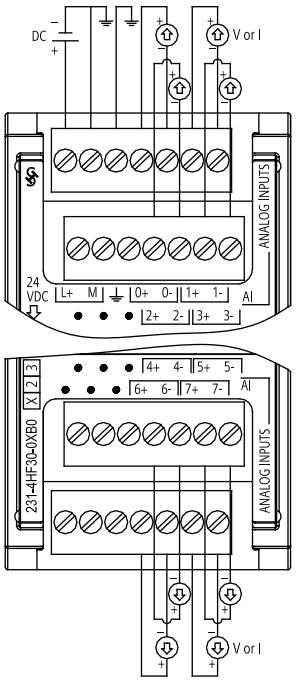
Diagramas de cableado

SM 1231 AI 4 x 13 bit



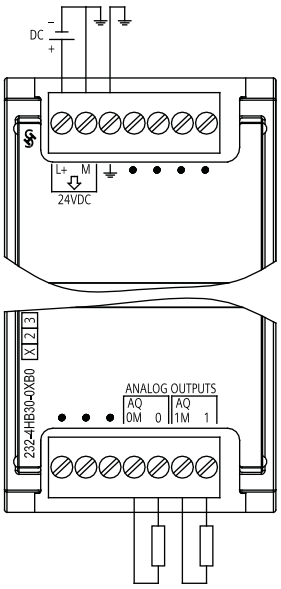
6ES7 231-4HD30-0XB0

SM 1231 AI 8 x 13 bit



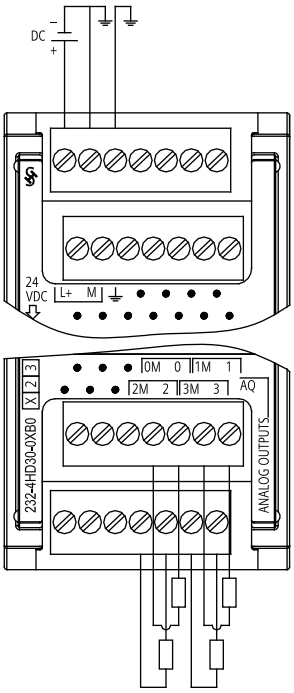
6ES7 231-4HF30-0XB0

SM 1232 AQ 2 x 14 bit



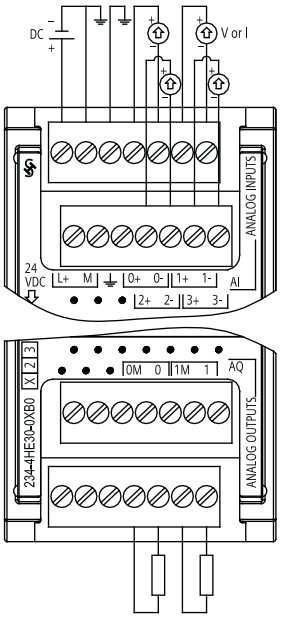
6ES7 232-4HB30-0XB0

SM 1232 AQ 4 x 14 bit



6ES7 232-4HD30-0XB0

SM 1234 AI 4 x 13 bit / AQ 2 x 14 bit



6ES7 234-4HE30-0XB0

A.5 Signal Boards (SBs)

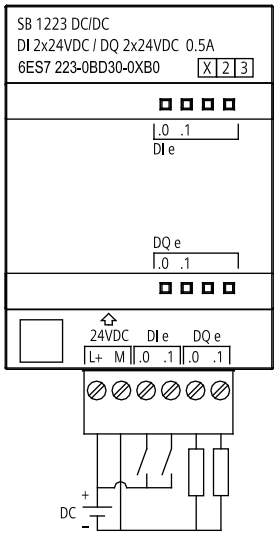
A.5.1 Datos técnicos de la SB 1223 2 entradas x 24 V DC / 2 salidas x 24 V DC

Datos técnicos de la Signal Board digital

Datos técnicos	
Modelo	**SB 1223 DI 2x24 V DC, DQ 2x24 V DC**
Referencia	6ES7 223-0BD30-0XB0
General	
Dimensiones A x A x P (mm)	38 x 62 x 21
Peso	40 gramos
Disipación de potencia	1,0 W
Consumo de corriente (bus SM)	50 mA
Consumo de corriente (24 V DC)	4 mA/entrada utilizada
Entradas digitales	
Número de entradas	2
Tipo	Tipo 1 IEC sumidero
Tensión nominal	24 V DC a 4 mA, nominal
Tensión continua admisible	30 V DC, máx.
Sobretensión transitoria	35 V DC durante 0,5 seg.
Señal 1 lógica (mín.)	15 V DC a 2,5 mA
Señal 0 lógica (máx.)	5 V DC a 1 mA
Frecuencias de entrada de reloj HSC (máx.)	20 kHz (15 a 30 V DC) 30 kHz (15 a 26 V DC)
Aislamiento (campo a lógica)	500 V AC durante 1 minuto
Grupos de aislamiento	1
Tiempos de filtro	0,2, 0,4, 0,8, 1,6, 3,2, 6,4 y 12,8 ms Seleccionable en grupos de 2
Número de entradas ON simultáneamente	2
Longitud de cable (metros)	500 apantallado, 300 no apantallado
Salidas digitales	
Número de salidas	2
Tipo de salida	Estado sólido - MOSFET
Rango de tensión	20,4 a 28,8 V DC
Señal 1 lógica a intensidad máx.	20 V DC mín.
Señal 0 lógica con carga de 10K Ω	0,1 V DC máx.
Intensidad (máx.)	0,5 A
Carga de lámparas	5 W
Resistencia en estado ON (contactos)	0,6 Ω máx.
Corriente de fuga por salida	10 µA máx.
Frecuencia de tren de impulsos	20 KHz máx., 2 Hz mín.

Datos técnicos	
Modelo	**SB 1223 DI 2x24 V DC, DQ 2x24 V DC**
Sobrecorriente momentánea	5 A durante máx. 100 ms
Protección contra sobrecargas	No
Aislamiento (campo a lógica)	500 V AC durante 1 minuto
Grupos de aislamiento	1
Intensidad por neutro	1 A
Tensión de bloqueo inductiva	L+ menos 48 V, disipación de 1 W
Retardo de conmutación	2 µs máx. OFF a ON 10 µs máx. ON a OFF
Reacción al cambiar de RUN a STOP	Último valor o valor sustitutivo (valor predeterminado: 0)
Número de salidas ON simultáneamente	2
Longitud de cable (metros)	500 apantallado, 150 no apantallado

Diagrama de cableado de la SB 1223 2 entradas x 24 V DC / 2 salidas x 24 V DC

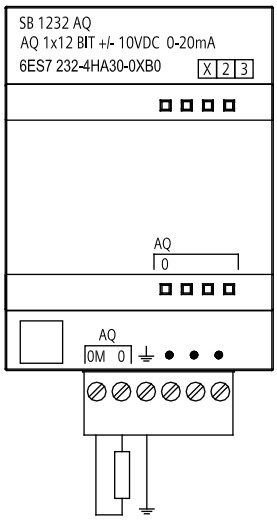


A.5.2 Datos técnicos de la SB 1232 de 1 salida analógica

Datos técnicos de la Signal Board analógica

Datos técnicos	
Modelo	**SB 1223 AQ 1x12bit**
Referencia	6ES7 232-4HA30-0XB0
General	
Dimensiones A x A x P (mm)	38 x 62 x 21 mm
Peso	40 gramos
Disipación de potencia	1,5 W
Consumo de corriente (bus SM)	15 mA
Consumo de corriente (24 V DC)	40 mA (sin carga)
Salidas analógicas	
Número de salidas	1
Tipo	Tensión o intensidad
Rango	±10 V ó 0 a 20 mA
Resolución	Tensión: 12 bits Intensidad: 11 bits
Rango total (palabra de datos)	Tensión: -27.648 a 27.648 Intensidad: 0 a 27.648
Precisión (25°C / 0 a 55°C)	±0.5% / ±1% de rango máximo
Tiempo de estabilización (95% del nuevo valor)	Tensión: 300 µS (R), 750 µS (1 uF) Intensidad: 600 µS (1 mH), 2 ms (10 mH)
Impedancia de carga	Tensión: ≥ 1000 Ω Intensidad: ≤ 600 Ω
Reacción al cambiar de RUN a STOP	Último valor o valor sustitutivo (valor predeterminado: 0)
Aislamiento (campo a lógica)	Ninguno
Longitud de cable (metros)	10 metros, trenzado y apantallado
Diagnóstico	
Rebase por exceso/defecto	Sí
Cortocircuito a tierra (sólo en modo de tensión)	Sí
Rotura de hilo (sólo en modo de intensidad)	Sí

Diagrama de cableado de la SB 1232 de 1 salida analógica

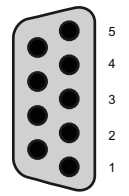


A.6 Módulos de comunicación (CMs)

A.6.1 Datos técnicos del CM 1241 RS485

Tabla A- 1 Módulo de comunicación CM 1241 RS485

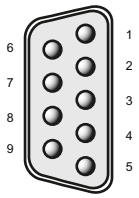
Datos técnicos	
Referencia	6ES7 241-1CH30-0XB0
Dimensiones y peso	
Dimensiones	30 x 100 x 75 mm
Peso	150 gramos
Transmisor y receptor	
Rango de tensión en modo común	-7 V a +12 V, 1 segundo, 3 VRMS continuo
Tensión de salida diferencial del transmisor	2 V mín. a R_L = 100 Ω 1,5 V mín. a R_L = 54 Ω
Terminación y polarización	10K Ω a +5 V en B, pin PROFIBUS 3 10K Ω a GND en A, pin PROFIBUS 8
Impedancia de entrada del receptor	5,4K Ω mín. incluyendo terminación
Umbral/sensibilidad del receptor	+/- 0,2 V mín., 60 mV de histéresis típica
Aislamiento Señal RS485 a conexión a masa Señal RS485 a lógica de la CPU	500 V AC durante 1 minuto
Longitud de cable, apantallado	1000 m máx.
Fuente de alimentación	
Pérdida de potencia (disipación)	1,1 W
De +5 V DC	220 mA

Pin	Descripción	Conector (hembra)	Pin	Descripción
1 GND	Masa lógica o de comunicación		6 PWR	+5V con resistor en serie de 100 ohmios: Salida
2	Sin conexión		7	Sin conexión
3 TxD+	Señal B (RxD/TxD+): Entrada/salida		8 TXD-	Señal A (RxD/TxD-): Entrada/salida
4 RTS	Petición de transmitir (nivel TTL): Salida		9	Sin conexión
5 GND	Masa lógica o de comunicación		SHELL	Conexión a masa

A.6.2 Datos técnicos del CM 1241 RS232

Módulo de comunicación CM 1241 RS232

Datos técnicos	
Referencia	6ES7 241-1AH30-0XB0
Dimensiones y peso	
Dimensiones	30 x 100 x 75 mm
Peso	150 gramos
Transmisor y receptor	
Tensión de salida del transmisor	+/- 5 V mín. a R_L = 3K Ω
Tensión de salida del transmisor	+/- 15 V DC máx.
Impedancia de entrada del receptor	3 K Ω mín.
Umbral/sensibilidad del receptor	0,8 V mín. bajo, 2,4 máx. alto histéresis típica: 0,5 V
Tensión de entrada del receptor	+/- 30 V DC máx.
Aislamiento Señal RS 232 a conexión a masa Señal RS 232 a lógica de la CPU	500 V AC durante 1 minuto
Longitud de cable, apantallado	10 m máx.
Fuente de alimentación	
Pérdida de potencia (disipación)	1,1 W
De +5 V DC	220 mA

Pin	Descripción	Conector (macho)	Pin	Descripción
1 DCD	Detección de portadora de datos: Entrada		6 DSR	Equipo de datos listo: Entrada
2 RxD	Datos recibidos de DCE: Entrada		7 RTS	Petición de transmitir Salida
3 TxD	Datos transmitidos a DCE: Salida		8 CTS	Listo para transmitir: Entrada
4 DTR	Terminal de datos disponible: Salida		9 RI	Indicación de timbre (no utilizado)
5 GND	Masa lógica		SHELL	Conexión a masa

A.7 SIMATIC Memory Cards

Datos técnicos de la Memory Card

Referencia	Capacidad
6ES7 954-8LF00-0AA0	24 MB
6ES7 954-8LB00-0AA0	2 MB

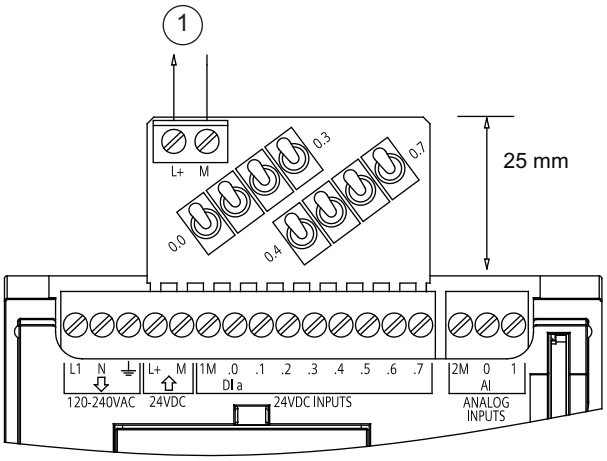
A.8 Simuladores de entradas

Modelo	Simulador de 8 entradas	Simulador de 14 entradas
Referencia	6ES7 274-1XF30-0XA0	6ES7 274-1XH30-0XA0
Dimensiones A x A x P (mm)	43 x 35 x 23	67 x 35 x 23
Peso	20 gramos	30 gramos
Entradas	8	14
Uso con CPU	CPU 1211C, CPU 1212C	CPU 1214C

⚠ ADVERTENCIA

Estos simuladores de entradas no están aprobados para ser utilizados en ubicaciones peligrosas ("hazardous locations") Class I DIV 2 o Class I Zone 2. Los interruptores pueden producir chispas o explotar si se utilizan en ubicaciones Class I DIV 2 o Class I Zone 2.

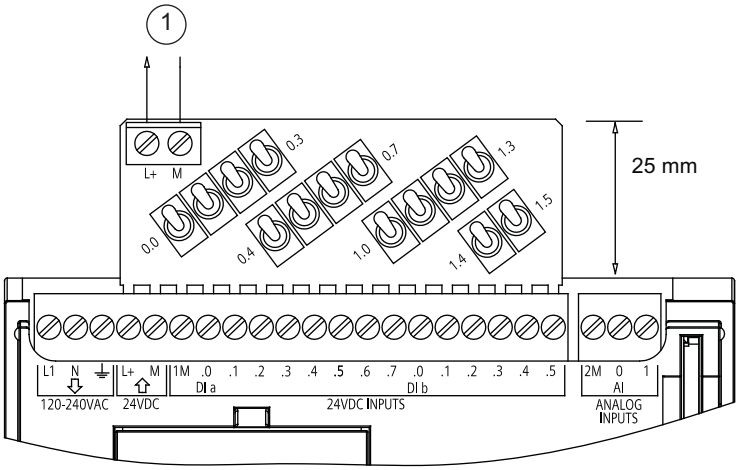
Simulador de 8 entradas



① Alimentación de sensores de 24 V DC

6ES7 274-1XF30-0XA0

Simulador de 14 entradas



① Alimentación de sensores de 24 V DC

6ES7 274-1XH30-0XA0

A.9 Cable para módulos de ampliación

Datos técnicos	
Referencia	6ES7 290-6AA30-0XA0
Longitud del cable	2 m
Peso	200 g

El cable para módulos de ampliación tiene un conector macho y uno hembra.

1. Conecte el conector macho al conector de bus en el lado derecho del módulo de señales.
2. Conecte el conector hembra al conector de bus en el lado izquierdo del módulo de señales.
   - Inserte la extensión con gancho del conector hembra en la carcasa en el conector de bus
   - Empuje el conector hembra hacia dentro del conector de bus.

Calcular la corriente necesaria

B

La CPU incorpora una fuente de alimentación interna capaz de abastecer la CPU, los módulos de ampliación y otros consumidores de 24 V DC.

Hay tres tipos de módulos de ampliación, a saber:

- Los módulos de señales (SM) se montan a la derecha de la CPU. Toda CPU permite conectar un número máximo posible de módulos de señales, sin considerar la corriente disponible.
  - La CPU 1214 permite conectar 8 módulos de señales
  - La CPU 1212 permite conectar 2 módulos de señales
  - La CPU 1211 no permite conectar módulos de señales
- Los módulos de comunicación (CM) se montan a la izquierda de la CPU. Se permiten como máximo 3 módulos de comunicación para cualquier CPU, sin considerar la corriente disponible.
- Las Signal Boards (SB) se montan en el lado superior de la CPU. Se permite como máximo 1 Signal Board para cualquier CPU.

Utilice la información siguiente como guía para determinar cuánta energía (o corriente) puede suministrar la CPU a la configuración.

Toda CPU suministra alimentación tanto de 5 V DC como de 24 V DC:

- La CPU suministra 5 V DC a los módulos de ampliación cuando son conectados. Si el consumo de 5 V DC de los módulos de ampliación excede la corriente que ofrece la CPU, habrá que desconectar tantos módulos de ampliación como sea necesario para no excederla.
- Toda CPU incorpora una fuente de alimentación de sensores de 24 V DC que puede suministrar 24 V DC a las entradas locales, o bien a las bobinas de relé de los módulos de ampliación. Si el consumo de 24 V DC excede la corriente disponible de la CPU, es posible agregar una fuente de alimentación externa de 24 V DC para suministrar 24 V DC a los módulos de ampliación. La alimentación de 24 V DC debe conectarse manualmente a las entradas o bobinas de relé.

⚠ ADVERTENCIA

Si se conecta una fuente de alimentación externa de 24 V DC en paralelo con la fuente de alimentación DC de sensores, podría surgir un conflicto entre ambas fuentes, ya que cada una intenta establecer su propio nivel de tensión de salida.

Este conflicto puede reducir la vida útil u ocasionar la avería inmediata de una o ambas fuentes de alimentación y, en consecuencia, el funcionamiento imprevisible del sistema PLC. El funcionamiento imprevisible puede producir la muerte, lesiones corporales graves y/o daños materiales.

La fuente de alimentación DC de sensores de la CPU y cualquier fuente de alimentación externa deben alimentar diferentes puntos. Se permite una conexión común de los cables neutros.

Algunos puertos de entrada de alimentación de 24 V del sistema PLC están interconectados y tienen un circuito lógico común que conecta varios bornes M. La fuente de alimentación de 24V de la CPU, la entrada de alimentación de las bobinas de relé de un SM, o bien una fuente de alimentación analógica sin aislamiento galvánico son ejemplos de circuitos interconectados si no tienen aislamiento galvánico según las hojas de datos técnicos. Todos los bornes M sin aislamiento galvánico deben conectarse al mismo potencial de referencia externo.

⚠ADVERTENCIA

Si los bornes M sin aislamiento galvánico se conectan a diferentes potenciales de referencia, circularán corrientes indeseadas que podrían averiar o causar reacciones inesperadas en el PLC y los equipos conectados.

Las averías o reacciones inesperadas podrían producir la muerte, lesiones corporales graves y/o daños materiales.

Asegúrese que todos los bornes M sin aislamiento galvánico de un sistema PLC están conectados al mismo potencial de referencia.

Para más información sobre la corriente disponible de las distintas CPUs y el consumo de corriente de los módulos de señales, consulte los datos técnicos (Página 319).

Nota

Si se excede la corriente disponible de la CPU, es posible que no se pueda conectar el número máximo de módulos soportado.

B.2 Ejemplo de cálculo del consumo de corriente

El ejemplo siguiente muestra el cálculo del consumo de corriente de un PLC que incluye una CPU 1214C AC/DC/relé, 3 módulos de señales SM 1223 de 8 entradas DC y 8 salidas de relé, así como un módulo de señales SM 1221 de 8 entradas DC. Este ejemplo incluye 46 entradas y 34 salidas en total.

Nota

La CPU ya ha asignado la corriente necesaria para accionar las bobinas de relé internas. Por tanto, no es necesario incluir el consumo de corriente de las bobinas de relé internas en el cálculo.

La CPU de este ejemplo suministra suficiente corriente de 5 V DC a los SMs, pero la alimentación de sensores no suministra suficiente corriente de 24 V DC a todas las entradas y bobinas de relé de ampliación. Las E/S requieren 448 mA, pero la CPU sólo puede suministrar 400 mA. Para esta configuración se necesita una fuente de alimentación adicional de 48 mA (como mínimo) a 24 V DC para operar todas las entradas y salidas de 24 V DC.

Corriente disponible de la CPU	**5 V DC**	**24 V DC**
CPU 1214C AC/DC/relé	1600 mA	400 mA
Menos		
Consumo del sistema	**5 V DC**	**24 V DC**
CPU 1214C, 14 entradas	-	14 * 4 mA = 56 mA
3 SM 1223, 5 V de corriente	3 * 145 mA = 435 mA	-
1 SM 1221, 5 V de corriente	1 * 105 mA = 105 mA	-
3 SM 1223, 8 entradas c/u	-	3 * 8 * 4 mA = 96 mA
3 SM 1223, 8 salidas de relé c/u	-	3 * 8 * 11 mA = 264 mA
1 SM 1221, 8 entradas	-	8 * 4 mA = 32 mA
Consumo total	540 mA	448 mA
Igual a		
Balance de corriente	**5 V DC**	**24 V DC**
Balance total de corriente	1060 mA	(48 mA)

B.3 Calcular el consumo de corriente

Utilice la tabla siguiente para determinar cuánta energía (o corriente) puede suministrar la CPU S7-1200 a la configuración en cuestión. En los datos técnicos (Página 319) encontrará información sobre la corriente disponible de la CPU y el consumo de los módulos de señales.

Corriente disponible de la CPU	**5 V DC**	**24 V DC**
Menos		
Consumo del sistema	**5 V DC**	**24 V DC**
Consumo total		
Igual a		
Balance de corriente	**5 V DC**	**24 V DC**
Balance total de corriente		

Referencias

C

CPUs		Referencia
CPU 1211C	CPU 1211C DC/DC/DC	6ES7 211-1AD30-0XB0
	CPU 1211C AC/DC/relé	6ES7 211-1BD30-0XB0
	CPU 1211C DC/DC/relé	6ES7 211-1HD30-0XB0
CPU 1212C	CPU 1212C DC/DC/DC	6ES7 212-1AD30-0XB0
	CPU 1212C AC/DC/relé	6ES7 212-1BD30-0XB0
	CPU 1212C DC/DC/relé	6ES7 212-1HD30-0XB0
CPU 1214C	CPU 1214C DC/DC/DC	6ES7 214-1AE30-0XB0
	CPU 1214C AC/DC/relé	6ES7 214-1BE30-0XB0
	CPU 1214C DC/DC/relé	6ES7 214-1HE30-0XB0

Módulos de señales, módulos de comunicación y Signal Boards		Referencia
Módulos de señales	SM 1221 8 entradas x 24 V DC	6ES7 221-1BF30-0XB0
	SM 1221 16 entradas x 24 V DC	6ES7 221-1BH30-0XB0
	SM 1222 8 salidas x 24 V DC	6ES7 222-1BF30-0XB0
	SM 1222 16 salidas x 24 V DC	6ES7 222-1BH30-0XB0
	SM 1222 8 salidas de relé	6ES7 222-1HF30-0XB0
	SM 1222 16 salidas de relé	6ES7 222-1HH30-0XB0
	SM 1223 8 entradas x 24 V DC / 8 salidas x 24 V DC	6ES7 223-1BH30-0XB0
	SM 1223 16 entradas x 24 V DC / 16 salidas x 24 V DC	6ES7 223-1BL30-0XB0
	SM 1223 8 entradas x 24 V DC / 8 salidas de relé	6ES7 223-1PH30-0XB0
	SM 1223 16 entradas x 24 V DC / 16 salidas de relé	6ES7 223-1PL30-0XB0
	SM 1231 4 entradas analógicas	6ES7 231-4HD30-0XB0
	SM 1231 8 entradas analógicas	6ES7 231-4HF30-0XB0
	SM 1232 2 salidas analógicas	6ES7 232-4HB30-0XB0
	SM 1232 4 salidas analógicas	6ES7 232-4HD30-0XB0
	SM 1234 4 entradas analógicas / 2 salidas analógicas	6ES7 234-4HE30-0XB0
Módulos de comunicación	CM 1241 RS232	6ES7 241-1AH30-0XB0
	CM 1241 RS485	6ES7 241-1CH30-0XB0
Signal Boards	SB 1223 2 entradas x 24 V DC / 2 salidas x 24 V DC	6ES7 223-0BD30-0XB0
	SB 1232 de 1 salida analógica	6ES7 232-4HA30-0XB0

Dispositivos HMI	Referencia
KTP400 Basic (Mono, PN)	6AV6 647-0AA11-3AX0
KTP600 Basic (Mono, PN)	6AV6 647-0AB11-3AX0
KTP600 Basic (Color, PN)	6AV6 647-0AD11-3AX0
KTP1000 Basic (Color, PN)	6AV6 647-0AF11-3AX0
TP1500 Basic (Color, PN)	6AV6 647-0AG11-3AX0

Paquete de programación	Referencia
STEP 7 Basic v10.5	6ES7 822-0AA0-0YA0

Memory Cards, otros dispositivos de hardware y repuestos		Referencia
Memory Cards	SIMATIC MC 2 MB	6ES7 954-8LB00-0AA0
	SIMATIC MC 24 MB	6ES7 954-8LF00-0AA0
Otros dispositivos de hardware	Fuente de alimentación PSU 1200	6EP1 332-1SH71
	Switch Ethernet CSM 1277 - 4 puertos	6GK7 277-1AA00-0AA0
	Simulador (1214C/1211C - 8 entradas)	6ES7 274-1XF30-0XA0
	Simulador (1214C - 14 entradas)	6ES7 274-1XH30-0XA0
	Cable para módulos de ampliación, 2 m	6ES7 290-6AA30-0XA0
Repuestos	Bloque de conectores, 7 terminales, estañado	6ES7 292-1AG30-0XA0
	Bloque de conectores, 8 terminales, estañado (4/pq)	6ES7 292-1AH30-0XA0
	Bloque de conectores, 11 terminales, estañado (4/pq)	6ES7 292-1AL30-0XA0
	Bloque de conectores, 12 terminales, estañado (4/pq)	6ES7 292-1AM30-0XA0
	Bloque de conectores, 14 terminales, estañado (4/pq)	6ES7 292-1AP30-0XA0
	Bloque de conectores, 20 terminales, estañado (4/pq)	6ES7 292-1AV30-0XA0
	Bloque de conectores, 3 terminales, dorado (4/pq)	6ES7 292-1BC0-0XA0
	Bloque de conectores, 6 terminales, dorado (4/pq)	6ES7 292-1BF30-0XA0
	Bloque de conectores, 7 terminales, dorado (4/pq)	6ES7 292-1BG30-0XA0
	Bloque de conectores, 11 terminales, dorado (4/pq)	6ES7 292-1BL30-0XA0

Documentación	Referencia
Manual de sistema del controlador programable S7-1200	
• Alemán	• 6ES7 298-8FA30-8AH0
• Inglés	• 6ES7 298-8FA30-8BH0
• Francés	• 6ES7 298-8FA30-8CH0
• Español	• 6ES7 298-8FA30-8DH0
• Italiano	• 6ES7 298-8FA30-8EH0
• Chino	• 6ES7 298-8FA30-8FH0
S7-1200 Easy Book	
• Alemán	• 6ES7 298-8FA30-8AQ0
• Inglés	• 6ES7 298-8FA30-8BQ0
• Francés	• 6ES7 298-8FA30-8CQ0
• Español	• 6ES7 298-8FA30-8DQ0
• Italiano	• 6ES7 298-8FA30-8EQ0
• Chino	• 6ES7 298-8FA30-8FQ0

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ANEXO 8.

MANUAL DE USUARIO DE VOLTÍMETRO

PeakTech®

Prüf- und Messtechnik

Spitzentechnologie, die überzeugt



PeakTech® 3441

Bedienungsanleitung / Operation Manual

Digital-Multimeter

1. Sicherheitshinweise

Dieses Gerät erfüllt die EU-Bestimmungen 2004/108/EG (elektromagnetische Kompatibilität) und 2006/95/EG (Niederspannung) entsprechend der Festlegung im Nachtrag 2004/22/EG (CE-Zeichen).
Überspannungskategorie III 1000V; Überspannungskategorie IV 600V;
Verschmutzungsgrad 2.

CAT I: Signalebene, Telekommunikation, elektronische Geräte mit geringen transienten Überspannungen
CAT II: Für Hausgeräte, Netzsteckdosen, portable Instrumente etc.
CAT III: Versorgung durch ein unterirdisches Kabel; Festinstallierte Schalter, Sicherungsautomaten, Steckdosen oder Schütze
CAT IV: Geräte und Einrichtungen, welche z.B. über Freileitungen versorgt werden und damit einer stärkeren Blitzbeeinflussung ausgesetzt sind. Hierunter fallen z.B. Hauptschalter am Stromeingang, Überspannungsableiter, Stromverbrauchszähler und Rundsteuerempfänger

Zur Betriebssicherheit des Gerätes und zur Vermeidung von schweren Verletzungen durch Strom- oder Spannungsüberschläge bzw. Kurzschlüsse sind nachfolgend aufgeführte Sicherheitshinweise zum Betrieb des Gerätes unbedingt zu beachten.

Schäden, die durch Nichtbeachtung dieser Hinweise entstehen, sind von Ansprüchen jeglicher Art ausgeschlossen.

* Dieses Gerät darf nicht in hochenergetischen Schaltungen verwendet werden.
* Gerät nicht auf feuchten oder nassen Untergrund stellen.
* Keine Flüssigkeiten auf dem Gerät abstellen (Kurzschlussgefahr beim Umkippen des Gerätes)

- Gerät nicht in der Nähe starker magnetischer Felder (Motoren, Transformatoren usw.) betreiben
- maximal zulässige Eingangsspannung von 1000V DC/AC nicht überschreiten.
- maximal zulässige Eingangswerte **unter keinen Umständen** überschreiten (schwere Verletzungsgefahr und/oder Zerstörung des Gerätes)
- Die angegebenen maximalen Eingangsspannungen dürfen nicht überschritten werden. Falls nicht zweifelsfrei ausgeschlossen werden kann, dass diese Spannungsspitzen durch den Einfluss von transienten Störungen oder aus anderen Gründen überschritten werden muss die Messspannung entsprechend (10:1) vorgedämpft werden.
- Nehmen Sie das Gerät nie in Betrieb, wenn es nicht völlig geschlossen ist.
- Defekte Sicherungen nur mit einer dem Originalwert entsprechenden Sicherung ersetzen. Sicherung oder Sicherungshalter **niemals** kurzschließen.
- Vor dem Umschalten auf eine andere Messfunktion Prüfleitungen oder Tastkopf von der Messschaltung abkoppeln.
- Keine Spannungsquellen über die µA/mA, 10A – und COM-Eingänge anlegen. Bei Nichtbeachtung droht Verletzungsgefahr und/oder die Gefahr der Beschädigung des Multimeters.
- Der 10A-Bereich ist durch eine 10A/1000V-Sicherung abgesichert.
- Bei Widerstandsmessungen keine Spannungen anlegen!
- Keine Strommessungen im Spannungsbereich (V/Ω) vornehmen.
- Gerät, Prüfleitungen und sonstiges Zubehör vor Inbetriebnahme auf eventuelle Schäden bzw. blanke oder geknickte Kabel und Drähte überprüfen. Im Zweifelsfalle keine Messungen vornehmen.
- Verwenden Sie ausschließlich 4mm-Sicherheitstestkabelsätze, um eine einwandfreie Funktion des Gerätes zu gewährleisten.

- Messarbeiten nur in trockener Kleidung und vorzugsweise in Gummischuhen bzw. auf einer Isoliermatte durchführen.
- Messspitzen der Prüfleitungen nicht berühren.
- Warnhinweise am Gerät unbedingt beachten.
- Gerät darf nicht unbeaufsichtigt betrieben werden
- Bei unbekannten Messgrößen vor der Messung auf den höchsten Messbereich umschalten.
- Gerät keinen extremen Temperaturen, direkter Sonneneinstrahlung, extremer Luftfeuchtigkeit oder Nässe aussetzen.
- Starke Erschütterung vermeiden.
- Heiße Lötpistolen aus der unmittelbaren Nähe des Gerätes fernhalten.
- Vor Aufnahme des Messbetriebes sollte das Gerät auf die Umgebungstemperatur stabilisiert sein (wichtig beim Transport von kalten in warme Räume und umgekehrt)
- Überschreiten Sie bei keiner Messung den eingestellten Messbereich. Sie vermeiden so Beschädigungen des Gerätes.
- Drehen Sie während einer Strom – oder Spannungs-messung niemals am Messbereichswahlschalter, da hierdurch das Gerät beschädigt wird.
- Messungen von Spannungen über 35V DC oder 25V AC nur in Übereinstimmung mit den relevanten Sicherheitsbestimmungen vornehmen. Bei höheren Spannungen können besonders gefährliche Stromschläge auftreten.
- Ersetzen Sie die Batterie, sobald das Batteriesymbol „BAT“ aufleuchtet. Mangelnde Batterieleistung kann unpräzise Messergebnisse hervorrufen. Stromschläge und körperliche Schäden können die Folge sein.
- Sollten Sie das Gerät für einen längeren Zeitraum nicht benutzen, entnehmen Sie die Batterie aus dem Batteriefach.
- Säubern Sie das Gehäuse regelmäßig mit einem feuchten Stofftuch und einem milden Reinigungsmittel. Benutzen Sie keine ätzenden Scheuermittel.

* Dieses Gerät ist ausschließlich für Innenanwendungen geeignet.
* Vermeiden Sie jegliche Nähe zu explosiven und entflammbaren Stoffen.
* Öffnen des Gerätes und Wartungs – und Reparatur-arbeiten dürfen nur von qualifizierten Service-Technikern durchgeführt werden.
* Gerät nicht mit der Vorderseite auf die Werkbank oder Arbeitsfläche legen, um Beschädigung der Bedienelemente zu vermeiden.
* Keine technischen Veränderungen am Gerät vornehmen.
* **- Messgeräte gehören nicht in Kinderhände –**

Reinigung des Gerätes:
Gerät nur mit einem feuchten, fusselfreien Tuch reinigen. Nur handelsübliche Spülmittel verwenden.
Beim Reinigen unbedingt darauf achten, dass keine Flüssigkeit in das Innere des Gerätes gelangt. Dies könnte zu einem Kurzschluss und zur Zerstörung des Gerätes führen.

1.1 Einleitung

Das neue PeakTech 3441 ist ein praktisches Digital-Multimeter für hohe Beanspruchung mit einer Vielzahl an nützlichen Messfunktionen.

Die Messanzeige des Gerätes lässt sich auf Tastendruck zwischen 3 5/6-stelliger LCD auf eine hochauflösende 4 5/6-stellige LCD umschalten, wobei alle Messungen als Echt-Effektivwert erfasst werden.

Neben den umfangreichen Messfunktionen für Strom, Spannung Kapazität, Widerstand und vielem mehr, verfügt diese Neuentwicklung unter anderem über eine 4-20mA% Stromschleifenmessung, einen Tiefpassfilter und eine Auto-Hold Funktion.

Das Modell PeakTech 3442 ist baugleich mit dem PeakTech 3441, jedoch verfügt dieses Modell über eine Bluetooth 4.0 Schnittstelle zur kabellosen Datenübertragung der Messwerte.

1.2 Maximal zulässige Eingangswerte

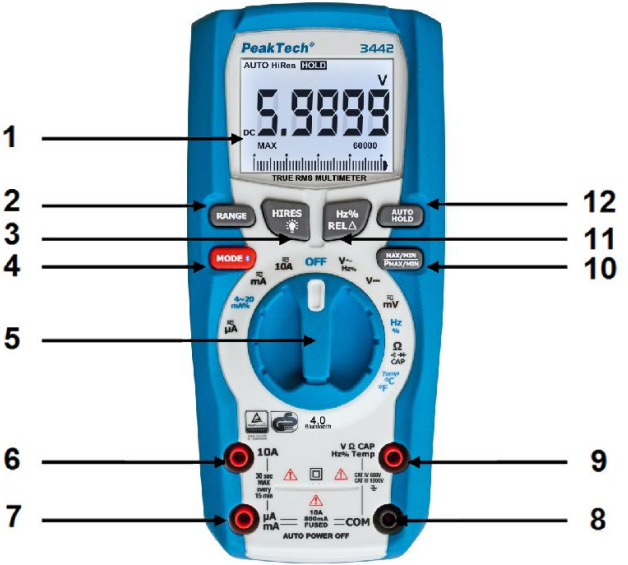
Funktion	**Überlastschutz**
DCV / ACV	1000V DC/AC_{eff}
DCA / ACA (µA/mA) DCA / ACA (10 A)	800mA / 1000V 10 A / 1000V
Widerstand	1000V DC/AC_{eff}
Diode / Durchgang	1000V DC/AC_{eff}
Kapazität	1000V DC/AC_{eff}
Frequenz	1000V DC/AC_{eff}
Temperatur	1000V DC/AC_{eff}
Überspannungsschutz: 8kV Spitze nach EN 61010	

1.3. Sicherheitssymbole und Hinweise am Gerät

	Gerät ist TÜV/GS geprüft; TÜV-Rheinland
	Achtung! Entsprechende(n) Abschnitt(e) in der Bedienungsanleitung nachlesen. Nichtbeachtung birgt Verletzungsgefahr und/oder die Gefahr der Beschädigung des Gerätes.
	max. zulässige Spannungsdifferenz von 1000 V DC/AC_{eff} zwischen COM-/ V-/ bzw. Ohm-Eingang und Erde aus Sicherheitsgründen nicht überschreiten.
	Gefährlich hohe Spannung zwischen den Eingängen. Extreme Vorsicht bei der Messung. Eingänge und Messspitzen nicht berühren. Sicherheitshinweise in der Bedienungsanleitung beachten!
~	Wechselspannung – Strom (AC)
	Gleichspannung – Strom (DC)
	AC oder DC
	Erde
	Doppelt isoliert
	Sicherung
CE	Entspricht den Richtlinien der europäischen Union

Achtung!
Mögliche Gefahrenquelle. Sicherheitsvorschriften unbedingt beachten. Bei Nichtbeachtung besteht u. U. Verletzungs- oder Lebensgefahr und/oder die Gefahr der Beschädigung des Gerätes.

2. Bedienelemente und Anschlüsse am Gerät



1. TFT**/**LCD-Display mit einer Anzeige von max. 60.000

2. RANGE-Taste: Umschaltung auf manuelle Bereichswahl

3. HIRES / Backlight-Taste: Zum Umschalten der Anzeige-auflösung und Einschalten der Hintergrundbeleuchtung.

4. MODE-Taste: Umschalten der Messfuktionen. Gerdrückt halten zum aktivieren der Bluetooth Schnittstelle (nur P3442)
5.

6. Drehwahlschalter: Zur Messbereichswahl.

7. 10A Buchse: AC/DC Strommessungen bis 10A

8. µA/mA Buchse: AC/DC Strommessungen bis 800mA

9. COM-Buchse: Zum Anschluss der korrespondierenden Messleitung am Bezugspunkt.

10. V/Ω/CAP/Hz%/Temp- Buchse: Zum Anschluss der Messleitung

11. MAX/MIN – PMAX/MIN-Taste: Zum Einschalten der Maximal, Minimal, Peak und AVG Messfunktion

12. Hz% / ∆REL –Taste: Tastverhältnis, Messfrequenz und Relativwertfunktion umschalten

13. AUTO / HOLD-Taste: Zum aktivieren der Data-Hold Funktion oder Auto-Hold Funktion.

3. Hinweise zur Inbetriebnahme des Gerätes

Achtung!
Messungen an Schaltungen mit hohen Spannungen (AC und DC) mit äußerster Vorsicht und nur in Übereinstimmung mit den relevanten Sicherheitsbestimmungen vornehmen. Gerät nach Beendigung des Messbetriebes stets ausschalten. Das Messgerät verfügt über eine interne Abschaltautomatik die das Gerät automatisch max. 30 Minuten nach dem letzten Betätigen einer Taste ausschaltet. Bei Aufleuchten des Überlaufsymbols OL übersteigt der gemessene Wert den gewählten Eingangsbereich. Bei Umschaltung auf einen höheren Messbereich erlischt die Anzeige automatisch.

3.1. Vorbereitung zum Messbetrieb

1. Prüfen Sie vor der Messung die Versorgungsspannung des Akkus. Ist sie zu schwach, erscheint das Batteriesymbol rechts oben und der Akku muss wieder aufgeladen werden.

2. Das Warndreieck neben den Eingangsbuchsen soll Sie warnen, dass Messspannung oder Messstrom zum Schutz der internen Schaltung nicht den angegebenen Wert übersteigen dürfen.

3. Der Funktionswahlschalter sollte vor der Messung auf den gewünschten Bereich eingestellt werden.

Hinweis:
In den niederen AC-/DC-Messbereichen erscheint bei nicht angeschlossenen Prüfleitungen u.U. ein beliebig sich ändernder Wert in der LCD-Anzeige. Dies ist bei Geräten mit hoher Empfindlichkeit normal und für die Messgenauigkeit bedeutungslos.

3.2. Umschaltung von automatischer auf manuelle Bereichswahl

Beim Einschalten des Gerätes wird immer die automatische Bereichswahl aktiviert. Die automatische Bereichswahl erleichtert den Messbetrieb und garantiert optimale Messergebnisse. Zur Umschaltung auf manuelle Bereichswahl wie beschrieben verfahren:

1. Taste RANGE drücken. Beim Drücken der Taste erlischt die Anzeige AUTO und der zuletzt gewählte Bereich bleibt weiterhin aktiviert.

2. Taste RANGE ggf. mehrmals, bis zum Erhalt des gewünschten Bereiches, drücken.

3. Zur Rückkehr zu automatischer Bereichswahl Taste RANGE für ca. 2 Sekunden gedrückt halten. Die Anzeige für automatische Bereichswahl „AUTO“ leuchtet auf.

4. Merkmale

4.1. Erklärung der Drucktaster

RANGE: Durch Drücken der RANGE-Taste wird der manuelle Messbereich in der aktuellen Messfunktion gewählt. Wird die RANGE-Taste 2 Sekunden gedrückt gehalten, kehrt das Gerät wieder in die automatische Bereichswahl zurück.

MODE : Durch Betätigen der MODE-Taste kann in einem Messbereich zwischen verschiendenen Funktionen umgeschaltet werden. Im Strom- und Spannungsbereich wird zwischen der AC und DC Messung umgeschaltet. Bei Auswahl des Ω/CAP/Diode/Durchgangsprüfer-Bereichs wird zwischen diesen Messfunktionen umgeschaltet.

Hz/REL: Durch Betätigen der Hz%/ΔREL-Taste wird im Wechselspannungmessbereich oder Frequenzmessbereich zwischen der Spannungsmessung, Frequenzmessung und der Anzeige des Tastverhältnis umgeschaltet. Halten Sie die REL-Taste für ca. 1 sek. Gedrückt, schaltet sich die Relativwertfunktion ein und die Messanzeige wird auf „Null“ zurückgesetzt. Dies kann z.B. im Gleichspannungsbereich genutzt werden, um negative Einflüsse durch Phantomwerte zu beseitigen.

HIRES: Durch kurzes Betätigen der Taste wird die Hintergrundbeleuchtung eingeschaltet. Durch langes Betätigen wird die Grundauflösung des Gerätes von 3 5/6 –stellig auf 4 5/6-stellig umgeschaltet.

AUTO: HOLD Der angezeigte Messwert wird durch kurzes Betätigen im Display eingefroren. Wir die AUTO/HOLD Taste ca. 2 Sekunden gedrückt, wechselt das Gerät in die Auto-Hold funktion und hält immer den aktuell stabilen Messwert in der Anzeige.

MAX/: MIN Durch kurzes mehrmaliges Betätigen der MAX/MIN-Taste schalten Sie durch die Maximalwert-Haltefunktion, die Minimalwert-Haltefunktion und die AVG-Durchschnittswerterfassung. Halten Sie die Taste länger gedrückt, schalten Sie in die PeakMAX und PeakMIN ein. Dort wird maximale und minimale Spitzen mit mehr als 1ms erfasst und in der Anzeige gehalten. Halten Sie die Taste erneut gedrückt, um diese Funkionen wieder auszuschalten.

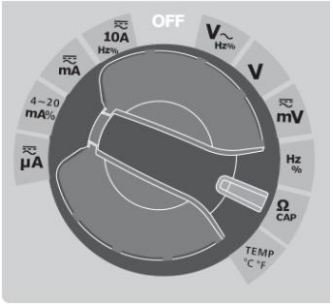
4.2. Beschreibung der Anzeige



•))	Durchgangsprüfung
⊣◁	Diodenprüfung
	Batterie Status
n	Nano (10^{-9})
µ	Mikro (10^{-6})
m	Milli (10^{-3})
A	Ampere (Strom)
k	Kilo
F	Farad (Kapazität)
M	Mega (10^{6})
Ω	Ohm (Widerstand)
PEAK	Spitzenwerterfassung
Hz	Hertz (Frequenz)
V	Volt (Spannung)
%	Tastverhältnis
REL	Relativwertfunktion
AC	Wechselspannung
AUTO	Automatische Bereichswahl
DC	Gleichspannung
HOLD	Messwerthaltefunktion
°F	Fahrenheit
°C	Celsius
MAX	Maximalwertfunktion
MIN	Minimalwertfunktion

4.3. Funktionsweise des Drehwahlschalters

Wählen Sie eine primäre Messfunktion, indem Sie den Drehschalter auf eine der möglichen Funktionen drehen. Das Messgerät stellt für jede einzelne Messfunktion eine Standardanzeige (Messbereich, Maßeinheiten und Modifikatoren). Ausgewählte Tastenoptionen werden nicht auf andere Messfunktionen übertragen.



V~	Spannungsmessfunktion AC
V–	Spannungsmessfunktion DC und AC+DC
mV	DC/AC milli-Volt Messfunktion
Ω / ⊣◀ •)) / CAP	Widerstand, Diodentest, Kapazität und Durchgangsprüffunktion
Hz%	Frequenzmessfunktion
TEMP	Temperatur-Messfunktion
A	AC/DC Strommessfunktion
mA	AC/DC mA-Strommessfunktion
4 - 20 mA%	% 4-20mA Messfunktion
µA	AC/DC µA Strommessfunktion bis 6.000 µA

4.4. Verwenden der Eingangsbuchsen

Für alle Funktionen, außer der Strommessfunktion werden die **V/Ω/CAP/Hz%/Temp** und **COM**-Eingangsanschlüsse verwendet.



10A	Eingang für 0 A bis 10,00 A Strom (20 VA Überlast für 30 Sekunden ein, 10 Minuten aus)
µA mA	Eingang für Strommessungen bis 600mA
COM	Masse-Anschluss für alle Messungen
V / Ω / ⊣◀ / Hz% / CAP / TEMP	Eingang für Spannung, Kontinuität, Widerstand, Diodentest, Frequenz, Kapazität und Temperatur

5. Messbetrieb

5.1.Gleichspannungsmessung (V DC)



1. Funktionswahlschalter in Stellung V⎓
2. Rote Prüfleitung an den **V/Ω/CAP/Hz%/Temp**-Eingang und die schwarze Prüfleitung an den **COM**-Eingang des Gerätes anschließen.
3. Prüfleitungen über die zu messendende Spannungsquelle anlegen und Messwert in der LCD-Anzeige des Gerätes ablesen. Bei negativen Messwerten erscheint ein Minussymbol (-) links vom Messwert.

5.2. Spannungsmessung (mV)

Achtung!

Vor dem Ein- bzw. Ausschalten der Messschaltung Prüfleitungen von der Messschaltung abziehen. Hohe Einschaltströme oder -spannungen könnten sonst u.U. das Messgerät beschädigen bzw. zerstören.

Achtung!

Phantomwerte

In niedrigen DC- und AC Spannungsbereichen und nicht angeschlossenen und somit offenen Eingängen zeigt die LCD-Anzeige sogenannte Phantomwerte, d. h. nicht “000” an. Dieses ist normal und stellt keinen Defekt des Gerätes dar.



1. Funktionswahlschalter in Stellung mV≂
2. Mit der Taste MODE die mV⎓ - oder mV~ Funktion auswählen.
3. Rote Prüfleitung an den **V/Ω/CAP/Hz%/Temp**-Eingang und die schwarze Prüfleitung an den **COM**-Eingang des Gerätes anschließen.
   Prüfleitungen über die zu messendende Spannungsquelle anlegen und Messwert in der LCD-Anzeige des Gerätes ablesen. Bei negativen Messwerten erscheint ein Minussymbol (-) links vom Messwert.

5.3. Wechselspannungsmessung (V AC)

Achtung!
Bei Messungen an 230V-Steckdosen ist äußerste Vorsicht geboten. Die Messspitzen der Prüfleitungen sind u.U. für einen einwandfreien Kontakt mit den Innenkontakten der Steckdose nicht lang genug und die LCD-Anzeige zeigt daher 0 V, obwohl eine Spannung von 230 V an der Steckdose anliegt. Daher immer sicherstellen, dass ein einwandfreier Kontakt zwischen den Messspitzen den Prüfleitungen und den Innenkontakten der Steckdose besteht und nicht blind der 0-V Anzeige vertrauen.

Wichtig!
Vor dem Ein- bzw. Ausschalten der Messschaltung Prüfleitungen von der Messschaltung abziehen. Hohe Einschaltströme oder -spannungen könnten sonst u.U. das Messgerät beschädigen bzw. zerstören.

Low Pass Filter:
Um falsche Wechselspannungsmessungen bei Pulsweiten-modulierten Signalen oder Störungen der Netzfrequenz zu vermeiden, können Sie bei der Wechselspannungsmessung einen Low-Pass Filter (Tiefpassfilter) einschalten.



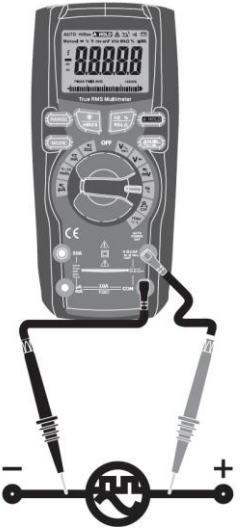
Zur Messung von Wechselspannungen wie beschrieben verfahren:

1. Funktionswahlschalter in Stellung "V~" drehen.
3. Rote Prüfleitung an den **V/Ω/CAP/Hz%/Temp**-Eingang und schwarze Prüfleitung an den **COM** -Eingang des Gerätes anschließen.
4. Prüfleitungen über die zu messende Spannungsquelle anlegen und Messwert in der LCD-Anzeige des Gerätes ablesen.
5. Bei Bedarf Hz% Taste drücken, um auf Frequenzmessung / Tastverhältnis der Wechselspannung umzuschalten.
6. In der Wechselspannungsmessung die MODE-Taste drücken, um auf eine „Low Pass Filter“ Messung umzuschalten.

5.4 Frequenzmessung/ Tastverhältnis

Zur Messung wie beschrieben verfahren:

1. Funktionswahlschalter in Stellung „Hz%“ drehen.
2. Mit der MODE Taste zwischen Frequenz (Hz) und Duty Cycle (%) umschalten.
3. Rote Prüfleitung an den **V/Ω/CAP/Hz%/Temp** -Eingang und schwarze Prüfleitung an den **COM** - Eingang des Gerätes anschließen.
4. Prüfleitungen über das zu messende Bauteil bzw. die zu messende Schaltung anlegen.
5. Messwert in der LCD-Anzeige ablesen. Der Messwert wird in der entsprechenden Maßeinheit (Hz, kHz, MHz oder %) angezeigt.



5.5. Widerstandsmessung

Achtung!
Nach Umschaltung des Multimeters auf die Widerstandsmessfunktion angeschlossene Prüfleitungen nicht an eine Spannungsquelle anlegen.

Widerstandsmessungen nur an spannungsfreien Schaltungen bzw. Bauteilen vornehmen und Netzstecker aus der Steckdose ziehen. In der Schaltung befindliche Kondensatoren vor der Messung unbedingt entladen.



Zur Messung wie beschrieben verfahren:

1. Funktionswahlschalter in Stellung "**Ω /**  /  / **CAP**" drehen.
2. Rote Prüfleitung an den **V/Ω/CAP/Hz%/Temp** -Eingang und Schwarze Prüfleitung an den **COM** – Eingang anschließen.
3. Prüfleitungen über den zu messenden Widerstand anlegen.
4. Messwert in der LCD-Anzeige ablesen.

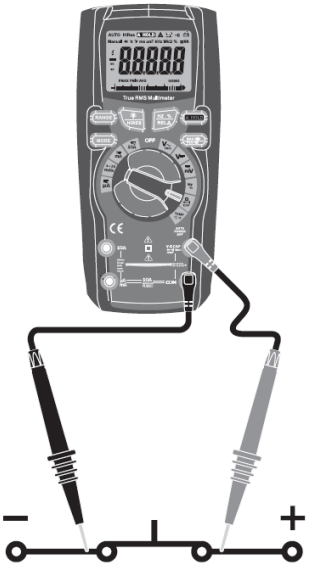
Hinweis:
Der Eigenwiderstand der Prüfleitungen kann bei Messungen von kleinen Widerständen (600 Ohm-Bereich) die Genauigkeit der Messung negativ beeinträchtigen. Der Eigenwiderstand üblicher Prüfleitungen liegt zwischen 0,2...1 Ohm.

Zur exakten Bestimmung des Eigenwiderstandes Prüfleitungen an die Eingangsbuchsen des Multimeters anschließen und Messspitzen kurzschließen. Der angezeigte Messwert entspricht dem Eigenwiderstand der Prüfleitungen.

5.6. Durchgangsprüffunktion

Achtung!
Nach Umschaltung des Multimeters auf die Widerstandsmessfunktion, angeschlossene Prüfleitungen nicht über eine Spannungsquelle anlegen.

Durchgangsprüfungen nur an spannungsfreien Schaltungen bzw. Bauteilen vornehmen und Netzstecker aus der Steckdose ziehen. In der Schaltung befindliche Kondensatoren vor der Messung unbedingt entladen.



Zur Messung wie beschrieben verfahren:

1. Funktionswahlschalter in Stellung "**Ω/**⊣▶⊢/•))/CAP" drehen.
2. Taste MODE drücken, um die Durchgangsprüffunktion auszuwählen.
3. Rote Prüfleitung an den **V/Ω/CAP/Hz%/Temp** -Eingang und schwarze Prüfleitung an den **COM** - Eingang des Gerätes anschließen.
4. Wenn der Widerstand unter ca. 30Ω liegt, ertönt das akustische Signal. Ist der Stromkreis offen, wird das Display "OL" anzeigen.

5.7. Diodenprüffunktion

Die Diodentestfunktion ermöglicht die Bestimmung der Verwendbarkeit von Dioden und anderen Halbleiter-Elementen in definierten Schaltungen, sowie die Bestimmung der Durchgängigkeit (Kurzschluss) und des Spannungsabfalls in Durchlassrichtung.

Achtung!
Vor Überprüfung der Diode, Bauteil bzw. Schaltung unbedingt spannungslos schalten oder Diode aus der Schaltung auslöten.



Zur Durchführung des Diodentests wie beschrieben verfahren:

1. Funktionswahlschalter in Stellung **Ω/**⊣▶⊢/CAP drehen.
2. Gerät auf die Diodentestfunktion durch Drücken der Taste MODE umschalten. In der LCD-Anzeige leuchtet das Symbol "⊣▶⊢" auf.
3. Rote Prüfleitung an den **V/Ω/CAP/Hz%/Temp** -Eingang und schwarze Prüfleitung an den **COM**-Eingang des Gerätes anschließen.
4. Prüfleitungen über die zu messende Diode anlegen und Messwert in der LCD-Anzeige ablesen.
5. Prüfleitungen über den Anschlüssen der Diode vertauschen und Messwert ablesen.
6. Wird nach dem ersten Anlegen oder nach dem Vertauschen der Prüfleitungen über dem zu messenden Bauteil einmal ein Messwert und einmal das Überlaufsymbol OL angezeigt, ist die Diode in Ordnung. Erscheint beim Anlegen bzw. Vertauschen der Prüfleitungen in beiden Fällen das Überlaufsymbol, ist die Diode offen. Wird in beiden Fällen ein sehr geringer Wert oder "0" angezeigt, ist die Diode kurzgeschlossen.

Hinweis:
Der angezeigte Wert entspricht dem Spannungsabfall der Diode in Durchlassrichtung.

5.8. Kapazitätsmessung

Achtung!
Kapazitätsmessungen nur in spannungslosen Schaltungen durchführen und Kondensator vor der Messung unbedingt entladen. Kondensator zur Messung aus der Schaltung auslöten.



Messung wie beschrieben durchführen:

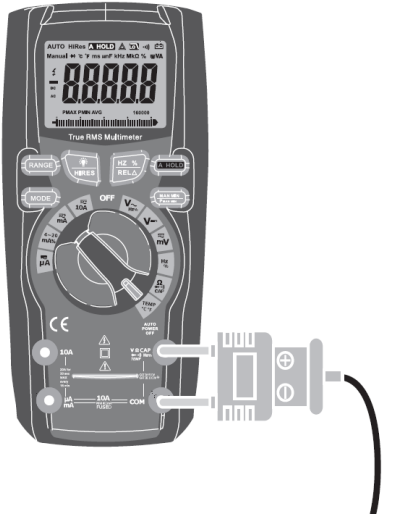
1. Funktionswahlschalter in Stellung "**Ω/**⊣►⊢/CAP" drehen.
2. Taste MODE drücken, um die Kapazitätsmessfunktion auszuwählen.
3. Rote Prüfleitung an den **V/Ω/CAP/Hz%/Temp**-Eingang und schwarze Prüfleitung an den **COM**-Eingang des Gerätes anschließen.

4. Prüfleitungen über den zu messenden Kondensator anlegen (Polarität beachten!).
5. Messwert in der LCD-Anzeige ablesen.

5.9. Temperaturmessfunktion

Achtung!

Temperaturmessungen nur an spannungsfreien Schaltungen bzw. Messobjekten vornehmen.



Temperaturmessung wie beschrieben durchführen:

1. Funktionswahlschalter in Stellung "TEMP °C/°F" drehen.
2. Taste MODE betätigen, um °C oder °F auszuwählen.
3. Adapter für Temperaturmessungen in Eingangsbuchsen **V/Ω/CAP/Hz%/Temp** (+) und **COM** (-) einstecken.
4. Typ-K Temperaturfühler auf den Temperaturadapter anschließen (auf korrekte Polarität achten!).
5. Messfühler auf die Oberfläche des zu messenden Bauteils aufsetzen und Kontakt bis zur Stabilisierung der Messwertanzeige aufrechterhalten (ca. 30 Sekunden).
6. Temperaturwert nach erfolgter Stabilisierung in der LCD-Anzeige ablesen.

Achtung!
Aus Sicherheitsgründen Temperaturfühler unbedingt vor dem Umschalten auf eine andere Messfunktion von den Eingangsbuchsen des Multimeters abziehen.

5.10. Gleichstrommessung

Achtung!
Aus Sicherheitsgründen keine Strommessungen in Schaltungen mit Spannungen von mehr als 1000V vornehmen.

Achtung!
Gleichstrommessungen von 10A auf maximal 30 Sekunden beschränken.



1. Entsprechend der zu messenden Stromgröße Funktionswahlschalter entweder in Stellung µA, mA oder 10A drehen.
2. Gerät auf die Gleichstrommessfunktion (DC „⎓“) durch Drücken der Taste MODE umschalten. In der LCD-Anzeige leuchtet das Funktionssymbol DC auf.
3. Abhängig von der zu messenden Stromstärke rote Prüfleitung an den **µA/mA** - oder den **10A** - Eingang und schwarze Prüfleitung an den **COM** - Eingang des Gerätes anschließen. Bei unbekannter Stromgröße aus Sicherheitsgründen den 10A-Bereich wählen und bei entsprechender Messwertanzeige ggf. auf einen mA-Messbereich umschalten.

4. Zu messende Schaltung spannungslos schalten und am gewünschten Messpunkt "öffnen". Prüfleitungen in Reihe anschließen (auf korrekte Polarität achten!).
5. Spannung an die Messschaltung anlegen und Messwert in der LCD-Anzeige des Gerätes ablesen. Beim Messen negativer Gleichströme erscheint ein Minussymbol (-) links von der Messwertanzeige.

5.11. Wechselstrommessung

Achtung!
Aus Sicherheitsgründen keine Strommessungen in Schaltungen mit Spannungen von mehr als 1000 V DC/AC_{eff} vornehmen.

Gleichstrommessungen im 10 A-Bereich auf maximal 30 Sekunden beschränken. Längere Messzeiten in diesem Bereich können zum Auslösen der internen Sicherung führen.

Achtung!
1. Entsprechend der zu messenden Stromgröße Funktionswahlschalter entweder in Stellung µA, mA oder 10A drehen.
2. Gerät auf die Wechselstrommessfunktion (AC „~“) durch Drücken der Taste MODE umschalten. In der LCD-Anzeige leuchtet das Funktionssymbol AC auf.
3. Abhängig von der zu messenden Stromstärke rote Prüfleitung an den µA/mA- oder den 10 A-Eingang und schwarze Prüfleitung an den COM-Eingang des Gerätes anschließen. Bei unbekannter Stromgröße aus Sicherheitsgründen 10 A-Bereich wählen und bei entsprechender Messwertanzeige ggf. auf einen mA-Messbereich umschalten.
4. Zu messende Schaltung spannungslos schalten und am gewünschten Messpunkt öffnen. Prüfleitungen in Reihe anschließen.
5. Spannung an die Messschaltung anlegen und Messwert in der LCD-Anzeige des Gerätes ablesen.



Achtung!

Strommessungen im 10A und µA/mA-Bereich sind durch Schmelzsicherungen gegen Überstrom abgesichert. Defekte Sicherungen müssen zur weiteren Messung gegen neue Sicherungen des gleichen Typs ausgewechselt werden. Bei ausgelösten Sicherungen ist keine Strommessung mehr möglich. Den maximalen Strommessbereich nicht überschreiten, um ein Auslösen der Sicherung zu vermeiden!

5.12. 4 – 20mA % Messung

Stromkreise mit 4-20 mA stellen einen analogen elektrischen Übertragungsstandard für industrielle Messgeräte und die Kommunikation dar. In einem solchen Stromkreis entspricht ein Pegel von 4 mA 0 % und ein Pegel von 20 mA 100 % des Signals. Die Nullposition bei 4 mA erlaubt den empfangenden Messgeräten die Unterscheidung zwischen einem Nullsignal und einem unterbrochenen Draht oder fehlerhaften Gerät. Die Vorteile der 4-20-mA-Übertragung die geringen Implementierungskosten sowie die Möglichkeit, viele Formen des elektrischen Rauschens auszuschließen.

1. Einstellungen und Verbinden der Prüfleitungen, wie in Punkt 6.10. Gleichstrommessungen beschrieben, durchführen.
3. Funktionswahlschalter in “4-20mA%”-Position drehen.
4. Der Schleifenstrom wird in % in der LCD-Anzeige wie folgt angegeben:

0 mA	-25%
4 mA	0%
20 mA	100%
24 mA	125%

6. Auswechseln der Batterien

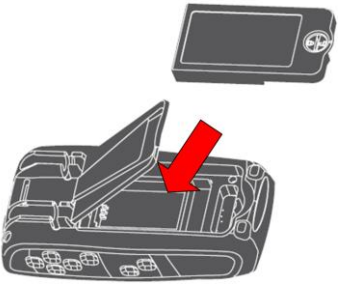
Ersetzen Sie die Batterien wie folgt:

1. Schalten Sie das Messgerät aus und entfernen Sie alle Messleitungen von den Eingangsbuchsen.

2. Drehen Sie die Schraube des Batteriefaches eine halbe Umdrehung gegen den Uhrzeigersinn, um das Batteriefach zu öffnen.

3. Ersetzen Sie die 4 x 1,5V AAA Batterien durch neue in gleicher Bauform.

4. Setzen Sie das Batteriefach wieder auf das Gerät und sichern Sie es durch Drehen der Schraube um eine halbe Umdrehung im Uhrzeigersinn.



6.1. Hinweise zum Batteriegesetz

Im Lieferumfang vieler Geräte befinden sich Batterien, die. z. B. zum Betrieb von Fernbedienungen dienen. Auch in den Geräten selbst können Batterien oder Akkus fest eingebaut sein. Im Zusammenhang mit dem Vertrieb dieser Batterien oder Akkus sind wir als Importeur gemäß Batteriegesetz verpflichtet, unsere Kunden auf folgendes hinzuweisen:

Bitte entsorgen Sie Altbatterien, wie vom Gesetzgeber vorgeschrieben - die Entsorgung im Hausmüll ist laut Batteriegesetz ausdrücklich verboten-, an einer kommunalen Sammelstelle oder geben Sie sie im Handel vor Ort kostenlos ab. Von uns erhaltene Batterien können Sie nach Gebrauch bei uns unter der auf der letzten Seite angegeben Adresse unentgeltlich zurückgeben oder ausreichend frankiert per Post an uns zurücksenden.

Schadstoffhaltige Batterien sind mit einem Zeichen, bestehend aus einer durchgestrichenen Mülltonne und dem chemischen Symbol (Cd, Hg oder Pb) des für die Einstufung als schadstoffhaltig ausschlaggebenden Schwermetalls versehen:



1. „Cd" steht für Cadmium.
2. „Hg" steht für Quecksilber.
3. „Pb" steht für Blei.

7. Auswechseln der Sicherungen

Achtung!
Vor Abnahme des Batteriefachdeckels zum Auswechseln der Sicherungen, Prüfleitungen von den Eingängen des Multimeters abziehen und Gerät ausschalten.
Defekte Sicherung nur durch eine dem Originalwert entsprechende Sicherung ersetzen.

Zum Auswechseln der Sicherung wie beschrieben vorgehen:

1. Drehen Sie die Schraube des Batteriefaches eine halbe Umdrehung gegen den Uhrzeigersinn, um das Batteriefach zu öffnen.

2. Defekte Sicherung vorsichtig aus dem Sicherungshalter entfernen.

4. Neue - im Wert und den Abmessungen der Originalsicherung entsprechende - Sicherung in den Sicherungshalter einsetzen. Darauf achten dass die Sicherung mittig im Halter sitzt.

5. Nach dem Auswechseln der entsprechenden Sicherung, Batteriefachdeckel wieder auf das Gerät auflegen und durch Drehen der Schraube um eine halbe Umdrehung im Uhrzeigersinn befestigen.

   800mA/1000V FF (Superflink) 6,3 x 32mm
   10 A/1000V F (Flink) 10 x 38 mm

8. Technische Daten

8.1. Allgemeine Daten

Anzeige	LCD Anzeige mit einer maximalen Anzeige von 59999.
Überlastschutz	in allen Bereichen
Betriebstemperaturbereich	5...40°C < 80 % RH
Betriebshöhe	< 2000 m max.
Lagertemperaturbereich	-20...+60°C < 80 % RH
Temperaturbereich für angegebene Genauigkeit	18...28°C

8.2 Allgemeine technische Daten

Gehäuse	Doppelt isoliert, wasserdicht
Falltest	2 m
Dioden-Test	Teststrom von 0,9 mA maximal, Leerlaufspannung 2,8 V DC typisch
Durchgangsprüffunktion	Akustisches Signal ertönt, wenn der Widerstand geringer als 30 Ω ist, Teststrom <0.35mA
PEAK-Funktion	Spitzenwerterfassung >1ms
Temperatursensor	Benötigt Typ-K-Temperaturfühler
Eingangswiderstand	>10MΩ VDC
AC Ansprechverhalten	Echteffektiv (True RMS)
ACV Frequenz-Bandbreite	50Hz to 5000Hz
Überbereichsanzeige	"OL" wird angezeigt
Abschaltautomatik	ca. 15 Minuten
Polaritätsanzeige	Automatisch Minus (-) Zeichen für negativ
Messrate	3 x pro Sekunde, nominal
Schnittstelle (nur P3442)	Bluetooth 4.0 Low Energy

AC Echteffektiv (True RMS)	Der Begriff steht für "Root-Mean-Square," repräsentiert die Berechnungsmethode der Spannungs- oder Stromwerte. Durchschnittliche Multimeter sind so kalibriert, um Sinuswellen korrekt anzuzeigen, jedoch zeigen diese Nicht-Sinussignale oder verzerrte Signale ungenau an. Geräte mit Echteffektiv-Funktion (True RMS) können auch diese Signaltypen genau anzeigen.
Batteriezustandsanzeige	"" wird angezeigt, wenn die Batteriespannung unter die benötigte Betriebsspannung fällt
Batterie /Akku	4 x 1,5 Volt AAA Batterie
Sicherungen	mA, uA; 0.8A / 1000V (6,3x32mm) FF Keramiksicherung A-Bereich; 10A / 1000V (10x32mm) F Keramiksicherung
Sicherheit	Dieses Gerät ist für Messungen an Elektroinstallationen konzipiert und geschützt durch doppelte Isolierung entsprechend EN 61010-1:2010 und IEC 61010-1:2010) und Überspannungskategorie CAT IV 600 V und CAT III 1000 V; Verschmutzungsgrad 2. Es erfüllt auch die UL 61010-1 2. Ausgabe (2004), CAN / CSA C22.2 Nr. 61010-1 2. Ausgabe (2004) und UL 61010B-2-031, 1. Auflage (2003)
Abmessungen (B x H x T)	80 x 175 x 50 mm
Gewicht	400 g

8.3. Spezifikationen (HiRes)

Wechselspannung (ACV)

Bereich	Auflösung	50 Hz – 1kHz	1kHz - 5kHz
600 mV	0,01 mV	± 1%+ 5 St.	± 3,0% + 5 St.
6 V	0,0001V		
60 V	0,001V		
600 V	0,01V		
1000 V	0,1V		Nicht spezifiziert

Genauigkeit bei >10% des Messbereiches

Gleichspannung (DCV)

Bereich	Auflösung	Genauigkeit
600 mV*	0,01 mV	± 0,9% + 5 St.
6 V	0,0001 V	
60 V	0,001 V	
600 V	0,01 V	
1000 V	0,1 V	± 1,2% + 5 St.

* Bei Verwendung des Relativ Modus (RELΔ) zum Ausgleich des Offsets.

Widerstand (Ω)	Bereich	Auflösung	Genauigkeit
	600 Ω *	0,01 Ω	± 2% + 9 St.
	6 kΩ	0,0001 kΩ	± 1,2% + 5 St.
	60 kΩ	0,001 kΩ	
	600 kΩ	0,01 kΩ	
	6 MΩ	0,0001 MΩ	
	60 MΩ	0,001 MΩ	± 2,0% + 10 St.
* Bei Verwendung der relativ Modus (RELΔ) zum Ausgleich des Offsets.			
Temperatur (Typ-K)	Bereich	Auflösung	Genauigkeit
	-50 ~ 760 °C	0,1 °C	± 2,0% + 3,0 °C
	-58 ~ 1400 °F	0,1 °F	± 2,0% + 5,5 °F
	1. Spezifikation enthält nicht den Messfehler des angeschlossenen Temperatursensors.		
	2. Genauigkeit der angegebenen Spezifikation setzt eine Stabilität der Umgebungstemperatur von ± 1,0 °C voraus.		
Kapazität	60 nF	0,01 nF	± 3,5% + 10 St.
	600 nF	0,1 nF	
	6 µF	0,001 µF	± 2,5% + 10 St.
	60 µF	0,01 µF	
	600 µF	0,1 µF	
	6000 µF	1 µF	± 3,5% + 10 St.
Tast-verhältnis	0,001 ~ 99,90%	0,0001%	± 1.2% + 50 St.
	Pulsweite: 100 µs – 100ms Frequenz: 5 Hz – 10 kHz		

Frequenz (Elektronisch)

60 Hz	0,001 Hz	± 1,0% + 2 dgt.
600 Hz	0,01 Hz	
6 kHz	0,0001 kHz	
60 kHz	0,001 kHz	
600 kHz	0,01 kHz	
10 MHz	0,001 MHz	Nicht spezifiziert
Empfindlichkeit: $2,0V_{eff}$ minimum bei 20% ~ 80% Tastverhältnis (duty cycle) und <100 kHz; $5V_{eff}$ minimum bei 20% ~ 80% Tastverhältnis (duty cycle) und >100 kHz		

Frequenz (Elektrisch)

40 Hz ~ 10 kHz	0,0001 Hz	± 0.5% v.M.
Empfindlichkeit: min. $15V_{eff}$		

Gleichstrom (DCA)

600 µA	0,01 µA	± 1,5% v.M. + 5 St.
6000 µA	0,1 µA	
60 mA	0,001 mA	
600 mA	0,01 mA	
10 A	0,001 A	

Wechselstrom (ACA)

		< 1 kHz	< 5 kHz
600 µA	0,01 µA	± 2,5% v.M. + 5 St.	± 3,5% v.M. + 5 St.
6000 µA	0,1 µA		
60 mA	0,001 mA		
600 mA	0,01 mA		
10 A	0,001 A		Nicht spezifiziert
(20A: maximal 30 Sekunden mit reduzierter Genauigkeit)			
Alle Wechselstrombereiche sind von 5% bis 100% des Messbereiches spezifiziert.			

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Letzter Stand bei Drucklegung. Technische Änderungen des Gerätes, welche dem Fortschritt dienen, vorbehalten.

Hiermit bestätigen wir, dass alle Geräte, die in unseren Unterlagen genannten Spezifikationen erfüllen und werkseitig kalibriert geliefert werden. Eine Wiederholung der Kalibrierung nach Ablauf von 1 Jahr wird empfohlen.

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1. Safety Precautions

This product complies with the requirements of the following European Community Directives: 2004/108/EC (Electromagnetic Compatibility) and 2006/95/EC (Low Voltage) as amended by 2004/22/EC (CE-Marking).
Overvoltage category III 1000V; overvoltage category IV 600V; pollution degree 2.

CAT I: For signal level, telecommunication, electronic with small transient over voltage
CAT II: For local level, appliances, main wall outlets, portable equipment
CAT III: Supplied from a cable under earth; fixed installed switches, automatic cut-off or main plugs
CAT IV: Units and installations, which are supplied overhead lines, which are stand in a risk of persuade of a lightning, i.e. main-switches on current input, overvoltage-diverter, current use counter.

To ensure safe operation of the equipment and eliminate the danger of serious injury due to short-circuits (arcing), the following safety precautions must be observed.
Damages resulting from failure to observe these safety precautions are exempt from any legal claims whatever.

* Do not use this instrument for high-energy industrial installation measurement.
* Do not place the equipment on damp or wet surfaces.
* Do not exceed the maximum permissible input ratings (danger of serious injury and/or destruction of the equipment).
* The meter is designed to withstand the stated max voltages. If it is not possible to exclude without that impulses, transients, disturbance or for other reasons, these voltages are exceeded a suitable presale (10:1) must be used.

- Replace a defective fuse only with a fuse of the original rating. Never short-circuit fuse or fuse holding.
- Disconnect test leads or probe from the measuring circuit before switching modes or functions.
- Do not conduct voltage measurements with the test leads connected to the µA/mA/A- and COM-terminal of the equipment.
- The 10A-range is protected by fuse 10A/1000V.
- To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements.
- Do not conduct current measurements with the leads connected to the V/Ω-terminals of the equipment.
- Check test leads and probes for faulty insulation or bare wires before connection to the equipment.
- Please use only 4mm-safety test leads to ensure immaculate function.
- To avoid electric shock, do not operate this product in wet or damp conditions. Conduct measuring works only in dry clothing and rubber shoes, i. e. on isolating mats.
- Never touch the tips of the test leads or probe.
- Comply with the warning labels and other info on the equipment.
- The measurement instrument is not to be to operated unattended.
- Always start with the highest measuring range when measuring unknown values.
- Do not subject the equipment to direct sunlight or extreme temperatures, humidity or dampness.
- Do not subject the equipment to shocks or strong vibrations.
- Do not operate the equipment near strong magnetic fields (motors, transformers etc.).
- Keep Allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurements).
- hot soldering irons or guns away from the equipment.

* Do not input values over the maximum range of each measurement to avoid damages of the meter.
* Do not turn the rotary function switch during voltage or current measurement, otherwise the meter could be damaged.
* Use caution when working with voltages above 35V DC or 25V AC. These Voltages pose shock hazard.
* Charge the battery as soon as the battery indicator “BAT” appears. With a low battery, the meter might produce false reading that can lead to electric shock and personal injury.
* Fetch out the battery when the meter will not be used for long period.
* Periodically wipe the cabinet with a damp cloth and mid detergent. Do not use abrasives or solvents.
* The meter is suitable for indoor use only
* Do not operate the meter before the cabinet has been closed and screwed safely as terminal can carry voltage.
* Do not store the meter in a place of explosive, inflammable substances.
* Do not modify the equipment in any way
* Do not place the equipment face-down on any table or work bench to prevent damaging the controls at the front.
* Opening the equipment and service – and repair work must only be performed by qualified service personnel
* **Measuring instruments don’t belong to children hands.**

Cleaning the cabinet

Clean only with a damp, soft cloth and a commercially available mild household cleanser. Ensure that no water gets inside the equipment to prevent possible shorts and damage to the equipment.

1.1. Introduction

The new PeakTech 3441 is a handy digital multimeter for heavy duty use with many useful measurement functions.

The measurement display of the device can be switched from 3 5/6 digit to 4 5/6 digits high-resolution by keystroke, where all measurements are made as True RMS.

In addition to the comprehensive measurement functions for current, voltage, capacity, resistance and more, this new developed device has among other things a 4-20mA% current loop measurement, a low-pass filter and an Auto-Hold function.

The model PeakTech 3442 is identically constructed to the model PeakTech 3441, nevertheless it is equipped with an additional Bluetooth 4.0 interface for wireless data transfer.

1.2. Input Limits

Function	Overload protection
DCV / ACV	1000V DC/AC_{rms}
DCA / ACA (µA/mA) DCA / ACA (10 A)	800mA / 1000V 10 A / 1000V
Resistance	1000V DC/AC_{rms}
Diode / Continuity	1000V DC/AC_{rms}
Capacity	1000V DC/AC_{rms}
Frequency	1000V DC/AC_{rms}
Temperature	1000V DC/AC_{rms}
Overload protection: 8kV peak as in EN 61010	

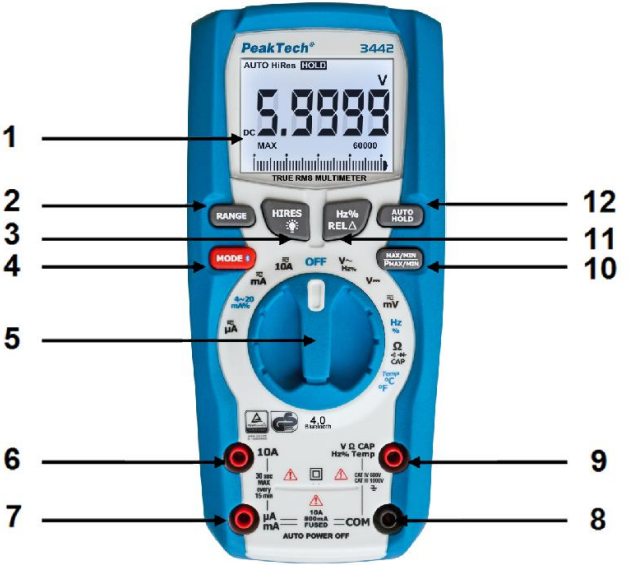
1.3. Safety Symbols

	TÜV/GS approved; TÜV-Rheinland
	Attention! Read the corresponding Section in the manual. Failure to comply entails risk of injury and / or the risk of damage to the device.
	max. allowable voltage difference of 1000 V DC/ACrms between COM / V or ohm input and earth does not exceed for safety reasons.
	Dangerous high voltage is applied between the inputs. Extreme caution in the measurement. Do not touch inputs and measuring tips. Safety instructions in the user manual note!
~	AC (Alternating Current)
	DC (Direct Current)
	AC or DC
	Earth ground
	Doppelt isoliert
	Fuse
CE	Conforms to European Union directives

WARNING / CAUTION

This WARNING / CAUTION symbols indicate a potentially hazardous situation, which if not avoided, may result in minor or moderate injury, or damage to the product or other property.

2. Front Panel Description



1. TFT / LCD display with an indication of max. 60.000

2. RANGE-Key: To switch measurement ranges manually

3. HIRES/ Backlight-Key: To select display resolution and switch backlight

4. MODE-Key: To switch the measurement functions. Hold key to activate Bluetooth interface (P3442 only)

5. Rotation Switch: To select the desired measurement

6. 10A Socket: AC/DC current measurements up to 10A

7. µA/mA Socket: AC/DC current measurements up to 800mA

8. COM Socket: To connect the corresponding measuring line at the reference point.

9. V/Ω/CAP/Hz%/Temp- Socket**:** Input connector for red test lead for all measurement functions except current measurements.

10. MAX/MIN – PMAX/MIN-Key: To turn on the maximum, minimum, peak and AVG measurement function

11. Hz% / ΔREL –Key: Switches duty cycle, frequency measurement and relative value function.

12. AUTO / HOLD- Key: Activate Data-Hold or Auto-Hold function.

3. Operating instructions

Warning!
Risk of electrocution! High-voltage circuits, both AC and DC are very dangerous and should be measured with great care.

Always push the power switch to the OFF position when the meter is not in use. This meter has Auto OFF that automatically shuts the meter OFF if max. 30 minutes elapse between uses.
If "OL" appears in the display during a measurement, that value you are measuring exceeds the range you have selected. Change to higher range.

3.1. Preliminary Note

1. Check the supply voltage by setting the DMM switch to ON. If the voltage is weak, a "BAT" sign will appear on the right of display and you have to charge the battery.

2. The warning sign next to the test leads jack is for warning, that the input voltage or current should not exceed the indicated values. This is to prevent damage to the internal circuitry.

3. The function switch should be set to the range, which you want to test before operation.

Note:
On some low AC and DC voltage ranges, with the test leads not connected to a device, the display may show a random, changing reading. This is normal and is caused by the high-input sensitivity. The reading will stabilize and give a proper measurement when connected to a circuit.

3.2. Autoranging / manual range selection

When the meter is first turned on, it automatically goes into Auto-Ranging. This automatically selects the best range for the measurements being made and is generally the best mode for most measurements. For measurement situations requiring that the range be manually held, perform the following:

1. Press the "RANGE" button. The "AUTO" indicator will extinguish and the currently selected range will be held.

2. Press the "RANGE" button to step through the available ranges until you select the range you want.

3. Press and hold the "RANGE" button for 2 seconds to exit the manual ranging mode and return to "AUTO" mode.

4. Features

4.1. Understanding the Push Buttons

RANGE: The manual range is selected in the current measurement function by pressing the RANGE button. When the RANGE button is held for 2 seconds, the unit will return to autoranging.

MODE: Can switch in a range between different electrical functions by pressing the MODE button. In current and voltage range measurement it is switched between AC and DC. When you select the Ω / CAP / diode / continuity tester range with the MODE key can be switched between these measurement functions.

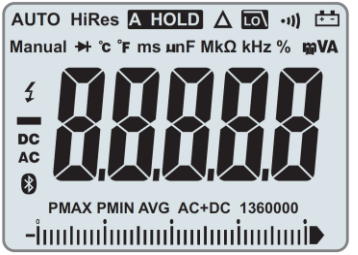
Hz / REL: Pressing the Hz% / ΔREL-button switches in AC voltage measuring range or frequency range between the voltage measurement, frequency measurement and display of the duty cycle. Hold and keep pressed the REL button for about 1 sec. and the relative value function turns on, so the meter display will be reset to "zero". This can e.g. be used in the DC range to eliminate negative influences by phantom values.

HIRES: The backlighting is turned on by pressing the button. Pressing and holding switches the base resolution of the device from 3 5/6 -digit to 4 5/6 digits.

AUTO: HOLD The displayed value will be “frozen” by pushing the HOLD key. Pressing the AUTO / HOLD button for about 2 seconds, the unit enters the auto-hold function and keeps the next stable reading in the display.

MAX/: MIN By briefly repeatedly pressing the MAX / MIN key you can cycle through the maximum value holding function, the minimum value holding function and the AVG Average value acquisition. Hold down the button, to turn on the PeakMAX and PeakMIN function. The maximum and minimum peak is detected with 1ms sampling and held in the display. Hold down the button again to turn this function off again.

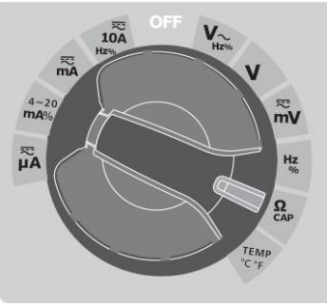
4.2. Understanding the Display



•))	Continuity Tester
▶|	Diode Tester
	Batterie Status
n	Nano (10^{-9})
µ	Micro (10^{-6})
m	Milli (10^{-3})
A	Ampere (Current)
k	Kilo
F	Farad (Capacity)
M	Mega (10^{6})
Ω	Ohm (Resistance)
PEAK	Peak detection
Hz	Hertz (Frequency)
V	Volt (Voltage)
%	Duty Cycle
REL	Relative function
AC	Alternating Current
AUTO	Automatic Range
DC	Direct Current
HOLD	Data Hold function
°F	Fahrenheit
°C	Celsius
MAX	Maximum value function
MIN	Minimum value function

4.3. Understanding the Rotary Switch

Select a primary measurement function by positioning the rotary switch to one of the icons around its perimeter. For each function, the Meter presents a standard display for that function (range, measurement units, and modifiers). Button choices made in one function do not carry over into another function.



V~	AC voltage measurements
V–	DC and AC+DC voltage measurements
mV	DC/AC milli-volts measurements
Ω / →||← •))) / CAP	Resistance, Diode test, capacitance and continuity measurements
Hz%	Frequency measurements
TEMP	Temperature measurements
A	AC/DC amps measurements
mA	AC/DC milliamps measurements
4 - 20 mA%	% 4-20mA measurements
µA	AC/DC microampere measurements up to 6,000 µA

4.4. Using the Input Terminals

All functions except the current measurement function use the **V/Ω/CAP/Hz%/Temp** and **COM** input terminals.



10A	Input for 0 A to 10.00 A current (20VA overload for 30 seconds on, 10 minutes off)
µA mA	Input for 0 A to 600 mA current measurements
COM	Ground-terminal for all measurements
V / Ω / →| •))) / Hz% / CAP / TEMP	Input for voltage, continuity, resistance, diode test, frequency, capacitance and temperature

5. Operation

5.1. DC Voltage measurements



1. Set the function switch to the green position.
2. Insert the black test lead into the negative **COM -** jack. Insert the red test lead into the positive **V/Ω/CAP/Hz%/Temp** - jack.
3. Read the voltage in the display. When the value is negative, a "-" symbol is displayed.

5.2. Voltage measurement (mV)

Caution!
Do not measure DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur during the ON or OFF operations that can damage the meter.

Caution!
Understanding Phantom readings:
In some DC and AC voltage ranges, when the test leads are not connected to any circuit, the display might show a phantom reading. This is normal. The meter's high input sensitivity produces a wandering effect. When you connect the test leads to a circuit, accurate reading appears.



1. Set the function switch to the mV⎓-position.
2. Press the push-button labeled MODE to select mV⎓ (DC) or mV~ (AC).
3. Insert the black test lead into the negative **COM** - jack. Insert the red test lead into the positive **V/Ω/CAP/Hz%/Temp** - jack.
4. Read the mV voltage in the display. When the values are negative, a "-" symbol is displayed.

5.3. AC Voltage measurements

Warning:
Risk of Electrocution. The probe tips may not be long enough to contact the live parts inside some 230 V outlets for appliances because the contacts are recessed deep in the outlets. As a result, the reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are contacting the metal contacts inside the outlet before assuming that no voltage is present.

Caution:
Do not measure AC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur during the ON or OFF operations that can damage the meter.

Low Pass Filter:
To avoid false AC voltage measurements with pulse width modulated signals or disturbances of the mains frequency, you can turn on the low pass filter when making an AC voltage measurement.



1. Set the function switch to the "V~" position.

2. Press “F2” button to select AC “~”.

3. Insert the black test lead into the negative **COM** jack and the red test lead into the positive **V/Ω/CAP/Hz%/Temp** jack.

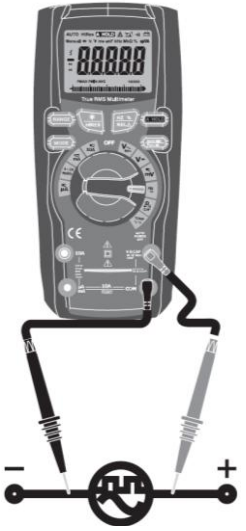
4. Touch the test probe tips to the circuit under test.

5. Read the voltage in the display. The display will indicate the proper decimal point, value and symbol.

6. Press the MODE button in the AC voltage measurement, to switch to a "low pass filter" measurement.

5.4. Frequency / Duty Cycle % measurements

1. Set the function switch to the "Hz%" position.
2. Use the MODE key to switch between Frequency (Hz) and Duty Cycle (%)
3. Insert the black test lead into the negative **COM**-jack and the red test lead banana plug into the positive **V/Ω/CAP/Hz%/Temp** jack.
4. Touch the test probe tips to the circuit under test.
5. Read the frequency in the display. The digital readings will indicate the proper decimal point, symbols (Hz, kHz, MHz, %) and value.



5.5. Resistance measurements

Warning:
To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.



1. Set the function switch to the " **Ω /**  " position.

2. Insert the black test lead into the negative **COM** jack and the red test lead into the positive **V/Ω/CAP/Hz%/Temp** jack.

3. Touch the test probe tips across the circuit or part under test. It is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.

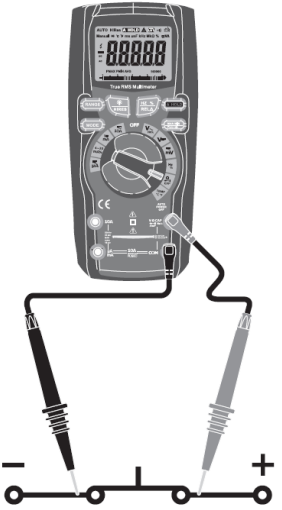
4. Read the resistance in the display. The display will indicate the proper decimal point, value and symbol.

Caution!
When you short the test leads in the 600 Ω range, your meter display a small value (no more than 0.2 ...1 Ω). This value is due to your meter´s and test leads internal resistance. Make a note of this value and subtract it from small resistance measurements for better accuracy.

5.6. Continuity Test

Caution!
To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

Perform continuity tests on idle circuits and components and unplug it from the outlet. In the circuit located capacitors should be absolutely discharged before measuring.



1. Set the function switch to the " **Ω/**⊣▶⊢/CAP " position.
2. Press the push button MODE to select the continuity-test.
3. Insert the black test lead into the negative **COM** jack and the red test lead into the positive **V/Ω/CAP/Hz%/Temp** jack.
4. If the resistance is less than approximately 30Ω, the audible signal will sound. If the circuit is open, the display will indicate “OL”.

5.7. Diode-Test

The diode test feature allows the determination of the usability of diodes and other semiconductor elements defined in circuits as well as the determination of the continuity (short-circuit) and the voltage drop in the forward direction.

Warning:
To avoid electric shock, do not test any diode that has voltage on it.



1. Set the function switch to "**Ω**/⊣▶⊢/CAP" position.

2. Press the MODE button until the "⊣▶⊢" symbol appears in the display.

3. Insert the black test lead into the negative **COM** jack and the red test lead banana plug into the positive **V/Ω/CAP/Hz%/Temp** jack.

4. Touch the test probe tips to the diode or semiconductor junction you wish to test. Note the meter reading.

5. Reverse the probe polarity by switching probe position. Note this reading.

6. The diode or junction can be evaluated as follows:
   A: If one reading shows a value and the other reading shows OL, the diode is good.
   B: If both readings are OL, the device is open.
   C: If both readings are very small or 0, the device is shorted.

Note: The value indicated in the display during the diode check is the forward voltage.

5.8. Capacitance measurements

Warning:
To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords.

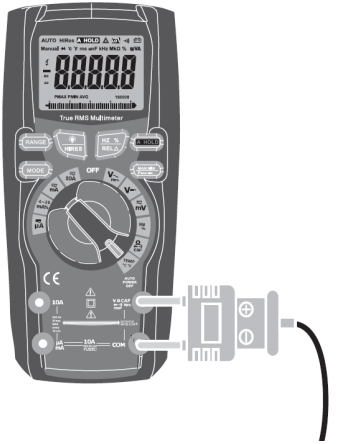


1. Set the function switch to the "**Ω/⊣►⊢**/CAP" - position.
2. Press the MODE button until the "CAP" symbol appears in the display.
3. Insert the black test lead into the negative **COM** jack and the red test lead into the positive **V/Ω/CAP/Hz%/Temp**-jack.
4. Touch the test leads to the capacitor to be tested. The display will indicate the proper decimal point, value and symbol.

5.9. Temperature measurements

Warning:

- To avoid electric shock, disconnect both test probes from any source of voltage before making a temperature measurement.
- To avoid electric shock, be sure the thermocouple has been removed before changing to any other measurement function.



1. Set the function switch to “TEMP °C/°F” position.
2. Pres the push button MODE to select °C or °F.
3. Insert the multi-function adaptor in the input socket for **V/Ω/CAP/Hz%/Temp** (+) and **COM** (-) for temperature measurements.
4. Insert the K-type thermocouple into the multi-function adaptor, making sure to observe the correct polarity.
5. Touch the temperature probe head to the part whose temperature you wish to measure. Keeps the probe touching the part under test until the reading stabilizes (about 30 seconds).
6. Read the temperature in the display. The digital reading will indicate the proper decimal point and value.

5.10. DC Current measurements

Warning:

To avoid electric shock do not measure DC current on any circuit whose voltage exceeds 1000V DC/AC_{RMS}.

Caution:

Do not make current measurements on the 10A scale for longer than 30 sec. Exceeding 30 sec. may cause damage to the meter and / or the test leads.



1. According to the current to be measured rotate function selector switch to either position of uA, mA or 10A.

2. Set the device to the DC measurement function (DC "⎓") by pressing the MODE key. In the LCD display the operation icon (DC "⎓") appears

3. For current measurements up to 6000 µA DC, set the function switch to the "µA" position and insert the red test lead banana plug into the mA/µA jack.

4. For current measurements up to 600 mA DC, set the function switch to the "mA" position and insert the red test lead banana plug into the mA/µA jack.

5. For current measurements up to 10 A DC, set the function switch to the 10 A position and insert the red test lead banana plug into the 10 A jack.

6. For safety reasons in case of unknown current magnitudes always choose the 10A range and corresponding measured value display switch to a mA measurement range.

7. Remove power from the circuit under test and open the circuit at the point where you wish to measure current. (Ensure correct polarity).

8. Touch the black test probe tip to the negative side of the circuit and touch the red test probe tip to the positive side of the circuit.

9. Apply power to the circuit.

10. Read the current in the display. The display will indicate the proper decimal point, value and symbol.

5.11. AC Current measurements

Warning:
To avoid electric shock do not measure AC-current on any circuit whose voltage exceeds 1000V DC/AC_{RMS}.

Caution:
Do not make current measurements on the 10A scale for longer than 30 sec. Exceeding 30 sec. may cause damage to the meter and/or the test leads.



Attention!

Current Measurements 10A and uA / mA range are protected by fuses against over-current. Blown fuses must be replaced for other measurement with new fuses of the same type. With blown fuses no current measurement is possible. Do not exceed the maximum current range, in order to avoid triggering the fuse!

1. Insert the black test lead into the negative COM jack.

2. For current measurements up to 5000µA AC, set the function switch to the "µA" position and insert the red test lead into the µA/mA-jack.

3. For current measurements up to 500mA AC, set the function switch to the "mA" position and insert the red test lead into the µA/mA-jack.

4. For current measurements up to 10A AC, set the function switch to the 10A position and insert the red test lead into the 10A-jack.

5. Press the MODE-button until AC “~” appears in the display.

6. Remove power from the circuit under test and open the circuit at the point where you wish to measure current.

7. Touch the black test probe tip to the negative side of the circuit and touch the red test probe tip to the positive side of the circuit.
8. Apply power to the circuit.

9. Read the current in the display. The display will indicate the proper decimal point, value and symbol.

5.12. 4 – 20mA % measurements

4 - 20 mA circuits represent an analog electrical transmission standard for industrial instruments and the communication. In such a circuit, a level corresponding to 0% of 4 mA and 20 mA, a level of 100% of the signal. The zero position at 4 mA allows the receiving instrument to distinguish between a zero signal and a broken wire or faulty appliance. The advantage of the 4-20 mA transmission are low implementation costs and the possibility of excluding many forms of electrical noise.

1. Set up and connect as described for DC mA measurements.
2. Set the rotary function switch to the “4-20mA%”-position.
3. The meter will display loop current in % as follows:

0 mA	-25%
4 mA	0%
20 mA	100%
24 mA	125%

6. Replacing the battery

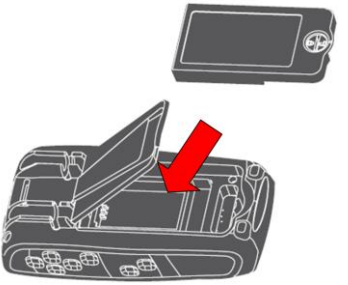
Refer to figure and replace the batteries as follows:

1.) Turn the Meter off and remove the test leads from the terminals.

2.) Remove the battery door assembly by using a screwdriver to turn the battery door screw one-half turn counterclockwise.

3.) Replace the batteries with 4 x 1,5V AAA batteries. Pay regard to the proper polarity.

4.) Reinstall the battery door assembly and secure it by turning the screw one-half turn clockwise.

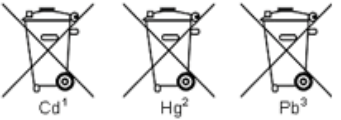


6.1. Notification about the Battery Regulation

The delivery of many devices includes batteries, which for example serve to operate the remote control. There also could be batteries or accumulators built into the device itself. In connection with the sale of these batteries or accumulators, we are obliged under the Battery Regulations to notify our customers of the following:

Please dispose of old batteries at a council collection point or return them to a local shop at no cost. The disposal in domestic refuse is strictly forbidden according to the Battery Regulations. You can return used batteries obtained from us at no charge at the address on the last side in this manual or by posting with sufficient stamps.

Contaminated batteries shall be marked with a symbol consisting of a crossed-out refuse bin and the chemical symbol (Cd, Hg or Pb) of the heavy metal which is responsible for the classification as pollutant:



1. "Cd" means cadmium.
2. "Hg" means mercury.
3. "Pb" stands for lead.

7. Replacing the fuses

Warning:
To avoid electric shock, disconnect the test leads from any source of voltage before removing the back cover or the battery/fuse door.

1. Turn the screw on the battery compartment half a turn counter-clockwise to open the battery compartment.

3. Remove the blown fuse from the fuse holder.

4. Insert the new fuse into the fuse holder - appropriate to the value and the dimensions of the original fuse. Make sure that the fuse is centred in the holder.

5. After replacing the appropriate backup, attach the battery cover back to the device and secure it by turning the screw by half a turn clockwise

Warning:
To avoid electric shock, do not operate your meter until the back cover and the battery door is in place and fastened securely

Note:
If your meter does not work properly, check the fuses and battery to make sure that they are still good and properly inserted.

800mA/1000V F (fast acting) 6,3 x 32mm
10 A/1000V F (fast acting) 10 x 38 mm

8.Technical Data

8.1. Specifications

Display	TFT-LCD-display with max display of 59999
Overload protection	on all ranges
Operating Temperature	5°C to 40°C < 80 % RH
Storage Temperature	-20...+60° C < 80 % RH
Altitude	< 2000 m
Accuracy temperature	18°C…28°C (64°F to 82°F) to maintain guaranteed accuracy

8.2. General Specifications

Enclosure	Double molded, waterproof
Shock (Drop Test)	6.5 feet (2 meters)
Diode Test	Test current of 0.9mA maximum, open circuit voltage 2.8V DC typical
Continuity Check	Audible signal will sound if the resistance is less than 30 Ω, test current <0.35mA
PEAK	Captures peaks >1ms
Temperature Sensor	Requires type K thermocouple
Input Impedance	>10MΩ VDC
AC Response	True RMS
ACV Bandwidth	50Hz ~ 5000Hz
Overrange indication	"OL." is displayed
Auto Power Off	approx 15 min
Polarity	Automatic (no indication for positive); Minus (-) sign for negative
Measurement Rate	3 times per second, nominal
Interface (P 3442 only)	Bluetooth 4.0 Low Energy

AC True RMS or current	The term stands for “Root-Mean-Square,” which represents the method of calculation of the voltage value. Average responding multimeters are calibrated to read correctly only on sine waves and they will read inaccurately on non-sine wave or distorted signals. True rms meters read accurately on either type of signal.
Low Battery Indication	“” is displayed if battery voltage drops below operating voltage
Battery	4 x 1,5V AAA battery
Fuse	mA, µA ranges: 0.8A/1000V (6,3x32mm) ceramic fast blow A-range: 10A/1000V (10x32mm) ceramic fast blow
Safety	This meter is intended for origin of installation use and protected, against the users, by double insulation per EN61010-1 and IEC61010-1 2nd Edition (2001) to Category IV 600V and Category III 1000V; Pollution Degree 2. The meter also meets UL 61010-1, 2nd Edition (2004), CAN/CSA C22.2 No. 61010-1 2nd Edition (2004), and UL 61010B-2-031, 1st Edition (2003)
Dimensions (W x H x D)	80 x 175 x 50 mm
Weight	400 g

8.3. Specifications (HiRes)

AC Voltage

Range	Resolution	50 Hz – 1kHz	1kHz - 5kHz
600 mV	0,01 mV		
6 V	0,0001V		
60 V	0,001V	± 1%+ 5 St.	± 3,0% + 5 dgt.
600 V	0,01V		
1000 V	0,1V		Not specified

Accuracy >10% of range

DC Voltage

Range	Resolution	Accuracy
600 mV*	0,01 mV	± 0,9% + 5 dgt.
6 V	0,0001 V	
60 V	0,001 V	
600 V	0,01 V	
1000 V	0,1 V	± 1,2% + 5 dgt.

*When using the relaiv mode (REL Q) to compensate for offsets.

Resistance (Ω)	Range	Resolution	Accuracy
	600 Ω *	0,01 Ω	± 2% + 9 dgt.
	6 kΩ	0,0001 kΩ	± 1,2% + 5 dgt.
	60 kΩ	0,001 kΩ	
	600 kΩ	0,01 kΩ	
	6 MΩ	0,0001 MΩ	
	60 MΩ	0,001 MΩ	± 2,0% + 10 dgt.
*When using the relative mode (REL Q) to compensate for offsets.			
Temperature (type-K)	Range	Resolution	Accuracy
	-50 ~ 760 °C	0,1 °C	± 2,0% + 3,0 °C
	-58 ~ 1400 °F	0,1 °F	± 2,0% + 5,5 °F
	1. Does not include error of the thermocouple probe.		
	2. Accuracy specification assumes ambient temperature stable to ± 1,0 °C		
Capacitance	60 nF	0,01 nF	± 3,5% + 10 dgt.
	600 nF	0,1 nF	
	6 µF	0,001 µF	± 2,5% + 10 dgt.
	60 µF	0,01 µF	
	600 µF	0,1 µF	
	6000 µF	1 µF	± 3,5% + 10 dgt.
	*With a film capacitor or better, using relative mode (REL Δ) to zero residual.		
Duty Cycle	0,001~ 99,90%	0,0001 %	± 1.2% +50 dgt.
	Pulse width: 100 µs – 100ms Frequency: 5 Hz – 10 kHz		

Frequency (Square)

60 Hz	0,001 Hz	± 1.0% + 2 dgt.
600 Hz	0,01 Hz	
6 kHz	0,0001 kHz	
60 kHz	0,001 kHz	
600 kHz	0,01 kHz	
10 MHz	0,001 MHz	not specified
Sensitivity: 2,0V rms min.@20% to 80% duty cycle and <100kHz 5Vrms min@20% to 80% duty cycle and > 100kHz.		

Frequency (Sinusodial)

40 Hz ~ 10 kHz	0.01 Hz	± 0.5% of reading
Sensitiviy: 15Vrms		

DC Current (DCA)

600 µA	0,01 µA	± 1,5% + 5 dgt.
6000 µA	0,1 µA	
60 mA	0,001 mA	
600 mA	0,01 mA	
10 A	0,001 A	
(20A: 30 sec. max. with reduced accuracy)		

AC Current (ACA)

		< 1 kHz	< 5 kHz
600 µA	0,01 µA	± 2,5% + 5 dgt.	± 3,5% + 5 dgt.
6000 µA	0,1 µA		
60 mA	0,001 mA		
600 mA	0,01 mA		
10 A	0,001 A		Not specified
(20A: 30 sec. max. with reduced accuracy)			
All AC current ranges are specified from 5% of range to 100% of range			

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This manual considers the latest technical knowing. Technical changings which are in the interest of progress reserved.

We herewith confirm, that the units are calibrated by the factory according to the specifications as per the technical specifications. We recommend to calibrate the unit again, after 1 year.

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ANEXO 9.

MANUAL DE USUARIO DE CALIBRADOR

5500A

Calibrador Multiproducto

Guía del Usuario

PN 107372
Junio 1995
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¿Qué contiene esta guía?

La guía del usuario 5500A es un resumen de la información del *5500A Operator Manual* (NP 945159). Consulte el *Operator Manual* para obtener una descripción completa de las características, funciones y procedimientos de operación del calibrador.

Consideraciones de seguridad

ADVERTENCIA

El calibrador puede suministrar tensión mortal. Lea esta guía antes de operar el calibrador.

Símbolos

ADVERTENCIA Hay riesgo de descarga eléctrica. Consulte el manual para obtener más información. Vea el índice.

TIERRA Terminal de tierra al bastidor (tierra).

Atención Consulte el manual para obtener la información acerca de este atributo. Este símbolo está en el terminal de tierra del tablero posterior y cerca del compartimento del fusible.

Fuente de alimentación de ca

El calibrador ha sido diseñado para operar desde una fuente de alimentación de ca que suministre menos de 264 Vca rms entre los conductores de suministro o entre uno de los conductores de suministro y tierra.

Uso del fusible adecuado

Para operación con 110 ó 120 V, utilice un fusible de demora de 2,5 A/250 V; para operación con 220 ó 240 V, utilice un fusible de demora de 1,25/250 V.

Conexión a tierra del calibrador

El bastidor debe estar conectado a tierra mediante el conductor de tierra del cordón de alimentación o mediante el terminal de tierra del tablero posterior.

Uso del cordon de alimentación adecuado

Use solamente el cordón de alimentación y el conector adecuado a la tensión y tipo de clavija de su país. Use solamente un cordón de alimentración en buenas condiciones. Sólo el personal calificado de servicio debe cambiar el conector y el cordón de alimentación.

⚠ PRECAUCION

Verifique que la tensión aplicacada a la UAP no exceda la clasificación dieléctrica de la UAP.

Desembalaje e inspección

El calibrador se envía en un contenedor diseñado para evitar daños. Inspeccione cuidadosamente el calibrador para detectar daños y notifique inmediatamente al transportista si encuentra daños. El contenedor contiene las instrucciones.

Al desembalar el calibrador determine si su pedido está completo. La tabla siguiente contiene el equipo estándar. Si falta alguna pieza, notifique al lugar donde lo adquirió o al Centro de Servicio Técnico de Fluke que aparece en el apéndice C del *5500A Operator Manual.*

Si necesita enviar de nuevo el calibrador, utilice el contenedor original. Si no está a disposición, puede pedir otro contenedor a Fluke indicando el modelo y el número de serie del calibrador.

Equipo estándar

Artículo	Número
Calibrador	5500A
Cordón de alimentación	*
5500A Getting Started Guide	105780
Operator Manual	945159
Operator Reference Guide	945097
Guía del usuario (alemán)**	107380
Guía del usuario (francés)**	107356
Guía del usuario (español)**	107372
Guía del usuario (japonés)**	107264
Guía del usuario (chino)**	107349
Guía de consulta para programación remota	105783
Certificado de Calibración	G749

*Consulte los números de pieza en el capítulo 2 del *5500A Operator Manual*.

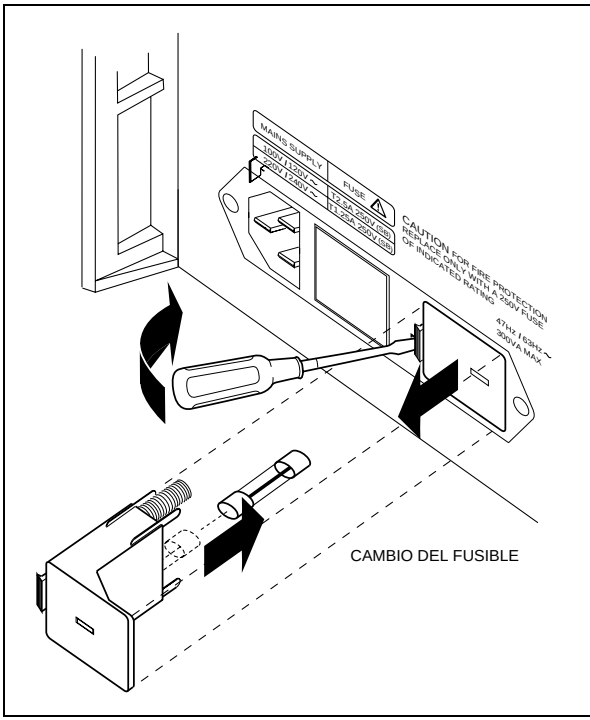
**Se envía uno de estos a los clientes de países con idioma distinto al inglés.

Cambio del fusible

⚠ PRECAUCION

Pare evitar daños al calibrador, verifique que ha sido instalado el fusible correcto a la tensión de línea seleccionada (fusible de demora de 2,5 A/250V a 100V y 120V; fusible de demora de 1,25A/250V a 200V y 240V.)

Desconecte la alimentación. Para cambiar el fusible, consulte la ilustración siguiente.



Cambio del fusible

Selección de la tensión de alimentación

Hay cuatro posiciones de tensión: 100V, 120V, 200V y 240V (47 a 63 Hz). Para revisar la posición, note la tensión visible a través de la ventana de la cubierta del compartimento del fusible. Para cambiar la posición de la tensión, observe la ilustración anterior.

Conexión a la alimentación

⚠ ADVERTENCIA

Para evitar descargas eléctricas, conecte el cordón de alimentación de tres conductores provisto por la fábrica a un tomacorriente debidamente conectado a tierra. No utilice adaptadores a dos conductores o extensiones del cordón ya que impiden la conexión protectora a tierra.

Utilice el terminal a tierra del tablero posterior para conectar un cable protector de tierra si hay duda respecto a la conexión a tierra del instrumento.

El calibrador viene con una clavija de alimentación adecuada al país a donde fue embarcado. Si necesita una clavija distinta, consulte la lista y las ilustraciones de las clavijas disponibles en el capítulo 2 del *5500A Operator Manual*.

Después de verificar que la tensión ha sido escogida correctamente y cuenta con el fusible adecuado, conecte el calibrador a un tomacorriente de tres contactos con conexión a tierra.

Cosideraciones de enfriamiento



ADVERTENCIA

Para el evitar riesgo de lesión, nunca opere o encienda el calibrador sin el filtro del abanico instalado.



PRECAUCION

Puede ocurrir daño por sobre-calentamiento si se restringe el área cerca de la toma de aire, si el aire de entrada está demasiado caliente o si el filtro se atasca.

Se mejora la precisión y la fiabilidad de las piezas interiores del calibrador manteniendo la temperatura interior lo más fría que se pueda. A fin de aumentar la vida del calibrador y mejorar su rendimiento:

- El filtro de aire debe separarse al menos 7,5 cm de los bastidores o paredes cercanas.
- Las perforaciones de salida a los lados del calibrador no deben estar obstruidas.

- El aire que penetra al calibrador debe estar a temperatura ambiental: verifique que el aire de salida de otro calibrador no está dirigido hacia la entrada del abanico.
- Limpie el filtro de aire cada 30 días o con más frecuencia si el calibrador opera en un ambiento con polvo.

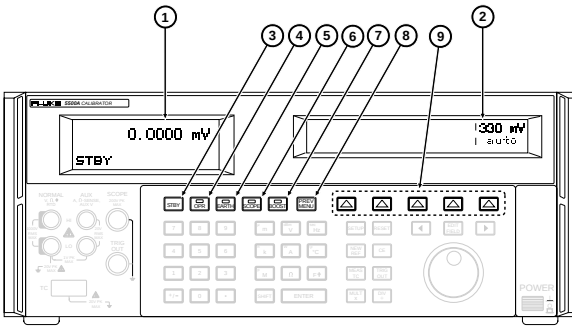
Conexión del amplificador 5725A

El calibrador 5500A cuenta con una conexión para el amplificador Fluke 5725A. Designe al 5500A o al 5725A como la fuente de corriente y tensión en el menú de configuración del calibrador. Vea la sección “Uso del amplificador 5725A”.

Un solo cable proporciona el enlace completo para las señales de mando digitales y analógicas. Consulte las instrucciones de instalación en el *5725A Instruction Manual*.

Tablero frontal

El tablero frontal contiene todos los mandos, pantallas, indicadores y terminales.



(1) Pantalla de salida

Una pantalla LCD retroiluminada de dos líneas que muestra la frecuencia, las amplitudes de salida y el estado del calibrador.

(2) Pantalla de mando

Una pantalla multiobjetivo LCD retroiluminada para visualizar la información que se alimenta, los ajustes de error de la UAP, los rótulos de las teclas programables, ángulos de fase, vatios, factores de potencia y otras indicaciones y mensajes.

(3) STBY

Pone al calibrador en modo de espera. Los terminales de salida NORMAL y AUX están desconectados internamente del calibrador.

④ OPR

Pone al calibrador en el modo de operación y enciende el indicador de la tecla.

⑤ EARTH

Abre y cierra una conexión entre el terminal NORMAL LO y tierra y enciende el indicador de la tecla.

⑥ SCOPE

Activa o desactiva la opción ScopeCal, si cuenta con ésta. Un anunciador en la tecla indica si la opción está activada.

⑦ BOOST

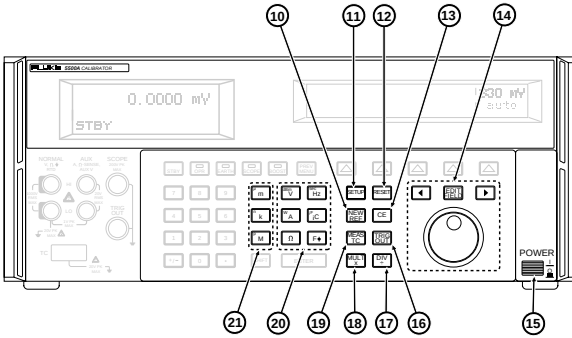
Activa o desactiva la salida de un amplificador. Un anunciador en la tecla indica si el 5725A está en uso.

⑧ PREV MENU

Regresa al conjunto anterior de opciones de menú. Cada vez que se pulsa esta tecla se regresa un nivel en el árbol del menú.

⑨ **Teclas programables**

Las teclas programables están identificadas por rótulos en la pantalla de mando directamente arriba de cada tecla.



(10) NEW REF

Está activa durante la operación en modo de error y establece el valor de la salida actual como una nueva referencia para el cálculo del error del medidor.

(11) SETUP

Visualiza el menú de configuración en la pantalla de mando. Se pueden escoger las opciones de configuración usando las teclas programables.

(12) RESET

Suspende el estado actual de operación del 5500A y regresa al estado inicial al encendido, excepto durante telemando.

(13) CE

Borra de la pantalla de mando la información parcialmente escrita en el teclado.

⑭ ◀ EDIT FIELD ▶

Es para ajustar en pasos la magnitud de la señal de salida.

⑮ Enciende y apaga la alimentación. Este interruptor es del tipo aldaba empujar-empujar.

⑯ TRIG OUT

Configura el disparo externo en el modo de osciloscopio.

⑰ DIV ÷

Cambia la salida a 1/10 del valor de referencia (no necesariamente el valor actual de salida).

⑱ MULT X

Cambia la salida a 10 veces el valor de referencia (no necesariamente el valor actual de salida).

⑲ MEAS TC

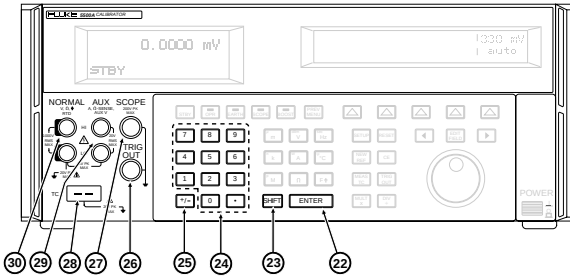
Activa la conexión de entrada de termopar (TC) y hace que el 5500A calcule una temperatura en base a la entrada.

⑳ **Funciones de medición**

Escoge la función de medición del calibrador. Algunas teclas escogen una función alterna cuando se usan con la tecla SHIFT.

㉑ μ m n K P M **Teclas multiplicadoras**

Escoge multiplicadores del valor de la salida. Algunas teclas escogen un multiplicador alterno al usarse con la tecla SHIFT.



(22) ENTER

Carga en el calibrador un valor de salida recién escrito exhibido en la pantalla de mando, el cual se visualiza en la pantalla de salida.

(23) SHIFT

Escoge funciones alternas de las teclas de unidades y multiplicadores alternos de las teclas multiplicadoras.

(24) **Teclado numérico**

Se usa para escribir los dígitos de la frecuencia y amplitud de salida.

(25) +/-

Cambia la polaridad de la salida para las funciones de corriente continua o tensión de cc.

(26) Dispara el osciloscopio al calibrar un osciloscopio.

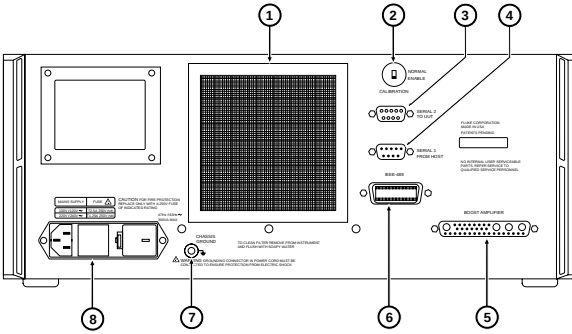
(27) Se usa para las salidas al calibrar un osciloscopio.

(28) Se usa para simulación de termopar al calibrar medidores de temperatura y durante las mediciones de termopares.

(29) **AUX** se usa para salidas de corriente alterna y continua, para la segunda salida de tensión en el modo de tensión doble y para captación de ohmios en mediciones compensadas de resistencia y capacitancia de 2 y 4 hilos y para la simulación de rtd.

(30) **NORMAL** Se usa como fuente para ohmios y capacitancia, tensión de ca y cc y simulación de Detección de Temperatura de Resistencia (RTD).

Tablero posterior



1. **Filtro del abanico** Cubre la entrada de aire para impedir que el polvo y la basura penetre en los deflectores de aire del bastidor.

2. **CALIBRATION NORMAL/ENABLE** Conmutador que permite activar y desactivar la capacidad de escribir a la memoria no volátil, que almacena las constantes de calibración.

3. **SERIAL 2 TO UUT** Conector que se usa para transmitir y recibir datos seriales entre el calibrador y la unidad bajo prueba (UAP).

4. **SERIAL 1 FROM HOST** Conector utilizado para el telemando del calibrador con un ordenador central, una impresora o terminal.

(5) **BOOST AMPLIFIER** Conector que proporciona la interfaz analógica y digital para el amplificador Fluke 5725A.

(6) **IEEE-488** Norma de interfaz paralela para operación del calibrador en telemando en la vía IEEE-488.

(7)

ADVERTENCIA

Para evitar las descargas eléctricas, conecte el cordón de alimentación de tres conductores provisto por la fábrica a un tomacorriente debidamente conectado a tierra. No utilice adaptadores a dos conductores o extensiones del cordón ya que impiden la conexión protectora a tierra.

Utilice el terminal a tierra del tablero posterior para conectar un cable protector de tierra si hay duda respecto a la conexión a tierra del instrumento.

CHASIS GROUND Terminal conectada internamente a tierra del bastidor.

(8) **Módulo de alimentación de ca** Proporciona un conector de tres contactos con conexión a tierra que acepta el cordón de alimentación, un mecanismo conmutador para escoger la tensión de operación y un fusible de la línea de alimentación.

Encendido del calibrador



ADVERTENCIA

El calibrador puede suministrar tensión mortal. No haga ninguna conexión a los terminales de salida al haber tensión presente. El poner al calibrador en espera puede no ser suficiente para evitar una descarga eléctrica ya que podría pulsarse accidentalmente la tecla de operación. Pulse la tecla para restablecer y verifique que el calibrador esté en espera antes de hacer conexiones a los terminales de salida.



ADVERTENCIA

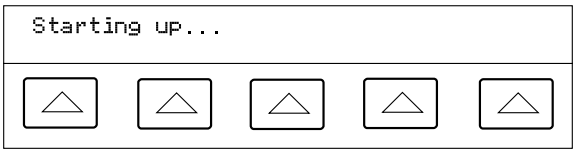
Para evitar una descarga eléctrica, asegúrese de que el calibrador esté debidamente conectado a tierra tal como se describe en “Conexión a la alimentación”.



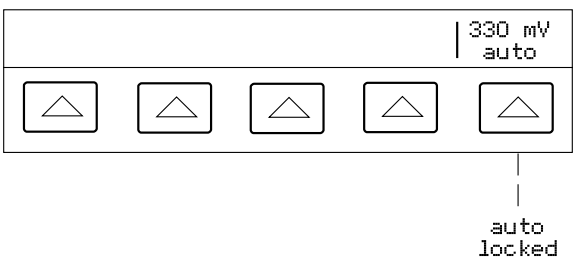
PRECAUCION

Antes de encender el calibrador asegúrese de que la selección de tensión es correcta. Consulte la sección “Selección de la tensión de alimentación”.

Al encenderse, el calibrador indica “Starting Up...” (vea más adelante) y efectúa una rutina de autocomprobación. Si esta rutina fracasa, la pantalla de mando identifica el código de error.



Después de la autocomprobación, la pantalla de mando exhibe la condición de restablecimiento (abajo).



Calentamiento del calibrador

Permita que el calibrador se caliente al menos 30 minutos después de encenderse. Esto permite que los componentes internos se estabilicen.

Si apaga el calibrador después del calentamiento y vuelve a encenderlo, permita que se caliente por lo menos durante el doble del tiempo que estuvo apagado (un máximo de 30 minutos). Por ejemplo, si el calibrador estuvo apagado durante 10 minutos y luego fue encendido de nuevo, permita que se caliente por lo menos durante 20 minutos.

Uso de las teclas programables

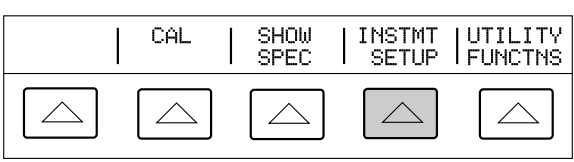
Las cinco teclas a la derecha de la tecla PREV MENU (Menú anterior) son teclas de función programable, o sencillamente, teclas programables. Este tipo de tecla es una tecla sin rótulo que permite el acceso a un menú o árbol de menúes con funciones y operaciones múltiples.

El estado funcional u operacional de una tecla programable se muestra directamente arriba de la misma en la pantalla de mando. Al pulsar una tecla programable se cambia un valor o hace que se visualice un submenú con nuevas opciones en la pantalla de mando.

Pulse PREV MENU para regresar a una selección de un menú anterior. Si bien pulsando RESET se regresa al menú de mayor nivel, también se restablecerán todas las configuracones volátiles y el calibrador regresará a 0V cc en el modo de espera. Use la tecla PREV MENU como su herramienta de navegación principal para recorrer los distintos niveles del menú.

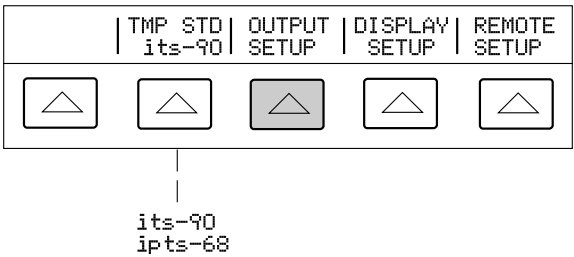
Uso del menú de configuración

Pulse SETUP para tener acceso a las operaciones y los parámetros modificables.



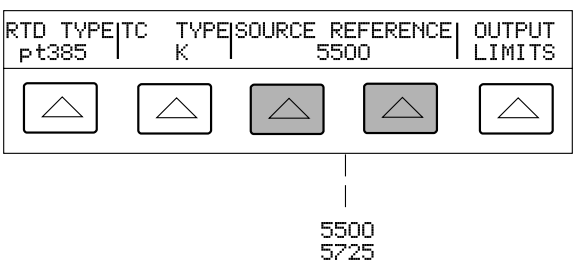
Menú de configuración

Pulse INSTMT SETUP en el menú de configuración para abrir el menú de configuración del calibrador.



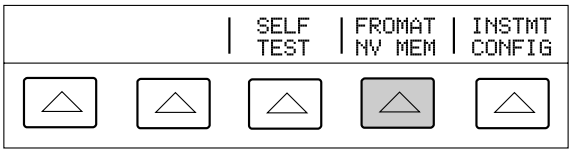
Selección de un amplificador externo

Pulse OUTPUT SETUP en el menú de configuración para tener acceso a la tecla programable SOURCE PREFRENCE.



Menú de funciones de servicio

Pulse UTILITY FUNCTNS en el menú de configuración para abrir los menúes de servicio.



Menú para formato de EEPROM

⚠ PRECAUCION

¡Utilice este menú con mucho cuidado! Las teclas programables FORMAT NV MEM (formato de memoria no volátil) borran permanentemente las constantes de calibración. Al pulsar ALL o CAL se invalida el estado de la calibración del 5500A.

Pulse FORMAT NV MEM en el menú de funciones de servicio para abrir lo siguiente:



- **ALL** Reemplaza el contenido del EEPROM por los valores de fábrica. El conmutador CALIBRATION del tablero posterior debe estar en la posición ENABLE.
- **CAL** Reemplaza todas las constantes de calibración por los valores de fábrica. El conmutador CALIBRATION del tablero posterior debe estar en la posición ENABLE.
- **SETUP** Reemplaza los parámetros de configuración con los valores de fábrica (vea la tabla de Valores de Fábrica).

Valores de Fábrica

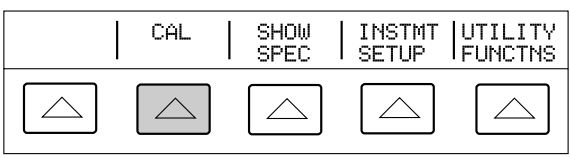
Estándar de temperatura	its-90
Conexión al ordenador central	gpib (IEEE-488)
Dirección del puerto GPIB	4
Puertos seriales	8 bits, 1 bit de parada, xon/xoff, sin paridad, 9600 baudios, espera de 30 seg.
EOL (fin de línea)	CRLF
EOF (fin de archivo)	012,000
I/F remoto	term
Contraste de la pantalla*	nivel 7,7
Brillo de la pantalla*	nivel 1,0
Tipo de RTD al encendido	pt385
Tipo de termopar al encendido	K
Fuente preferida	5500
Límites de corriente	±11 A
Límites de tensión	±1000 V
Instrucciones remotas	
SRQSTR	SRQ: %02x %02x %04x %04x
***Cadena PUD**	borrada

* Pantalla de salida y de mando, respectivamente. Hay 8 niveles: 0,1,2,3,4,5,6,7.

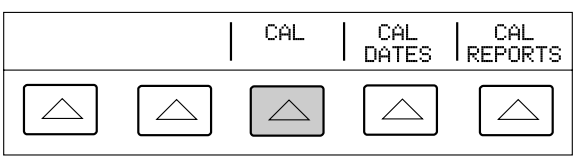
Puesta a cero del calibrador

Ponga a cero el calibrador cada 7 días, o cuando la temperatura ambiental del calibrador cambia en más de 5°C, a fin de alcanzar las especificaciones. Escoja entre puesta a cero total del calibrador (ZERO) o puesta a cero de ohmios solamente (OHMS ZERO).

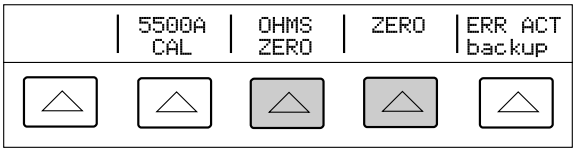
1. Encienda el calibrador y deje que se caliente (30 minutos).
2. Pulse la tecla RESET.
3. Instale un cortocircuito de cobre en el conector TC (sólo para la puesta a cero total del calibrador).
4. Pulse la tecla SETUP, para abrir el menú de configuración.



5. Pulse CAL en el menú de configuración.



6. Pulse CAL en el menú de calibración.



7. Pulse ZERO para poner a cero el calibrador completamente o pulse OHMS ZERO para poner a cero solamente los ohmios. Después de terminar la rutina de puesta a cero (varios minutos), pulse RESET.

Operación y espera

Para activar el modo de operación, pulse OPR. Para poner al calibrador en espera, pulse STBY.

El calibrador pasa a espera si:

- Pulsa la tecla RESET.
- Escoge una tensión ≥33V cuando la tensión anterior era <33V.
- La función cambia.
- Cambia la localización de la salida.
- Se detecta una condición de sobrecarga.

Conexión del calibrador a una UAP

ADVERTENCIA

El calibrador puede suministrar tensión mortal. No haga conexiones a los terminales de salida cuando está presente una tensión. El poner al calibrador en espera puede no ser suficiente para evitar riesgos de descargas ya que puede pulsarse la tecla OPR en forma accidental. Pulse la tecla de restablecer y verifique que el anunciador STBY esté encendido antes de hacer conexiones a los terminales de salida.

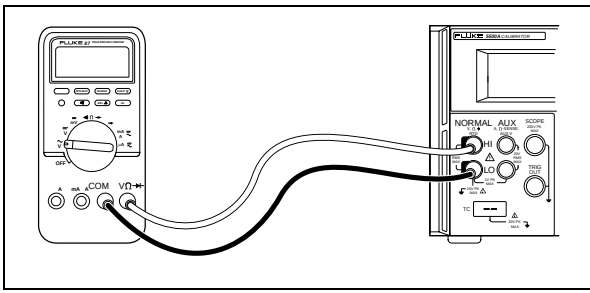
Cuándo se debe utilizar la conexión a tierra

La tecla EARTH establece una conexión entre el terminal NORMAL LO y tierra. Cuando la tierra común no está en la UAP, use EARTH para efectuar una tierra común en el calibrador.

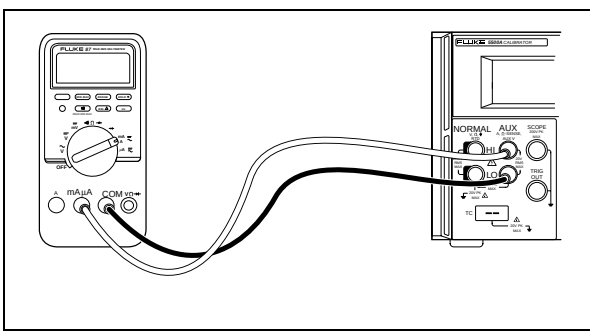
Conexiones de 4 y 2 hilos

La capacidad de captación externa de las conexiones compensadas de 4 y 2 hilos ofrece más precisión para los valores de resistencia menores de 110 kΩ y valores de capacitancia de 110 nf y superiores.

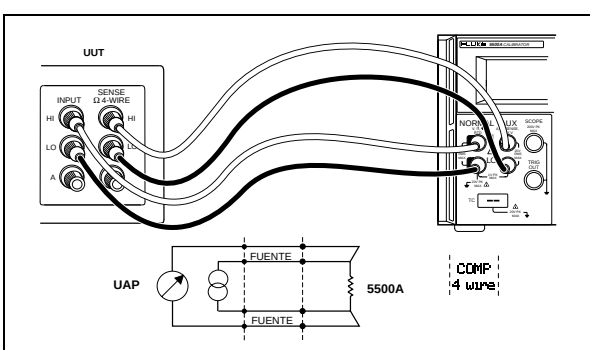
Diagramas de conexión de los cables



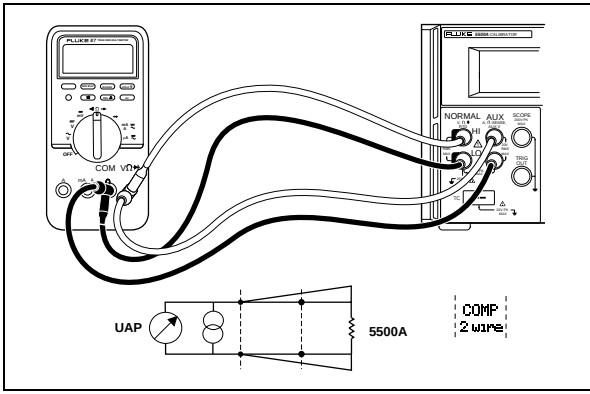
Tensión de cc/Tensión de ca



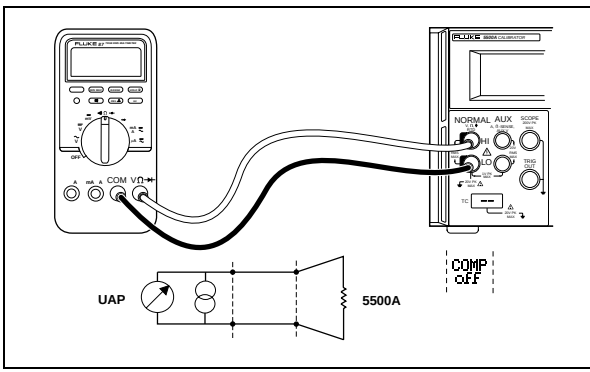
Corriente continua/Corriente alterna



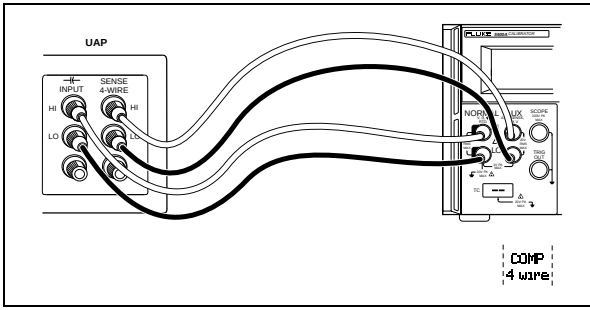
Ohmios (Comp de 4 hilos)



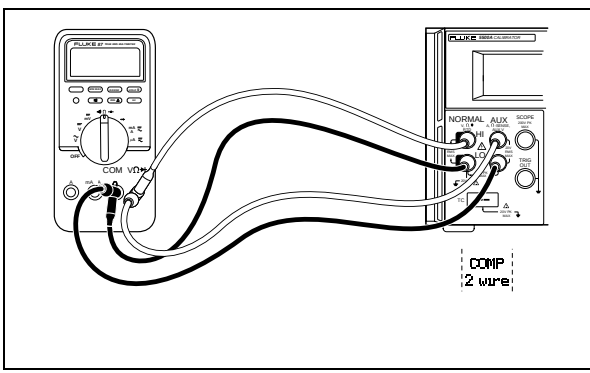
Ohmios (Comp de 2 hilos)



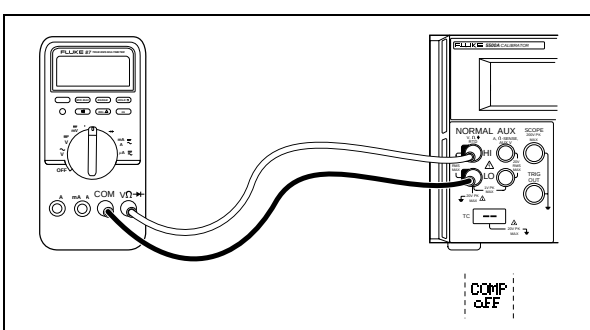
Ohmios (Sin comp)



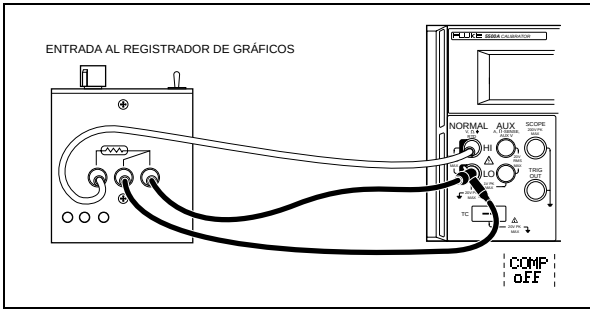
Capacitancia (Comp de 4 hilos)



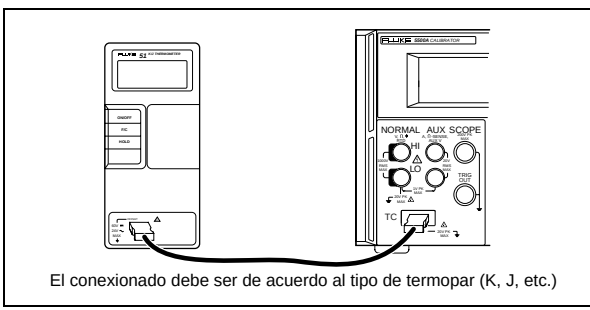
Capacitancia (Comp de 2 hilos)



Capacitancia (Sin comp)



Temperatura (RTD)



El conexionado debe ser de acuerdo al tipo de termopar (K, J, etc.)

Temperatura (Termopar)

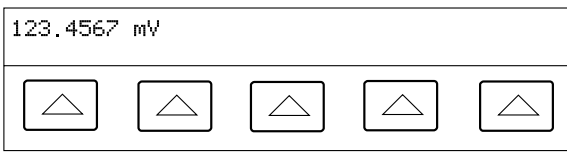
Configuración de las salidas

Salida de tensión de cc

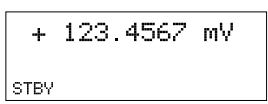
Para configurar la salida de tensión de cc en los terminales NORMAL del calibrador, haga lo siguiente:

1. Pulse RESET para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir tensión de cc.

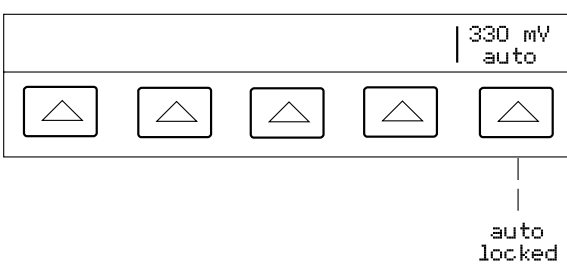
4. Especifique la salida de tensión deseada (7 dígitos).
5. Pulse [+/-] para seleccionar la polaridad.
6. Pulse una tecla multiplicadora en caso de ser necesario.
7. Pulse [dBm V].
8. La pantalla de mando exhibe el valor especificado, por ejemplo, 123.4567 mV.



9. Pulse [ENTER]. Se visualiza la salida en la pantalla de salida.



10. Pulse [OPR] para activar la salida del calibrador.

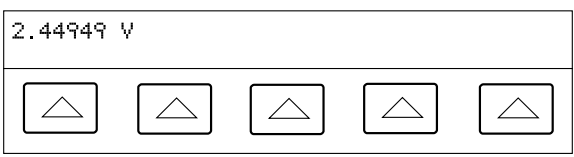


Pulse la tecla de función programable **auto/locked** para alternar entre el modo de autorango o para enclavar al calibrador en el rango actual.

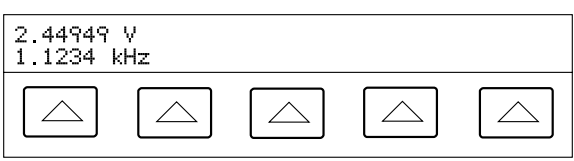
Salida de tensión de ca

Para establecer la salida de tensión de ca en voltios o una salida de potencia en dBm (con referencia a una carga de 600Ω) en los terminales NORMAL del calibrador:

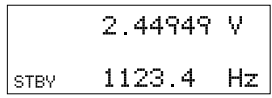
1. Pulse [RESET] para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir tensión de ca.
4. Especifique la salida de tensión deseada (6 dígitos).
5. Pulse una tecla multiplicadora en caso de ser necesario.
6. Pulse [dBm V] (voltios) o [SHIFT] [dBm V] (dBm).
7. La pantalla de mando exhibe el valor especificado, por ejemplo, 2.44949 V.



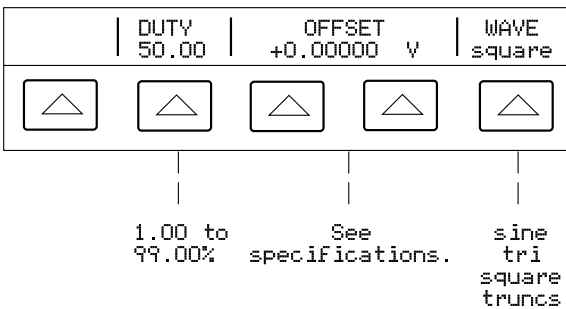
8. Especifique la salida de frecuencia deseada (5 dígitos).
9. Pulse una tecla multiplicadora en caso de ser necesario.
10. Pulse la tecla [sec Hz].
11. La pantalla de mando exhibe el valor especificado, por ejemplo, 1.1234 kHz (abajo).



12. Pulse ENTER para ver la salida en la pantalla de salida.



13. Pulse OPR para activar la salida del calibrador.



DUTY (Ciclo de trabajo) Establece el ciclo de trabajo de la onda cuadrada (1.00 a 99.00%).

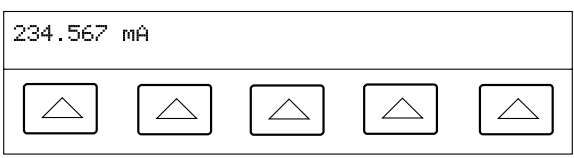
OFFSET (Voltaje de compensación) Añade un voltaje de compensación de ca o cc.

WAVE (Forma de onda) Escoge el tipo de la forma de onda.

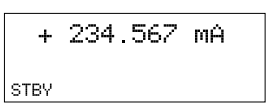
Salida de corriente continua

Para configurar la salida de corriente continua en los terminales AUX del calibrador (o los terminales BOOST del 5725A):

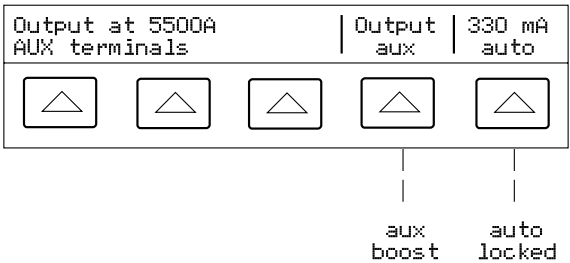
1. Pulse RESET para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir corriente continua.
4. Especifique la salida de corriente deseada (6 dígitos).
5. Pulse +/- para seleccionar la polaridad.
6. Pulse una tecla multiplicadora en caso de ser necesario.
7. Pulse W A.
8. La pantalla de mando exhibe el valor especificado, por ejemplo, 234.567 mA.



9. Pulse ENTER para ver la salida en la pantalla de salida.



10. Pulse OPR para activar la salida del calibrador.



OUTPUT (Localización de la salida) Escoge al calibrador (aux) o al 5725A (boost). Si el 5725A no está conectado, no se visualiza la tecla programable OUTPUT.

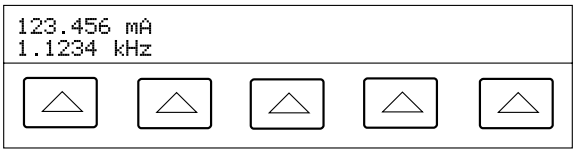
Pulse la tecla programable **auto/locked** para conmutar entre el modo de autorango o enclavar el calibrador en el rango acutal.

Salida de corriente alterna

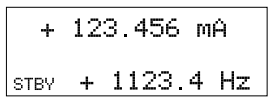
Para configurar la salida de corriente alterna en los terminales AUX del calibrador (o BOOST del 5725A):

1. Pulse RESET para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir corriente alterna.
4. Especifique la salida de corriente deseada (6 dígitos).
5. Pulse una tecla multiplicadora en caso de ser necesario.
6. Pulse W A
7. Especifique la frecuencia deseada (5 dígitos).
8. Pulse una tecla multiplicadora en caso de ser necesario.
9. Pulse SRC Hz.

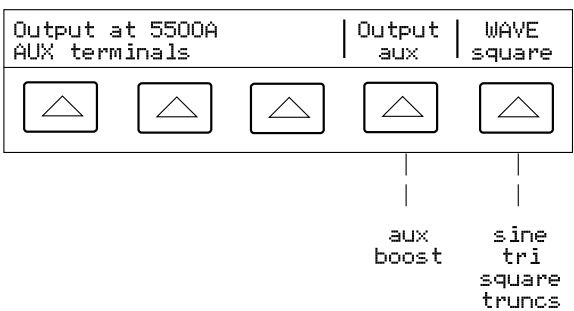
10. La pantalla de mando exhibe el valor especificado, por ejemplo, 123.456 mA y 1.1234 kHz.



11. Pulse ENTER para ver la salida en la pantalla de salida.



12. Pulse OPR para activar la salida del calibrador.



OUTPUT (Localización de la salida) Selecciona (aux) del calibrador o (boost) del 5725A. Si el 5725A no está conectado, la tecla programable OUTPUT no se visualiza.

WAVE (Forma de onda) Escoge uno de cuatro tipos distintos de forma de onda.

Salida de potencia de cc

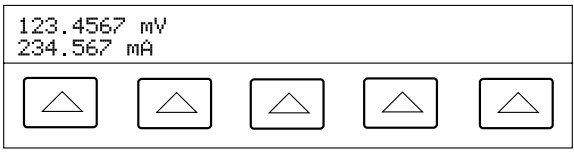
NOTA

Conecte los terminales NORMAL LO y AUX LO en la UAP o en el calibrador mediante la tecla de función programable "LO"s tied.

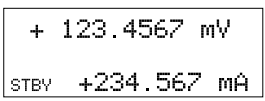
Para configurar la tensión de cc en los terminales NORMAL del calibrador y la corriente continua en los terminales AUX (o los terminales BOOST del 5725A):

1. Pulse [RESET] para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir potencia de cc.
4. Especifique la salida de tensión deseada (7 dígitos).
5. Pulse [+/-] para seleccionar la polaridad.
6. Pulse una tecla multiplicadora en caso de ser necesario.
7. Pulse [dBm V].
8. Especifique la salida de corriente deseada (6 dígitos).
9. Pulse [+/-] para seleccionar la polaridad.
10. Pulse una tecla multiplicadora en caso de ser necesario.
11. Pulse [W A].

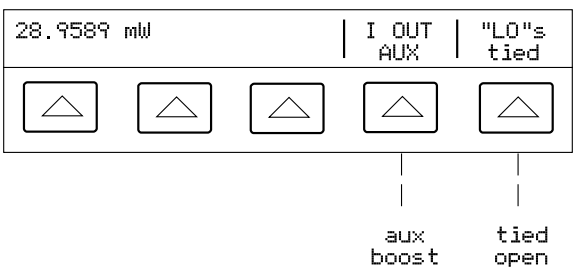
12. La pantalla de mando exhibe el valor especificado, por ejemplo, 123.4567 mV y 234.567 mA.



13. Pulse ENTER para ver la salida en la pantalla de salida.



14. Pulse OPR para activar la salida del calibrador.



(Especifique la tensión *o* la corriente y luego los vatios, con SHIFT W A. Se calcula y se exhibe el valor restante de tensión o corriente.)

I OUT (Corriente de salida) Escoge (aux) del calibrador o (boost) del 5725A. Si el 5725A no está conectado, AUX está en letras mayúsculas.

"LO"s (Terminales de salida de potencial bajo) Une o abre una conexión entre los terminales NORMAL LO y AUX LO del tablero frontal.

Salida de potencia de ca

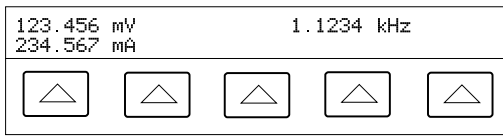
NOTA

Conecte los terminales NORMAL y AUX LO en la UAP o en el calibrador, mediante la tecla programable "LO"s tied. Para un funcionamiento óptimo de fase, conecte los terminales LO en la UAP. A niveles de corriente ≥2,2 A, conecte los terminales en la UAP utilizando un hilo grueso con resistencia <10 mΩ.

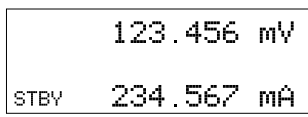
Para configurar la tensión de ca en los terminales NORMAL del calibrador y la corriente continua en los terminales AUX (o los terminales boost del 5725A):

1. Pulse RESET para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir potencia de ca.
4. Especifique la salida de tensión deseada (6 dígitos).
5. Pulse una tecla multiplicadora en caso de ser necesario.
6. Pulse dBm V.
7. Especifique la salida de corriente deseada (6 dígitos).
8. Pulse una tecla multiplicadora en caso de ser necesario.
9. Pulse W A.
10. Especifique la salida de frecuencia deseada (5 dígitos).

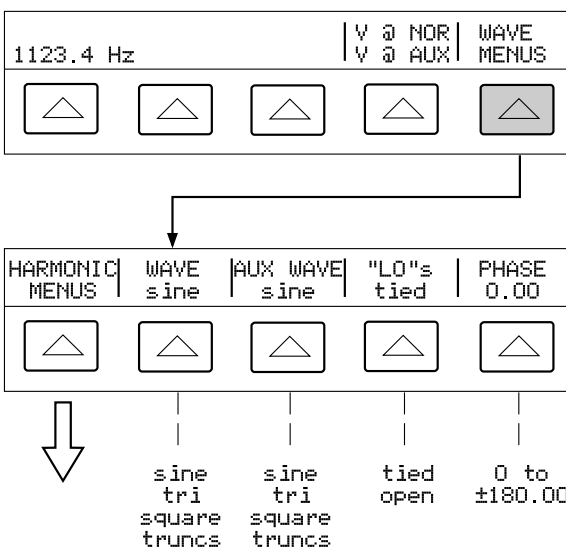
11. Pulse una tecla multiplicadora en caso de ser necesario.
12. Pulse [SRC Hz].
13. La pantalla de mando exhibe el valor especificado, por ejemplo, 123.456 mV, 234.567 mA, y 1.1234 kHz.



14. Pulse [ENTER] para ver la salida en la pantalla de salida.



15. Pulse [OPR] para activar la salida del calibrador.



(Especifique el voltaje *o* la corriente y luego los vatios, con SHIFT W A . Se calcula y se exhibe el valor restante de voltaje o corriente).

I OUT (Salida de corriente) Escoge (aux) del calibrador o (boost) del 5725A. Si el 5725A no está conectado, AUX está en letras mayúsculas.

WAVE MENUS (Menúes de forma de onda) Escoge el tipo de armónico, forma de onda, condición de terminal LO del tablero frontal y fase.

HARMONIC MENUS (Menúes de frecuencia armónica) Escoge las salidas de los armónicos.

V WAVE (Forma de onda del voltaje) Escoge la forma de onda del voltaje.

I WAVE (Forma de onda de la corriente) Escoge la forma de onda de la corriente.

"LO"s (Terminales de salida de potencial bajo) Une o abre una conexión entre los terminales NORMAL LO y AUX LO del tablero frontal.

PHASE (Diferencia de fase) Escoge la diferencia de la fase entre las salidas NORMAL y AUX.

Salida de tensión doble de cc

NOTA

Conecte los terminales NORMAL LO y AUX LO en la UAP o en el calibrador mediante la tecla programable "LO"s tied.

Para configurar la tensión doble de cc en los terminales NORMAL y AUX del calibrador:

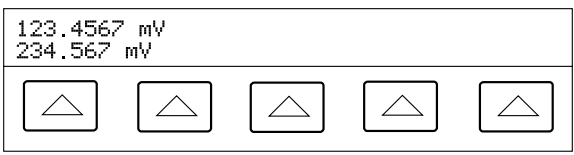
1. Pulse RESET para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir tensión doble de cc.
4. Especifique la salida de tensión deseada en los terminales NORMAL (7 dígitos).
5. Pulse +/- para escoger la polaridad.
6. Pulse una tecla multiplicadora en caso de ser necesario.
7. Pulse dBm V.

NOTA

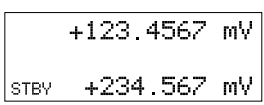
La tensión en la salida AUX está limitada a un máximo de 3,3V.

8. Especifique la salida de tensión deseada en los terminales AUX (6 dígitos).

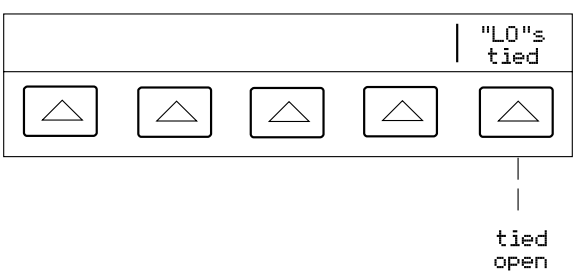
9. Pulse [+/-] para escoger la polaridad.
10. Pulse una tecla multiplicadora en caso de ser necesario.
11. Pulse [dBm V].
12. La pantalla de mando exhibe los valores especificados, por ejemplo, 123.4567 mV y 234.567 mV.



13. Pulse [ENTER] para ver la salida en la pantalla de salida.



14. Pulse [OPR] para activar la salida del calibrador.



“LO”s (Terminales de salida de potencial bajo) Une o abre una conexión entre los terminales NORMAL LO y AUX LO del tablero frontal.

Salida de tensión doble de ca

NOTA

Conecte los terminales NORMAL LO y AUX LO en la UAP o en el calibrador mediante la tecla programable "LO"s tied.

Para configurar los voltajes dobles de ca en los terminales NORMAL y AUX del calibrador:

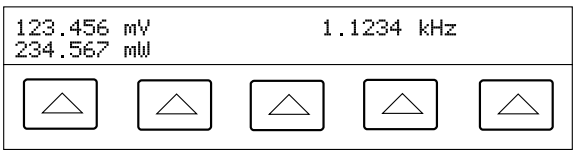
1. Pulse [RESET] para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir tensión doble de ca.
4. Especifique la salida de tensión deseada en los terminales NORMAL (6 dígitos).
5. Pulse una tecla multiplicadora en caso de ser necesario. Por ejemplo, pulse [μ m].
6. Pulse [dBm V].

NOTA

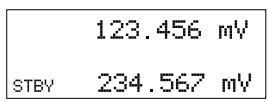
La salida AUX está limitada a 3,3V rms para ondas sinusoidales, 6,6V cresta a cresta para ondas cuadradas, 9,3V cresta a cresta para ondas sinusoidales truncadas y ondas triangulares.

7. Especifique la tensión deseada en los terminales AUX (6 dígitos).
8. Pulse una tecla multiplicadora en caso de ser necesario.
9. Pulse [dBm V].
10. Especifique la frecuencia de salida deseada (5 dígitos).

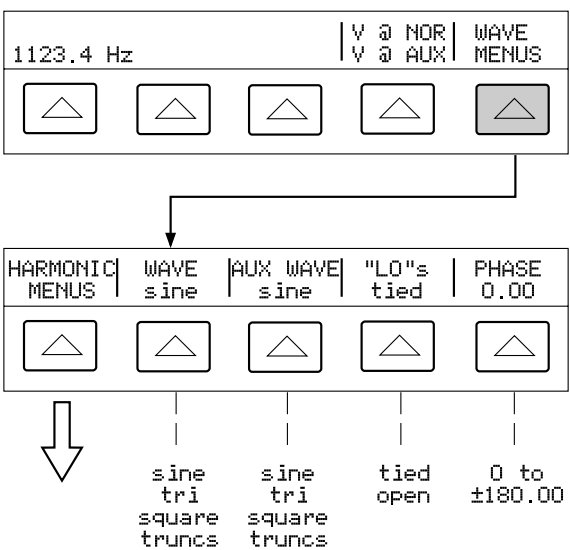
11. Pulse una tecla multiplicadora en caso neceario.
12. Pulse [SRC Hz].
13. La pantalla de mando exhibe los valores especificados, por ejemplo, 123.456 mV, 234.567 mV a 1.1234 kHz.



14. Pulse [ENTER] para ver la salida en la pantalla de salida.



15. Pulse [OPR] para activar la salida del calibrador.



V @ NOR (Tensión en los terminales NORMAL) No es una tecla programable.

V @ AUX (Tensión en los terminales AUX) No es una tecla programable.

WAVE MENUS (Menúes de forma de onda) Escoge el tipo de armónico, forma de onda, condición del terminal LO del tablero frontal y fase.

HARMONIC MENUS (Menúes de frecuencia armónica) Escoge las salidas de los armónicos.

WAVE (Forma de onda) Escoge una de cuatro formas distintas de onda en los terminales NORMAL.

AUX WAVE (Forma de onda auxiliar) Escoge una de cuatro formas distintas de onda en los terminales AUX.

"LO"s (Terminales de salida de potencial bajo) Une o abre una conexión entre los terminales NORMAL LO y AUX del tablero frontal.

PHASE (Diferencia de fase) Escoge la diferencia de la fase entre las salidas NORMAL y AUX.

Salida de resistencia

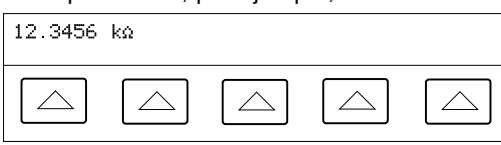
Para configurar la salida de resistencia sintetizada en los terminales NORMAL del calibrador:

1. Pulse [RESET] para despejar la salida del calibrador.
2. Conecte la UAP.

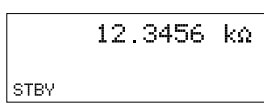
NOTA

Las conexiones de los terminales del calibrador a la UAP deben ser de LO a LO y de HI a HI.

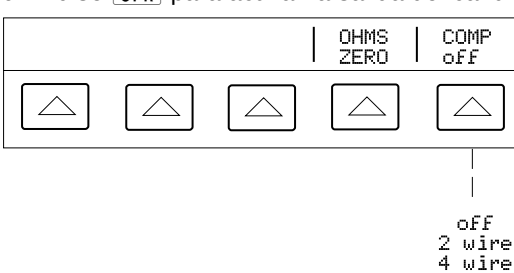
3. Configure la UAP para medir resistencia.
4. Especifique la resistencia deseada (6 dígitos).
5. Pulse una tecla multiplicadora en caso de ser necesario.
6. Pulse [Ω].
7. La pantalla de mando exhibe el valor especificado, por ejemplo, 12.3456 kΩ.



8. Pulse [ENTER] para ver la salida en la pantalla de salida.



9. Pulse [OPR] para activar la salida del calibrador.



OHMS ZERO Pone a cero la función ohmios solamente.

COMP (Compensación) Establece compensación de 4 hilos, compensación de 2 hilos o sin compensación (<110 kΩ solamente).

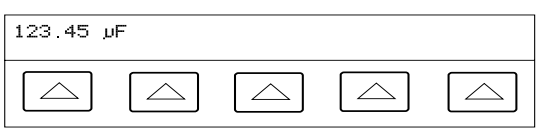
Salida de capacitancia

Para configurar la salida de capacitancia sintetizada en los terminales NORMAL del calibrador:

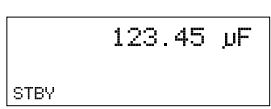
1. Pulse [RESET] para despejar la salida del calibrador.
2. Conecte la UAP.

   NOTA

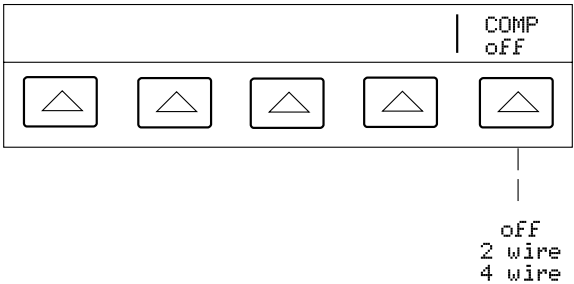
   Ya que esta salida es sintetizada, las conexiones de los terminales del calibrador a la UAP deben ser de LO a LO y de HI a HI.
3. Configure la UAP para medir capacitancia.
4. Especifique la salida de capacitancia deseada (5 dígitos).
5. Pulse una tecla multiplicadora, por ejemplo, [SHIFT] y luego [μ m] para μf.
6. Pulse [F ÷].
7. La pantalla de mando exhibe el valor especificado, por ejemplo, 123.45 μf (abajo).



8. Pulse [ENTER] para ver la salida en la pantalla de salida.



9. Pulse OPR para activar la salida del calibrador.



COMP (Compensación) Establece compensación de 4 hilos, compensación de 2 hilos o sin compensación (≥110 nF).

Simulación de temperatura (TC)

NOTA

Tenga cuidado de que las fuentes externas de temperatura no afecten al conector y al hilo del termopar. Por ejemplo, no ponga los dedos en el enchufe o hilo del termopar al simular una temperatura.

Para configurar una salida de temperatura simulada de termopar en el conector TC del tablero frontal del calibrador:

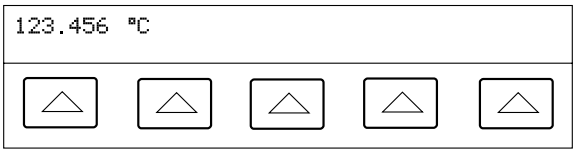
1. Pulse RESET para despejar la salida del calibrador.
2. Conecte la UAP.

NOTA

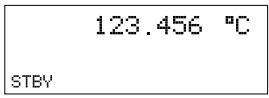
Use miniconectores y hilo de termopar de acuerdo con el tipo de termopar.

3. Configure la UAP para medir temperatura.
4. Especifique la temperatura de salida deseada (6 dígitos).

5. Pulse la tecla [°F °C] o las teclas [SHIFT] [°F °C] para °F.
6. La pantalla de mando exhibe el valor especificado, por ejemplo, 123.456 °C.



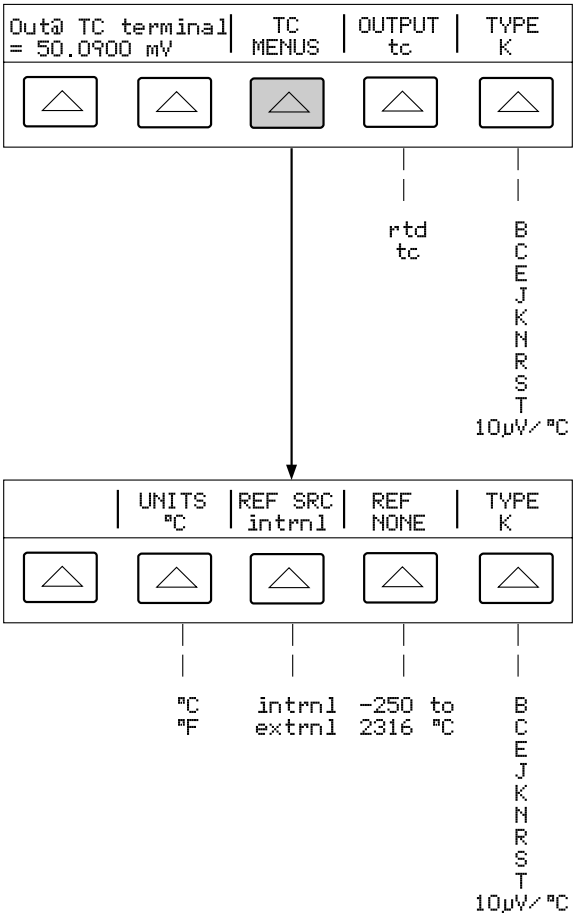
7. Pulse [ENTER] para ver la salida en la pantalla de salida.



8. Pulse [OPR] para activar la salida del calibrador.

NOTA

Si cambia de tipo de termopar o de tc a rtd (excepto un termopar tipo B, que comienza 600°C), la temperatura se pone a 0°C (32°F).


Out@ TC terminal
= 50.0900 mV
TC
MENUS
OUTPUT
tc
TYPE
K
rtd
tc
B
C
E
J
K
N
R
S
T
10µV/°C
UNITS
°C
REF SRC
intrnl
REF
NONE
TYPE
K
°C
°F
intrnl
extrnl
-250 to
2316 °C
B
C
E
J
K
N
R
S
T
10µV/°C

Out@TC terminal (Salida en los terminales TC del tablero frontal) Exhibe la tensión de cc en los terminales TC.

TC MENUS (Menú del termopar) Exhibe los submenúes para las salidas del termopar.

UNITS (Unidades de temperatura) Escoge las unidades de la temperatura en °C o °F.

REF SRC (Origen de referencia) Escoge un origen de referencia intrnl (interno) o extrnl (externo).

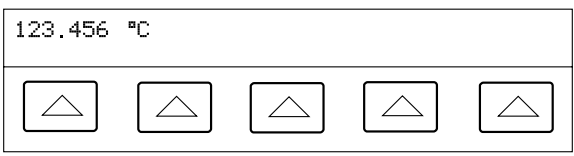
TYPE (Tipo de termopar) Escoge el tipo de termopar a emular.

OUTPUT (Dispositivo de salida de temperatura) Escoge el dispositivo de temperatura: termopar (tc) o detector de temperatura de resistencia (rtd).

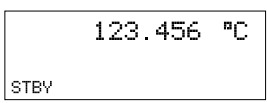
Simulación de temperatura (RTD)

Para configurar una salida de temperatura simulada RTD en los terminales NORMAL del calibrador:

1. Pulse RESET para despejar la salida del calibrador.
2. Conecte la UAP.
3. Configure la UAP para medir temperatura.
4. Especifique la temperatura de salida deseada (6 dígitos).
5. Pulse la tecla °F °C o las teclas SHIFT °F °C para °F.
6. La pantalla de mando exhibe el valor especificado, por ejemplo, 123.456 °C.



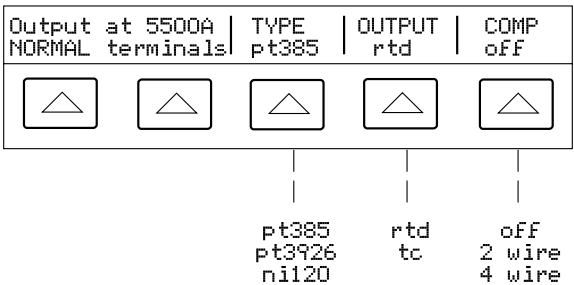
7. Pulse ENTER para ver la salida en la pantalla de salida.



8. Pulse [OPR] para activar la salida del calibrador.

NOTA

La temperatura se pone a 0 °C (32 °F) si cambia de tc a rtd o si cambia el tipo de rtd.



Output at 5500A NORMAL terminal. Exhibe la localización de los terminales de salida (siempre NORMAL).

TYPE (Tipo de RTD) Escoge la curva rtd pt385, pt3926, o ni120.

OUTPUT (Dispositivo de salida de temperatura) Escoge el dispositivo de temperatura: termopar (tc) o detector de temperatura de resistencia (rtd).

COMP (Compensación) Establece compensación de 4 hilos, compensación de 2 hilos o sin compensación.

Medición de una salida de termopar

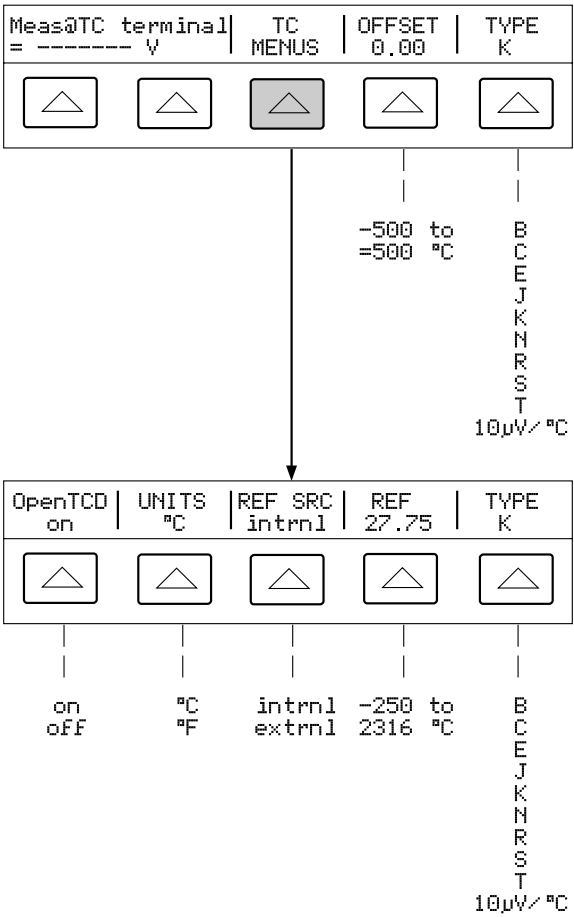
Para medir la salida de un termopar conectado al conector TC del calibrador:

1. Pulse [RESET] para borrar la salida del calibrador.
2. Conecte el termopar al conector TC.

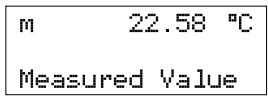
NOTA

Use miniconectores y alambre de termopar de acuerdo con el tipo de termopar.

3. Pulse [MEAS TC], para visualizar los menúes TC.



4. La temperatura medida está en la pantalla de salida. Una pequeña m parpadea durante la medición.



Meas@TC terminal (Medición en los terminales TC) Exhibe la tensión cc en los terminales TC.

TC MENUS (Menúes del termopar) Abre submenúes que apoyan las salidas del termopar.

Open TCD (Detección de termopar abierto) Escoge el apagado o encendido del atributo Detección de termopar abierto.

UNITS (Unidades de temperatura) Escoge las unidades de temperatura en °C o °F.

REF SRC (Origen de referencia) Escoge el origen de referencia intrnl (interno) o extrnl (externo).

REF (Temperatura de referencia) Exhibe el valor de la referencia de temperatura.

OFFSET (Compensación de la medición visualizada) Escoge el valor de compensación de temperatura que debe sumarse o restarse a la medición real.

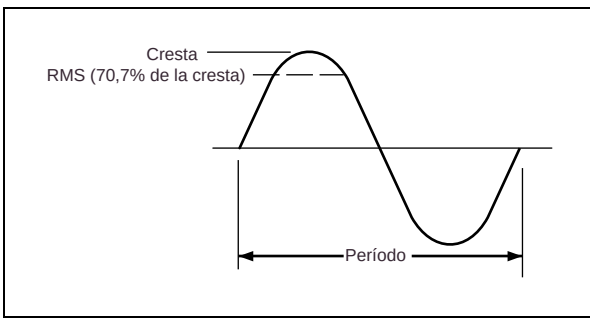
TYPE (Tipo de termopar) Escoge el tipo de termopar a emular.

Formas de onda

Para tensión, corriente, tensión doble y potencia de corriente alterna, escoja entre las formas de onda **sine**, **tri**, **square**, o **truncs**.

Onda sinusoidal (sine)

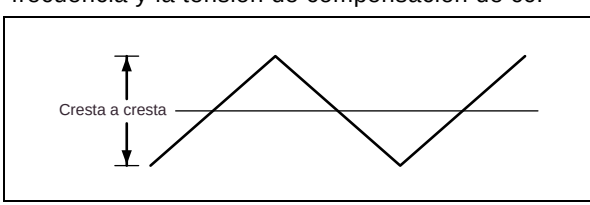
Una onda sinusoidal está presente en las salidas del calibrador. Las variables son la amplitud, la frecuencia y la tensión de compensación de cc.



Onda sinusoidal

Onda triangular (tri)

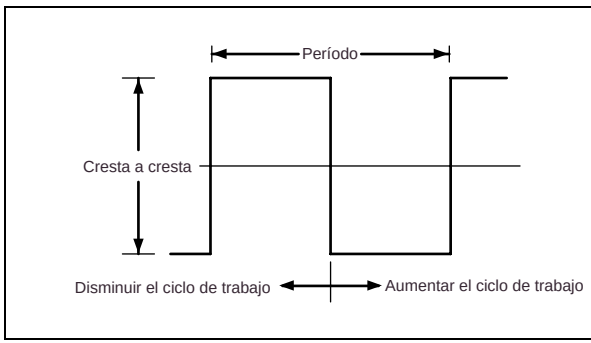
Una onda triangular está presente en las salidas del calibrador. Las variables son la amplitud, la frecuencia y la tensión de compensación de cc.



Onda triangular

Onda cuadrada (square)

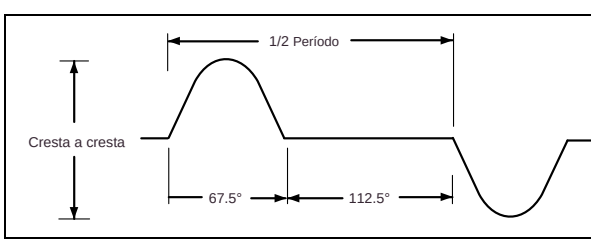
Una onda cuadrada está presente en las salidas del calibrador. Las variables son el ciclo de trabajo, la amplitud, frecuencia y la tensión de compensación de cc.



Onda cuadrada y ciclo de trabajo

Onda sinusoidal truncada (truncs)

Una onda sinusoidal truncada está presente en las salidas del calibrador. Las variables son la amplitud y la frecuencia.

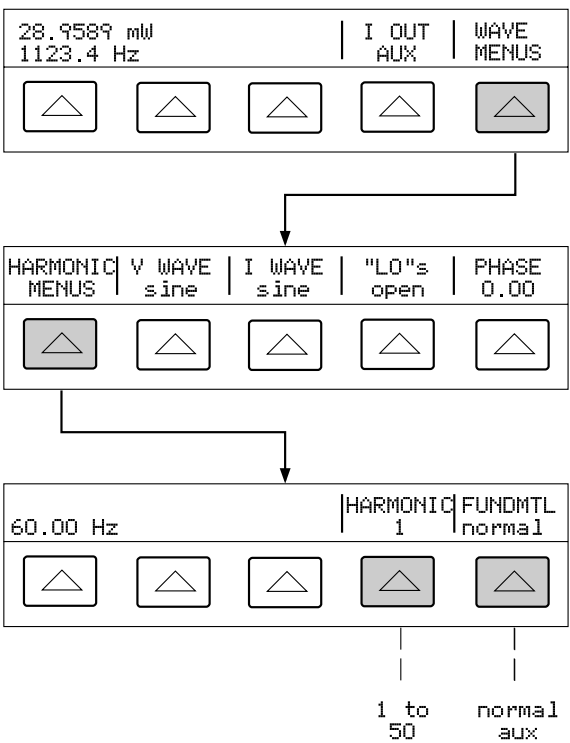


Onda sinusoidal truncada

Configuración de armónicos

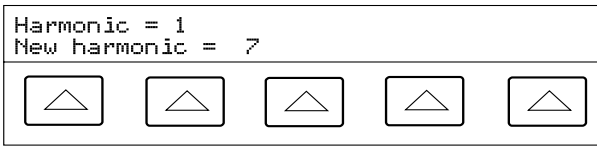
Para generar dos señales con diferencia armónica ajustable para tensión y potencia de ca (ondas sinusoidales solamente), siga el procedimiento siguiente. Las fundamentales se pueden configurar en los terminales NORMAL o AUX.

1. Pulse WAVE MENUS para abrir el menú de forma de onda.
2. Pulse HARMONIC MENUS para abrir el menú de armónicos.



3. Pulse FUNDMTL para escoger los terminales NORMAL o AUX (o BOOST al estar conectado el 5725A) para la fundamental.

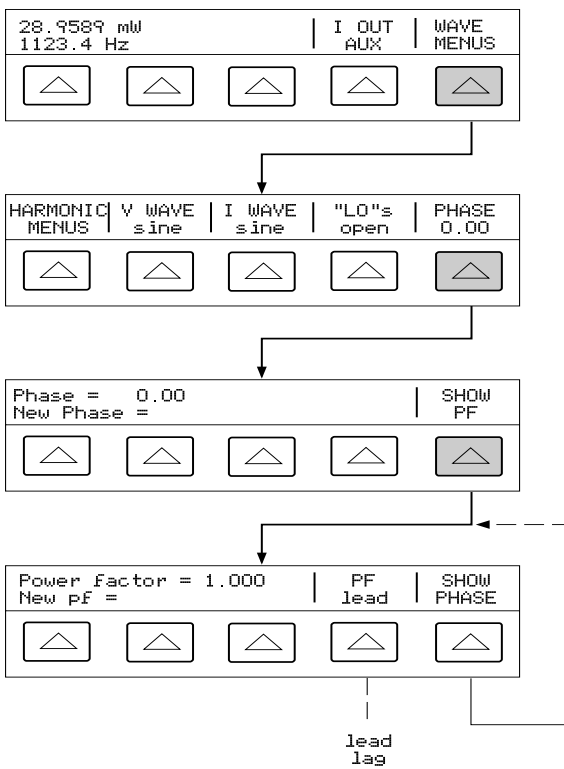
4. Pulse HARMNIC para especificar el armónico deseado (1 to 50). Por ejemplo, para el séptimo armónico. Pulse ENTER.



5. Pulse PREV MENU una o más veces para regresar a los menúes anteriores.

Ajuste de la fase

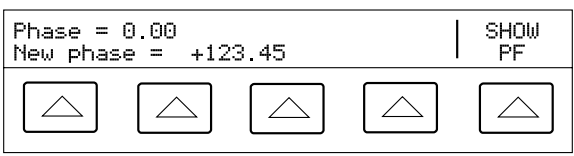
Para establecer una diferencia de fase entre las salidas en los modos de tensión doble de ca y potencia de ca:



Ajuste del ángulo de fase

Para establecer un desfase en grados para las salidas de tensión doble de ca y potencia de ca:

1. Pulse WAVE MENUS para abrir el menú de forma de onda.
2. Pulse PHASE para abrir el menú de datos de fase.
3. Especifique el ángulo de fase deseado (5 dígitos).
4. Pulse **+/-** para escojer un desfase adelantado (+) o retrasado (-).
5. La pantalla de mando exhibe los valores especificados. Por ejemplo, un ángulo de fase adelantado de 123.45 grados. Pulse **ENTER**.



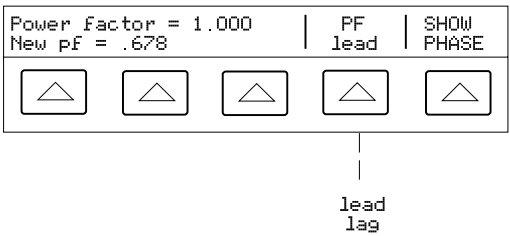
6. Pulse **PREV MENU** una o más veces para regresar a los menúes anteriores.

Ajuste del factor de potencia

Para establecer un desfase como factor de potencia (PF), donde PF=Coseno Φ, y Φ es el desfase:

1. Pulse WAVE MENUS para abrir el menú de forma de onda.
2. Pulse PHASE para abrir el menú de datos de la fase.
3. Pulse SHOW PF para abrir el menú de datos del factor de potencia.
4. Especifique el factor de potencia deseado (3 dígitos).

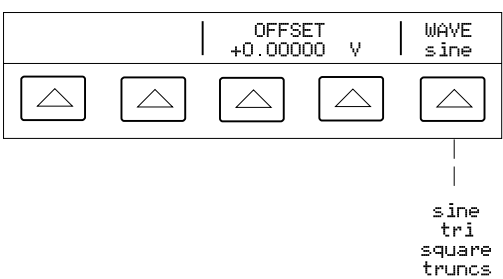
5. Pulse PF para conmutar entre un factor de potencia adelantado (**lead**) o retrasado (**lag**), por ejemplo, un factor de potencia de 0.678. Pulse ENTER.



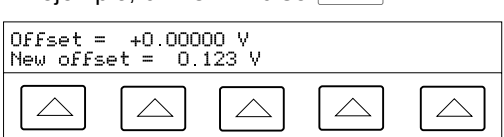
6. Pulse PREV MENU una o más veces para regresar a los menúes anteriores.

Ajuste de la compensación de cc

Para establecer una compensación de cc para salidas de voltaje sencillo de ca:



1. Pulse WAVE para escoger la forma de onda deseada.
2. Pulse OFFSET para abrir el menú de datos de compensación.
3. Especifique la compensación deseada, por ejemplo, 0.123 V. Pulse ENTER.



4. Pulse PREV MENU una o más veces para regresar a los menúes anteriores.

Uso del amplificador 5725A

En el modo de voltaje reforzado, la salida del 5725A se presenta en los terminales NORMAL del calibrador. En el modo de corriente reforzada, la salida del 5725A se presenta en los terminales del 5725A. La salida que se canaliza del calibrador a los terminales de salida del 5725A es de 0 a 2,2A cc y 300 μA a 2,2A ca.

Reglas de operación

- Cuando está encendido el anunciador de la tecla BOOST, significa que se está usando el amplificador de refuerzo de corriente o de tensión del 5725A.
- Si el indicador del amplificador de corriente 5725A está encendido y el anunciador BOOST está apagado, significa que la corriente del calibrador se está canalizando hacia el 5725A.
- Al suministrar corriente, la selección de la tecla programable OUTPUT (AUX or BOOST) es de mayor primacía que la tecla programable SOURCE PREFRNCE (que indica la fuente preferida de la corriente) y la tecla BOOST del tablero frontal. *Sin embargo,* cuando el calibrador no puede suministrar la corriente seleccionada, la salida cambia automáticamente a BOOST y el calibrador indica “Current OUTPUT moved to 5725A”.
- La tecla programable SOURCE PREFRNCE en el menú de configuración escoge al calibrador o al 5725A. La tecla BOOST es una selección provisional de la fuente preferida de la corriente.
- Toda combinación de corriente o tensión fuera de la capacidad del calibrador, pero dentro de la capacidad del 5725A, activará la salida del 5725A.

ADVERTENCIA

La operación con voltaje reforzado genera alta tensión a niveles de corriente más elevados de los que normalmente genera el calibrador. Durante la operación con voltaje reforzado, el potencial de riesgo de lesiones o un accidente mortal es mayor que durante la operación normal.

Para establecer una salida reforzada del amplificador 5725A:

1. Pulse RESET para despejar la salida del calibrador.
2. Instale el 5725A siguiendo las instrucciones del manual del 5725A.
3. Conecte la UAP. Para corriente reforzada, conecte a los terminales del 5725A; para voltaje reforzado, conecte a los terminales NORMAL del calibrador.
4. Configure la UAP para medir salida.
5. Seleccione al 5725 como la fuente preferida: para seleccionar el 5725, pulse la tecla SETUP, luego INSTMT SETUP, OUTPUT SETUP y SOURCE PREFRNCE.
6. Pulse la tecla PREV MENU una o más veces para regresar a los menúes anteriores.
7. Especifique el valor de salida deseado descrito en “Ajuste de las salidas”.

NOTA

Puede hacer que el 5725A suministre una corriente continua menor de 1,5A para aprovechar el voltaje de rendimiento superior del amplificador. Para lograr esto, pulse la tecla programable RANGE para enclavar el rango a 11A cuando el calibrador está ajustado para más de 2,2A, o establezca la corriente inferior y pulse BOOST OPR *para encender el amplificador.*

8. Pulse la tecla BOOST.

Edición y ajustes de las salidas de error

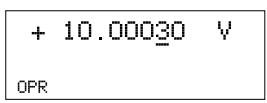
Use la perilla de edición de campos y las teclas ◀, ▶, y EDIT FIELD para editar las salidas. Las teclas de multiplicar MULT X y dividir DIV ÷ editan la salida en decenas.

Teclas para salir del modo de error

Teclas	Acción
ENTER	Regresa al valor de referencia anterior.
+/- + ENTER	Referencia nueva.
Dato del teclado + ENTER	Referencia nueva.
NEW REF	La salida actual como la nueva referencia.
MULT X	Ajusta al calibrador a 10 veces el valor de referencia y nueva referencia.
DIV ÷	Ajusta al calibrador a 1/10 del valor de referencia y nueva referencia.
RESET	Regresa a las condiciones iniciales del encendido.

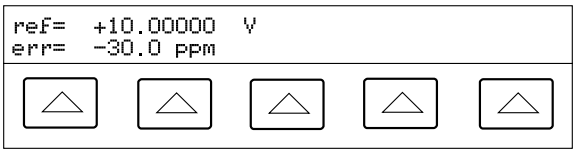
Edición de la configuración de salida

Gire la perilla de edición de campos a la derecha para aumentar el valor de salida o a la izquierda para disminuir el valor de salida. Para seleccionar un dígito de orden superior, use la tecla ◀ o ▶ W A EDIT FIELD. El dígito de salida está subrayado.



Visualización del error de salida

Edita la salida de manera tal que la UAP visualiza el valor esperado indicando de esta manera la precisión de la UAP.



Por ejemplo, la diferencia editada de 0,00030 voltios para una salida de 10,00000V representa 0,00030/10,00000=0.000030, o sea, 30 partes por millón.

Multiplicación y división

Pulse la tecla [MULT X] para multiplicar la salida por 10. Pulse la tecla [DIV ±] para dividir la salida entre 10. Si la salida multiplicada excede 33V, el calibrador se pone en STBY (espera).

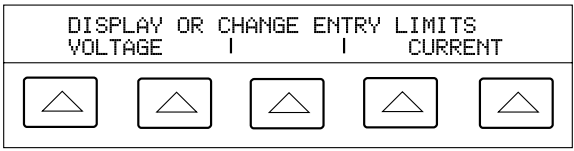
Ajuste de los límites de corriente y tensión

Los límites de la salida ayudan a prevenir daño accidental a la UAP por exceso de corriente o de tensión. Las selecciones se almacenan en la memoria no volátil. Los límites de tensión se expresan en rms.

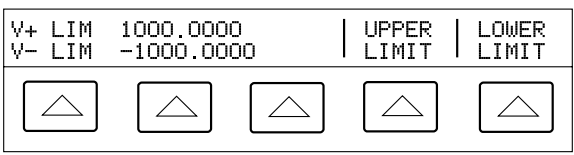
Para establecer límites de tensión y corriente.

1. Pulse [RESET] para despejar la salida del calibrador.
2. Pulse [SETUP]. Pulse INSTMT SETUP para abrir los submenúes de configuración.
3. Pulse OUTPUT SETUP para abrir los submenúes de configuración de la salida.

4. Pulse SET LIMITS para abrir el menú de ajuste de los límites.

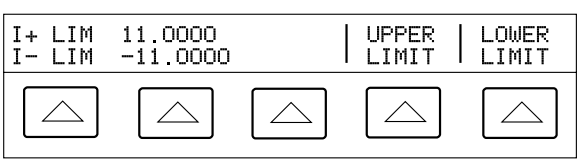


5. Para limitar la tensión (tanto tensión de ca como de cc), pulse la tecla programable debajo de VOLTAGE.



   a. Pulse “Upper Limit” o “Lower Limit”, según corresponda, y especifique el nuevo límite.
   b. Pulse ENTER seguido por PREV MENU una o más veces para regresar a los menúes anteriores.

6. Para limitar la corriente (tanto corriente continua como alterna), pulse la tecla programable debajo de CURRENT.



   a. Pulse “Upper Limit” o “Lower Limit”, según corresponda, y especifique el nuevo límite.
   b. Pulse ENTER seguido por PREV MENU una o más veces para regresar a los menúes anteriores.

Revisión de la calibración

El capítulo 7 del *5500A Operator Manual* describe las pruebas que verifican el funcionamiento del calibrador. Si encuentra una condición fuera de tolerancia, puede volver a calibrar al 5500A desde el tablero frontal o por interfaz remota. Desde el tablero frontal se le guía por todo el procedimiento de calibración. Los detalles de la calibración del 5500A se encuentran en el *5500A Service Manual* (NP 105798).

Consulte la sección “Performing a Calibration Check” en el capítulo 7 del *5500A Operator Manual* que contiene una lista del equipo necesario. Si algún instrumento específico no está disponible, puede substituirse por otro instrumento que garantice una Razón de Incertidumbre de Ensayo de 4:1.

Pruebas de rendimiento

Las pruebas de rendimiento se anotan en el capítulo 7 del *5500A Operator Manual*. Antes de efectuar estas pruebas, termine el procedimiento “Puesta a cero del calibrador” de esta guía.

Cambio de fusibles internos

Además del fusible de la línea de alimentación que puede reemplazar el operario (vea “Reposición del fusible”), hay fusibles montados en los montajes de circuito impreso (pca) dentro del calibrador. Estos fusibles no pueden ser reemplazados por el operario. Para la descripción y la localización de los fusibles, consulte la sección “Non-Operator Fuse Replacement” en el capítulo 7 del *5500A Operator Manual*. Para obtener las instrucciones de cómo reemplazar un fusible de circuito impreso, consulte el *5500 Service Manual* (NP 105798).