

57-1500

MA-BHA

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# Módulo TIA Portal 032-600 Bloques de datos globales con SIMATIC S7-1500

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# Índice de contenido

| 1  | Obje       | Dbjetivos  |     |  |  |  |  |  |  |  |
|----|------------|--|-----|--|--|--|--|--|--|--|
| 2  | Requisitos |  |     |  |  |  |  |  |  |  |
| 3  | Hard       | dware y software necesarios  | . 6 |  |  |  |  |  |  |  |
| 4  | Teo        | ría  | . 7 |  |  |  |  |  |  |  |
|    | 4.1        | Bloques de datos   | . 7 |  |  |  |  |  |  |  |
|    | 4.2        | Tipos de datos en SIMATIC S7-1500  | . 8 |  |  |  |  |  |  |  |
|    | 4.3        | Bloques optimizados  | . 9 |  |  |  |  |  |  |  |
|    | 4.4        | Carga sin reinicialización   | . 9 |  |  |  |  |  |  |  |
| 5  | Tare       | a planteada  | 10  |  |  |  |  |  |  |  |
| 6  | Plan       | ificación  | 10  |  |  |  |  |  |  |  |
|    | 6.1        | Bloque de datos global para el control de velocidad y la vigilancia de velocidad del motor 1 | 10  |  |  |  |  |  |  |  |
|    | 6.2        | Esquema tecnológico1   | 11  |  |  |  |  |  |  |  |
|    | 6.3        | Tabla de asignación  | 12  |  |  |  |  |  |  |  |
| 7  | Instr      | ucciones paso a paso estructuradas   | 13  |  |  |  |  |  |  |  |
|    | 7.1        | Desarchivación de un proyecto existente 1  | 13  |  |  |  |  |  |  |  |
|    | 7.2        | Creación del bloque de datos global "SPEED_MOTOR" 1  | 15  |  |  |  |  |  |  |  |
|    | 7.3        | Acceso a los datos del bloque de datos en el bloque de organización2                         | 20  |  |  |  |  |  |  |  |
|    | 7.4        | Guardado y compilación del programa2   | 24  |  |  |  |  |  |  |  |
|    | 7.5        | Carga del programa2  | 25  |  |  |  |  |  |  |  |
|    | 7.6        | Observación/forzado de valores en bloques de datos2  | 26  |  |  |  |  |  |  |  |
|    | 7.7        | Inicialización de los valores de ajuste / reinicialización de los valores iniciales2         | 27  |  |  |  |  |  |  |  |
|    | 7.8        | Instantáneas en bloques de datos2  | 29  |  |  |  |  |  |  |  |
|    | 7.9        | Ampliación del bloque de datos y carga sin reinicialización                                  | 33  |  |  |  |  |  |  |  |
|    | 7.10       | Archivado del proyecto   | 37  |  |  |  |  |  |  |  |
| 8  | Lista      | a de comprobación  | 38  |  |  |  |  |  |  |  |
| 9  | Ejer       | cicio  | 39  |  |  |  |  |  |  |  |
|    | 9.1        | Tarea planteada: ejercicio   | 39  |  |  |  |  |  |  |  |
|    | 9.2        | Esquema tecnológico  | 39  |  |  |  |  |  |  |  |
|    | 9.3        | Tabla de asignación  | 40  |  |  |  |  |  |  |  |
|    | 9.4        | Planificación  | 40  |  |  |  |  |  |  |  |
|    | 9.5        | Lista de comprobación: ejercicio   | 41  |  |  |  |  |  |  |  |
| 1( | ) Infor    | mación adicional   | 42  |  |  |  |  |  |  |  |

# BLOQUES DE DATOS GLOBALES CON SIMATIC S7-1500

# 1 Objetivos

En este capítulo aprenderá el uso de bloques de datos globales en SIMATIC S7-1500 con la herramienta de programación TIA Portal.

El módulo describe la estructura, la creación y el acceso a los bloques de datos globales para SIMATIC S7-1500. Se muestra paso a paso la manera de crear un bloque de datos global en TIA Portal y acceder a dichos datos en modo de lectura y escritura en el programa.

Pueden utilizarse los controladores SIMATIC S7 indicados en el capítulo 3.

## 2 Requisitos

Este capítulo se basa en el capítulo "Valores analógicos con una SIMATIC S7 CPU1516F-3 PN/DP". Para el seguimiento de este capítulo puede recurrir, p. ej., al siguiente proyecto: "SCE\_ES\_032-500\_Analog Values\_R1508.zap13".

## 3 Hardware y software necesarios

- 1 Estación de ingeniería: Se requieren el hardware y el sistema operativo (Para más información, ver Readme/Léame en los DVD de instalación del TIA portal)
- 2 SIMATIC Software STEP 7 Professional en el TIA Portal - V13 o superior
- Controlador SIMATIC S7-1500/S7-1200/S7-300, p. ej., CPU 1516F-3 PN/DP -3 firmware V1.6 o superior con Memory Card, 16 DI/16 DO y 2 AI/1 AO Nota: Las entradas digitales y las entradas y salidas analógicas deberían estar conectadas en un cuadro.
- Conexión Ethernet entre la estación de ingeniería y el controlador 4



3 Controlador SIMATIC S7-1500

## 4 Teoría

#### 4.1 Bloques de datos

Al contrario que los bloques lógicos, los bloques de datos no contienen instrucciones, sino que sirven para almacenar datos de usuario.

Así, los bloques de datos contienen datos variables con los que trabaja el programa de usuario. La estructura de bloques de datos globales puede definirse a discreción.

Los bloques de datos globales almacenan datos utilizables *desde todos los demás bloques* (ver Figura 1). A los bloques de datos de instancia solo debe acceder el bloque de función correspondiente. El tamaño máximo de los bloques de datos varía en función de la CPU utilizada.



Figura 1: Diferencia entre un bloque de datos global y un bloque de datos de instancia.

Ejemplos de uso de bloques de datos globales:

- Guardar la información de un sistema de almacenamiento. "¿Dónde está cada producto?"
- Guardar recetas de determinados productos.

Normalmente, los datos de los bloques de datos se guardan de modo remanente. Así, se conservan incluso en caso de corte de tensión o tras PARADA/ARRANQUE de la CPU.

#### 4.2 Tipos de datos en SIMATIC S7-1500

En una SIMATIC S7-1500 hay un gran número de tipos de datos distintos, con los que se representan distintos formatos numéricos. A continuación se ofrece un listado de algunos tipos de datos elementales.

| Tipo de<br>datos | Tamaño<br>(bits) | Rango   | Ejemplo de entrada<br>constante           |
|------------------|------------------|---|---|
| Bool             | 1                | de 0 a 1  | TRUE, FALSE, O, 1                         |
| Byte             | 8                | de 16#00 a 16#FF  | 16#12, 16#AB                              |
| Word             | 16               | de 16#0000 a 16#FFFF  | 16#ABCD, 16#0001                          |
| DWord            | 32               | de 16#00000000 a 16#FFFFFFF   | 16#02468ACE                               |
| Char             | 8                | de 16#00 a 16#FF  | "A", "r", "@"                             |
| Sint             | 8                | de -128 a 127   | 123, -123                                 |
| Int              | 16               | de -32.768 a 32.767   | 123, -123                                 |
| Dint             | 32               | de -2.147.483.648 a<br>2.147.483.647  | 123, -123                                 |
| USInt            | 8                | de 0 a 255  | 123                                       |
| Ulnt             | 16               | de 0 a 65.535   | 123                                       |
| UDInt            | 32               | de 0 a 4.294.967.295  | 123                                       |
| Real             | 32               | de +/-1,18 x 10 -38 a +/-3,40 x<br>10 <sup>38</sup>   | 123,456, -3,4, -1,2E+12,<br>3,4E-3        |
| LReal            | 64               | de +/-2,23 x 10 - <sup>308</sup> a +/-1,79 x 10 <sup>308</sup>  | 12345.123456789<br>-1.2E+40               |
| Time             | 32               | de T#-24d_20h_31 m_23s_648ms<br>a T#24d_20h_31 m_23s_647ms<br>Se guarda como: de -<br>2,147.483,648 ms a<br>+2,147.483.647 ms   | T#5m_30s<br>5#-2d<br>T#1d_2h_15m_30x_45ms |
| String           | Variable         | de 0 a 254 caracteres en tamaño<br>de bytes   | "ABC"                                     |
| Array            |                  | Las matrices permiten ordenar<br>sucesivamente datos de un mismo<br>tipo y direccionarlos de forma<br>consecutiva en el área de<br>direcciones. Las propiedades de<br>cada uno de los elementos de<br>matriz son iguales y se configuran<br>en las variables de matriz.                       |   |
| Struct           |                  | El tipo de datos STRUCT<br>representa una estructura de datos<br>compuesta por un número fijo de<br>componentes de diferentes tipos de<br>datos. Los componentes de los<br>tipos de datos STRUCT o ARRAY<br>también pueden anidarse en una<br>estructura.<br>Encontrará más tipos de datos en |   |
|                  |                  | la ayuda en pantalla.   |   |

#### 4.3 Bloques optimizados

Los controladores S7-1500 están provistos de almacenamiento de datos optimizado. En los bloques optimizados, todas las variables se ordenan automáticamente por tipo de datos. Esta ordenación garantiza la reducción al mínimo de los vacíos de datos entre las variables y el almacenamiento de las variables de un modo que facilite el acceso para el procesador.

- El acceso siempre es lo más rápido posible, ya que el guardado de archivos está optimizado por el sistema y es independiente de la declaración.
- No hay peligro de incoherencias a causa de accesos erróneos absolutos, que el acceso se realiza siempre de modo simbólico.
- Los cambios de declaración no dan lugar a errores de acceso, ya que. p. ej., los accesos desde sistemas de visualización de procesos se realizan de modo simbólico.
- Las distintas variables pueden definirse como remanentes de forma selectiva.
- No se necesitan (ni pueden realizarse) ajustes en el bloque de datos de instancia.
   Todos los ajustes (p. ej., la remanencia) se realizan en el FB asignado.
- Las reservas de memoria en el bloque de datos permiten efectuar cambios sin pérdida de los valores actuales (carga sin reinicialización).

#### 4.4 Carga sin reinicialización

Para modificar con posterioridad programas de usuario que ya funcionan en un controlador, los controladores S7-1500 permiten ampliar las interfaces de bloques de función o datos optimizados durante el funcionamiento. Los bloques modificados pueden cargarse sin necesidad de pasar el controlador a STOP y sin influir en los valores actuales de las variables ya cargadas.



Figura 2: Carga sin reinicialización

Mientras el controlador está en RUN, pueden realizarse las siguientes acciones:

- 1. Activar "Download without reinitialization" (Carga sin reinicialización)
- 2. Insertar nuevas variables definidas en el bloque existente
- 3. Cargar el bloque ampliado en el controlador

Las variables recién definidas se inicializan. Las variables ya existentes mantienen su valor actual.

El requisito es que antes se haya definido una reserva de memoria para el bloque y que este se haya cargado en la CPU con dicha reserva de memoria.

## 5 Tarea planteada

En este capítulo se ampliará el programa del capítulo "SCE\_ES\_032-500 Analog Values".con un bloque de datos que pone a disposición los parámetros para las dos funciones ""MOTOR\_SPEEDCONTROL [FC10] y "MOTOR\_ SPEEDMONITORING" [FC11] de manera centralizada.

## 6 Planificación

La administración de datos y la especificación de consigna para las funciones "MOTOR\_SPEEDCONTROL" [FC10] y "MOTOR\_ SPEEDMONITORING" [FC11] se realizarán por medio del bloque de datos global "SPEED\_MOTOR" [DB2].

Este se agregará al proyecto "032-500\_Analog Values" a modo de ampliación. Este proyecto debe desarchivarse previamente.

En el bloque de organización "Main" [OB1] deben conectarse previamente las funciones "MOTOR\_SPEEDCONTROL" [FC10] y "MOTOR\_SPEEDMONITORING" [FC11] con las variables del bloque de datos global "SPEED\_MOTOR" [DB2].

#### 6.1 Bloque de datos global para el control de velocidad y la vigilancia

#### de velocidad del motor

La consigna de velocidad y el valor real de velocidad se crean en el formato de datos Real (número en coma flotante de 32 bits) como primeras variables del bloque de datos "SPEED\_MOTOR" [DB2]. La consigna de velocidad tendrá el valor inicial +14 rpm.

Tras ello se crea una estructura (Struct) "Positive\_Speed" (Velocidad\_positiva) para vigilar los límites de velocidad positivos.

Esta estructura contiene las variables "Threshold\_Error" (Límite\_fallo) (valor inicial +15 rpm) y "Threshold\_Warning" (Límite\_advertencia) (valor inicial +10 rpm) en el formato de datos Real (número en coma flotante de 32 bits), y las variables "Error" y "Warning" en el formato de datos Bool (valor binario).

La estructura (Struct) "Positive\_Speed" se inserta de nuevo como copia y se le cambia el nombre a "Negative\_Speed" para vigilar los límites de velocidad negativos.

La variable "Threshold\_Error" tendrá aquí el valor inicial -16 rpm y "Threshold\_Warning" el valor inicial -14 rpm.

### 6.2 Esquema tecnológico

Aquí se muestra el esquema tecnológico para la tarea.



Figura 3: Esquema tecnológico

| Schalter der Sortieranlage<br>Switches of sorting station  | Automatikbetrieb<br>Automatic mode | Handbetrieb / Manual mode<br>-S3 Tippbetrieb -M1 vorwärts/<br>Manual -M1 forwards  |
|--|------------------------------------|--|
| -P1 en/on -P1 en/on -P1 en/on -P4 aktivient/active -P4 aktivient/active -P4 aktivient/active -P2 Hand/manual -P3 Auto/auto -P3 A | S1 Start/start                     | -S4 Tippbetrieb -M1 rückwärts/<br>Manual -M1 backwards<br>-S6 Zylinder -M4 ausfahren/<br>cylinder -M4 einfahren/<br>cylinder -M4 einfahren/<br>cylinder -M4 einfahren/ |

Figura 4: Panel de control

## 6.3 Tabla de asignación

| DI    | Тіро | Identificación | Función  | NC/NA                           |
|-------|------|----------------|--|---------------------------------|
| I 0.0 | BOOL | -A1:           | Aviso PARADA DE EMERGENCIA ok  | NC                              |
| I 0.1 | BOOL | -K0            | Instalación "ON"   | NA                              |
| 10.2  | BOOL | -S0            | Interruptor selección de modo manual<br>(0)/automático (1)                       | Manual = 0<br>Automático<br>= 1 |
| 10.3  | BOOL | -S1            | Pulsador inicio automático   | NA                              |
| I 0.4 | BOOL | -S2            | Pulsador parada automática   | NC                              |
| I 0.5 | BOOL | -B1            | Sensor cilindro-M4 introducido   | NA                              |
| I 1.0 | BOOL | -B4            | Sensor deslizador ocupado  | NA                              |
| l 1.3 | BOOL | -B7            | Sensor de pieza al final de la cinta   | NA                              |
| EW64  | BOOL | -B8            | Sensor de valor real de velocidad del motor,<br>+/-10 V corresponden a +/-50 rpm |                                 |

Para esta tarea se necesitan las siguientes señales como operandos globales.

| DO    | Тіро | Identificación | Función   |  |
|-------|------|----------------|---|--|
| Q 0.2 | BOOL | -Q3            | Motor de cinta-M1 velocidad variable  |  |
| QW 64 | BOOL | -U1            | Consigna de velocidad del motor en 2<br>direcciones, +/-10 V corresponden a +/-50 rpm |  |

#### Leyenda de la lista de asignación

L

- DI Entrada digital DO Salida digital
- Al Entrada analógica AO Salida analógica
  - Entrada Q Salida
- NC Contacto normalmente cerrado
- NA Contacto normalmente abierto

## 7 Instrucciones paso a paso estructuradas

A continuación se describe cómo realizar la planificación. Si ya está familiarizado con este tema, le bastará seguir los pasos numerados. De lo contrario, siga las instrucciones que encontrará a continuación.

#### 7.1 Desarchivación de un proyecto existente

→ Antes de poder ampliar el proyecto "SCE\_ES\_032-500\_Analog Values\_R1508.zap13" del capítulo "SCE\_ES\_032-500 Analog Values", debemos desarchivarlo. Para desarchivar un proyecto existente, debemos escoger el fichero en cuestión en la vista del proyecto → Project (Proyecto) → Retrieve (Desarchivar). Tras ello, confirme la selección con "Open" (Abrir).

 $(\rightarrow \text{Project [Proyecto]} \rightarrow \text{Retrieve [Desarchivar]} \rightarrow \text{Select a .zap archive [Seleccionar un fichero .zap]} \rightarrow \text{Open [Abrir]})$ 



- → A continuación podrá seleccionar la carpeta de destino en la que se guardará el proyecto desarchivado. Confirme la selección con "OK".
  - (  $\rightarrow$  Target directory [Carpeta de destino]  $\rightarrow$  OK)

 $\rightarrow$  Guarde el proyecto abierto con el nombre 032-600\_Global Data Blocks.

(  $\rightarrow$  Project [Proyecto]  $\rightarrow$  Save as [Guardar como]  $\rightarrow$  032-600\_Global\_Data\_Blocks  $\rightarrow$  Save [Guardar])

| Siemens - G:\Automation\032_300_Analog                     | _Values\032_300_Analog_Values  | ×   |
|--|--|---|
| Project Edit View Insert Online Options                    | Tools Window Help<br>) ± C <sup>4</sup> ± 🛅 🖳 🔛 🔛 💋 <b>Go online</b> 🖉 Go offline 🏪 🖪 🖪 🛠 🖃 🛄  | Totally Integrated Automation<br>PORTAL   |
| Migrate project Ctrl+O                                     | (  | Tasks 🗖 🛙 🕨                               |
| Close Ctrl+W   |  | Options                                   |
| Save Ctrl+S  | •  |   |
| Save as Ctrl+Shift+S                                       |  | ✓ Find and replace                        |
| Delete project <sup>VG</sup> Ctrl+E<br>Archive<br>Retrieve | 21   | Find:                                     |
| The card Reader/USB memory                                 | Salitatinan as   | Whole words only                          |
| Upgrade  |  | Match case                                |
| Print Ctrl+P   |  | Find in substructures                     |
| Print preview  |  | Use wildcards                             |
| G:\Automation\03\032_300_Analog_Values Exit                |  | Use regular expressions                   |
|  |  | O Whole document                          |
|  | 🖳 Properties 🚺 Info 🚺 🗓 Diagnostics 💷 🖃 🗸  | <ul> <li>From current position</li> </ul> |
|  | General  | <ul> <li>Selection</li> </ul>             |
|  |  | Down                                      |
|  | No 'nroperties' available  | Oup                                       |
|  | No 'properties' can be shown at the moment. There is either no object selected or the selected | Find                                      |
| Details view   | object does not have any displayable properties.   |   |
| Portal view  | C Proje  | st 022, 200, Applea, Values append        |
| Portal view  |  | ct 032_300_Analog_values opened.          |

#### 7.2 Creación del bloque de datos global "SPEED\_MOTOR"

→ Seleccione la carpeta "Program blocks" (Bloques de programa) de su CPU 1516F-3 PN/DP y haga clic en "Add new block" (Agregar nuevo bloque) para crear un bloque de datos global en ella.

 $(\rightarrow CPU_1516F [CPU 1516F-3 PN/DP] \rightarrow Add new block [Agregar nuevo bloque])$ 



→ En el cuadro de diálogo, seleccione y asigne al nuevo bloque el nombre:
 "SPEED\_MOTOR". Escoja como tipo "Global DB"; se le asignará automáticamente el número 2. Active la casilla "Add new and open" (Agregar y abrir). Haga clic ahora en el botón "OK".

( → Due block → Name: [Nombre] SPEED\_MOTOR → Type: [Tipo] Global DB →  $\blacksquare$  Add new and open [Agregar y abrir] → OK)

| A | dd new block      |                     |                               |     | ×      |
|---|-------------------|---------------------|-------------------------------|-----|--------|
|   | Name:             |                     |                               |     |        |
|   | SPEED_MOTOR       |                     |                               |     |        |
|   |                   |                     |                               |     |        |
|   |                   | Type:               | 🧧 Global DB 💌                 |     |        |
|   | OB                | Language:           | DB                            |     |        |
|   | Organization      | Number:             | 2                             |     |        |
|   | DIOCK             |                     | 🔘 Manual                      |     |        |
|   |                   |                     | <ul> <li>Automatic</li> </ul> |     |        |
|   | ER                | Description:        |                               |     |        |
|   | Eurotion block    | Data blocks (DBs) s | ave program data.             |     |        |
|   | - unction block   |                     |                               |     |        |
|   |                   |                     |                               |     |        |
|   | FC                |                     |                               |     |        |
|   | Function          |                     |                               |     |        |
|   |                   |                     |                               |     |        |
|   | В                 |                     |                               |     |        |
|   | Data block        |                     |                               |     |        |
|   |                   | More                |                               |     |        |
| > | Additional inform | ation               |                               |     |        |
|   | Add new and open  |                     |                               | Сок | Cancel |

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→ Se mostrará automáticamente el bloque de datos "SPEED\_MOTOR". Ahora, cree primero las variables "Speed\_Setpoint" (Consigna de velocidad) y "Speed\_Actual\_Value" (Valor real de velocidad) mostradas aquí con los comentarios correspondientes.
 Seleccione el tipo de datos "Real". Asigne a "Speed\_Setpoint" el valor inicial 10.0 rpm.
 (→ Speed\_Setpoint → Real → 10.0 → Speed\_Actual\_Value → Real)

|   | 032-600_Global_Data_Blocks > CPU1516F [CPU 1516F-3 PN/DP] > Program blocks > SPEED_MOTOR [DB2] |                   |           |             |        |                     |                |          |  |  |  |  |
|---|--|-------------------|-----------|-------------|--------|---------------------|----------------|----------|--|--|--|--|
|   |  |                   |           |             |        |                     |                |          |  |  |  |  |
|   | # # \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$                                      |                   |           |             |        |                     |                |          |  |  |  |  |
|   | SPI  | EED_MOTOR         |           |             |        |                     |                |          |  |  |  |  |
|   |  | Name              | Data type | Start value | Retain | Accessible from HMI | Visible in HMI | Setpoint | Comment  |  |  |  |
|   | -  | ▼ Static          |           |             |        |                     |                |          |  |  |  |  |
| 1 | -  | Speed_Setpoint    | Real      | 14.0        |        | <b></b>             | <b></b>        |          | Speed set point in revolutions per minute (range: +/-50 rpm)   |  |  |  |
| 3 | -  | Speed_Actual_Valu | e Real 🔳  | 0.0         |        |                     | <b></b>        |          | Speed actual value in revolutions per minute (range: +/-50 rpm |  |  |  |
|   |  |                   |           |             |        |                     |                |          |  |  |  |  |

Nota: Asegúrese de usar los tipos de datos correctos.

→ En el siguiente paso crearemos una estructura de variable "Struct" para poder reproducirla luego.

 $(\rightarrow \text{Struct})$ 

| 03 | 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → SPEED_MOTOR [DB2] |    |                    |           |             |        |                     |                |          |  |  |  |  |
|----|--|----|--------------------|-----------|-------------|--------|---------------------|----------------|----------|--|--|--|--|
|    |  |    |                    |           |             |        |                     |                |          |  |  |  |  |
| 2  | 2 2 4 4 5 1 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5  |    |                    |           |             |        |                     |                |          |  |  |  |  |
|    | SPEED_MOTOR  |    |                    |           |             |        |                     |                |          |  |  |  |  |
|    |  | Na | me                 | Data type | Start value | Retain | Accessible from HMI | Visible in HMI | Setpoint | Comment  |  |  |  |
| 1  | -0   | •  | Static             |           |             |        |                     |                |          |  |  |  |  |
| 2  | -0   | •  | Speed_Setpoint     | Real      | 14.0        |        |                     |                |          | Speed set point in revolutions per minute (range: +/-50 rpm)   |  |  |  |
| З  | -0   | •  | Speed_Actual_Value | Real      | 0.0         |        |                     |                |          | Speed actual value in revolutions per minute (range: +/-50 rpm |  |  |  |
| 4  |  |    | <add new=""></add> |           |             |        |                     |                |          |  |  |  |  |
|    |  |    |                    | RTM       |             | ^      |                     |                |          |  |  |  |  |
|    |  |    |                    | Real      |             |        |                     |                |          |  |  |  |  |
|    |  |    |                    | S5Time    |             |        |                     |                |          |  |  |  |  |
|    |  |    |                    | SInt      |             |        |                     |                |          |  |  |  |  |
|    |  |    |                    | String    |             | =      |                     |                |          |  |  |  |  |
|    |  |    |                    | Struct    |             | *      |                     |                |          |  |  |  |  |
|    | <  |    |                    |           | P.0         |        |                     | 111            |          | >  |  |  |  |

 $\rightarrow~$  Asigne a la estructura el nombre "Positive\_Speed" (Velocidad\_positiva) y un comentario.

(  $\rightarrow$  Positive\_Speed)

| _  |             |      |                    |           |             |         |                     |                |          |  |  |  |
|----|-------------|------|--------------------|-----------|-------------|---------|---------------------|----------------|----------|--|--|--|
| 03 | 2-6         | )0_( | Global_Data_Blocks | ⊧ ► CPU1  | 516F [CPU   | 1516F   | -3 PN/DP] 🕨 Progr   | am blocks 🔸    | SPEED_   | MOTOR [DB2]  |  |  |
|    |             |      |                    |           |             |         |                     |                |          |  |  |  |
| 1  |             |      |                    |           |             |         |                     |                |          |  |  |  |
|    | SPEED_MOTOR |      |                    |           |             |         |                     |                |          |  |  |  |
|    |             | Name | e                  | Data type | Start value | Retain  | Accessible from HMI | Visible in HMI | Setpoint | Comment  |  |  |
| 1  | -           | ▼ S  | tatic              |           |             |         |                     |                |          |  |  |  |
| 2  | -           | •    | Speed_Setpoint     | Real      | 14.0        | <b></b> |                     | $\sim$         | <b></b>  | Speed set point in revolutions per minute (range: +/-50 rpm)   |  |  |
| З  | -           | •    | Speed_Actual_Value | Real      | 0.0         | <b></b> |                     | $\sim$         |          | Speed actual value in revolutions per minute (range: +/-50 rpm |  |  |
| 4  | -           | • •  | Positive_Speed     | Struct 🔳  |             |         |                     | $\sim$         |          | Parameters for error/warning positive speed                    |  |  |
| 5  |             |      | <add new=""></add> |           |             |         |                     |                |          |  |  |  |
| 6  |             | •    | <add new=""></add> |           |             |         |                     |                |          |  |  |  |
|    |             |      |                    |           |             |         |                     |                |          |  |  |  |

→ Cree por debajo de la estructura las variables de vigilancia de velocidad que se muestran, con sus respectivos valores iniciales.

| C   | 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → SPEED_MOTOR [DB2] _ I I X |     |     |                    |           |             |          |                     |                |              |  |  |  |
|-----|--|-----|-----|--------------------|-----------|-------------|----------|---------------------|----------------|--------------|--|--|--|
|     |  |     |     |                    |           |             |          |                     |                |              |  |  |  |
| 144 | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2  |     |     |                    |           |             |          |                     |                |              |  |  |  |
|     | SPEED_MOTOR  |     |     |                    |           |             |          |                     |                |              |  |  |  |
|     |  | Na  | me  |                    | Data type | Start value | Retain   | Accessible from HMI | Visible in HMI | Setpoint     | Comment  |  |  |
| 1   | -  | •   | Sta | itic               |           |             |          |                     |                |              |  |  |  |
| 2   | -  | 1 - |     | Speed_Setpoint     | Real      | 14.0        |          |                     |                | $\checkmark$ | Speed set point in revolutions per minute (range: +/-50 rpm)   |  |  |
| З   | -  |     |     | Speed_Actual_Value | Real      | 0.0         |          |                     | <b></b>        |              | Speed actual value in revolutions per minute (range: +/-50 rpm |  |  |
| 4   | -  | 1 = | •   | Positive_Speed     | Struct    |             |          |                     | <b></b>        |              | Parameters for error/warning positive speed                    |  |  |
| 5   |  | 1   | •   | Threshold_Error    | Real      | 0.0         | <b>V</b> |                     |                | $\sim$       | Speed limit / if exceeded an error is displayed                |  |  |
| 6   |  | 1   | •   | Threshold_Warning  | Real      | 0.0         | <b>V</b> |                     | <b></b>        | $\sim$       | Speed limit / if exceeded a warning is displayed               |  |  |
| 7   |  | 1   | •   | Error              | Bool      | false       | <b>V</b> |                     | $\checkmark$   |              | error limit exceeded   |  |  |
| 8   | 1  | 1   | •   | Warning            | Bool 🔳    | false       | <b>V</b> |                     | $\checkmark$   |              | warning limit exceeded   |  |  |
|     |  |     |     |                    |           |             |          |                     |                |              |  |  |  |

Nota: Asegúrese de usar los tipos de datos correctos.

 $\rightarrow$  Ahora, seleccione la estructura y cópiela.

 $(\rightarrow Copy)$ 

| 032-6       | 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → SPEED_MOTOR [DB2] |            |             |          |                     |                |  |  |  |  |  |  |
|-------------|--|------------|-------------|----------|---------------------|----------------|--|--|--|--|--|--|
|             |  |            |             |          |                     |                |  |  |  |  |  |  |
| 🥩 🖻         | 2 2 4 5 6 6 5 E U *  |            |             |          |                     |                |  |  |  |  |  |  |
| SPEED_MOTOR |  |            |             |          |                     |                |  |  |  |  |  |  |
|             | Name   | Data type  | Start value | Retain   | Accessible from HMI | Visible in HMI | Setpoint   | Comment  |  |  |  |  |
| 1 📶         | ▼ Static   |            |             |          |                     |                |  |  |  |  |  |  |
| 2 📶         | Speed_Setpoint   | Real       | 14.0        | <b></b>  |                     | <b></b>        | <b></b>  | Speed set point in revolutions per minute (range: +/-50 rpm)   |  |  |  |  |
| з 🕣         | Speed_Actual_Value   | Real       | 0.0         |          |                     | <b></b>        |  | Speed actual value in revolutions per minute (range: +/-50 rpm |  |  |  |  |
| 4 🐢         | Positive Speed   | Struct III | -           |          |                     |                |  | Parameters for error/warning positive speed                    |  |  |  |  |
| 5 📢         | Insert row   |            | 0.0         | <b>V</b> |                     | <b></b>        | Image: A start and a start | Speed limit / if exceeded an error is displayed                |  |  |  |  |
| 6 📢         | Add row  |            | 0.0         | <b>V</b> |                     | <b></b>        | <b></b>  | Speed limit / if exceeded a warning is displayed               |  |  |  |  |
| 7 \prec     | 🗶 Cut  | Ctrl+X     | alse        | <b>V</b> |                     | <b></b>        |  | error limit exceeded   |  |  |  |  |
| 8 ┥         | 🔲 Сору   | Ctrl+C     | alse        | <b>V</b> |                     |                |  | warning limit exceeded   |  |  |  |  |
| 0           | 🗎 Paste 🔒  | Ctrl+V     |             |          |                     |                |  |  |  |  |  |  |
|             | 🗙 Delete   | Del        |             |          |                     |                |  |  |  |  |  |  |
|             | Rename   | F2         |             |          |                     |                |  |  |  |  |  |  |
|             | Update interface   |            |             |          |                     |                |  |  |  |  |  |  |
|             | Cross-reference information  |            |             |          |                     |                |  |  |  |  |  |  |
|             | Show overlapping accesses  |            |             |          |                     |                |  |  |  |  |  |  |
| - R         | Go to local point of use   |            |             |          |                     |                |  | >  |  |  |  |  |

 $\rightarrow$  Pegue de nuevo la estructura copiada por debajo de "Positive\_Speed".

#### $(\rightarrow \text{Paste})$

| 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → SPEED_MOTOR [DB2] |           |             |          |                     |  |          |  |  |  |  |  |  |
|--|-----------|-------------|----------|---------------------|--|----------|--|--|--|--|--|--|
|  |           |             |          |                     |  |          |  |  |  |  |  |  |
| 2 2 & B   R B B B I  | 3 E       | 2 00        |          |                     |  |          | <b>3</b>   |  |  |  |  |  |
| SPEED_MOTOR  |           |             |          |                     |  |          |  |  |  |  |  |  |
| Name   | Data type | Start value | Retain   | Accessible from HMI | Visible in HMI   | Setpoint | Comment  |  |  |  |  |  |
| 1 🕣 🔻 Static   |           |             |          |                     |  |          |  |  |  |  |  |  |
| 2 📹 🔹 Speed_Setpoint   | Real      | 14.0        | <b></b>  |                     | Image: A start and a start | <b></b>  | Speed set point in revolutions per minute (range: +/-50 rpm)   |  |  |  |  |  |
| 3 📹 🔹 Speed_Actual_Value   | Real      | 0.0         | <b></b>  |                     | <b>~</b>   |          | Speed actual value in revolutions per minute (range: +/-50 rpm |  |  |  |  |  |
| 4 🕣 🛚 🔻 Positive_Speed   | Struct    |             | <b></b>  |                     | <b>~</b>   |          | Parameters for error/warning positive speed                    |  |  |  |  |  |
| 5 📶 💻 Threshold_Error  | Real      | 0.0         | <b>v</b> |                     | <b></b>  |          | Speed limit / if exceeded an error is displayed                |  |  |  |  |  |
| 6 📶 🔹 Threshold_Warning  | Real      | 0.0         | <b>V</b> |                     |  | <b></b>  | Speed limit / if exceeded a warning is displayed               |  |  |  |  |  |
| 7 📶 🔹 Error  | Bool      | false       | <b>V</b> |                     | Image: A start and a start |          | error limit exceeded   |  |  |  |  |  |
| 8 📶 📮 Warning  | Bool      | false       | <b>V</b> |                     | <b>~</b>   |          | warning limit exceeded   |  |  |  |  |  |
| 9 Add news   |           |             |          |                     |  |          |  |  |  |  |  |  |
| insert row   |           |             |          |                     |  |          |  |  |  |  |  |  |
| Add row  |           |             |          |                     |  |          |  |  |  |  |  |  |
| X Cut  | Ctrl+X    |             |          |                     |  |          |  |  |  |  |  |  |
| Сору   | Ctrl+C    |             |          |                     |  |          |  |  |  |  |  |  |
| La Paste   | Ctrl+V    |             |          |                     |  |          |  |  |  |  |  |  |
| X Delete   | Del       |             |          |                     |  |          |  |  |  |  |  |  |
| Rename   | F2        |             |          |                     |  |          |  |  |  |  |  |  |
| Cross-reference information SI   | hift+F11  |             |          |                     |  |          |  |  |  |  |  |  |

→ Cambie el nombre de la nueva estructura a "Negative\_Speed" (Velocidad\_negativa) y vuelva a asignar un comentario.

 $(\rightarrow Negative\_Speed)$ 

 $(\rightarrow \square \square \square \square)$ 

| 03 | 2-6(  | 00_G | lobal_Data_Blocks  | CPU151   | 6F [CPU 1 | 516F-3  | PN/DP] • Program | n blocks 🔸 S | SPEED_M | OTOR [DB2]   |  |  |  |  |  |
|----|---|------|--------------------|----------|-----------|---|------------------|--------------|---------|--|--|--|--|--|--|
|    |   |      |                    |          |           |   |                  |              |         |  |  |  |  |  |  |
| Ð  |   |      |                    |          |           |   |                  |              |         |  |  |  |  |  |  |
|    | SPEED_MOTOR   |      |                    |          |           |   |                  |              |         |  |  |  |  |  |  |
|    | Name Data type Start value Retain Accessible from HMI Visible in HMI Setpoint Comment |      |                    |          |           |   |                  |              |         |  |  |  |  |  |  |
| 1  | -   | ▼ St | atic               |          |           |   |                  |              |         |  |  |  |  |  |  |
| 2  | -   | •    | Speed_Setpoint     | Real     | 14.0      |   |                  | <b>~</b>     |         | Speed set point in revolutions per minute (range: +/-50 rpm)   |  |  |  |  |  |
| 3  | -   | •    | Speed_Actual_Value | Real     | 0.0       |   |                  | <b>~</b>     |         | Speed actual value in revolutions per minute (range: +/-50 rpm |  |  |  |  |  |
| 4  |   | • •  | Positive_Speed     | Struct   |           |   |                  | <b>~</b>     |         | Parameters for error/warning positive speed                    |  |  |  |  |  |
| 5  |   | . •  | Threshold_Error    | Real     | 0.0       | <b>V</b>  |                  | <b>~</b>     |         | Speed limit / if exceeded an error is displayed                |  |  |  |  |  |
| 6  |   | •    | Threshold_Warning  | Real     | 0.0       | <b>v</b>  |                  | <b>~</b>     |         | Speed limit / if exceeded a warning is displayed               |  |  |  |  |  |
| 7  |   | •    | Error              | Bool     | false     | <b>V</b>  |                  | <b>~</b>     |         | error limit exceeded   |  |  |  |  |  |
| 8  | -   |      | Warning            | Bool     | false     | <ul> <li>Image: A set of the set of the</li></ul> |                  | $\checkmark$ |         | warning limit exceeded   |  |  |  |  |  |
| 9  |   | • •  | Negative_Speed     | Struct 🔳 |           |   |                  | <b></b>      |         | Parameters for error/warning negative speed                    |  |  |  |  |  |
| 10 |   |      | Threshold_Error    | Real     | 0.0       | <ul> <li>Image: A start of the start of</li></ul> |                  | $\checkmark$ |         | Speed limit / if exceeded an error is displayed                |  |  |  |  |  |
| 11 | -   | •    | Threshold_Warning  | Real     | 0.0       | <b>V</b>  |                  | <b>~</b>     |         | Speed limit / if exceeded a warning is displayed               |  |  |  |  |  |
| 12 | -   |      | Error              | Bool     | false     | <ul> <li>Image: A start of the start of</li></ul> |                  | <b>~</b>     |         | error limit exceeded   |  |  |  |  |  |
| 13 | -   |      | Warning            | Bool     | false     | <b>v</b>  |                  | <b>~</b>     |         | warning limit exceeded   |  |  |  |  |  |
| 14 |   | •    | <add new=""></add> |          |           |   |                  |              |         |  |  |  |  |  |  |
|    |   |      |                    |          |           |   |                  |              |         |  |  |  |  |  |  |
|    | <   |      |                    |          |           |   |                  |              |         |  |  |  |  |  |  |

 → No olvide hacer clic en Save project. El bloque de datos global listo para usar "SPEED\_MOTOR" [DB2] se muestra a continuación. Compruebe en todas las variables si está seleccionado el Para remanencia y se ha introducido el valor inicial correspondiente. De este modo, los datos del bloque de datos se conservarán incluso en caso de corte de tensión o PARADA/ARRANQUE de la CPU. Las opciones Para "Accessible from HMI" (Accesible desde HM) y "Visible in HMI" (Visible en HMI) también deben estar activadas en todos los casos, para asegurar que todas las variables sean accesibles desde los sistemas de visualización (HMI) en las futuras ampliaciones de este proyecto. La opción "Setpoint" (Valor de ajuste) solo la activaremos en los valores predeterminados de nuestro bloque de datos.

| 032  | -60                                     | 0_0 | Global_Data_Blocks                 | CPU151    | 16F [CPU 1  | 1516F-3  | PN/DP] 🕨 Program    | m blocks 🔸     | SPEED_N  | 10TOR [DB2] _ 🗖 🖬 🗙  |  |  |  |  |  |
|------|---|-----|------------------------------------|-----------|-------------|----------|---------------------|----------------|----------|--|--|--|--|--|--|
|      |   |     |                                    |           |             |          |                     |                |          |  |  |  |  |  |  |
|      | ≠ ≠ • • • • • • • • • • • • • • • • • • |     |                                    |           |             |          |                     |                |          |  |  |  |  |  |  |
|      |   |     |                                    |           |             |          |                     |                |          |  |  |  |  |  |  |
|      | SPEED_MOTOR                             |     |                                    |           |             |          |                     |                |          |  |  |  |  |  |  |
|      |   | Nam | e                                  | Data type | Start value | Retain   | Accessible from HMI | Visible in HMI | Setpoint | Comment  |  |  |  |  |  |
| 1 -  |   | • 9 | itatic                             |           |             |          |                     |                |          |  |  |  |  |  |  |
| 2 -  | 1                                       | •   | Speed_Setpoint                     | Real      | 14.0        | <b></b>  |                     |                | <b></b>  | Speed set point in revolutions per minute (range: +/-50 rpm)   |  |  |  |  |  |
| з -  | -                                       |     | Speed_Actual_Value                 | Real      | 0.0         | <b></b>  |                     |                |          | Speed actual value in revolutions per minute (range: +/-50 rpm |  |  |  |  |  |
| 4 -  | 1                                       | •   | <ul> <li>Positive_Speed</li> </ul> | Struct    |             |          |                     |                |          | Parameters for error/warning positive speed                    |  |  |  |  |  |
| 5    | -                                       |     | Threshold_Error                    | Real      | 16.0        | <b>V</b> |                     |                |          | Speed limit / if exceeded an error is displayed                |  |  |  |  |  |
| 6 -  | •                                       |     | Threshold_Warning                  | Real      | 14.0        | <b>V</b> |                     |                |          | Speed limit / if exceeded a warning is displayed               |  |  |  |  |  |
| 7 -  | -                                       |     | Error                              | Bool      | false       |          |                     |                |          | error limit exceeded   |  |  |  |  |  |
| 8 -  | •                                       |     | Warning                            | Bool      | false       |          |                     |                |          | warning limit exceeded   |  |  |  |  |  |
| 9 -  | •                                       | •   | <ul> <li>Negative_Speed</li> </ul> | Struct    |             |          |                     |                |          | Parameters for error/warning negative speed                    |  |  |  |  |  |
| 10 - | -                                       |     | Threshold_Error                    | Real      | -16.0       | <b>V</b> |                     |                |          | Speed limit / if exceeded an error is displayed                |  |  |  |  |  |
| 11   | •                                       |     | Threshold_Warning                  | Real 🔳    | -14.0       |          |                     |                |          | Speed limit / if exceeded a warning is displayed               |  |  |  |  |  |
| 12   | 1                                       |     | Error                              | Bool      | false       |          |                     |                |          | error limit exceeded   |  |  |  |  |  |
| 13 - | •                                       |     | Warning                            | Bool      | false       | <b>V</b> |                     |                |          | warning limit exceeded   |  |  |  |  |  |
| 14   |   |     | <add new=""></add>                 |           |             |          |                     |                |          |  |  |  |  |  |  |
|      |   |     |                                    |           |             |          |                     |                |          |  |  |  |  |  |  |
|      | <                                       |     |                                    |           |             |          |                     |                |          | د  |  |  |  |  |  |

**Nota:** El uso de los valores de ajuste se describe más adelante en las instrucciones paso a paso.

# 7.3 Acceso a los datos del bloque de datos en el bloque de organización

 $\rightarrow$  Abra el bloque de organización "Main" [OB1] haciendo doble clic.



→ Elimine en el "Main" [OB1] las variables temporales que ya no sean necesarias. En el futuro solo se necesitará la variable booleana "Motor\_Speed\_Control\_Ret\_Val".

| l  | _Da   | ata | _Blocks 	 CPU1516F [CPU 1516F-3 F   | PN/DP] ▶  | Program blo   | cks → Main [OB1] 🛛 🗕 🖬         | r∎×     |  |  |  |  |  |  |  |
|----|---|-----|-------------------------------------|-----------|---------------|--------------------------------|---------|--|--|--|--|--|--|--|
|    |   |     |                                     |           |               |                                |         |  |  |  |  |  |  |  |
| юî | kå kå 🥩 🐳 🍋 🚍 🚍 💬 君 ± 🖴 🔛 😢 🌕 🚱 🥵 🍓 🧐 🖳 🕍 🙄 🔢 🛛 📑 |     |                                     |           |               |                                |         |  |  |  |  |  |  |  |
|    | Main  |     |                                     |           |               |                                |         |  |  |  |  |  |  |  |
| _  |   | Na  | me                                  | Data type | Default value | Comment                        |         |  |  |  |  |  |  |  |
| 1  | -00   | •   | Input                               |           |               |                                |         |  |  |  |  |  |  |  |
| 2  | -   | •   | Initial_Call                        | Bool      |               | Initial call of this OB        |         |  |  |  |  |  |  |  |
| 3  | -   | •   | Remanence                           | Bool      |               | =True, if remanent data are av | ailable |  |  |  |  |  |  |  |
| 4  | -   | •   | Temp                                |           |               |                                |         |  |  |  |  |  |  |  |
| 5  |   | •   | Motor_speed_monitoring_error_max    | Bool 🔳    | st Insert rov | v                              | ]       |  |  |  |  |  |  |  |
| 6  | -00   | •   | Motor_speed_monitoring_warning_max  | Bool      | Add row       | -                              |         |  |  |  |  |  |  |  |
| 7  |   | •   | Motor_speed_monitoring_warning_min  | Bool      | -             | Cel. V                         |         |  |  |  |  |  |  |  |
| 8  | -00   | •   | Motor_speed_monitoring_error_min    | Bool      |               | Ctrl+X                         |         |  |  |  |  |  |  |  |
| 9  |   | •   | Motor_speed_monitoring_actual_speed | Real      |               | Ctri+C                         |         |  |  |  |  |  |  |  |
| 10 | -00   | •   | Motor_speed_monitoring_Ret_Val      | Bool      |               | Cui+v                          |         |  |  |  |  |  |  |  |
| 11 | -00   | •   | Constant                            |           | X Delete      | Del                            |         |  |  |  |  |  |  |  |
| 12 |   | •   | <add new=""></add>                  |           | Rename        | 45 F2                          |         |  |  |  |  |  |  |  |
|    |   |     |                                     |           | Update in     | nterface                       |         |  |  |  |  |  |  |  |
|    |   |     |                                     |           | Cross-refe    | erence information Shift+F11   |         |  |  |  |  |  |  |  |
|    |   |     |                                     |           | Go to loca    | al point of use                |         |  |  |  |  |  |  |  |
|    | <   |     |                                     |           |               |                                | >       |  |  |  |  |  |  |  |

 $(\rightarrow \text{Delete [Borrar]})$ 

→ A continuación, visualice el bloque de datos "SPEED\_MOTOR" [DB2] y el bloque de organización "Main" [OB1] el uno junto al otro dividiendo verticalmente el área del editor con un clic en el icono .

 $(\rightarrow \square)$ 

| M Siemens - G:VAutomation\032-600_Global_Data_Bloc | s1032-600_Global_Data_Blocks  | _ = ×   |
|--|---|---|
| Project Edit View Insert Online Options Tools      | víndow Help   | Totally Integrated Automation   |
| 📑 隆 🔜 Save project 🚐 🗶 🗐 🚡 🗙 🍋 🛨 🖓 🗄               | 🔂 🖪 🕼 🖳 🍠 Goonline 🧭 Gooffline 🔥 🌆 🖪 🗶 🚽 认  | PORTAL  |
| Project tree                                       | 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → Main [OB1] | _ # = × <   |
| Devices  | Split editor space vertically   |   |
|  |   |   |
|  | vin seise die die Graft aut die die die sie sie. Pier                                   |   |
| The second clocked press plants                    | Main  |   |
| OS2-600_GIODAI_Data_blocks                         | Name Data type Default value Comment  | in a second s |
| Add new device                                     |   | · · · · · · · · · · · · · · · ·   |
|  | a initia-can bool initia can or this OB   |   |
| Consider (Considers Hyper)                         | Kemanence     Dool     Firue, if remanent data are available                            |   |
| Opline & diagnostics                               | A data series and mentioning that Vel. Paral and  | est   |
| Program blocks                                     | A Constant  | II.   |
| Add new block                                      |   |   |
| - Main [OB1]                                       |   |   |
| MOTOR SPEEDCONTROL [EC10]                          |   | 1   |
| MOTOR SPEEDMONITORING (FC11)                       |   |   |
| - MOTOR_AUTO [FB1]                                 | a >=1 127 → -ol → -[=]  | с,<br>,   |
| MOTOR_AUTO_DB [DB1]                                | Block title: "Main Program Sween (Cycle)"   |   |
| SPEED_MOTOR [DB2]                                  | Comment   |   |
| Technology objects                                 | Connicht  | = <b>5</b>  |
| External source files                              | • Wetwork 1: Speed monitoring conveyor motor  |   |
| PLC tags   | Comment   |   |
| PLC data types                                     |   |   |
| Watch and force tables                             | %FC11   |   |
| Online backups                                     | "MOTOR_SPEEDMONITORING"   |   |
| Traces   | #Motor speed  |   |
| Program info                                       | monitoring_   |   |
| Device proxy data                                  | Error_max — error_max   |   |
| PLC alarms   | #Motor speed  |   |
| Text lists   | monitoring_   |   |
| Local modules                                      |   |   |
| Common data  |   | v»  |
| > Details view                                     | Properties 1  | 🔒 Info 🔒 💁 Diagnostics 👘 🗐 🚍 📥  |
| Portal view      Overview     Ain                  | 🗸 P   | Project 032-600_Global_Data_Blocks o  |

→ Ahora arrastre con el ratón, mediante arrastrar y soltar, las variables necesarias para la conexión desde el bloque de datos "SPEED\_MOTOR" [DB2] a las conexiones de las funciones y bloques de función que se llaman en el bloque de organización "Main" [OB1].
 En primer lugar arrastraremos la variable "Speed\_Actual\_Value" a la salida "Actual\_speed" del bloque "MOTOR\_SPEEDMONITORING" [FC11].

| 🎚3locks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → Main [OB1] 🦳 🖬 🗮 🗙  | < 📼CPU 1516F [CPU 1516F-3 P   | N/DP] 	 Program blocks  | SPEED_MOTOR [DB2]          | _ # # ×    |
|---|---|---|----------------------------|------------|
| (2) (2) (2) (2) (2) (2) (2) (2) (2) (2)   | SPEED_MOTOR   | B E U °   |                            |            |
| a >+1 	 □ → -e1 	 → -[-1]<br>▼ 	 C Network 1: Speed monitoring conveyor motor   | Name<br>1 ← Static<br>2 ← Speed_Setpoint  | Real 14.0   | Value Retain Accessible T. | Visible in |
| Comment  **CC11  **Otor_speed_ monitoring_ Error_max  **Motor_speed_ monitoring_ **Motor_speed_ | 4     •     •     Positive_Speed       5     •     •     Threshold_Error       6     •     Threshold_Warning       7     •     •     Error       8     •     •     Warning       9     •     •     Warning       10     •     •     Warning       10     •     •     Threshold_Error       11     •     •     Threshold_Warning       12     •     Error       13     •     Warning | Real 16.0<br>Real 16.0<br>Bool faise<br>Struct Real -16.0<br>Real -16.0<br>Bool faise<br>Bool faise |                            |            |
| 15.0 warning_max Error_minerror_min<br>Speed_limit_<br>-10.0 warning_min<br>Speed_limit_<br>-12.0 error_minActual_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speedscluad_speed   | <b>-</b>  |   |                            |            |

 $(\rightarrow \text{Speed}_\text{Actual}_\text{Value})$ 

→ Conecte también los demás contactos del segmento 1, como se muestra aquí, con variables del bloque de datos "SPEED\_MOTOR" [DB2].



→ Conecte también los contactos del segmento 2, como se muestra aquí, con variables del bloque de datos "SPEED\_MOTOR" [DB2].



→ Conecte igualmente los contactos del segmento 3 –ver figura– con variables del bloque de datos "SPEED\_MOTOR" [DB2].



#### 7.4 Guardado y compilación del programa

→ Para guardar el proyecto, haga clic en el menú en el botón Save project. Para compilar todos los bloques, haga clic en la carpeta "Program blocks" (Bloques de programa) y

seleccione en el menú el icono de compilación 🛅





→ Tras ello, en la sección "Info", "Compile" (Compilar) se mostrarán los bloques que se han podido compilar correctamente.

|   | Ropert                                       | ies         | 🔄 Info | • 🖬 🛛  | Diagno   | stics      |  |  |  |  |  |
|---|--|-------------|--------|--------|----------|------------|--|--|--|--|--|
| General (1) Cross-references Compile Syntax |  |             |        |        |          |            |  |  |  |  |  |
| Image: Show all messages                    |  |             |        |        |          |            |  |  |  |  |  |
| Compiling completed (errors: 0; wa          | arnings: 0)                                  |             |        |        |          |            |  |  |  |  |  |
| ! Path                                      | Description                                  | Go to       | ?      | Errors | Warnings | Time       |  |  |  |  |  |
| ✓ ▼ CPU1516F                                |  |             |        | 0      | 0        | 7:26:42 AM |  |  |  |  |  |
| < 🔻 Program blocks                          |  | <b>N</b>    |        | 0      | 0        | 7:26:42 AM |  |  |  |  |  |
| SPEED_MOTOR (DB2)                           | Block was successfully compiled.             | <b>&gt;</b> |        |        |          | 7:26:42 AM |  |  |  |  |  |
| Main (OB1)                                  | Block was successfully compiled.             | <b>&gt;</b> |        |        |          | 7:26:44 AM |  |  |  |  |  |
| <b>S</b>                                    | Compiling completed (errors: 0; warnings: 0) |             |        |        |          | 7:26:48 AM |  |  |  |  |  |
|   |  |             |        |        |          |            |  |  |  |  |  |

#### 7.5 Carga del programa

→ Tras la compilación correcta, puede cargarse todo el controlador con el programa creado, incluida la configuración hardware, tal como se describe en los módulos anteriores.





#### 7.6 Observación/forzado de valores en bloques de datos

→ Para observar las variables de un bloque de datos cargado, debe estar abierto el bloque en cuestión. A continuación puede activarse o desactivarse la visualización haciendo clic

en el icono 🖭.





→ Ahora podrán verse en la columna "Monitor value" (Valor de observación) los valores disponibles actualmente en la CPU.

| 03  | 2.6  | 50  | 0 6  | Johal Data Blocks   | CPU151 | 6E [CPU 1 | 516E-3 DN/DD | D   | ogram bl     | ocke 🕨       | SPEED   |                                       |  |  |
|-----|--|-----|------|---------------------|--------|-----------|--------------|---|--------------|--------------|---------|---------------------------------------|--|--|
| 0.3 | 2-0  |     |      | IIODAI_D'ATA_DIOCKS | CFUISI |           | 5101-5 FN/DF | I v Fi  | ogram bi     | UCKS P       | JFLLU_  |                                       |  |  |
|     |  |     |      |                     |        |           |              |   |              |              |         |                                       |  |  |
| 1   | 2 2 4 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1                                    |     |      |                     |        |           |              |   |              |              |         |                                       |  |  |
|     | SPEED_MOTOR  |     |      |                     |        |           |              |   |              |              |         |                                       |  |  |
|     | Name Data type Start value Monitor value Retain Access Visibl Setpoint Comment |     |      |                     |        |           |              |   |              |              |         |                                       |  |  |
| 1   |  |     | r St | atic                | 1 🔳    |           |              |   |              |              |         |                                       |  |  |
| 2   |  |     |      | Speed_Setpoint      | Real   | 14.0      | 14.0         |   | <b></b>      | <b></b>      |         | Speed set point in revolutions per .  |  |  |
| з   |  |     |      | Speed_Actual_Value  | Real   | 0.0       | 15.06981     |   | $\checkmark$ | $\checkmark$ |         | Speed actual value in revolutions     |  |  |
| 4   |  | 1 - | •    | Positive_Speed      | Struct |           |              | <b></b>   | $\checkmark$ | $\sim$       |         | Parameters for error/warning posit.   |  |  |
| 5   |  | 1   |      | Threshold_Error     | Real   | 16.0      | 16.0         | <ul> <li>Image: A start of the start of</li></ul> | <b>~</b>     | $\sim$       | <b></b> | Speed limit / if exceeded an error i. |  |  |
| 6   |  | 1   |      | Threshold_Warning   | Real   | 14.0      | 14.0         | <ul> <li>Image: A start of the start of</li></ul> | <b>~</b>     | $\sim$       | <b></b> | Speed limit / if exceeded a warnin    |  |  |
| 7   |  | 1   |      | Error               | Bool   | false     | TRUE         | <ul> <li>Image: A start of the start of</li></ul> | <b></b>      |              |         | error limit exceeded                  |  |  |
| 8   |  | 1   |      | Warning             | Bool   | false     | FALSE        | <ul> <li>Image: A start of the start of</li></ul> | <b></b>      | $\checkmark$ |         | warning limit exceeded                |  |  |
| 9   |  | 1 - | •    | Negative_Speed      | Struct |           |              | <b></b>   | $\checkmark$ | $\sim$       |         | Parameters for error/warning nega.    |  |  |
| 10  |  | 1   |      | Threshold_Error     | Real   | -16.0     | -16.0        | <ul> <li>Image: A start of the start of</li></ul> | $\checkmark$ | $\sim$       | <b></b> | Speed limit / if exceeded an error i. |  |  |
| 11  |  | 1   |      | Threshold_Warning   | Real   | -14.0     | -14.0        | <ul> <li>Image: A start of the start of</li></ul> | <b>~</b>     | $\sim$       | <b></b> | Speed limit / if exceeded a warnin    |  |  |
| 12  |  | 1   |      | Error               | Bool   | false     | FALSE        | <b>V</b>  |              | <b></b>      |         | error limit exceeded                  |  |  |
| 13  |  | 1   |      | Warning             | Bool   | false     | FALSE        | <ul> <li>Image: A start of the start of</li></ul> |              | <b></b>      |         | warning limit exceeded                |  |  |
| 14  |  |     |      | <add new=""></add>  |        |           |              |   |              |              |         |                                       |  |  |
|     |  |     |      |                     |        |           |              |   |              |              |         |                                       |  |  |

→ Haciendo clic en el botón derecho del ratón en uno de los valores se abre el cuadro de diálogo para "Modify" (Modificar) el valor en cuestión.

 $(\rightarrow Modify [Modificar] \rightarrow Modify value: [Modificar valor] 14.0 \rightarrow OK)$ 

| 032               | 2-6                                     | 00 | _G  | obal_Data_Blocks   | CPU151       | 6F [CPU 1   | 516F-3 PN/DF               | P] 🕨 Pr  | ogram b | locks 🔸  | SPEED_   | MOTOR [DB2]            | _ 🖬 🖬 🗙          |  |
|-------------------|---|----|-----|--------------------|--------------|-------------|----------------------------|----------|---------|----------|----------|------------------------|------------------|--|
|                   |   |    |     |                    |              |             |                            |          |         |          |          |                        |                  |  |
| $\exists^{\flat}$ | 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 |    |     |                    |              |             |                            |          |         |          |          |                        |                  |  |
|                   | SPEED_MOTOR                             |    |     |                    |              |             |                            |          |         |          |          |                        |                  |  |
|                   |   | Na | me  |                    | Data type    | Start value | Monitor value              | Retain   | Access  | Visibl   | Setpoint | Comment                |                  |  |
| 1                 |   | •  | Sta | tic                |              |             |                            |          |         |          |          |                        |                  |  |
| 2                 | -00                                     |    |     | Speed_Setpoint     | Real 🔳       | 14.0        | 14.0                       |          | <b></b> | <b>~</b> |          | Speed set point in re  | evolutions per . |  |
| з                 | -00                                     | •  |     | Speed_Actual_Value | Modify       |             |                            | _        |         |          |          |                        | × utions         |  |
| 4                 | -00                                     |    | ٠   | Positive_Speed     |              |             |                            |          | _       |          | -        |                        | g posit.         |  |
| 5                 | -00                                     |    | •   | Threshold_Error    | Operand:     | "SPEED_     | MOTOR <sup>®</sup> .Speed_ | Setpoint | Data t  | ype:     | Real     |                        | error i          |  |
| 6                 | -00                                     |    | •   | Threshold_Warnin   | Modify value | : 13.0      |                            |          | Forma   | t:       | Floating | -point number          | varnin           |  |
| 7                 | -00                                     |    | •   | Error              |              |             |                            |          |         |          |          |                        |                  |  |
| 8                 |   |    | •   | Warning            |              |             |                            |          |         |          |          |                        |                  |  |
| 9                 | -00                                     | •  | ٠   | Negative_Speed     |              |             |                            |          |         |          |          | OK Canc                | el g nega.       |  |
| 10                | -00                                     |    | •   | Threshold_Error    |              |             |                            |          |         |          |          |                        | error i          |  |
| 11                |   |    | •   | Threshold_Warning  | Real         | -14.0       | -14.0                      | <b>V</b> | <b></b> | <b>~</b> | <b></b>  | Speed limit / if excee | eded a warnin    |  |
| 12                | -00                                     |    | •   | Error              | Bool         | false       | FALSE                      | <b>~</b> |         | <b>~</b> |          | error limit exceeded   |                  |  |
| 13                | -00                                     |    | •   | Warning            | Bool         | false       | FALSE                      | <b>V</b> |         | <b>~</b> |          | warning limit exceed   | ded              |  |
| 14                |   | •  |     | <add new=""></add> |              |             |                            |          |         |          |          |                        |                  |  |

# 7.7 Inicialización de los valores de ajuste / reinicialización de los valores iniciales

→ Haciendo clic en el icono se inicializan los valores de ajuste. Tras ello, en las variables que tienen activada la opción se n "Setpoint", se adoptará como valor actual el valor inicial. (→)

| e 🛃 👟 🛃  | · 🎼 B. B. B. 🖪  | ) 🖿 🔢   | <b>00</b>   |   |                       |           |  |          | _     |   |
|--|---|---|---|---|-----------------------|-----------|--|----------|-------|---|
| SPEED_MO   | TOR   | 3   |   |   |                       |           |  |          |       |   |
| Name   |   | Initialize  | setpoints   | Monitor value   | Retain                | Accessibl | Visible i  | Setpoint | Comm  | ient  |
| 🕣 💌 Static   |   |   |   |   |                       |           |  |          |       |   |
| 📲 🔹 Sp   | eed_Setpoint  | Real  | 14.0  | 13.0  |                       |           |  | <b></b>  | Speed | d set point in revolutions per minute (ran.   |
| 🛥 🔹 Sp   | eed_Actual_Value  | Real  | 0.0   | 15.06981  |                       |           |  |          | Speed | d actual value in revolutions per minute (.   |
| 📲 = 🔻 Po   | sitive_Speed  | Struct  |   |   |                       |           |  |          | Paran | neters for error/warning positive speed   |
|  | Threshold_Error   | Real  | 16.0  | 16.0  | <b>V</b>              |           |  |          | Speed | d limit / if exceeded an error is displayed   |
|  | Threshold_Warning   | Real  | 14.0  | 14.0  | $\checkmark$          |           |  |          | Speed | d limit / if exceeded a warning is displayed  |
|  | Error   | Bool  | false   | TRUE  |                       |           |  |          | error | limit exceeded  |
|  | Warning   | Bool  | false   | FALSE   |                       |           |  |          | warni | ng limit exceeded   |
| 📲 = 🔻 Ne   | gative_Speed  | Struct  |   |   |                       |           |  |          | Paran | neters for error/warning negative speed   |
|  | Threshold_Error   | Real  | -16.0   | -16.0   |                       |           |  |          | Speed | d limit / if exceeded an error is displayed   |
|  | Threshold_Warning   | Real  | -14.0   | -14.0   |                       |           |  |          | Speed | d limit / if exceeded a warning is displayed  |
|  | Error   | Bool  | false   | FALSE   |                       |           |  |          | error | imit exceeded   |
|  | Warning   | Bool  | false   | FALSE   |                       |           |  |          |       | and the second se   |
| 2-600_Glol   | bal_Data_Blocks   | CPU 15  | 16F [CPU  | 1516F-3 PN/   | DP] • Pr              | ogram blo | cks > S  | PEED_M   | otor  | ng limit exceeded [DB2] _ 『   |
| 82-600_Glol  | bal_Data_Blocks   | › CPU15<br>ট≱ ोे [  | 16F [CPU  | 1516F-3 PN/   | DP] → Pr              | ogram blo | cks ► S  | PEED_M   | DTOR  | ng limit exceeded   |
| 2-600_Glo<br>E   | bal_Data_Blocks   | > CPU15<br>ট≱  [  | 16F [CPU  | 1516F-3 PN/   | DP] → Pr              | ogram blo | cks → Si   | PEED_M   |       | ng limit exceeded   |
| 2-600_Glo<br>SPEED_MO<br>Name  | bal_Data_Blocks   | > CPU 15  | 16F [CPU  | 1516F-3 PN/   | DP] > Pr              | ogram blo | cks → Si<br>sibl Visil   | PEED_M   | point | IDB2] _ P   |
| 2-600_Glo<br>SPEED_MC<br>Name<br>Sati  | bal_Data_Blocks   | CPU 15  | 16F [CPU  | 1516F-3 PN  | DP] > Pr              | ogram blo | cks ≻ Sl   | PEED_M   | point | IDB2] _ I   |
| 2-600_Gloi<br>SPEED_MO<br>Name<br>Stati<br>Stati   | bal_Data_Blocks   | CPU15   | 16F [CPU  | 1516F-3 PN  | DP] > Pr              | ogram blo | cks ≻ Sl   | PEED_M   | point | IDB2] _ I   |
| 2-600_Glo<br>* ** ** **<br>SPEED_MO<br>Name<br>** * Stati<br>** * Stati<br>** * Stati  | bal_Data_Blocks   | CPU15   | 16F [CPU<br>Start value<br>14.0<br>0.0  | 1516F-3 PN<br>e Monitor val<br>14.0<br>15.27055   | DP] → Pr              | Access    | cks ► Si<br>sibl Visil   | PEED_MC  | point | IDB2] _ 때<br>Comment<br>Speed set point in revolutions per minu<br>Speed actual value in revolutions per m  |
| 2-600_Glo<br>SPEED_MO<br>Name  | bal_Data_Blocks   | CPU15   | 16F [CPU<br>Start value<br>14.0<br>0.0  | 1516F-3 PN/<br>e Monitor val<br>14.0<br>15.27055  | DP] → Pr              | Access    | cks → Si<br>sibl Visil   | PEED_M   | point | IDB2 – P<br>Comment<br>Speed set point in revolutions per minu<br>Speed actual value in revolutions per m<br>Parameters for error/warning positive sp   |
| 2-600_Glol<br>SPEED_MO<br>Name   | bal_Data_Blocks   | CPU15   | 16F [CPU<br>Start value<br>14.0<br>0.0  | <ul> <li>Monitor val</li> <li>14.0</li> <li>15.27055</li> <li>16.0</li> </ul>   | DP] → Pr              | Access    | cks > S  | PEED_M   | point | IDB2 - I  |
| 2-600_Glo<br>SPEED_MC<br>Name<br>SPEED_Statil<br>SI<br>SI<br>SI<br>SI<br>SI<br>SI<br>SI<br>SI<br>SI<br>SI  | Dal_Data_Blocks   | CPU15     CPU15     Data type     Real     Real     Struct     Real     Real  | 16F [CPU<br>Start value<br>14.0<br>0.0<br>16.0<br>14.0  | <ul> <li>1516F-3 PN/</li> <li>Monitor val</li> <li>14.0</li> <li>15.27055</li> <li>16.0</li> <li>14.0</li> </ul>  | DP] → Pr              | Acces     | cks > S  | PEED_MC  | point | IDB2 - Image Comment<br>Comment<br>Speed set point in revolutions per minu<br>Speed actual value in revolutions per m<br>Parameters for error/warning positive sp<br>Speed limit / if exceeded a marning is di<br>Speed limit / if exceeded a warning is disp   |
| 2-600_Glol<br>SPEED_MO<br>Name   | bal_Data_Blocks   | CPU15     CPU15     Data type     I     Real     Real     Struct     Real     Bool  | 16F (CPU<br>Start value<br>14.0<br>0.0<br>16.0<br>14.0<br>false                                     | <ul> <li>Monitor val</li> <li>14.0</li> <li>15.27055</li> <li>16.0</li> <li>14.0</li> <li>TRUE</li> </ul>   | DP] → Pr              | Access    | cks > Si<br>sibl Visil   | PEED_MC  | point | IDB2 - IT<br>Comment<br>Speed set point in revolutions per minu<br>Speed actual value in revolutions per m<br>Parameters for error/warning positive sp<br>Speed limit / if exceeded an error is disp<br>Speed limit / if exceeded an warning is di<br>error limit exceeded  |
| 2-600_Glol<br>SPEED_MO<br>Name<br>T Stati<br>T Stati<br>T Stati<br>T Stati   | bal_Data_Blocks   | CPU15     Data type     Real     Real     Struct     Real     Bool  | 16F (CPU<br>Start value<br>14.0<br>0.0<br>16.0<br>14.0<br>false                                     | 1516F-3 PN/<br>e Monitor val<br>14.0<br>15.27055<br>16.0<br>14.0<br>TRUE<br>FALSE   | DP]  Pr               | Access    | cks → Si<br>sibl Visil   | PEED_M   | point | IDB2 - Imit exceeded  |
| 2-600_Glol<br>SPEED_MON<br>Name<br>SEED_MON<br>Name<br>SEED_SI<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED<br>SEED | c<br>c<br>c<br>c<br>c<br>c<br>c<br>c<br>c<br>c<br>c<br>c<br>c<br>c  | CPU15     Data type     Real     Real     Real     Real     Real     Bool     Bool     Struct                                   | 16F [CPU<br>Start value<br>14.0<br>0.0<br>16.0<br>14.0<br>false<br>false                            | 1516F-3 PN/           e         Monitor val           14.0           15.27055           16.0           14.0           TRUE           FALSE                            | DP] → Pr<br>ue Retain | Access    | sibl Visi  | PEED_MA  | point | Imit exceeded<br>[DB2] Imit exceeded<br>Comment<br>Speed set point in revolutions per minu<br>Speed actual value in revolutions per m<br>Parameters for error/warning positive sp<br>Speed limit / if exceeded an error is disp<br>Speed limit / if exceeded a warning is di<br>error limit exceeded<br>warning limit exceeded<br>Parameters for error/warning negative sc  |
| 2-600_Gloi<br>SPEED_MO<br>Name<br>- Stati<br>- S<br>- S<br>- S<br>- S<br>- S<br>- S<br>- S<br>- S  | c<br>peed_Setpoint<br>peed_Setpoint<br>peed_Actual_Value<br>ssitive_Speed<br>Threshold_Error<br>Threshold_Warning<br>Error<br>Warning<br>egative_Speed<br>Threshold Error | CPU15     CPU15     Data type     I     Real     Real     Real     Real     Real     Real     Bool     Bool     Struct     Real | 16F [CPU<br>Start value<br>14.0<br>0.0<br>16.0<br>14.0<br>false<br>false<br>-16.0                   | <ul> <li>Monitor val</li> <li>14.0</li> <li>15.27055</li> <li>16.0</li> <li>14.0</li> <li>TRUE</li> <li>FALSE</li> <li>16.0</li> </ul>                                | ue Retain             | Access    | cks > S  | peed_m   | point | Imit exceeded   |
| 2-600_Glol<br>SPEED_MO<br>Name<br>3 Stati<br>3 Stati<br>4 Si<br>4 Si<br>4 Si<br>4 Si<br>4 Si<br>4 Si<br>4 Si<br>4 S  | bal_Data_Blocks   | CPU15     CPU15     Data type     I     Real     Real     Bool     Bool     Struct     Real     Real                            | 16F [CPU<br>Start value<br>14.0<br>0.0<br>16.0<br>14.0<br>false<br>false<br>-16.0<br>-14.0          | <ul> <li>Monitor val</li> <li>14.0</li> <li>15.27055</li> <li>16.0</li> <li>14.0</li> <li>TRUE</li> <li>FALSE</li> <li>-16.0</li> <li>-14.0</li> </ul>                | DP] → Pr              | Acces     | sibl Visi<br>al al a                                      | PEED_M   | point | IDB2  Imit exceeded  Comment  Speed set point in revolutions per minu Speed actual value in revolutions per m Parameters for error/warning positive sp Speed limit / if exceeded an error is disp Speed limit / if exceeded a warning is di error limit exceeded Parameters for error/warning negative s Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp Speed limit / if exceeded an error is disp   |
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| 2-600_Gloi<br>SPEED_MO<br>Name<br>STEED_MO<br>Name<br>STEED<br>SEED_MO<br>Name<br>SEED_MO<br>Name<br>SEED_MO<br>Name<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_MO<br>SEED_M   | bal_Data_Blocks   | CPU15   | 16F [CPU<br>Start value<br>14.0<br>0.0<br>16.0<br>14.0<br>false<br>false<br>-16.0<br>-14.0<br>false | 1516F-3 PN/<br>Monitor val<br>14.0<br>15.27055<br>16.0<br>14.0<br>TRUE<br>FALSE<br>-16.0<br>-14.0<br>FALSE<br>-16.0<br>-14.0<br>FALSE                                 | ue Retain             | Access    | cks → S<br>sibl Visi<br>a (<br>a (<br>a (<br>a (<br>a (<br>a (<br>a (<br>a (<br>a (<br>a ( | PEED_M   | point | IDB2  Comment Comment Speed set point in revolutions per minu Speed actual value in revolutions per m Parameters for error/warning positive sp Speed limit / if exceeded a warning limit exceeded warning limit exceeded Parameters for error/warning negative s Speed limit / if exceeded an error is disp Speed limit / if exceeded |

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 $\rightarrow$  Pueden reinicializarse todos los valores iniciales haciendo clic en el icono  $\stackrel{\bullet}{\Longrightarrow}$ .

| ( - | $(\rightarrow \overset{\bullet}{\Longrightarrow})$   |     |                    |           |             |               |  |              |           |          |  |  |  |  |
|-----|--|-----|--------------------|-----------|-------------|---------------|--|--------------|-----------|----------|--|--|--|--|
| 03  | 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → SPEED_MOTOR [DB2] |     |                    |           |             |               |  |              |           |          |  |  |  |  |
|     |  |     |                    |           |             |               |  |              |           |          |  |  |  |  |
| ġ   | # # <b>• • • • • • • • • •</b>   |     |                    |           |             |               |  |              |           |          |  |  |  |  |
|     | SPE  | ED_ | Reset start values |           |             |               |  |              |           |          |  |  |  |  |
| -   |  | Nam |                    | Data type | Start value | Monitor value | Retain   | Accessibl    | Visible i | Setpoint | Comment  |  |  |  |
| 1   |  | ▼ S | tatic              |           |             |               |  |              |           |          |  |  |  |  |
| 2   |  | •   | Speed_Setpoint     | Real      | 14.0        | 13.0          |  | <b></b>      | <b></b>   | <b></b>  | Speed set point in revolutions per minute (ran.  |  |  |  |
| з   | -00  | •   | Speed_Actual_Value | Real      | 0.0         | 15.27055      | <b></b>  | $\checkmark$ | <b></b>   |          | Speed actual value in revolutions per minute (.  |  |  |  |
| 4   | -00  | • • | Positive_Speed     | Struct    |             |               |  | <b></b>      | <b></b>   |          | Parameters for error/warning positive speed      |  |  |  |
| 5   |  |     | Threshold_Error    | Real      | 16.0        | 16.0          | Image: A start and a start | <b></b>      | <b></b>   | <b></b>  | Speed limit / if exceeded an error is displayed  |  |  |  |
| 6   |  |     | Threshold_Warning  | Real      | 14.0        | 14.0          | Image: A start and a start | <b></b>      | <b></b>   | <b></b>  | Speed limit / if exceeded a warning is displayed |  |  |  |
| 7   |  |     | Error              | Bool      | false       | TRUE          | <b>V</b>   |              | <b></b>   |          | error limit exceeded                             |  |  |  |
| 8   | -00  |     | Warning            | Bool      | false       | FALSE         | <b>V</b>   |              |           |          | warning limit exceeded                           |  |  |  |
| 9   | -  | • • | Negative_Speed     | Struct    |             |               |  |              |           |          | Parameters for error/warning negative speed      |  |  |  |
| 10  |  |     | Threshold_Error    | Real      | -16.0       | -16.0         | Image: A start and a start |              |           |          | Speed limit / if exceeded an error is displayed  |  |  |  |
| 11  |  |     | Threshold_Warning  | Real      | -14.0       | -14.0         |  |              |           |          | Speed limit / if exceeded a warning is displayed |  |  |  |
| 12  |  |     | Error              | Bool      | false       | FALSE         |  |              |           |          | error limit exceeded                             |  |  |  |
| 13  | -  |     | Warning            | Bool      | false       | FALSE         | 2  |              |           |          | warning limit exceeded                           |  |  |  |

| 03       | 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → SPEED_MOTOR [DB2] |    |  |              |                |                |                               |           |           |              |  |  |  |  |
|----------|--|----|--|--------------|----------------|----------------|-------------------------------|-----------|-----------|--------------|--|--|--|--|
|          |  |    |  |              |                |                |                               |           |           |              |  |  |  |  |
|          | 2 2 2 4 5 5 6 6 E 🔢 🕾  |    |  |              |                |                |                               |           |           |              |  |  |  |  |
|          | SPEED_MOTOR  |    |  |              |                |                |                               |           |           |              |  |  |  |  |
|          |  | Na | me   | Data type    | Start value    | Monitor value  | Retain                        | Accessibl | Visible i | Setpoint     | Comment  |  |  |  |
| 1        |  | -  | Static                                     |              |                |                |                               |           |           |              |  |  |  |  |
| 2        |  | -  | Speed_Setpoint                             | Real         | 0.0            | 13.0           | <b></b>                       |           | <b></b>   | $\checkmark$ | Speed set point in revolutions per minute (ran.  |  |  |  |
| з        | -00  | •  | Speed_Actual_Value                         | Real         | 0.0            | 15.27055       | <b></b>                       |           | <b></b>   |              | Speed actual value in revolutions per minute (.  |  |  |  |
| 4        |  | •  | <ul> <li>Positive_Speed</li> </ul>         | Struct       |                |                | <b></b>                       |           | <b></b>   |              | Parameters for error/warning positive speed      |  |  |  |
| 5        |  |    | Threshold_Error                            | Real         | 0.0            | 16.0           |                               |           | <b></b>   | <b></b>      | Speed limit / if exceeded an error is displayed  |  |  |  |
| 6        |  |    | Threshold_Warning                          | Real         | 0.0            | 14.0           |                               |           | <b></b>   | $\checkmark$ | Speed limit / if exceeded a warning is displayed |  |  |  |
| 7        |  |    | <ul> <li>Error</li> </ul>                  | Bool         | false          | TRUE           |                               |           | <b></b>   |              | error limit exceeded                             |  |  |  |
| 8        |  |    | <ul> <li>Warning</li> </ul>                | Bool         | false          | FALSE          |                               | <b></b>   | <b></b>   |              | warning limit exceeded                           |  |  |  |
| 9        |  | •  | <ul> <li>Negative_Speed</li> </ul>         | Struct       |                |                | <b></b>                       |           | <b></b>   |              | Parameters for error/warning negative speed      |  |  |  |
| 10       |  |    | Threshold_Error                            | Real         | 0.0            | -16.0          |                               |           | <b></b>   | <b></b>      | Speed limit / if exceeded an error is displayed  |  |  |  |
| 11       |  |    | Threshold_Warning                          | Real         | 0.0            | -14.0          |                               |           | <b></b>   | <b></b>      | Speed limit / if exceeded a warning is displayed |  |  |  |
| 12       |  |    | <ul> <li>Error</li> </ul>                  | Bool         | false          | FALSE          | <b>~</b>                      |           | <b></b>   |              | error limit exceeded                             |  |  |  |
| 13       |  |    | <ul> <li>Warning</li> </ul>                | Bool         | false          | FALSE          |                               |           | <b></b>   |              | warning limit exceeded                           |  |  |  |
| 12<br>13 | -<br>-   |    | <ul> <li>Error</li> <li>Warning</li> </ul> | Bool<br>Bool | false<br>false | FALSE<br>FALSE | <ul><li>✓</li><li>✓</li></ul> |           |           |              | error limit exceeded<br>warning limit exceeded   |  |  |  |

#### 7.8 Instantáneas en bloques de datos

→ Haciendo clic en el icono Puede realizarse una instantánea de los valores observados, a fin de adoptar dichos valores como valores iniciales o cargarlos de nuevo a la CPU más tarde.

 $(\rightarrow \mathbb{R})$ 

|          |   | CPU1516F [CPU       | 1516F-3 PN/D | P] 🕨 Program blo | cks 🕨 SPEEI  | D_MOTOR [DI  | 32]        |          | _ # = X                    |  |  |  |  |
|----------|---|---------------------|--------------|------------------|--|--------------|------------|----------|----------------------------|--|--|--|--|
|          |   |                     |              |                  |  |              |            |          |                            |  |  |  |  |
| 🥩 🔮 🍕    | ی 🎝 🎝 🎀   | 🕾 🛃 😼               |              |                  |  |              |            |          | <b></b>                    |  |  |  |  |
| SPEED_N  | SPEED_MOTOR <sup>VS</sup> snapshot created: 7/29/2015 7:53:09 AM)   |                     |              |                  |  |              |            |          |                            |  |  |  |  |
| Name     | Snapshot of the second seco | ne monitored values | Start value  | Monitor value    | Retain   | Accessible f | Visible in | Setpoint | Comment                    |  |  |  |  |
| 1 🕣 🔻 St | atic  |                     |              |                  |  |              |            |          |                            |  |  |  |  |
| 2 📲      | Speed_Setpoint  | Real 🔳              | 14.0         | 13.0             |  |              |            | <b></b>  | Speed set point in revolu. |  |  |  |  |
| 3 📲 🔳    | Speed_Actual_Value  | Real                | 0.0          | 15.19097         |  |              | <b></b>    |          | Speed actual value in rev. |  |  |  |  |
| 4 📶 = 🔻  | Positive_Speed  | Struct              |              |                  |  |              |            |          | Parameters for error/war   |  |  |  |  |
| 5 📶 🔹    | Threshold_Error   | Real                | 16.0         | 15.0             | <b>~</b>   |              |            | <b></b>  | Speed limit / if exceeded  |  |  |  |  |
| 6 📲 🔹    | Threshold_Warning   | Real                | 14.0         | 10.0             | $\checkmark$   |              | <b></b>    | <b>~</b> | Speed limit / if exceeded  |  |  |  |  |
| 7 📶 🔳    | Error   | Bool                | false        | TRUE             | <b>~</b>   |              | <b></b>    |          | error limit exceeded       |  |  |  |  |
| 8 📲 🔹    | Warning   | Bool                | false        | FALSE            | <b>~</b>   |              |            |          | warning limit exceeded     |  |  |  |  |
| 9 🕣 🗖 🔻  | Negative_Speed  | Struct              |              |                  |  |              | <b></b>    |          | Parameters for error/war   |  |  |  |  |
| 10 🕣 🔳   | Threshold_Error   | Real                | -16.0        | -16.0            | $\checkmark$   |              | <b></b>    | <b>~</b> | Speed limit / if exceeded  |  |  |  |  |
| 11 🕣 🔹   | Threshold_Warning   | Real                | -14.0        | -14.0            | <b>~</b>   |              |            | <b></b>  | Speed limit / if exceeded  |  |  |  |  |
| 12 📲 🔳   | Error   | Bool                | false        | FALSE            | <b>~</b>   |              |            |          | error limit exceeded       |  |  |  |  |
| 13 📶 📲   | Warning   | Bool                | false        | FALSE            | Image: A start and a start |              |            |          | warning limit exceeded     |  |  |  |  |
|          |   |                     |              |                  |  |              |            |          |                            |  |  |  |  |



→ La adopción de los valores de la instantánea se puede realizar también haciendo clic en el icono el icono para todos los valores o haciendo clic en el icono solo para los valores iniciales. Normalmente solo se necesitan los valores iniciales.

 $(\rightarrow \overset{\bullet}{\overset{\bullet}{\overset{\bullet}{\overset{\bullet}}}})$ 

| 032-600_Global_Data_Block | s → CPU1516F [CPU         | 1516F-3 PN/I   | DP] 🕨 Program       | blocks            | MOTOR [DB2 | ]            |            | -        | ∎≡×   |
|---------------------------|---------------------------|----------------|---------------------|-------------------|------------|--------------|------------|----------|-------|
|                           |                           |                |                     |                   |            |              |            |          |       |
| SPEED MOTOR (snapshot     | created: 7/29/2015 7      | :54:43 AM)     |                     |                   |            |              |            |          |       |
| Name Copy a               | ll values from the "Snaps | hot" column to | the "Start value" c | olumn nitor value | Retain     | Accessible f | Visible in | Setpoint | Com   |
| 1 🕣 💌 Static              |                           |                |                     |                   |            |              |            |          |       |
| 2 📲 Speed_Setpoint        | Real                      | 14.0           | 13.0                | 13.0              | <b></b>    |              |            |          | Spee  |
| 3 📲 Speed_Actual_Value    | Real                      | 0.0            | 15.19097            | 15.64308          |            |              |            |          | Spee  |
| 4 📲 💌 Positive_Speed      | Struct                    |                |                     |                   |            |              |            |          | Para  |
| 5 📲 🔹 Threshold_Error     | Real                      | 16.0           | 15.0                | 15.0              | <b>~</b>   |              |            |          | Spee  |
| 6 🕣 🔹 Threshold_Warni     | ng Real                   | 14.0           | 10.0                | 10.0              | <b>~</b>   |              |            |          | Spee  |
| 7 📲 Error                 | Bool                      | false          | TRUE                | TRUE              | <b>~</b>   |              |            |          | error |
| 8 📶 🔹 Warning             | Bool                      | false          | FALSE               | FALSE             | <b>~</b>   | <b></b>      |            |          | warni |
| 9 📹 🔹 🔻 Negative_Speed    | Struct                    |                |                     |                   | <b>~</b>   | <b></b>      |            |          | Para  |
| 10 🕘 🔹 Threshold_Error    | Real                      | -16.0          | -16.0               | -16.0             | <b>~</b>   | <b></b>      |            |          | Spee  |
| 11 🕣 🔹 Threshold_Warni    | ng Real                   | -14.0          | -14.0               | -14.0             | <b>~</b>   | <b></b>      |            |          | Spee  |
| 12 💷 📮 Error              | Bool                      | false          | FALSE               | FALSE             | <b>~</b>   |              |            |          | error |
| 13 🕣 🔹 Warning            | Bool                      | false          | FALSE               | FALSE             | <b>V</b>   | <b></b>      | <b></b>    |          | warni |
|                           |                           |                |                     |                   |            |              |            |          |       |

| 03 | 2-6 | 00  | _GI | obal_Data_Blocks   | CPU1516F [CPU          | 1516F-3 PN/DP]    | Program blo          | ocks 🕨 SPEED_MO | TOR [DB2] |              |            | -        | ∎≡×   |
|----|-----|-----|-----|--------------------|------------------------|-------------------|----------------------|-----------------|-----------|--------------|------------|----------|-------|
|    |     |     |     |                    |                        |                   |                      |                 |           |              |            |          |       |
| 1  | 1   | ÷ 1 | •   | By 📭 🛃 🙀 🕹 (       | s 🖹 🔢 🕾                |                   |                      |                 |           |              |            |          |       |
|    | SP  | EEC | D_M | OTOR (snapshot cre | eated: 7/29/2015 7:    | :54:43 AM)        |                      |                 |           |              |            |          |       |
|    |     | Na  | me  | Copy all           | setpoints from the "Si | hapshot" column t | to the "Start value" | column value    | Retain    | Accessible f | Visible in | Setpoint | Com   |
| 1  | -0  | •   | Sta | tic                |                        |                   |                      |                 |           |              |            |          |       |
| 2  | -00 | •   |     | Speed_Setpoint     | Real 🔳                 | 14.0              | 13.0                 | 13.0            | <b></b>   |              | <b></b>    |          | Spee  |
| з  | -00 | •   |     | Speed_Actual_Value | Real                   | 0.0               | 15.19097             | 15.64308        | <b></b>   |              | <b></b>    |          | Spee  |
| 4  | -00 | •   | •   | Positive_Speed     | Struct                 |                   |                      |                 | <b></b>   |              |            |          | Para  |
| 5  | -00 |     | •   | Threshold_Error    | Real                   | 16.0              | 15.0                 | 15.0            | <b>V</b>  |              |            |          | Spee  |
| 6  | -00 |     | •   | Threshold_Warning  | Real                   | 14.0              | 10.0                 | 10.0            | <b>V</b>  |              | <b></b>    |          | Spee  |
| 7  | -00 |     | •   | Error              | Bool                   | false             | TRUE                 | TRUE            | <b>V</b>  |              | <b></b>    |          | error |
| 8  | -00 |     | •   | Warning            | Bool                   | false             | FALSE                | FALSE           | <b>V</b>  |              |            |          | warni |
| 9  | -00 | •   | •   | Negative_Speed     | Struct                 |                   |                      |                 | <b></b>   |              |            |          | Para  |
| 10 | -00 |     | •   | Threshold_Error    | Real                   | -16.0             | -16.0                | -16.0           | <b>V</b>  |              |            |          | Spee  |
| 11 | -00 |     | •   | Threshold_Warning  | Real                   | -14.0             | -14.0                | -14.0           | <b>V</b>  |              |            |          | Spee  |
| 12 | -00 |     | •   | Error              | Bool                   | false             | FALSE                | FALSE           | <b>V</b>  |              |            |          | error |
| 13 | -00 |     | •   | Warning            | Bool                   | false             | FALSE                | FALSE           | <b>V</b>  |              |            |          | warni |
|    |     |     |     |                    |                        |                   |                      |                 |           |              |            |          |       |

| 03 | 2-6 | 00_0 | lobal_Data_Blocks   | CPU1516F [CPU      | 1516F-3 PN/DI | P] 🕨 Program b | locks 🕨 SPEED_M | OTOR [DB2]  |  |              | -        | ∎∎×   |
|----|-----|------|---------------------|--------------------|---------------|----------------|-----------------|---|--|--------------|----------|-------|
|    |     |      |                     |                    |               |                |                 |   |  |              |          |       |
| 1  | 1   |      | 🛃 🐺 🌉 🛃 I           | s 🗄 🔢 🚏            |               |                |                 |   |  |              |          | -     |
|    | SPE | ED_  | MOTOR (snapshot cre | ated: 7/29/2015 7: | 54:43 AM)     |                |                 |   |  |              |          |       |
|    |     | Name | •                   | Data type          | Start value   | Snapshot       | Monitor value   | Retain  | Accessible f   | Visible in   | Setpoint | Com   |
| 1  |     | ▼ St | tatic               |                    |               |                |                 |   |  |              |          |       |
| 2  | -   | •    | Speed_Setpoint      | Real 🔳             | 13.0          | 13.0           | 13.0            |   |  | <b></b>      |          | Spee  |
| 3  | -   | •    | Speed_Actual_Value  | Real               | 0.0           | 15.19097       | 15.64308        |   |  |              |          | Spee  |
| 4  | -00 | • •  | Positive_Speed      | Struct             |               |                |                 |   |  |              |          | Para  |
| 5  | -00 |      | Threshold_Error     | Real               | 15.0          | 15.0           | 15.0            | <ul> <li>Image: A start of the start of</li></ul> |  |              |          | Spee  |
| 6  | -00 |      | Threshold_Warning   | Real               | 10.0          | 10.0           | 10.0            | <ul> <li>Image: A start of the start of</li></ul> |  | $\checkmark$ | <b></b>  | Spee  |
| 7  | -00 |      | Error               | Bool               | false         | TRUE           | TRUE            | <ul> <li>Image: A start of the start of</li></ul> |  | $\checkmark$ |          | error |
| 8  | -00 |      | Warning             | Bool               | false         | FALSE          | FALSE           | <b>V</b>  | Image: A start and a start | <b></b>      |          | warni |
| 9  | -00 | • •  | Negative_Speed      | Struct             |               |                |                 |   | <b></b>  |              |          | Para  |
| 10 | -   |      | Threshold_Error     | Real               | -16.0         | -16.0          | -16.0           | <ul> <li>Image: A set of the set of the</li></ul> |  | <b></b>      |          | Spee  |
| 11 | -   |      | Threshold_Warning   | Real               | -14.0         | -14.0          | -14.0           |   |  | <b></b>      |          | Spee  |
| 12 | -   |      | Error               | Bool               | false         | FALSE          | FALSE           | Image: A start and a start          |  |              |          | error |
| 13 | -00 |      | Warning             | Bool               | false         | FALSE          | FALSE           | <ul> <li>Image: A start of the start of</li></ul> |  |              |          | warni |
|    |     |      |                     |                    |               |                |                 |   |  |              |          |       |

 → Para volver a cargar en la CPU los datos guardados temporalmente en la instantánea, haga clic en el icono .

(→➡)

| 03 | 2-6 | 0.0 | Global Data Blocks                 | CPU1516F [CPU          | 1516E-3 PN/DP      | Program blo          | ocks ▶ SPEED MO | TOR [DB2] |              |            |          |       |
|----|-----|-----|------------------------------------|------------------------|--------------------|----------------------|-----------------|-----------|--------------|------------|----------|-------|
|    |     |     |                                    |                        |                    |                      |                 |           |              |            |          |       |
|    |     |     |                                    |                        |                    |                      |                 |           |              |            |          |       |
| 2  | 1   | •   | ७ 🗗 👫 🕵 🕵 📢                        | B 📰 🔢 🔁                |                    |                      |                 |           |              |            |          |       |
|    | SPE | ED  | _MOTOR (snapshot cr                | eated: 7/29/2015 7     | :54:43 AM)         |                      |                 |           |              |            |          |       |
|    |     | Nan | ne 🕨                               | Copy all values from t | he snapshot to the | e actual values of t | he CPU r value  | Retain    | Accessible f | Visible in | Setpoint | Com   |
| 1  | -   | •   | Static                             |                        |                    |                      |                 |           |              |            |          |       |
| 2  | -   | •   | Speed_Setpoint                     | Real 🔳                 | 13.0               | 13.0                 | 14.0            |           |              | <b></b>    |          | Spee  |
| З  | -00 | •   | Speed_Actual_Value                 | Real                   | 0.0                | 15.19097             | 15.06981        |           | $\sim$       | <b></b>    |          | Spee  |
| 4  | -00 | •   | <ul> <li>Positive_Speed</li> </ul> | Struct                 |                    |                      |                 |           | $\sim$       | <b></b>    |          | Para  |
| 5  | -00 |     | Threshold_Error                    | Real                   | 15.0               | 15.0                 | 15.0            |           | $\sim$       | <b></b>    |          | Spee  |
| 6  | -   |     | Threshold_Warning                  | Real                   | 10.0               | 10.0                 | 10.0            | <b>V</b>  | $\sim$       | <b></b>    |          | Spee  |
| 7  | -   |     | <ul> <li>Error</li> </ul>          | Bool                   | false              | TRUE                 | TRUE            | <b>V</b>  |              | <b></b>    |          | error |
| 8  | -00 |     | <ul> <li>Warning</li> </ul>        | Bool                   | false              | FALSE                | FALSE           |           | $\sim$       | <b></b>    |          | warni |
| 9  | -00 | •   | <ul> <li>Negative_Speed</li> </ul> | Struct                 |                    |                      |                 |           | $\sim$       | <b></b>    |          | Para  |
| 10 | -00 |     | Threshold_Error                    | Real                   | -16.0              | -16.0                | -16.0           |           | $\sim$       | <b></b>    |          | Spee  |
| 11 | -   |     | Threshold_Warning                  | Real                   | -14.0              | -14.0                | -14.0           | <b>V</b>  | $\sim$       | <b></b>    |          | Spee  |
| 12 | -   |     | <ul> <li>Error</li> </ul>          | Bool                   | false              | FALSE                | FALSE           | <b>V</b>  | $\sim$       | <b></b>    |          | error |
| 13 |     |     | <ul> <li>Warning</li> </ul>        | Bool                   | false              | FALSE                | FALSE           |           | $\sim$       | <b></b>    |          | warni |
|    |     |     |                                    |                        |                    |                      |                 |           |              |            |          |       |

| 0.   |   |   |     |                    |         |       |          |          |          |              |              |  |       |  |
|--|---|---|-----|--------------------|---------|-------|----------|----------|----------|--------------|--------------|--|-------|--|
|  |   |   |     |                    |         |       |          |          |          |              |              |  |       |  |
| ∌  | 1   | 6 | •   | 🛃 🐺 🛃 🐼 I          | 🕹 🗮 🔢 🛸 |       |          |          |          |              |              |  |       |  |
| SPEED_MOTOR (snapshot created: 7/29/2015 7:54:43 AM) |   |   |     |                    |         |       |          |          |          |              |              |  |       |  |
|  | Name Data type Start value Snapshot Monitor value Retain Accessible f Visible in Setpoint |   |     |                    |         |       |          |          |          |              |              |  | Com   |  |
| 1  |   | - | Sta | tic                |         |       |          |          |          |              |              |  |       |  |
| 2  |   |   |     | Speed_Setpoint     | Real 🔳  | 13.0  | 13.0     | 13.0     |          |              | <b></b>      |  | Spee  |  |
| з  | -00   | • |     | Speed_Actual_Value | Real    | 0.0   | 15.19097 | 15.06981 |          |              | $\checkmark$ |  | Spee  |  |
| 4  | -00   | • | •   | Positive_Speed     | Struct  |       |          |          | <b>~</b> | $\checkmark$ | <b>~</b>     |  | Para  |  |
| 5  |   |   | •   | Threshold_Error    | Real    | 15.0  | 15.0     | 15.0     | <b>V</b> | $\checkmark$ |              |  | Spee  |  |
| 6  |   |   | •   | Threshold_Warning  | Real    | 10.0  | 10.0     | 10.0     | <b>~</b> |              | <b></b>      |  | Spee  |  |
| 7  |   |   | •   | Error              | Bool    | false | TRUE     | TRUE     | <b>V</b> |              |              |  | error |  |
| 8  | -00   |   | •   | Warning            | Bool    | false | FALSE    | FALSE    | <b>V</b> |              | $\checkmark$ |  | warni |  |
| 9  | -00   | • | •   | Negative_Speed     | Struct  |       |          |          | <b></b>  | <b>~</b>     |              |  | Para  |  |
| 10   |   |   | •   | Threshold_Error    | Real    | -16.0 | -16.0    | -16.0    | <b>V</b> | $\checkmark$ |              |  | Spee  |  |
| 11   |   |   | •   | Threshold_Warning  | Real    | -14.0 | -14.0    | -14.0    | <b>V</b> |              | <b></b>      |  | Spee  |  |
| 12   |   |   | •   | Error              | Bool    | false | FALSE    | FALSE    | <b>~</b> |              | <b></b>      |  | error |  |
| 13   |   |   | •   | Warning            | Bool    | false | FALSE    | FALSE    | <b>~</b> |              | $\checkmark$ |  | warni |  |
|  |   |   |     |                    |         |       |          |          |          |              |              |  |       |  |

 $\rightarrow$  Si desea sobrescribir todos los valores de ajuste con los valores iniciales, haga clic en

Los valores de la CPU para los que no se ha activado la opción "Setpoint" se conservarán.

 $(\rightarrow \textcircled{b})$ 

| 03 | 2-6 | 00_ | Global_Data_Blocks                    | CPU1516F [CPU        | 1516F-3 PN/[ | OP] 🕨 Program | blocks 🔸 SPEED_I | MOTOR [DB2] |              |            | -        | ∎ ≡×  |
|----|-----|-----|---------------------------------------|----------------------|--------------|---------------|------------------|-------------|--------------|------------|----------|-------|
|    |     |     |                                       |                      |              |               |                  |             |              |            |          |       |
| 1  | 1   | >   | 5 🛃 💘 🛃 🛃                             | Br 🖿 🔢 🙄             |              |               |                  |             |              |            |          |       |
|    | SP  | EED | _MOTOR (snapshot cre                  | Initialize setpoints | 54:43 AM)    |               |                  |             |              |            |          |       |
|    |     | Nan | ne                                    | Data type            | Start value  | Snapshot      | Monitor value    | Retain      | Accessible f | Visible in | Setpoint | Com   |
| 1  |     | •   | Static                                |                      |              |               |                  |             |              |            |          |       |
| 2  |     | •   | Speed_Setpoint                        | Real 🔳               | 13.0         | 13.0          | 14.0             |             |              |            | <b></b>  | Spee  |
| з  |     | •   | Speed_Actual_Value                    | Real                 | 0.0          | 15.19097      | 15.06981         |             |              | <b></b>    |          | Spee  |
| 4  |     | •   | <ul> <li>Positive_Speed</li> </ul>    | Struct               |              |               |                  |             |              |            |          | Para  |
| 5  |     |     | Threshold_Error                       | Real                 | 15.0         | 15.0          | 15.0             |             |              |            | <b></b>  | Spee  |
| 6  | -   |     | <ul> <li>Threshold_Warning</li> </ul> | Real                 | 10.0         | 10.0          | 10.0             | <b>~</b>    |              |            | <b></b>  | Spee  |
| 7  |     |     | <ul> <li>Error</li> </ul>             | Bool                 | false        | TRUE          | TRUE             | <b>~</b>    |              | <b></b>    |          | error |
| 8  |     |     | <ul> <li>Warning</li> </ul>           | Bool                 | false        | FALSE         | FALSE            |             |              |            |          | warni |
| 9  | -   | •   | <ul> <li>Negative_Speed</li> </ul>    | Struct               |              |               |                  |             | $\checkmark$ |            |          | Para  |
| 10 |     |     | Threshold_Error                       | Real                 | -16.0        | -16.0         | -16.0            | <b>v</b>    |              | <b></b>    | <b></b>  | Spee  |
| 11 | -   |     | Threshold_Warning                     | Real                 | -14.0        | -14.0         | -14.0            |             |              |            | <b></b>  | Spee  |
| 12 | -   |     | <ul> <li>Error</li> </ul>             | Bool                 | false        | FALSE         | FALSE            | <b>~</b>    |              |            |          | error |
| 13 | -   |     | <ul> <li>Warning</li> </ul>           | Bool                 | false        | FALSE         | FALSE            | <b>v</b>    | <b></b>      |            |          | warni |
|    |     |     |                                       |                      |              |               |                  |             |              |            |          |       |



#### 7.9 Ampliación del bloque de datos y carga sin reinicialización

ightarrow Para habilitar la "Download without reinitialization" (Carga sin reinicialización) para el

bloque de datos "SPEED\_MOTOR" [DB2], debe seleccionar offline para, a continuación, abrir las propiedades del bloque de datos.

IA Siemens - G:\Automation\032-600 Global Data Blocks\032-600 Global [ Totally Integrated Automation PORTAL Edit View Insert Online Options Tools Project 📑 🖥 Save project 📑 🐰 🟥 🗎 🗙 崎 🗄 🥵 🖥 🔃 🟠 🖳 🎇 💋 Go online 🖉 ₩ 🖪 🖪 🗶 🖃 💷 Project tree Devices III ask 3 O O 🔲 🛃 ▶₽ № ₽ ₽ ₽ ₽ Ш 2 SPEED\_MOTOR (snapshot created: 7/29/2015 7:54:43 AM) MOTOR\_AUTO [FB1] Data type Start valu Snapshot Accessible f... Visible in Name Setpoint П MOTOR\_AUTO\_DB [DB1] - 00-Static SPEED MOTOR [DB2] Real 13.0 13.0 Speed set point in revolution pint SPEED\_MOTOR [D
 General source files
 General source files
 General source files Open Real Struct Real Speed actual value in revoluto.. Speed actual value in revolu Parameters for error/warning Speed limit / if exceeded an . Speed limit / if exceeded a w L\_Value 15.19097 Ctrl+X ed Ctrl+C \_Error Copy 15.0 15.0 PLC data types
 Watch and force tables \_Warning Real 10.0 10.0 Copy as text Bool false TRUE error limit exceeded warning limit exceeded Parameters for error/warning Speed limit / if exceeded an . Speed limit / if exceeded a w Add new watch table Bool false FALSE X Delete Del Force table Watch table\_1 Conline backups Traces Struct Real eed Rename F2 -16.0 -14.0 -16.0 -14.0 \_Error  $\overline{\mathbf{P}}$ Compile \_Warning Real Download to device Bool false false FALSE error limit exceeded 💋 Go online 🔊 Go offine Program info
 Program info
 Device proxy data
 PLC alarms
 Text lists
 Local modules Ctrl+K Bool FALSE warning limit exceeded Snapshot of the monitor values Apply snapshot values as start values Generate source from blocks Gommon data Cross-reference information Shift+F1 Generation settings
 Generation settings X Cross-references F11 **Q** Properties Info Diagnostics Call structure ferences Compile Syntax Switch programming language • ages Know-how protection 
 Date
 Time

 7/29/2015
 8:05:08 AM

 7/29/2015
 8:06:50 AM
 昌 Print... 鹶 Print preview. Ctrl+P iccessfully written to the PLC > Details view 1516F terminated. Q Alt+Enter Portal vi

 $(\rightarrow \overset{\text{Go offline}}{\longrightarrow} \rightarrow \text{SPEED}_{MOTOR} [DB2] \rightarrow \text{Properties} [Propiedades])$ 

→ En las propiedades, active en "General" la casilla en el atributo "Optimized block access" (Acceso optimizado al bloque).

 $(\rightarrow \text{General} \rightarrow \text{Attributes} [\text{Atributos}] \rightarrow \blacksquare \text{Optimized block access} [\text{Acceso optimizado al bloque}])$ 

| SPEED_MOTOR [DB2]   |   | × |
|---|---|---|
| General   |   |   |
| General<br>Information  | Attributes  |   |
| Time stamps   |   |   |
| Protection<br>Attributes<br>Download without reinitialization | <ul> <li>Only store in load memory</li> <li>Data block write-protected in the device</li> <li>Optimized block access</li> </ul> |   |
|   |   |   |
|   | < III CANCEL  |   |

→ Para "Download without reinitialization" (Carga sin reinicialización), asigne al bloque de datos una "Retentive memory reserve" (Reserva en la memoria remanente).
 (→ Download without reinitialization [Carga sin reinicialización] → Retentive memory reserve [Reserva en la memoria remanente] → 10 bytes → OK)

| SPEED_MOTOR [DB2]                          | ×   |
|--|---|
| General                                    |   |
| General                                    | Download without reinitialization   |
| Time stamps<br>Compilation<br>Protection   | Memory reserve: 100 Bytes (100 bytes available)   |
| Attributes<br>Download without reinitializ | Enable download without reinitialization for     retentive tags.     Retentive memory reserve 10 Bytes (10 bytes available) |
| < m  |   |
|  | Cancel  |

 $\rightarrow~$  Tras ello, cargue su bloque de datos "SPEED\_MOTOR" [DB] de nuevo en el controlador

y seleccione ጆ 🛛 online

| $(\rightarrow \text{SPEED}_\text{MOTOR} [\text{DB}] \rightarrow \blacksquare$ - | → <b>↓</b> | ø | Go online | ) |
|---|------------|---|-----------|---|
|---|------------|---|-----------|---|

| A Siemens - G:\Automation\032-600_Global_Data | _Blocks  | 032-       | 500_GI                  | lobal_Data_Blocks                     |                      |              |          |        |                 |                |              |                             |      |
|---|----------|------------|-------------------------|---------------------------------------|----------------------|--------------|----------|--------|-----------------|----------------|--------------|-----------------------------|------|
| Project Edit View Insert Online Options To    | ols W    | indow      | Help                    |                                       |                      | m mi sai     |          |        |                 |                | Totally      | Integrated Automation       | 1    |
| 📑 📑 🔚 Save project 📕 🐰 🏣 🗐 🗙 🏷 🗄              | (~! ±    | <u>i</u> L |                         | 📱 🔝 🎽 Go online                       | Go offline           |              |          |        |                 |                |              | POR                         | AL   |
| Project tree                                  | 1 📢 🛛    | 32-6       | 00 Gl                   | obal Data Blocks                      |                      |              |          |        |                 |                |              |                             | i×,  |
| Devices                                       |          |            | Down                    | load to device                        |                      |              |          |        |                 |                |              |                             |      |
|   |          | 67 =67     |                         |                                       |                      |              |          |        |                 |                |              |                             | -    |
|   |          | CDE        | ED M                    |                                       |                      |              |          |        |                 |                |              |                             | •    |
| T 022 600 Clabal Data Blacks                  |          | SFL        |                         | NION                                  | Data tara            | Construction | Carachas | Detain | A susselfille & | And the second | Constant     | Comment                     |      |
| Add new device                                | <u>^</u> |            | Name                    |                                       | Data type            | Start value  | snapsnot | Retain | Accessible f    | visible in     | . setpoint   | Comment                     |      |
| Add new device                                | 1        | <b>U</b>   | <ul> <li>Sta</li> </ul> | tic<br>Canad Cataziat                 | Deal                 | 12.0         |          |        |                 |                |              | Consideration in the second |      |
|   | 2        |            |                         | Speed_Setpoint                        | Real                 | 15.0         |          |        |                 |                | Sec.         | Speed set point in revolu   | uo   |
| Device configuration                          | 2        |            |                         | Speed_Actual_value                    | Carried              | 0.0          |          |        |                 |                |              | Speed actual value in rev   |      |
| Online & diagnostics                          |          |            |                         | Thrachold Error                       | Real                 | 15.0         |          |        |                 |                |              | Encod limit / if overaided  | ang. |
| Program blocks                                | = 6      |            | - 2                     | Threshold_Uterning                    | Peal                 | 10.0         |          |        |                 |                |              | Speed limit / if exceeded   | a    |
| Add new block                                 | - 0      |            |                         | Error                                 | Rool                 | falce        |          |        |                 |                |              | arror limit avreeded        | u    |
| - Main [OB1]                                  | 8        | -          |                         | Warning                               | Bool                 | false        |          |        |                 |                | H            | warning limit exceeded      |      |
| MOTOR SPEEDCONTROL [EC10]                     | 9        | -          |                         | Negative Speed                        | Struct               | iona c       |          |        |                 |                |              | Parameters for error/warr   | nina |
| MOTOR SPEEDMONITORING [FC11]                  | 1        | 0 - 61     |                         | Threshold Error                       | Real                 | -16.0        |          |        |                 |                |              | Speed limit / if exceeded   | an   |
| MOTOR AUTO [FB1]                              | 1        | 1 -50      |                         | Threshold Warning                     | Real                 | -14.0        |          |        |                 |                |              | Speed limit / if exceeded   | a w  |
| MOTOR AUTO DB [DB1]                           | 1        | 2 - 51     |                         | Error                                 | Bool                 | false        |          |        |                 |                | - E          | error limit exceeded        |      |
| SPEED MOTOR [DB2]                             | 1        | 3 🚮        |                         | Warning                               | Bool                 | false        |          |        |                 |                | - E          | warning limit exceeded      |      |
| Technology objects                            |          |            |                         | , , , , , , , , , , , , , , , , , , , |                      |              |          |        |                 |                |              |                             |      |
| External source files                         |          |            |                         |                                       |                      |              |          |        |                 |                |              |                             |      |
| PLC tags                                      |          |            |                         |                                       |                      |              |          |        |                 |                |              |                             |      |
| PLC data types                                |          |            |                         |                                       |                      |              |          |        |                 |                |              |                             |      |
| <ul> <li>Watch and force tables</li> </ul>    |          |            |                         |                                       |                      |              |          |        |                 |                |              |                             |      |
| Add new watch table                           |          | <          |                         |                                       |                      |              |          |        |                 |                |              |                             | >    |
| Force table                                   |          |            |                         |                                       |                      |              |          |        | Q Proper        | ties 🛝         | Info 🛽 😵     | Diagnostics                 |      |
| Watch table_1                                 |          | 6          |                         |                                       |                      | 6.1          |          |        |                 | 1              |              |                             |      |
| Online backups                                |          | Gen        | erai                    | Cross-references                      | Compile              | Syntax       |          |        |                 |                |              |                             |      |
| Traces  |          | 3 🔺        | 0                       | Show all messages                     | •                    |              |          |        |                 |                |              |                             |      |
| 🔤 Program info                                |          |            |                         |                                       |                      |              |          |        |                 |                |              |                             |      |
| Device proxy data                             | 1        | Me         | ssage                   |                                       |                      |              |          | Go to  | ? Dat           | e Tir          | ne           |                             |      |
|   | ~ (      | >          | Conne                   | ected to CPU1516F, add                | ress IP=192.168.0.1. |              |          |        | 7/2             | 9/2015 8:      | 13:45 AM     |                             | ^    |
| > Details view                                | <        | 2          | Conne                   | ection to CPU1516F term               | ninated.             |              |          |        | 7/2             | 9/2015 8:      | 14:10 AM     |                             | ~    |
| Portal view     Portal view                   | Main     |            |                         | Watch table_1 🗧 Si                    | PEED MOTOR           |              |          |        |                 | 🗸 Col          | nection to C | PU1516F terminated.         |      |

→ Ahora, active la carga sin reinicialización haciendo clic en el icono <sup>1</sup>/<sub>2</sub> y confirme la pregunta de seguridad con "OK".

| $(\rightarrow \blacksquare \rightarrow \bigcirc$ | DK) |
|--|-----|
|--|-----|

| 03 | 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → SPEED_MOTOR [DB2] |     |                                    |           |          |                    |          |           |           |          |  |
|----|--|-----|------------------------------------|-----------|----------|--------------------|----------|-----------|-----------|----------|--|
|    |  |     |                                    |           |          |                    |          |           |           |          |  |
| Ť  | *** ** ** ** ** ** ** ** ** ** ** ** **  |     |                                    |           |          |                    |          |           |           |          |  |
|    | SPEED MOTOR  |     |                                    |           |          |                    |          |           |           |          |  |
| _  |  | Nam | e                                  | Data type | Download | d without reinitia | lization | Accessibl | Visible i | Setpoint | Comment  |
| 1  | -0   | • 9 | tatic                              |           |          |                    |          |           |           |          |  |
| 2  |  | •   | Speed_Setpoint                     | Real      | 13.0     | 13.0               | <b></b>  |           | <b></b>   | <b>~</b> | Speed set point in revolutions per minute (ran.  |
| З  | -  | •   | Speed_Actual_Value                 | Real      | 0.0      | 15.27055           | <b></b>  |           | <b></b>   |          | Speed actual value in revolutions per minute (.  |
| 4  | -  | • • | <ul> <li>Positive_Speed</li> </ul> | Struct    |          |                    | <b></b>  |           | <b></b>   |          | Parameters for error/warning positive speed      |
| 5  | -  |     | Threshold_Error                    | Real      | 15.0     | 15.0               | <b>V</b> |           | <b></b>   | <b></b>  | Speed limit / if exceeded an error is displayed  |
| 6  | -  |     | Threshold_Warning                  | Real      | 10.0     | 10.0               | <b>V</b> |           | <b></b>   | <b></b>  | Speed limit / if exceeded a warning is displayed |
| 7  |  |     | Error                              | Bool      | false    | TRUE               | <b>~</b> |           | <b>~</b>  |          | error limit exceeded                             |
| 8  | -  |     | Warning                            | Bool      | false    | FALSE              | <b>V</b> | <b></b>   | <b></b>   |          | warning limit exceeded                           |
| 9  | -  | •   | <ul> <li>Negative_Speed</li> </ul> | Struct    |          |                    | <b></b>  |           | <b></b>   |          | Parameters for error/warning negative speed      |
| 10 | -  |     | Threshold_Error                    | Real      | -16.0    | -16.0              | <b>V</b> |           | <b></b>   | <b></b>  | Speed limit / if exceeded an error is displayed  |
| 11 | -  |     | Threshold_Warning                  | Real      | -14.0    | -14.0              |          |           | <b></b>   | <b></b>  | Speed limit / if exceeded a warning is displayed |
| 12 | -  |     | Error                              | Bool      | false    | FALSE              | <b>~</b> |           | <b></b>   |          | error limit exceeded                             |
| 13 | -  |     | Warning                            | Bool      | false    | FALSE              | <b>V</b> |           |           |          | warning limit exceeded                           |
|    |  |     |                                    |           |          |                    |          |           |           |          |  |

×

Cancel

#### Activation (0601:000020)

# Do you want to enable the block function "Load without reinitialization"?

You can download the following changes to the block interface in "RUN" mode without having to reinitialize the program. The number of possible changes is limited. You can specify the size of the memory reserved for changes under "Options > Settings". Please note that changes which were made before activating the memory reserve may cause a reinitialization.

DOK.

 $\rightarrow$  Ahora inserte una variable cualquiera en su bloque de datos.

( $\rightarrow$  Name: [Nombre] Value\_test  $\rightarrow$  Data type: [Tipo de datos] Real  $\rightarrow$  Start value: [Valor inicial] 99)

| 03 | 032-600_Global_Data_Blocks → CPU1516F [CPU 1516F-3 PN/DP] → Program blocks → SPEED_MOTOR [DB2] |     |     |                    |           |             |              |  |   |  |  |
|----|--|-----|-----|--------------------|-----------|-------------|--------------|--|---|--|--|
|    |  |     |     |                    |           |             |              |  |   |  |  |
| 2  | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2  |     |     |                    |           |             |              |  |   |  |  |
|    | SPEED_MOTOR  |     |     |                    |           |             |              |  |   |  |  |
|    |  | Nar | me  |                    | Data type | Start value | Retain       | Accessibl  | Visible i   | Setpoint   | Comment  |
| 1  |  | •   | Sta | atic               |           |             |              |  |   |  |  |
| 2  | -  | •   |     | Speed_Setpoint     | Real      | 13.0        |              | <b>V</b>   |   | <b></b>  | Speed set point in revolutions per minute (range: +/-50 rpm)   |
| З  | -  | •   |     | Speed_Actual_Value | Real      | 0.0         | <b>V</b>     | <b>V</b>   | <ul> <li>Image: A start of the start of</li></ul> |  | Speed actual value in revolutions per minute (range: +/-50 rpm |
| 4  | -00  | •   | •   | Positive_Speed     | Struct    |             | <b>V</b>     | <b>V</b>   |   |  | Parameters for error/warning positive speed                    |
| 5  | -  |     | •   | Threshold_Error    | Real      | 15.0        |              | <b>V</b>   | $\checkmark$  | Image: A start and a start | Speed limit / if exceeded an error is displayed                |
| 6  |  |     | •   | Threshold_Warning  | Real      | 10.0        |              |  |   | <b>~</b>   | Speed limit / if exceeded a warning is displayed               |
| 7  |  |     | •   | Error              | Bool      | false       | <b>V</b>     | <b>V</b>   |   |  | error limit exceeded   |
| 8  | -  |     | •   | Warning            | Bool      | false       |              | Image: A start and a start |   |  | warning limit exceeded   |
| 9  |  | •   | •   | Negative_Speed     | Struct    |             | $\checkmark$ |  |   |  | Parameters for error/warning negative speed                    |
| 10 | -  |     | •   | Threshold_Error    | Real      | -16.0       |              | <b>V</b>   |   | <b></b>  | Speed limit / if exceeded an error is displayed                |
| 11 | -  |     | •   | Threshold_Warning  | Real      | -14.0       | $\checkmark$ | Image: A start and a start |   | <b></b>  | Speed limit / if exceeded a warning is displayed               |
| 12 |  |     | •   | Error              | Bool      | false       | <b>V</b>     | Image: A start and a start |   |  | error limit exceeded   |
| 13 | -  |     | •   | Warning            | Bool      | false       |              | <b>V</b>   |   |  | warning limit exceeded   |
| 14 | -00  | •   |     | Value_Test         | Real 🔳    | 99.0        |              |  |   |  |  |
| 15 | [  | •   |     | <add new=""></add> |           |             |              |  |   |  |  |
|    |  |     |     |                    |           |             |              |  |   |  |  |

 $\rightarrow$  Cargue de nuevo su bloque de datos "SPEED\_MOTOR" [DB] en el controlador.

 $(\rightarrow SPEED\_MOTOR [DB] \rightarrow \blacksquare \rightarrow Download)$ 

| 🚻 Siemens - G:VA  | utomation\032-600_Global_Data_Bl | ocks\032  | -600_Global_                                       | Data_Blocks                        |           |               |             |   |   |  | _ • >  |
|---|----------------------------------|-----------|--|------------------------------------|-----------|---------------|-------------|---|---|--|--|
| Project Edit Vie  | w Insert Online Options Tools    | Window    | / Help   |                                    |           |               |             |   |   |  | Totally Integrated Automation                                |
| 📑 📑 🔚 Save pro  | oject 进 🐰 🏥 🗎 🗙 らさ 🧨             | - B I     | L 🖸 😐 🛯  | 🖡 🚿 Go online 💋 Go o               | ffline    | 17 🖪 🖪        | * 🗆 💷       |   |   |  | PORTAL   |
| Project tree  |                                  |           | San con  | Data Blocks                        | CPU1      | 516F [CPU     | 1516F-3 PN  | /DP1 ▶ Pro  | gram blo  | cks ▶ S                                | PEED MOTOR [DB2]   |
| Daviasa   |                                  |           | Download   |                                    |           |               |             |   |   |  |  |
| Devices   |                                  | _         |  |                                    |           |               |             |   |   |  |  |
| B 0 0   |                                  | <u> </u>  | 22   |                                    | ₿ E       |               |             |   |   |  |  |
| .2  |                                  |           | SPEED_   | _MOTOR                             |           |               |             |   |   |  |  |
| • 032-600_G   | lobal_Data_Blocks                | • •       | Nam  | ie                                 | Data typ  | be Start valu | e Retain    | Accessibl   | Visible i   | Setpoint                               | Comment  |
| Add nev   | w device                         |           | 1 🕣 🕶  | Static                             | Devel     | 12.0          |             |   |   |  |  |
|   | ISE [CPU 1516E-3 PN/DP]          |           | 2  | Speed_Setpoint                     | Real      | 13.0          | ▼           |   |   |  | Speed set point in revolutions per minute (range: +i-50 rpm) |
|   | ice configuration                | ••        | 4  | Positive Speed                     | Struct    | 0.0           |             |   |   |  | Parameters for error/warning positive speed                  |
| 🖁 🐰 Onli  | ine & diagnostics                |           | 5 🕣 🛛  | Threshold_Error                    | Real      | 15.0          | ×           |   | <ul> <li>Image: A start of the start of</li></ul> |  | Speed limit / if exceeded an error is displayed              |
| 👻 😓 Prog  | gram blocks                      |           | 6 🕣 🛛  | Threshold_Warning                  | Real      | 10.0          |             |   |   |  | Speed limit / if exceeded a warning is displayed             |
| 📑 🖉 F   | Add new block                    |           | 7 🕣 🛛  | Error                              | Bool      | false         |             | <ul> <li>Image: A start of the start of</li></ul> | <ul> <li>Image: A start of the start of</li></ul> |  | error limit exceeded   |
| 🛥 M   | Main [OB1]                       | •         | 8 📲 🛛  | Warning                            | Bool      | false         | <b>V</b>    | <b>v</b>  | <b>v</b>  |  | warning limit exceeded                                       |
|   | MOTOR_SPEEDCONTROL [FC10]        | •         | 9 📲 •  | <ul> <li>Negative_Speed</li> </ul> | Struct    |               |             |   |   |  | Parameters for error/warning negative speed                  |
|   | MOTOR_SPEEDMONITORING [FC11]     |           | 10 - 10  | Threshold_Error                    | Real      | -16.0         |             |   | ¥   |  | Speed limit / if exceeded an error is displayed              |
|   |                                  |           |  | Threshold_Warning                  | Real      | -14.0         |             |   |   |  | Speed limit / if exceeded a warning is displayed             |
|   | SPEED_MOTOR [DB2]                |           | 12 13  | Warning                            | Bool      | false         |             |   |   |  | enor minit exceeded  |
| E Tech  | hnology objects                  |           | 14 -   | Value Test                         | Real      | 99.0          |             |   |   |  | warning intra exceeded                                       |
| Exte  | ernal source files               |           | 15   | <add new=""></add>                 |           |               |             |   |   |  |  |
| 🕨 🗦 🔁 PLC   | tags                             |           |  |                                    |           |               |             |   |   |  |  |
| 🕨 🕨 📘 🕨   | data types                       |           | <  |                                    |           |               |             |   | in .  |  |  |
| 👻 🥅 Wate  | ch and force tables              |           |  |                                    |           |               |             |   | 🔍 Pi  | roperties 🚺 Info 👔 🗓 Diagnostics 💿 💷 🗸 |  |
| <u> </u>  | Add new watch table              |           | Gonoral  | Cross references                   |           | ompilo        | Syntax (1)  |   |   |  |  |
| Si F  | Force table                      |           |  |                                    |           | mpne [        | Syntax 🔒    |   |   |  |  |
|   | Watch table_1                    |           |  | Show all messages                  |           |               |             |   |   |  |  |
| Image: Contract of the second seco | ine backups                      |           |  |                                    |           |               |             |   |   |  |  |
| Ma Proc   | tram info                        |           | ! Message  |                                    |           |               |             |   |   | Go to                                  | ? Date Time  |
| Devi  | ice proxy data                   |           | 5 setpoint values successfully written to the PLC. |                                    |           |               |             |   |   |  | 7/30/2015 6:29:17 PM   |
| PLC   | alarms                           | ~         |  | apected to CPU1516F term           | recc IP-1 | 97 168 0 1    |             |   |   |  | 7/30/2015 6:30:09 PM   |
| > Details view  | w                                |           |  | incelled to crororor, add          | 103311-1  | 52.100.0.1.   |             |   |   |  | 715012015 0.52.491W  |
| 4. Destal view  | Wat Overview                     | h table 1 |  |                                    |           |               |             |   |   |  |  |
| Load preview  | efore loading                    | -         | -  |                                    | -         | -             | -           | -   | ×   |  |  |
| Canada I  | Taxaat                           | Mar       |  |                                    |           | Action        |             |   | _   |  |  |
|   |                                  | ivies     | sage<br>du teo loc d'                              |                                    |           | Action        |             |   |   |  |  |
| •0 🕑  | <ul> <li>CPU1516F</li> </ul>     | Rea       | dy for load  | ng.                                |           |               |             |   |   |  |  |
|   |                                  |           |  |                                    |           |               |             |   |   |  |  |
| S   | <ul> <li>Software</li> </ul>     | Dov       | vnload soft  | ware to device                     |           | Con           | sistent dow | nload   |   |  |  |
| <ul> <li>Overwrite online?</li> <li>Objour</li> </ul>   |                                  |           | ects that ex<br>rwritten.                          | ist online and are                 |           |               |             |   |   |  |  |
| Main [OB1]  |                                  |           |  |                                    |           | Ove           | rwrite      |   |   |  |  |
| SPEED_MOTOR [DB2]   |                                  |           |  |                                    |           | ✓ Ove         | rwrite      |   |   |  |  |
| -   |                                  |           |  |                                    |           |               |             |   |   |  |  |
|   |                                  |           |  |                                    |           |               |             | Refresh   |   |  |  |
|   |                                  |           |  | Fin                                | iish      | ₿.La          | ad          | Cancel  |   |  |  |

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→ Si vuelve a visualizar el bloque haciendo clic en "<sup>™</sup>", verá que los valores observados no han sido sobrescritos por los valores iniciales.

| ( -   | $(\rightarrow \square)$  |     |           |                    |           |             |               |  |  |  |          |  |
|-------|--|-----|-----------|--------------------|-----------|-------------|---------------|--|--|--|----------|--|
| 03    | 032-600_Global_Data_Blocks   CPU1516F [CPU 1516F-3 PN/DP]   Program blocks   SPEED_MOTOR [DB2] |     |           |                    |           |             |               |  |  |  |          |  |
| - III | ·····································  |     |           |                    |           |             |               |  |  |  |          |  |
| _     | SP   | EEI | )_ <br>me | MOTOR              | Data type | Start value | Monitor value | Retain   | Accessibl  | Visible i  | Setpoint | Comment  |
| 1     |  | -   | St        | atic               |           |             |               |  |  |  |          |  |
| 2     |  |     |           | Speed_Setpoint     | Real      | 13.0        | 14.0          |  |  |  | <b></b>  | Speed set point in revolutions per minute (ran   |
| з     |  | •   |           | Speed_Actual_Value | Real      | 0.0         | 0.0           | <b>~</b>   |  | <b>~</b>   |          | Speed actual value in revolutions per minute (.  |
| 4     |  | •   | •         | Positive_Speed     | Struct    |             |               |  | Image: A start and a start | <b>V</b>   |          | Parameters for error/warning positive speed      |
| 5     | -  | 1   | •         | Threshold_Error    | Real      | 15.0        | 17.0          | $\checkmark$   | Image: A start and a start | <b>V</b>   | <b>~</b> | Speed limit / if exceeded an error is displayed  |
| 6     |  | 1   | •         | Threshold_Warning  | Real      | 10.0        | 12.0          | Image: A start and a start | Image: A start and a start | Image: A start and a start | <b>~</b> | Speed limit / if exceeded a warning is displayed |
| 7     |  | 1   | •         | Error              | Bool      | false       | FALSE         | <b>V</b>   | Image: A start of the start |  |          | error limit exceeded                             |
| 8     |  | 1   | •         | Warning            | Bool      | false       | FALSE         | $\checkmark$   | $\checkmark$   | $\checkmark$   |          | warning limit exceeded                           |
| 9     |  | •   | ٠         | Negative_Speed     | Struct    |             |               | $\checkmark$   |  | $\checkmark$   |          | Parameters for error/warning negative speed      |
| 10    |  |     | •         | Threshold_Error    | Real      | -16.0       | -16.0         | $\checkmark$   | $\checkmark$   | $\checkmark$   | <b></b>  | Speed limit / if exceeded an error is displayed  |
| 11    |  | 1   | •         | Threshold_Warning  | Real      | -14.0       | -14.0         | $\checkmark$   |  | <b>V</b>   | <b></b>  | Speed limit / if exceeded a warning is displayed |
| 12    |  | 1   | •         | Error              | Bool      | false       | FALSE         | $\checkmark$   | $\checkmark$   | $\checkmark$   |          | error limit exceeded                             |
| 13    |  | 1   | •         | Warning            | Bool      | false       | FALSE         | $\checkmark$   | $\checkmark$   | $\checkmark$   |          | warning limit exceeded                           |
| 14    |  | •   |           | Value_Test         | Real      | 99.0        | 99.0          | <b>~</b>   | <b>V</b>   | $\checkmark$   |          |  |
|       |  |     |           |                    |           |             |               |  |  |  |          |  |

#### 7.10 Archivado del proyecto

00

→ Finalmente, archivaremos el proyecto completo. Seleccione la opción → "Archive ..." (Archivar) en la opción de menú → "Project" (Proyecto). Seleccione la carpeta en la que desee archivar el proyecto y guárdelo con el tipo de archivo "TIA Portal project archive" (Archivos de proyecto del TIA Portal).

 $(\rightarrow \text{Project} [\text{Proyecto}] \rightarrow \text{Archive} [\text{Archivar}] \rightarrow \text{TIA Portal project archive} [\text{Archivos de proyecto del TIA Portal}] \rightarrow 032-600_Global_Data_Blocks... \rightarrow \text{Save [Guardar]})$ 

| VA Siemens - G:\Automation\032-600_Glo    | obal_Dat | ta_Blo | cks  | 032     | 600 | _Global_Data_Blocks                |             |             |  |  |   |          | _ 0 :                                   | ×  |
|---|----------|--------|------|---------|-----|------------------------------------|-------------|-------------|--|--|---|----------|---|----|
| Project Edit View Insert Online Op        | ptions 1 | Tools  | Wi   | ndov    | r F | Help                               |             |             |  |  |   | То       | tally Integrated Automation             |    |
| 🚰 New                                     | ) ÷      | e 🗠 🗄  | 1    | a I     |     | î 🖳 🔝 💋 Go online 🔬                | 🖉 Go offlin | e 🛵 🖪       | 🖪 🛪 🗖  | H TH E   |   | 10       | PORTAL                                  |    |
| - 🞦 Open Ct                               | rl+0     | -<br>- |      | 60      | 0 ( | Clobal Data Blocks N (             | 01115165    |             |  |  | m blocks  | > CDEE   |   | -  |
| Migrate project                           |          |        |      | 00      | 0_0 | SIODAI_DATA_DIOCKS V (             | .FU15101    |             |  | j 🕐 Plogia   | III DIOCKS  | 9 JFLL   |   |    |
| Close Ct                                  | rl+W     |        |      |         |     |                                    |             |             |  |  |   |          |   | 2  |
| 🔚 Save Ct                                 | trl+S    | III 🖬  | ۲I   | ÷ :     | *   | 5 B 12 B B B                       | 3. E 🛽      |             |  |  |   |          |   | 1  |
| Save as Ctrl+Shi                          | ift+S    |        |      | _ د     | PEE | D_MOTOR                            |             |             |  |  |   |          |   | 5  |
| Delete project Ct                         | trl+E    |        | ~    |         | N   | ame                                | Data type   | Start value | Retain   | Accessibl  | Visible i   | Setnoint | Comment                                 |    |
| Archive                                   |          |        |      | 1 4     |     | Static                             | bota type   | Start value |  |  |   |          | L Comment                               |    |
| Retrieve K                                |          |        |      | 2 4     |     | Speed Setpoint                     | Real 🔳      | 13.0        |  |  |   |          | Speed set point in revolutions per      | ş. |
| T Card Reader/USB memory                  | •        |        | 1    | 3 🚽     |     | Speed_Actual_Value                 | Real        | 0.0         |  |  |   | Ā        | Speed actual value in revolutions p.    |    |
| The Memory card file                      | •        |        | _    | 4 🔫     |     | <ul> <li>Positive_Speed</li> </ul> | Struct      |             |  |  |   |          | Parameters for error/warning positi     | 5  |
| Upgrade                                   |          |        | 16   | 5 ⊀     |     | Threshold_Error                    | Real        | 15.0        |  | Image: A start and a start | <b>V</b>  |          | Speed limit / if exceeded an error is . |    |
|   |          |        |      | 6       |     | Threshold_Warning                  | Real        | 10.0        | Image: A start and a start |  | <b>V</b>  | <b></b>  | Speed limit / if exceeded a warning .   |    |
| A Print preview                           | un+r     |        |      | 7 ⊀     |     | <ul> <li>Error</li> </ul>          | Bool        | false       | <b>V</b>   | <b>V</b>   | <b>V</b>  |          | error limit exceeded                    |    |
| a mit preview                             |          |        |      | в \prec |     | <ul> <li>Warning</li> </ul>        | Bool        | false       | <b>V</b>   | $\checkmark$   | <b>V</b>  |          | warning limit exceeded                  |    |
| G:lAutomatio1032-600_Global_Data_Bloc     | ks       |        |      | 9 \prec | •   | <ul> <li>Negative_Speed</li> </ul> | Struct      |             | $\checkmark$   | $\checkmark$   | <b>V</b>  |          | Parameters for error/warning negati.    |    |
| G:Automation\zu1032_300_PID_Contro        | 0 1]     |        |      | 10 🔫    |     | Threshold_Error                    | Real        | -16.0       | Image: A start and a start | <b>V</b>   | $\checkmark$  | <b></b>  | Speed limit / if exceeded an error is . |    |
| GlAutomation/052-3/052-300_PID_Contro     |          |        |      | 11 🔫    |     | Threshold_Warning                  | Real        | -14.0       |  |  |   |          | Speed limit / if exceeded a warning .   |    |
| d.ixutomationiosiosz_soo_knalog_valu      |          |        |      | 12      |     | <ul> <li>Error</li> </ul>          | Bool        | false       |  |  |   |          | error limit exceeded                    |    |
| Exit                                      |          |        |      | 13      |     | <ul> <li>Warning</li> </ul>        | Bool        | false       |  |  |   |          | warning limit exceeded                  |    |
| Technology objects                        |          |        |      | 14      | •   | Value_Test                         | Real        | 99.0        |  |  | <ul> <li>Image: A start of the start of</li></ul> |          |   |    |
| <ul> <li>External source files</li> </ul> |          |        |      |         |     |                                    |             |             |  |  |   |          |   |    |
| PLC tags                                  |          |        |      |         |     |                                    |             |             |  |  |   |          |   |    |
| Whiteh and force tables                   |          |        |      |         |     |                                    |             |             |  |  |   |          |   |    |
| Add pewwatch table                        |          |        |      |         |     |                                    |             |             |  |  |   |          |   |    |
| Fill Force table                          |          |        |      |         |     |                                    |             |             |  |  |   |          |   |    |
| Watch table 1                             |          |        | ~    |         | ¢   |                                    |             |             |  |  |   |          | >                                       |    |
| > Details view                            |          | _      | -1   |         |     |                                    |             |             |  | Q Proper   | ties 📍  | Linfo 🔒  | Diagnostics                             |    |
| A Deute Luieux                            |          | Wate   | h ta | bla 1   |     |                                    |             |             |  |  |   |          | An CRUITE 1 CE torm instead             | -  |

# 8 Lista de comprobación

| N.º | Descripción   | Comprobado |
|-----|---|------------|
| 1   | Bloque de datos SPEED_MOTOR [DB2] creado correctamente.   |            |
| 2   | Cambios de programa en Main [OB1] realizados.   |            |
| 3   | Compilación correcta y sin avisos de error  |            |
| 4   | Carga correcta y sin avisos de error  |            |
| 5   | Conexión de la instalación (-K0 = 1)<br>Cilindro introducido/respuesta activada (-B1 = 1)<br>Parada de emergencia (-A1 = 1) no activada<br>Modo de operación AUTOMÁTICO (-S0 = 1)<br>Pulsador de parada automática no accionado (-S2 = 1)<br>Accionar brevemente el pulsador de arranque automático<br>(-S1 = 1)<br>Sensor deslizador ocupado, activado (-B4 = 1)<br>A continuación se conecta Motor de cinta -M1 velocidad<br>variable (-Q3 = 1) y permanece activo.<br>La velocidad coincide con la consigna de velocidad dentro del<br>rango +/-50 rpm |            |
| 6   | Sensor fin de cinta, activado (-B7 = 1) $\rightarrow$ -Q3 = 0; al cabo de 2 segundos,   |            |
| 7   | accionar brevemente el pulsador Parada automática (-S2 = 0)<br>$\rightarrow$ -Q3 = 0  |            |
| 8   | Activar PARADA DE EMERGENCIA (-A1 = 0) $\rightarrow$ -Q3 = 0  |            |
| 9   | Modo de operación Manual (-S0 = 0) $\rightarrow$ -Q3 = 0  |            |
| 10  | Desconectar la instalación (-K0 = 0) $\rightarrow$ -Q3 = 0  |            |
| 11  | Cilindro no introducido (-B1 = 0) $\rightarrow$ -Q3 = 0   |            |
| 12  | Velocidad > Límite de velocidad fallo máx. $\rightarrow$ -Q3 = 0  |            |
| 13  | Velocidad < Límite de velocidad fallo mín. $\rightarrow$ -Q3 = 0  |            |
| 14  | Proyecto archivado correctamente  |            |

# 9 Ejercicio

#### 9.1 Tarea planteada: ejercicio

En este ejercicio se creará otro bloque de datos global denominado "ALMACÉN\_PLÁSTICO" [DB3].

En este bloque de datos se definirán y se mostrarán respectivamente la consigna y el valor real del contador de piezas de plástico.

Para ello, se agregarán al bloque de función "MOTOR\_AUTO" [FB1] una entrada conectable para la especificación de la consigna y una salida para la visualización del valor real.

#### 9.2 Esquema tecnológico

Aquí se muestra el esquema tecnológico para la tarea.



Figura 5: Esquema tecnológico



Figura 6: Panel de control

## 9.3 Tabla de asignación

| DI    | Тіро | Identificación | Función  | NC/NA                           |
|-------|------|----------------|--|---------------------------------|
| I 0.0 | BOOL | -A1:           | Aviso PARADA DE EMERGENCIA ok  | NC                              |
| I 0.1 | BOOL | -K0            | Instalación "ON"   | NA                              |
| 10.2  | BOOL | -S0            | Interruptor selección de modo manual<br>(0)/automático (1)                       | Manual = 0<br>Automático<br>= 1 |
| 10.3  | BOOL | -S1            | Pulsador inicio automático   | NA                              |
| I 0.4 | BOOL | -S2            | Pulsador parada automática   | NC                              |
| I 0.5 | BOOL | -B1            | Sensor cilindro-M4 introducido   | NA                              |
| I 1.0 | BOOL | -B4            | Sensor deslizador ocupado  | NA                              |
| I 1.3 | BOOL | -B7            | Sensor de pieza al final de la cinta   | NA                              |
| EW64  | BOOL | -B8            | Sensor de valor real de velocidad del motor,<br>+/-10 V corresponden a +/-50 rpm |                                 |

Para esta tarea se necesitan las siguientes señales como operandos globales.

| DO    | Тіро | Identificación | Función   |  |
|-------|------|----------------|---|--|
| Q 0.2 | BOOL | -Q3            | Motor de cinta-M1 velocidad variable  |  |
| QW 64 | BOOL | -U1            | Consigna de velocidad del motor en dos<br>direcciones, +/-10 V corresponden a +/-50 rpm |  |

#### Leyenda de la lista de asignación

- DI Entrada digital DO Salida digital
- Al Entrada analógica AO Salida analógica
- I Entrada Q Salida
- NC Contacto normalmente cerrado
- NA Contacto normalmente abierto

#### 9.4 Planificación

Ahora, planifique por su cuenta la implementación de la tarea.

# 9.5 Lista de comprobación: ejercicio

| N.º | Descripción  | Comprobado |
|-----|--|------------|
| 1   | Bloque de datos ALMACÉN_PLÁSTICO [DB3] creado<br>correctamente.  |            |
| 2   | Cambios de programa en MOTOR_AUTO [FB1] realizados.  |            |
| 3   | Cambios de programa en Main [OB1] realizados.  |            |
| 4   | Compilación correcta y sin avisos de error   |            |
| 5   | Carga correcta y sin avisos de error   |            |
| 6   | Conexión de la instalación (-K0 = 1)<br>Cilindro introducido/respuesta activada (-B1 = 1)<br>Parada de emergencia (-A1 = 1) no activada<br>Modo de operación AUTOMÁTICO (-S0 = 1)<br>Pulsador de parada automática no accionado (-S2 = 1)<br>Accionar brevemente el pulsador de arranque automático<br>(-S1 = 1)<br>Sensor deslizador ocupado, activado (-B4 = 1)<br>A continuación se conecta Motor de cinta -M1 velocidad<br>variable (-Q3 = 1) y permanece conectado.<br>La velocidad coincide con la consigna de velocidad dentro del<br>rango +/-50 rpm |            |
| 7   | Sensor fin de cinta, activado (-B7 = 1) $\rightarrow$ -Q3 = 0; al cabo de 2 segundos,  |            |
| 8   | accionar brevemente el pulsador Parada automática (-S2 = 0)<br>$\rightarrow$ -Q3 = 0   |            |
| 9   | Activar PARADA DE EMERGENCIA (-A1 = 0) $\rightarrow$ -Q3 = 0   |            |
| 10  | Modo de operación Manual (-S0 = 0) $\rightarrow$ -Q3 = 0   |            |
| 11  | Desconectar la instalación (-K0 = 0) $\rightarrow$ -Q3 = 0   |            |
| 12  | Cilindro no introducido (-B1 = 0) $\rightarrow$ -Q3 = 0  |            |
| 13  | Velocidad > Límite de velocidad fallo máx. $\rightarrow$ -Q3 = 0   |            |
| 14  | Velocidad < Límite de velocidad fallo mín. $\rightarrow$ -Q3 = 0   |            |
| 15  | Proyecto archivado correctamente   |            |

# 10Información adicional

Si desea familiarizarse más con los materiales y profundizar su conocimiento, encontrará información adicional como, p. ej.: primeros pasos, vídeos, tutoriales, aplicaciones, manuales, guías de programación y versiones de prueba del software y el firmware, todo en el siguiente enlace:

www.siemens.com/sce/s7-1500