

### How to connect CMMT to an OMRON PLC in Sysmac Studio via Ethernet/IP

This document will go through a Step by Step description of what must be done to connect CMMT to an OMRON PLC through Ethernet/IP and how to control via ProfiDrive.

CMMT

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## 1 Components/Software used

| Type/Name                      | Version Software/Firmware | Date of manufacture |
|--------------------------------|---------------------------|---------------------|
| CMMT-AS                        | V018.0.5.62_release       | 2020                |
| Festo Automation Suite         | 2.0.1.9                   | 2020                |
| CMMT-AS Plug-In                | 20.01.8                   | 2020                |
| NJ301-1100 Omron PLC           | 1.10                      | --                  |
| Sysmac Studio Standard Edition | Ver.1.16                  | --                  |

Table 1.1: 1 Components/Software used



### Information

This AppNote describes the procedure with the CMMT-AS motor controller. The CMMT-AS servo drive controller and CMMT-ST servo drive controller for extra-low voltage are based on the same software platform. Therefore, the described settings can also be used as a reference for its parameterization. It is hereby expressly pointed out, that this has not been explicitly tested and therefore the function cannot be guaranteed!



## 2 FAS configuration

### 2.1 Create a new project in FAS

Create a new project in FAS which represent your required HW-components.

### 2.2 CMMT Drive Parameterisation for Integrate with PLC

#### 2.2.1 IP scan and setting in FAS

The screenshot displays the FAS configuration software interface. The 'PARAMETERISATION' tab is active. In the top left, a device 'CMMT-AS-C2-3A-EP-S1' is shown with its 'Path' set to '192.168.1.1' and status 'Disconnected'. A red box highlights the 'Connect' button. On the right, the 'Device Communication' dialog is open, showing the IP address '192.168.1.1' entered in the text field. Below this, a table lists 'Available Devices'.

| Status                              | Identify                 | Device Name        | Device Type     | Address     |
|-------------------------------------|--------------------------|--------------------|-----------------|-------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | CMMT-AS-C2-3A-E... | CMMT-AS-C2-3... | 192.168.1.1 |

Below the table, a red box highlights the 'Use IP Address for Device Communication' button. The 'Drive configuration' panel on the left shows a tree view with 'Fieldbus' selected, and 'Servo drive' chosen under 'Please select the correct device'.

1. Click the IP address “**Path**” from tool bar.
2. Select the correct drive based on IP address & select “**Use IP Address for Device Communication**” but-ton to assign path address.
3. Click on “**Connect**” button to establish communication & status of the drive changes from Disconnected to Connected.

## 2.2.2 Factor group setting

**Factor group**

|                   |                                                                                                                   |   |
|-------------------|-------------------------------------------------------------------------------------------------------------------|---|
| Current user unit | Rev [rev, rpm, ...] (3)                                                                                           | ■ |
| Position          |  <input type="text" value="-6"/> | ■ |
| Velocity          |  <input type="text" value="-3"/> | ■ |

Enter the Position & Velocity command scale factor value of fieldbus. User can reach the Factor group in Automation Suite from **PARAMETERISATION > Fieldbus > Factor group**.

Example - 1 PLC scale value is calculated below for move the linear axis 10 mm in 1 m/s speed.

Position Factor (-6) =  $10^{-6} = 0.000001 = 1\mu\text{m}$  Then For 10 mm = 1000000 Increment value in PLC

Velocity Factor (-3) =  $10^{-3} = 0.001 = 1\text{mm/s}$  Then for 1 m/s = 1000 Increment value in PLC

Example - 2 PLC scale value is calculated below for move the rotary axis 5 Rev in 100 RPM speed.

Position Factor (-6) =  $10^{-6} = 0.000001 \text{ Rev}$  Then For 5 Rev = 5000000 Increment value in PLC

Velocity Factor (-3) =  $10^{-3} = 0.001 \text{ RPM}$  Then for 100 RPM = 100000 Increment value in PLC

## 2.2.3 Reference values setting

**Reference values**

|                                 |                                                                                                                          |       |   |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------|---|
| Base value velocity (user unit) |  <input type="text" value="3000.00"/> | rpm   | ■ |
| Base value speed (controller)   | <input type="text" value="3000.00"/>                                                                                     | rpm   | ■ |
| Base value acceleration         | <input type="text" value="600.00"/>                                                                                      | rpm/s | ■ |
| Base value deceleration         | <input type="text" value="600.00"/>                                                                                      | rpm/s | ■ |

Enter the actual Base speed value, Acceleration & Deceleration values of the application in the respective numeric fields.

**Note**

- Base speed value does not affect the speed of the drive but it will effect on display value of the drive.
- The AOI tag "**BaseSpeedValue**" tag must have same value as the FAS parameter value that is (FAS = P1.11280701.0.0).



2.2.4 EtherNet/IP interface setting

**EtherNet/IP interface**

**Configuration**

|                 |                                 |   |
|-----------------|---------------------------------|---|
| Activate DHCP   | <input type="checkbox"/> Active | ■ |
| IP address      | 192 . 168 . 1 . 2               | ■ |
| Subnet mask     | 255 . 255 . 255 . 0             | ■ |
| Gateway address | 0 . 0 . 0 . 0                   | ■ |

Ether the IP address & Subnet mask for EtherNet/IP interface. This communication interface is used to establish connection with PLC to receive control command & to send signal feedbacks. And it will take effect after reboot CMMT



**Note**

IP address series of EtherNet/IP interface must match with PLC IP address series to establish connection.

2.2.5 Telegram selection

**Connection properties**

|                           |                         |   |
|---------------------------|-------------------------|---|
| Telegram selection        | Telegram (111) ▼        | ■ |
| Current application class | Application class 1 (1) | ■ |

2.2.6 Store parameter

  
Store on device

  
Load factory settings

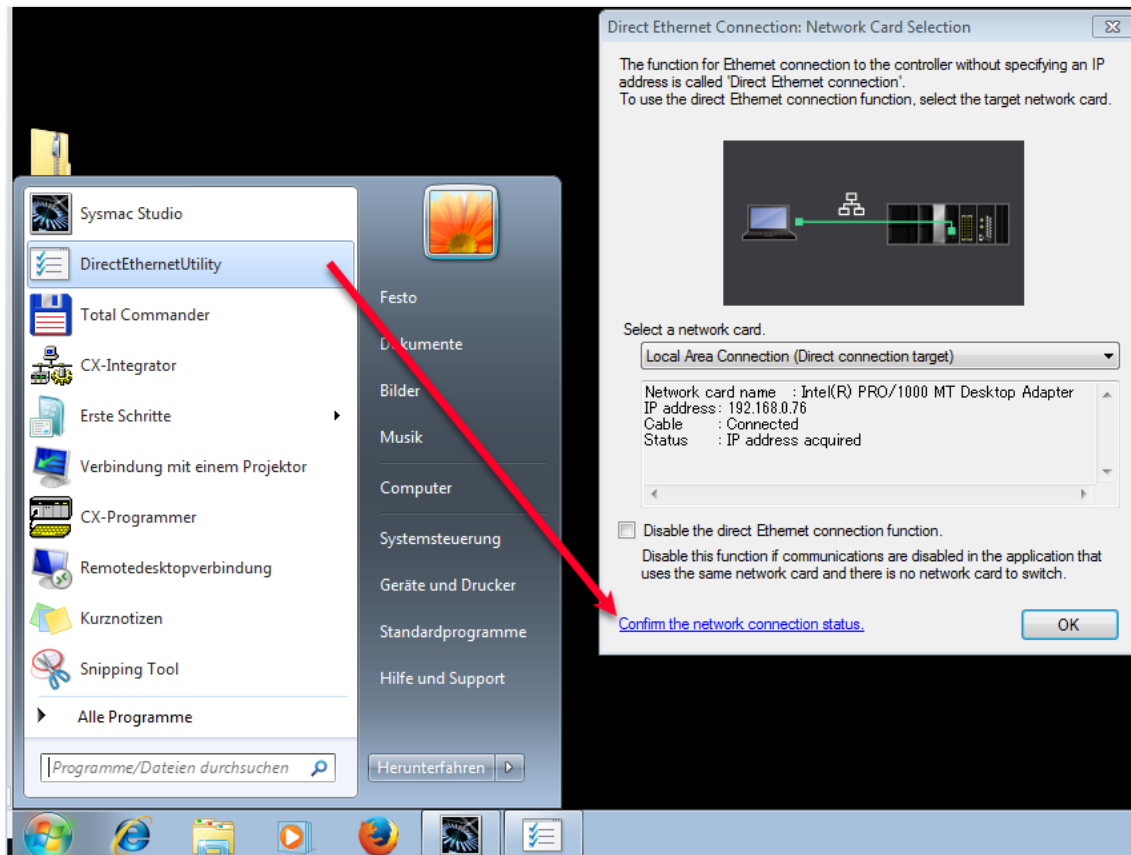
  
Reinitialize

  
Restart device

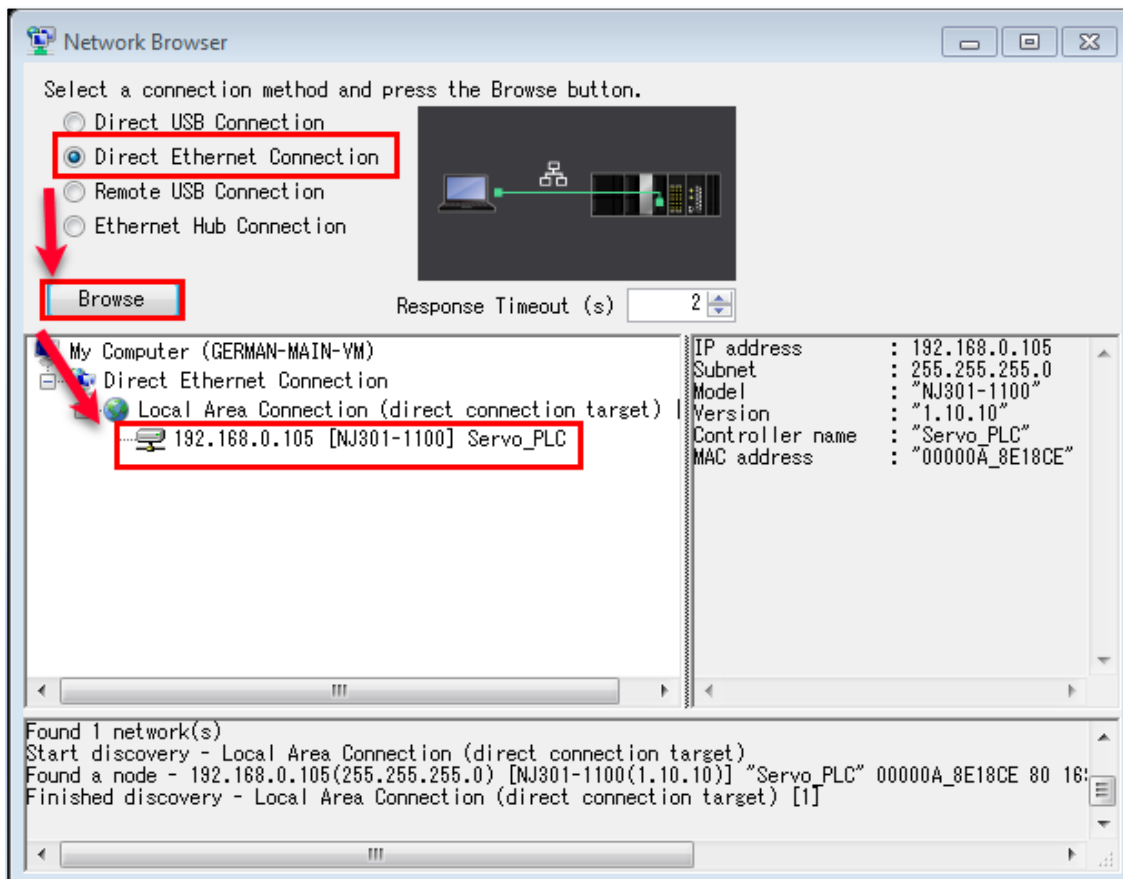
Click the “**Store on device**” button to store all the parameters on drive memory.

### 3 Testing connection to the PLC

After installing Sysmac Studio, Omron provides an IP scanning software labelled as DirectEthernetUtility. It is recommended to use this tool in case the IP address is unknown or has been forgotten. Start DirectErhernetUtility and click on Confirm the network connection status



Select the connection method and click on Browse to find the device.



## 4 Sysmac Studio configuration

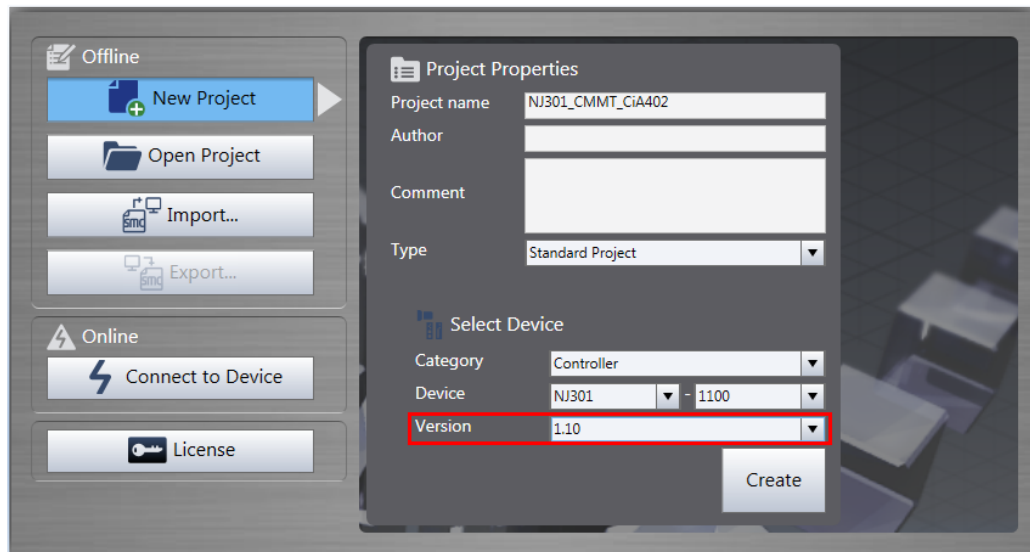
### 4.1 Starting a new project

Create a New Project selecting **Device Type and Version** that you have.



#### Note

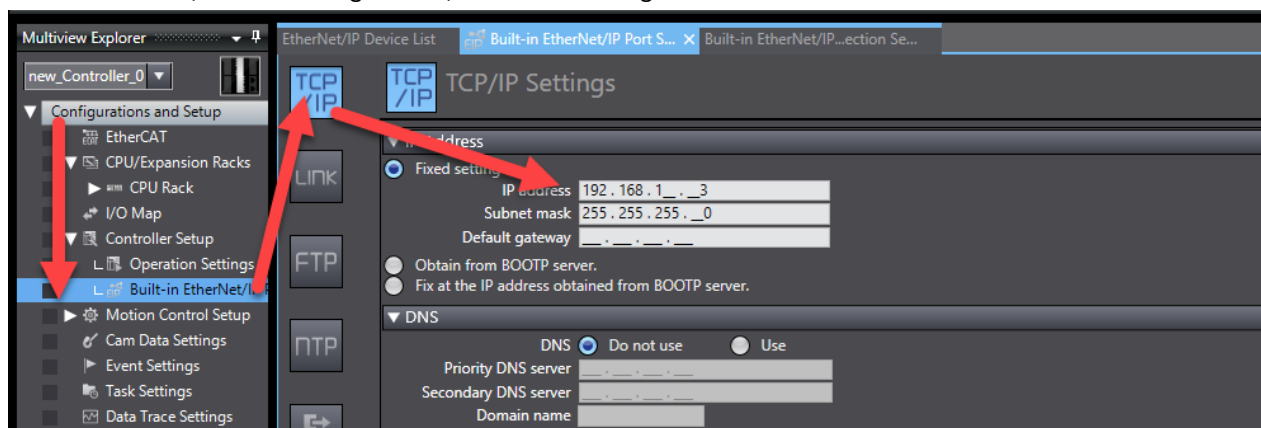
The Device Version **MUST BE 1.10 OR HIGHER**. An older controller will not be compatible with the Festo\_MotionControl library. Contact OMRON concerning FW updates.



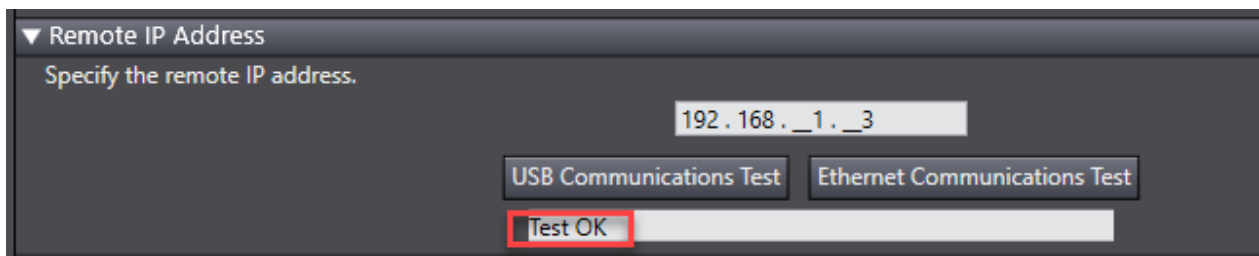
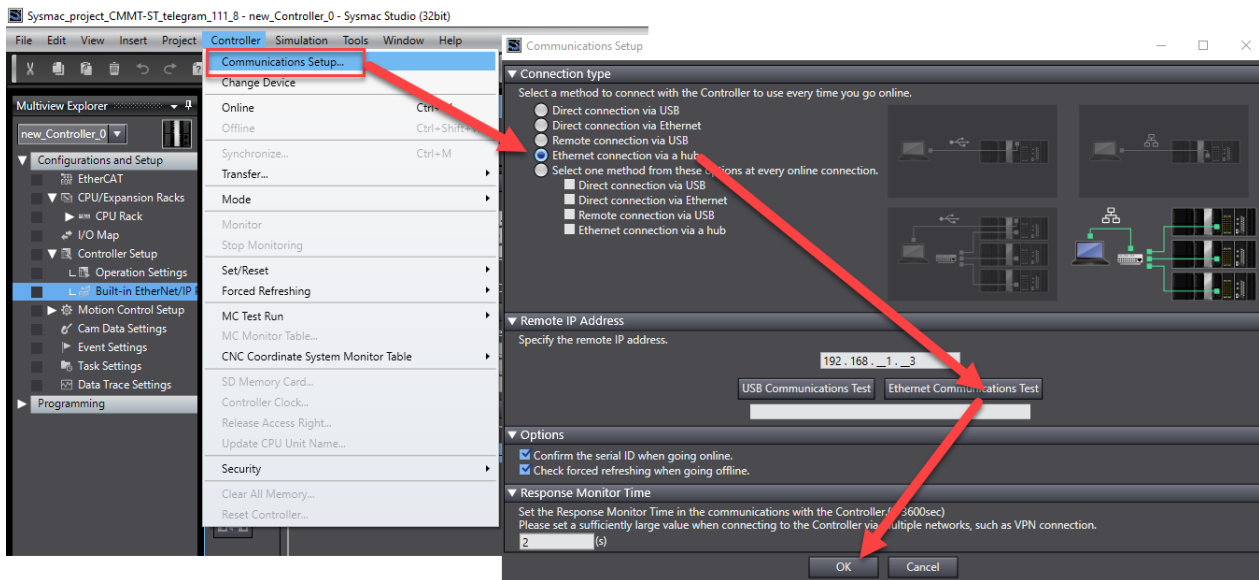
### 4.2 PLC Ethernet/IP Port Configuration

#### 4.2.1 IP address

Set the IP address of the PLC in the project by opening the Configurations and Setup Menu -> Controller Setup -> Built-in Ethernet/IP Port Settings -> TPC/IP -> Fixed Setting



Make the communication setup by clicking on Controller -> Communication Setup... -> Select connection method -> Communications Test.

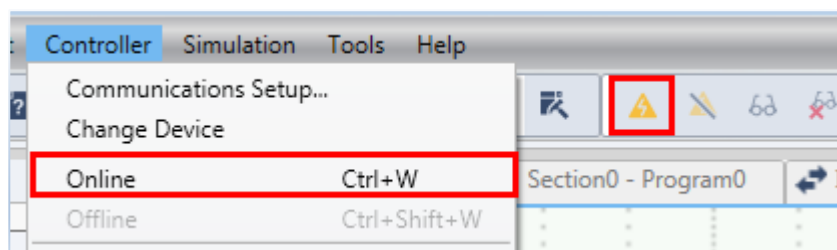


#### Note

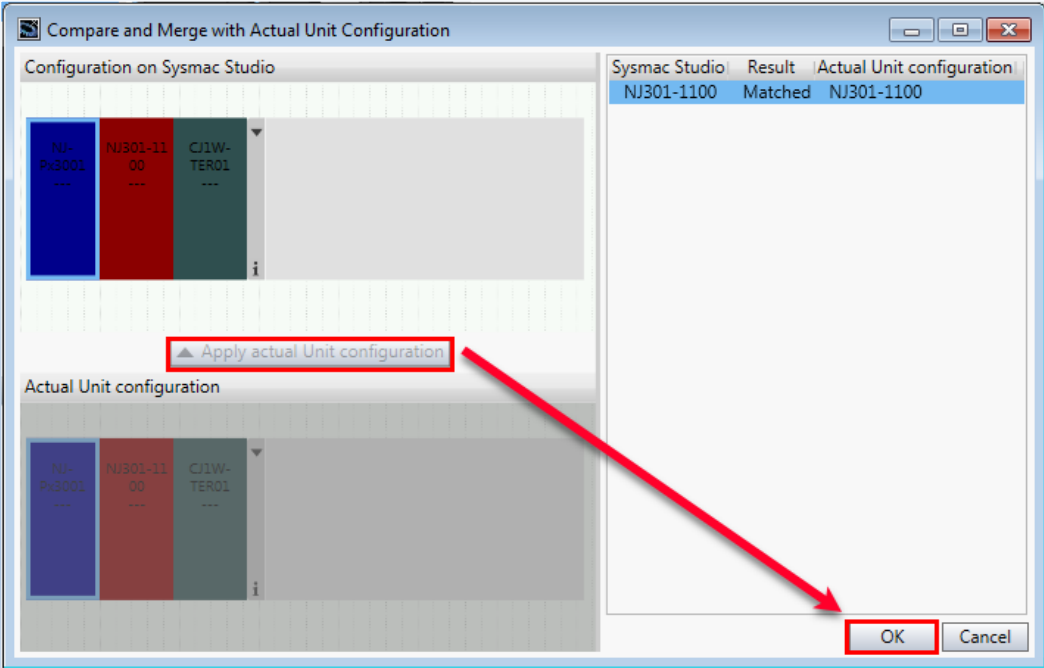
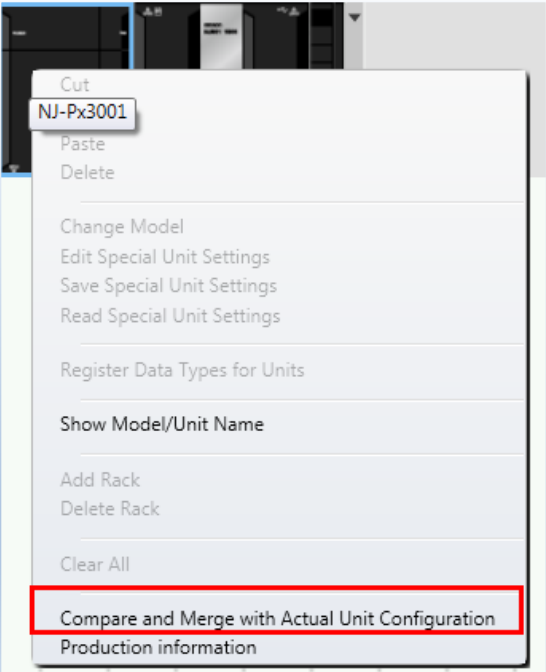
A successful test will display the message Test OK

### 4.2.2 PLC Module configuration

First establish an online connection to the PLC by clicking on Controller -> Online.

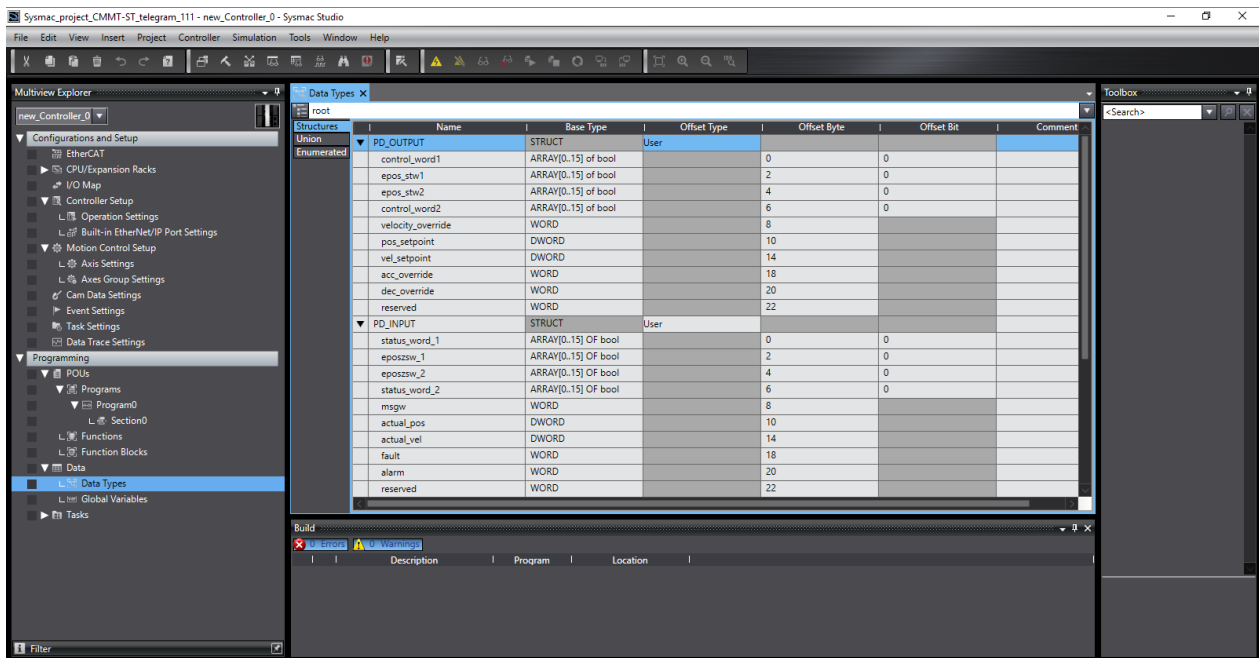


Double-click on the CPU/Expansion Racks. Right click any of the shown modules and select the Compare and Merge with Actual Unit Configuration Option -> Apply actual Unit configuration



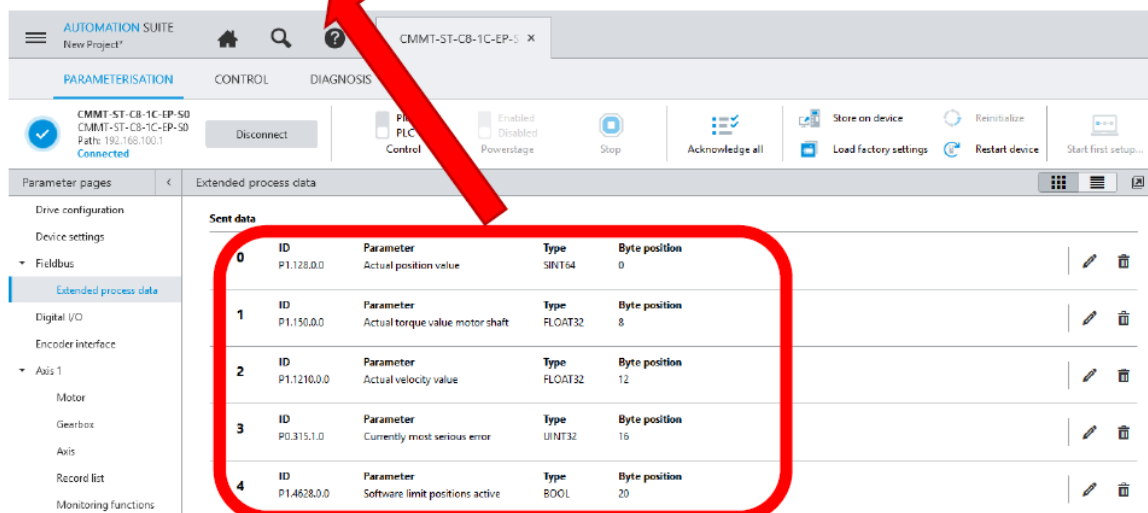
### 4.3 Create data types and global variables

In the "Programming" → "Data" section → "Data Types" create the different types of data input and output for process data according to the structure of telegram 111:



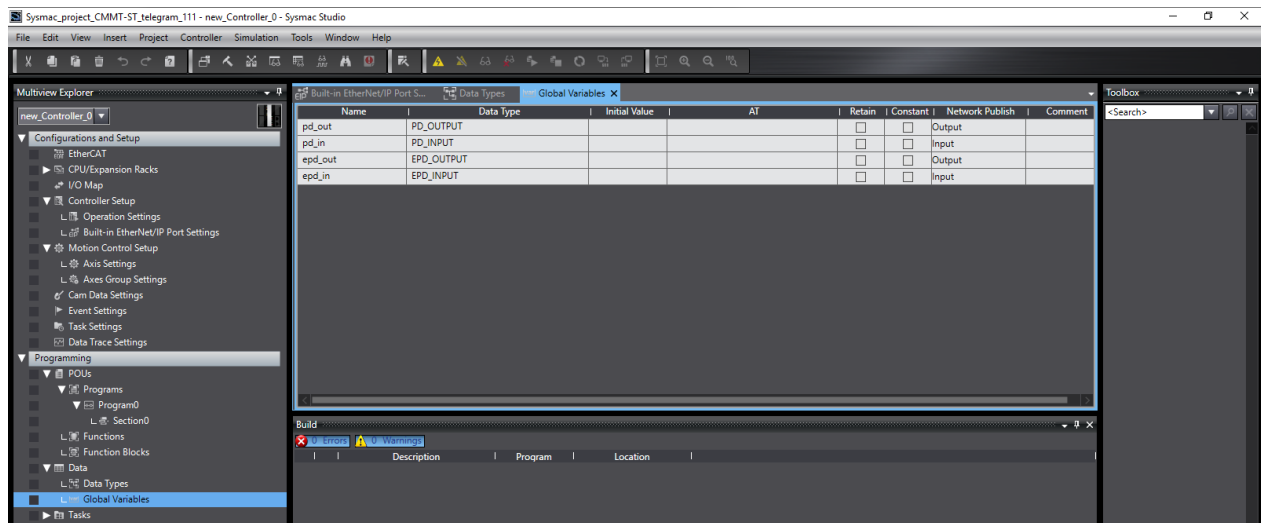
Create the different types of data input and output for extended process data according to the configuration defined with the Automation Suite, taking care to configure all 32 Bytes even if not fully used:

|                                  |                      |      |    |  |  |
|----------------------------------|----------------------|------|----|--|--|
| ▼ EPD_OUTPUT                     | STRUCT               | User |    |  |  |
| software_limit_position_active   | BYTE                 |      | 0  |  |  |
| negative_software_limit_position | LINT                 |      | 1  |  |  |
| positive_software_limit_position | LINT                 |      | 9  |  |  |
| other                            | ARRAY[0..14] OF SINT |      | 17 |  |  |
| ▼ EPD_INPUT                      | STRUCT               | User |    |  |  |
| actual_position                  | LINT                 |      | 0  |  |  |
| actual_torque                    | REAL                 |      | 8  |  |  |
| actual_velocity                  | REAL                 |      | 12 |  |  |
| error_id                         | UDINT                |      | 16 |  |  |
| software_limit_position_active   | BYTE                 |      | 20 |  |  |
| other                            | ARRAY[0..10] OF SINT |      | 21 |  |  |



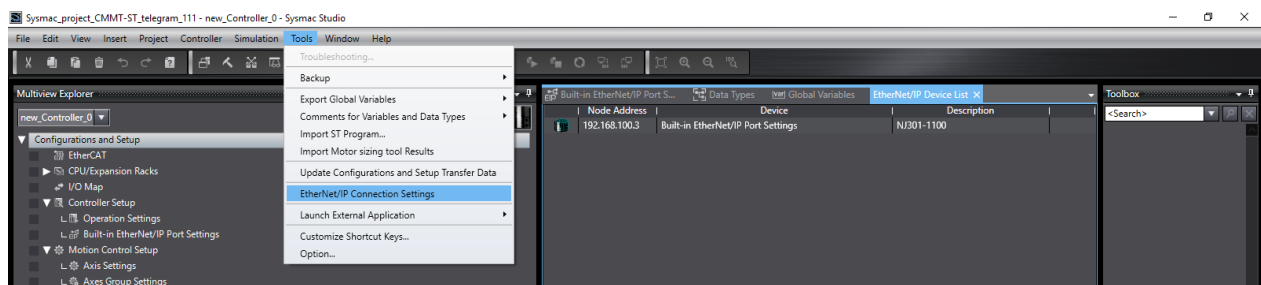
Define Global Variables:

In the "Programming" → "Data" section → "Global variables" create the different types of data input and output for process data according to the structure of telegram 111

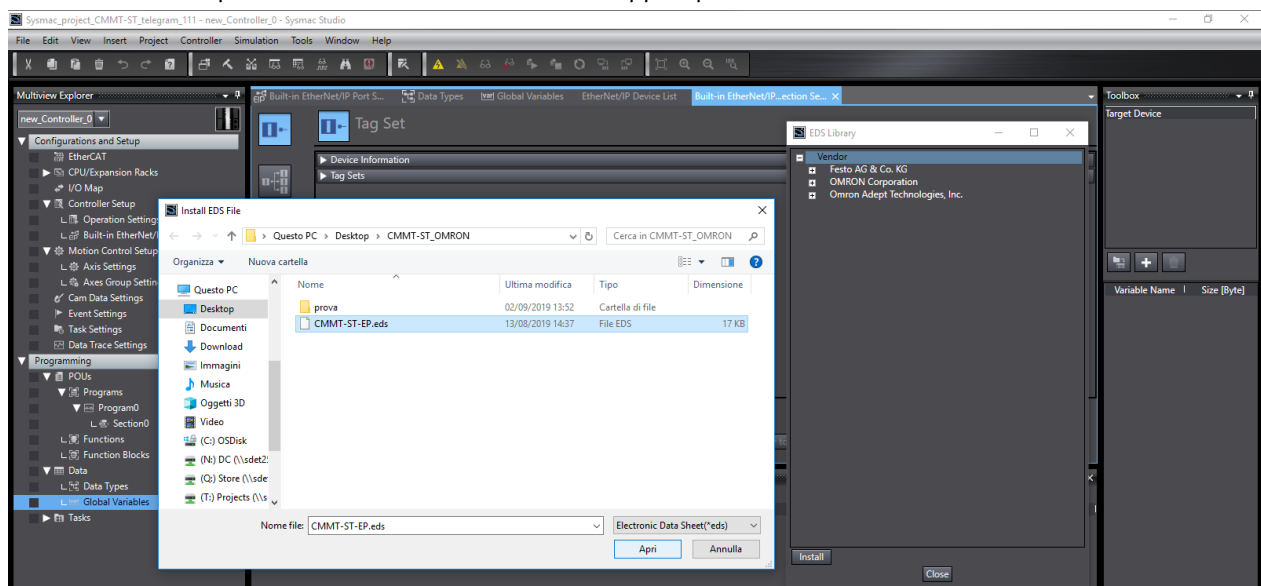


### 4.4 Add EDS file

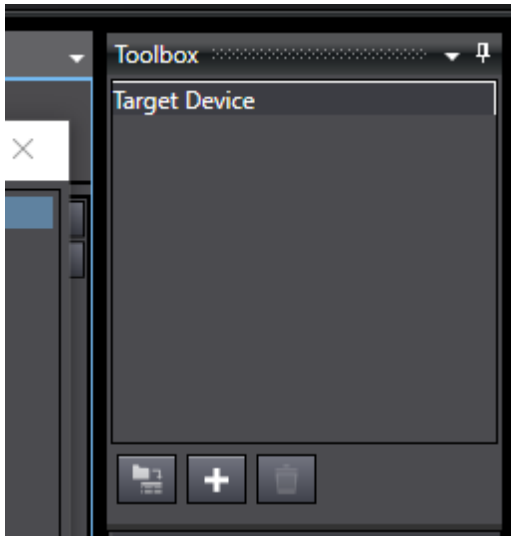
On the menu at the top: "tool" → "Ethernet/IP connection Setting" → double click on the PLC icon



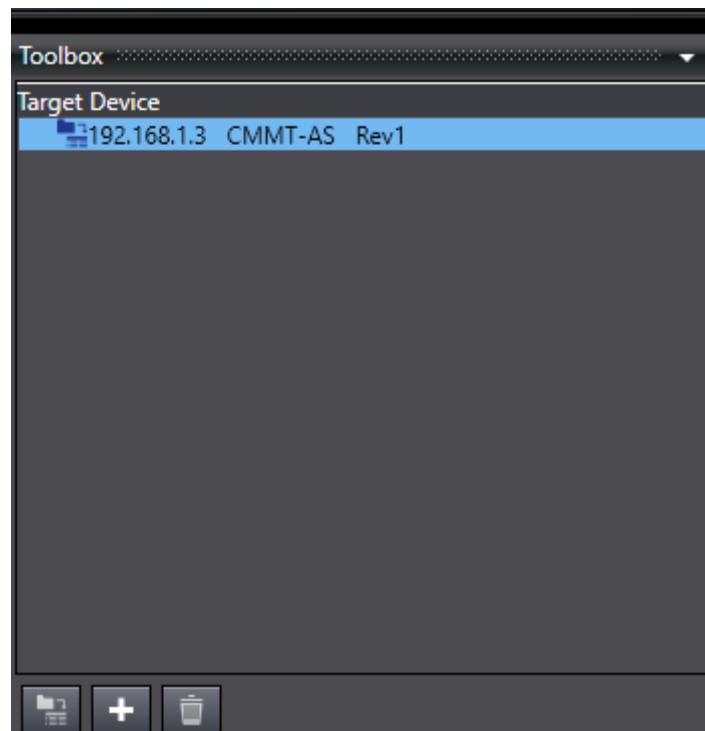
Install the CMMT EDS descriptive file: Right key on the "Target Device" window → "Display EDS Library" and install the EDS file provided or available on the Festo support portal.



Add the CMMT Device to the "Target Device"

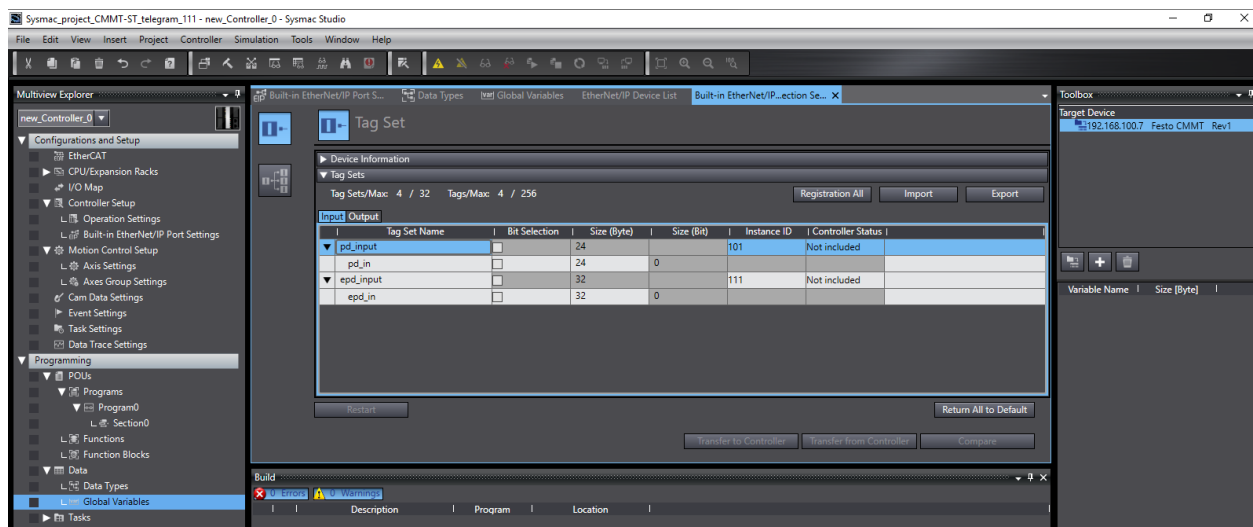


Enter the Ethernet/IP address set on the Automation Suite earlier and select the "CMMT festo" template you just added to the library:



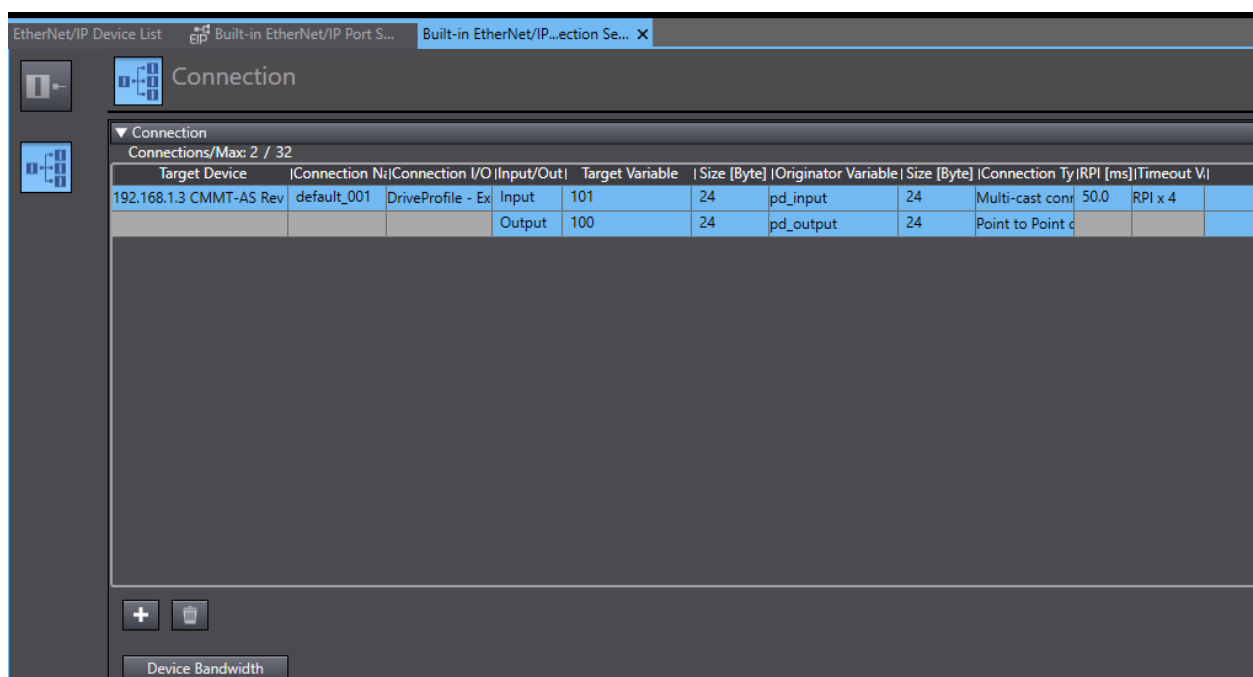


In the "Tag Set" section, define the input and output set tags with their instances and associate them with the global variables that you created earlier:



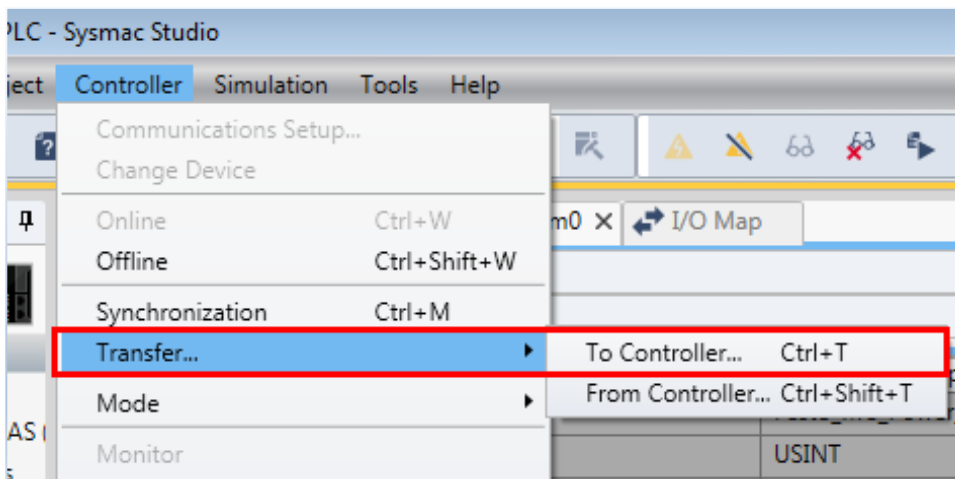
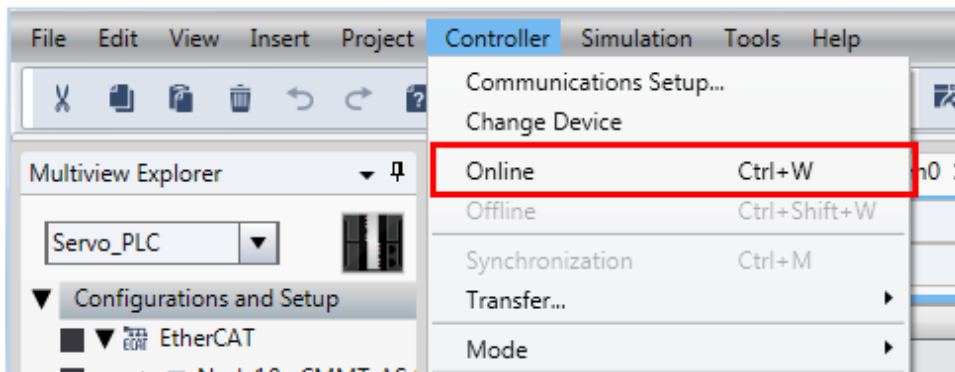
| Input | Output | Tag Set Name | Bit Selection            | Size (Byte) | Size (Bit) | Instance ID | Controller Status | Output at Fatal Err |
|-------|--------|--------------|--------------------------|-------------|------------|-------------|-------------------|---------------------|
| ▼     |        | pd_output    | <input type="checkbox"/> | 24          |            | 100         | Not included      |                     |
|       |        | pd_out       | <input type="checkbox"/> | 24          | 0          |             |                   | Cleared             |
| ▼     |        | epd_output   | <input type="checkbox"/> | 32          |            | 110         | Not included      |                     |
|       |        | epd_out      | <input type="checkbox"/> | 32          | 0          |             |                   | Cleared             |

In the "Connection" section, associate the CMMT with the Different Tags as in the following schema:



## 5 Transfer to Controller and control using watch table

Once all changes have been made, the last step is to go online and Transfer the parameters to the Omron controller.



### Note

To avoid having to Transfer the whole controller configuration (once it's been done correctly) the Online changes instructions should be used to make changes which do not affect the topology or PLC settings.



### Transfer to Controller and control using watch table

| Device name      | Name                | Online value | Modify     | Comment | Data type | AT | Display format |
|------------------|---------------------|--------------|------------|---------|-----------|----|----------------|
| new_Controller_0 | pd_in               |              |            |         | PD_INPUT  |    |                |
| new_Controller_0 | pd_out              |              |            |         | PD_OUTPUT |    |                |
|                  | control_word1[0-15] |              |            |         |           |    |                |
|                  | control_word1[0]    | True         | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[1]    | True         | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[2]    | True         | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[3]    | True         | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[4]    | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[5]    | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[6]    | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[7]    | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[8]    | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[9]    | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[10]   | True         | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[11]   | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[12]   | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[13]   | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[14]   | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |
|                  | control_word1[15]   | False        | TRUE FALSE |         | bool      |    | Boolean ▾      |

- After enabling CMMT, there is a warning Profile velocity=0 needs to be acknowledged

The screenshot displays the Festo Motion Studio software interface. At the top, the 'AUTOMATION SUITE' header is visible, along with a 'Test Bench' tab. The left sidebar contains three main sections: 'PARAMETERIZATION', 'CONTROL' (which is currently selected), and 'DIAGNOSIS'. The main workspace area shows a 'Watch window' on the right, which lists the 'Active motion task' as 'Power on (1)'. A red box highlights the 'Power on (1)' entry. In the center of the workspace, a diagram of a drive system is shown, with a red box highlighting the 'Profile velocity = 0' error message. The error message text reads: 'The preset profile velocity is 0. The drive does not move and does not reach its target position. Error number: D1.05[02]00364.0'. Below the error message, there is a 'Show details' link and an 'Acknowledge' button. The top of the workspace area features a row of control buttons: 'Disconnect', 'Plug-in PLC', 'Enabled Disabled Powerstage', 'Stop', 'Acknowledge All', 'Store on Device', 'Reinitialize', 'Restart Device', and 'Start Trace'. The bottom of the workspace area shows a 'Current position (37)' indicator and a 'Setpoint Position -0.2357155 mm' value.

Toggle following bit of PZD1(STW1) to reset

[illegible]

### Transfer to Controller and control using watch table

| Device name      | Name                  | Online value | Modify                  | Comment | Data type | AT | Display format |
|------------------|-----------------------|--------------|-------------------------|---------|-----------|----|----------------|
|                  | actual_vel            | 4294904047   |                         |         | DWORD     |    | Decimal ▼      |
|                  | fault                 | 0000         |                         |         | WORD      |    | Hexadecim. ▼   |
|                  | alarm                 | 0000         |                         |         | WORD      |    | Hexadecim. ▼   |
|                  | reserved              | 0000         |                         |         | WORD      |    | Hexadecim. ▼   |
| new_Controller_0 | ▼ pd_out              |              |                         |         | PD_OUTPUT |    |                |
|                  | ▼ control_word1[0-15] |              |                         |         |           |    |                |
|                  | control_word1[0]      | True         | <span>TRUE</span> FALSE |         | bool      |    | Boolean ▼      |
|                  | control_word1[1]      | True         | <span>TRUE</span> FALSE |         | bool      |    | Boolean ▼      |
|                  | control_word1[2]      | True         | <span>TRUE</span> FALSE |         | bool      |    | Boolean ▼      |
|                  | control_word1[3]      | True         | <span>TRUE</span> FALSE |         | bool      |    | Boolean ▼      |
|                  | control_word1[4]      | True         | <span>TRUE</span> FALSE |         | bool      |    | Boolean ▼      |
|                  | control_word1[5]      | True         | <span>TRUE</span> FALSE |         | bool      |    | Boolean ▼      |
|                  | control_word1[6]      | False        | TRUE <span>FALSE</span> |         | bool      |    | Boolean ▼      |
|                  | control_word1[7]      | True         | <span>TRUE</span> FALSE |         | bool      |    | Boolean ▼      |
|                  | control_word1[8]      | False        | TRUE FALSE              |         | bool      |    | Boolean ▼      |
|                  | control_word1[9]      | False        | TRUE FALSE              |         | bool      |    | Boolean ▼      |
|                  | control_word1[10]     | True         | <span>TRUE</span> FALSE |         | bool      |    | Boolean ▼      |
|                  | control_word1[11]     | False        | TRUE FALSE              |         | bool      |    | Boolean ▼      |
|                  | control_word1[12]     | False        | TRUE FALSE              |         | bool      |    | Boolean ▼      |
|                  | control_word1[13]     | False        | TRUE FALSE              |         | bool      |    | Boolean ▼      |
|                  | control_word1[14]     | False        | TRUE FALSE              |         | bool      |    | Boolean ▼      |
|                  | control_word1[15]     | False        | TRUE FALSE              |         | bool      |    | Boolean ▼      |

- Enable hardware and software limit: Toggle following bits of PZD3(POS\_STW2 or Epos\_STW2)- bit14 and bit15

[illegible]

| Watch (Project)1 |                   |              |        |       |         |           |    |                |
|------------------|-------------------|--------------|--------|-------|---------|-----------|----|----------------|
| Device name      | Name              | Online value | Modify |       | Comment | Data type | AT | Display format |
|                  | control_word1[15] | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | ▶ epos_stw1[0-15] |              |        |       |         |           |    |                |
|                  | ▼ epos_stw2[0-15] |              |        |       |         |           |    |                |
|                  | epos_stw2[0]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[1]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[2]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[3]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[4]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[5]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[6]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[7]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[8]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[9]      | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[10]     | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[11]     | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[12]     | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[13]     | False        | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[14]     | True         | TRUE   | FALSE |         | bool      |    | Boolean ▼      |
|                  | epos_stw2[15]     | True         | TRUE   | FALSE |         | bool      |    | Boolean ▼      |

• Set velocity override value (100%=16#4000 or 10#16384)

|         |          | RP MODE<br>NOTE: Telegram 111 is a SIEMENS specific extension of PROFIDrive. (Siemens telegram 111) |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|---------|----------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|-----------------------------------------------|--------------------------------------------|----------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------|
|         |          | B15                                                                                                 | B14                                                                    | B13                                                                    | B12                                   | B11                                                              | B10                                                                                                     | B9                                                                                                                                                                                                                                           | B8                                                                         | B7                                                               | B6                                          | B5                                          | B4                                            | B3                                         | B2                                           | B1                                                                  | B0                                                          |                                         |
| STATUS  | WORD0    | ZSW1                                                                                                | Device specific                                                        | Device specific                                                        | Drive Stopped<br>AutoSoftStart        | Traverse Task Acknowledge<br>AutoSoftStart                       | Home Position Set<br>AutoSoft                                                                           | Target Position Reached<br>AutoSoft                                                                                                                                                                                                          | PLC Control Requested                                                      | Following Error Within Tolerance Range                           | Warning Active<br>AutoWarn                  | Switch On Inhibited<br>Lockout              | Quick Stop Not Active                         | Coast Stop Not Active                      | Fault Active<br>AutoError                    | Operation Enabled<br>AutoEnabled                                    | Ready To Operate<br>AutoReady                               | Ready to Switch On                      |
|         | WORD1    | POS_STW1 or Epos_STW1                                                                               | MDI Active Selection<br>0=Record Mode<br>1=Direct Mode                 | -FW Pending-<br>MDI Setup Active                                       | Position Record Task is Active        | -FW Pending-<br>Flying Reference Active                          | Homing Task is Active                                                                                   | Logging Task is Active                                                                                                                                                                                                                       | Positive Hardware Limit Switch is Activated                                | Negative Hardware Limit Switch is Activated                      | Reserved B7                                 | Position Record Selected Bit 6              | Position Record Selected Bit 5                | Position Record Selected Bit 4             | Position Record Selected Bit 3               | Position Record Selected Bit 2                                      | Position Record Selected Bit 1                              | Position Record Selected Bit 0          |
|         | WORD2    | POS_STW2 or Epos_STW2                                                                               | Traversing Task is Active                                              | Travel to Fixed Stop is Active                                         | Fixed EndStop Clamping Torque Reached | Fixed Stop Reached                                               | Direct Output 2 via Positioning Record                                                                  | Direct Output 1 via Positioning Record                                                                                                                                                                                                       | Actual Position = Cam Switch Position 1                                    | Actual Position = Cam Switch Position 0                          | Positive Software Limit Switch is Activated | Negative Software Limit Switch is Activated | Axis is Moving Negative                       | Axis is Moving Positive                    | -FW Pending-<br>Printing Mark outside window | Ready to Accept new Setpoint                                        | Velocity Limit is Active                                    | Tracking Mode is Active                 |
|         | WORD3    | ZSW2                                                                                                | Reserved B15                                                           | Reserved B14                                                           | Pulses Enabled                        | Drive Ready                                                      | Device specific                                                                                         | Device specific                                                                                                                                                                                                                              | Device specific                                                            | Device specific                                                  | Device specific                             | Device specific                             | Device specific                               | Device specific                            | Device specific                              | Device specific                                                     | Device specific                                             | Device specific                         |
|         | WORD4    | MELW                                                                                                | Reserved B15                                                           | Reserved B14                                                           | Pulses Enabled                        | Drive Ready                                                      | Controller Enable                                                                                       | Reserved B10                                                                                                                                                                                                                                 | Reserved B9                                                                | Speed Setpoint - Actual Deviation Within tolerance               | No alarm, thermal overload, power unit      | No motor over-temperature alarm             | variable signaling function                   | Reserved B4                                | Setpoint(n) speed threshold value 2          | Setpoint(n) speed threshold value 3                                 | Torque (Tn) torque threshold value 2                        | 0=Ramping Active<br>1=Ramping Completed |
|         | WORD5    | ZSW1_A                                                                                              | Actual Position Value<br>FAS P1.139                                    |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD6    | ZSW1_B                                                                                              | Actual Velocity Value                                                  |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD7    | ZSW1_C                                                                                              | Actual Fault Number                                                    |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD8    | FAS15_CODE                                                                                          | Active Fault Number                                                    |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD9    | WARN_CODE                                                                                           | Active Warning Number                                                  |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
| WORD10  | Reserved | Not Used                                                                                            |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
| CONTROL | WORD0    | STW1                                                                                                | Device specific                                                        | Device specific                                                        | Device specific                       | STW1.12 Release Holding Brake<br>ConfigEP05.15<br>FAS P1.1147120 | Home/Reference Task Start                                                                               | Control By PLC                                                                                                                                                                                                                               | log2                                                                       | log1                                                             | Fault Acknowledge<br>AutoError              | Traversing Task Activate<br>ExecuteMode     | Intermediate Stop Disable<br>IntermediateStop | Traversing Task Enable<br>CancelTraversing | Enable Operation                             | STW1.2 Quick Stop Disable<br>ConfigEP05.1<br>FAS P1.1147020         | STW1.1 Coast Stop Disable<br>ConfigEP05.0<br>FAS P1.1147010 | Power Stage Pulses Enable<br>EnableAut  |
|         | WORD1    | POS_STW1 or Epos_STW1                                                                               | MDI Selection<br>0=Record Mode<br>1=Direct Mode                        | signal Setup Selected                                                  | Reserved B13                          | Constant Takeover                                                | Reserved B11                                                                                            | 0 = Absolute positioning through the shortest distance<br>1 = Absolute positioning/MDI direction selection, positive<br>2 = Absolute positioning/MDI direction selection, negative<br>3 = Absolute positioning through the shortest distance | Direct Mode Absolute Positioning Active                                    | Reserved B7                                                      | Position Record Selected Bit 6              | Position Record Selected Bit 5              | Position Record Selected Bit 4                | Position Record Selected Bit 3             | Position Record Selected Bit 2               | Position Record Selected Bit 1                                      | Position Record Selected Bit 0                              |                                         |
|         | WORD2    | POS_STW2 or Epos_STW2                                                                               | POS_STW2.15 Hardware Limits Enable<br>ConfigEP05.3<br>FAS-P1.112414150 | POS_STW2.14 Software Limits Enable<br>ConfigEP05.2<br>FAS-P1.112414140 | Reserved B13                          | Reserved B12                                                     | ROS_STW2.11 Touch Probe Edge<br>0 = Rising edge<br>1 = Falling edge<br>ConfigEP05.4<br>FAS-P1.112414130 | ROS_STW2.10 Select Touch Probe<br>0 = Probe 1 Active<br>1 = Probe 2 Active<br>ConfigEP05.5<br>FAS-P1.112414100                                                                                                                               | Start Reference Search<br>0 = positive direction<br>1 = negative direction | Reference Select<br>1 = Flying Reference<br>0 = Search Reference | Reserved B7                                 | Reserved B6                                 | Logging<br>1 = incremental<br>0 = velocity    | Reserved B4                                | Reserved B3                                  | ROS_STW2.2 Reference Cam Active<br>ConfigEP05.6<br>FAS-P1.112414170 | Set Reference Point                                         | Tracking Mode Active                    |
|         | WORD3    | STW2                                                                                                | Master Sign-Of-Life                                                    |                                                                        | Motor Switchover Completed            | Reserved B10                                                     | Global Trigger Command                                                                                  | STW2.8 Travel to Fixed EndStop (Torque Mode) Enable<br>ConfigEP05.30<br>FAS P1.1148080                                                                                                                                                       | Parking Axis Enable                                                        | Reset I-Component                                                | Global Start                                | DOS Bit 4                                   | DOS Bit 3                                     | DOS Bit 2                                  | DOS Bit 1                                    | DOS Bit 0                                                           | DOS Bit 0                                                   |                                         |
|         | WORD4    | OVERRIDE                                                                                            | Position Velocity Override                                             |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD5    | MDI_TARPOS                                                                                          | MDI (Manual Data Input) Position Target<br>FAS P1.1128064              |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD6    | MDI_TARPOS                                                                                          | MDI (Manual Data Input) Velocity Target                                |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD7    | MDI_VELOCITY                                                                                        | MDI Percent Acceleration                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD8    | MDI_Acc                                                                                             | MDI Percent Deceleration                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
|         | WORD9    | MDI_DEC                                                                                             | Not Used                                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |
| WORD10  | Reserved | Not Used                                                                                            |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                         |

|                     |  |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |               |
|---------------------|--|-----------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------|
| control_word2[0-15] |  |           |      |  |  |  |  |  |  |  |  |  |  |  |  |  |               |
| velocity_override   |  | 4000      | 4000 |  |  |  |  |  |  |  |  |  |  |  |  |  | Hexadecimal ▼ |
| pos_setpoint        |  | 0000 0000 |      |  |  |  |  |  |  |  |  |  |  |  |  |  | Hexadecimal ▼ |
| vel_setpoint        |  | 0000 0000 |      |  |  |  |  |  |  |  |  |  |  |  |  |  | Hexadecimal ▼ |
| acc_override        |  | 0000      |      |  |  |  |  |  |  |  |  |  |  |  |  |  | Hexadecimal ▼ |
| dec_override        |  | 0000      |      |  |  |  |  |  |  |  |  |  |  |  |  |  | Hexadecimal ▼ |
| reserved            |  | 0000      |      |  |  |  |  |  |  |  |  |  |  |  |  |  | Hexadecimal ▼ |

• Start homing(FAS configuration): Toggle bit of PZD11(STW1)

|         |        | RP MODE<br>NOTE: Telegram 111 is a SIEMENS specific extension of PROFIDrive. (Siemens telegram 111) |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|---------|--------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|-----------------------------------------------|--------------------------------------------|----------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------|
| STATUS  | WORD0  | ZSW1                                                                                                | B15<br>Device specific                                                 | B14<br>Device specific                                                 | B13<br>Drive Stopped<br>AutoSoftStart | B12<br>Traverse Task Acknowledge<br>AutoSoftStart                | B11<br>Home Position Set<br>AutoSoft                                                                    | B10<br>Target Position Reached<br>AutoSoft                                                                                                                                                                                                   | B9<br>PLC Control Requested                                                | B8<br>Following Error Within Tolerance Range                     | B7<br>Warning Active<br>AutoWarn            | B6<br>Switch On Inhibited<br>Lockout        | B5<br>Quick Stop Not Active                   | B4<br>Coast Stop Not Active                | B3<br>Fault Active<br>AutoError              | B2<br>Operation Enabled<br>AutoEnabled                              | B1<br>Ready To Operate<br>AutoReady                         | B0<br>Ready to Switch On               |
|         | WORD1  | POS_STW1 or Epos_STW1                                                                               | MDI Active Selection<br>0=Record Mode<br>1=Direct Mode                 | -FW Pending-<br>MDI Setup Active                                       | Position Record Task is Active        | -FW Pending-<br>Flying Reference Active                          | Homing Task is Active                                                                                   | Logging Task is Active                                                                                                                                                                                                                       | Positive Hardware Limit Switch is Activated                                | Negative Hardware Limit Switch is Activated                      | Reserved B7                                 | Position Record Selected Bit 6              | Position Record Selected Bit 5                | Position Record Selected Bit 4             | Position Record Selected Bit 3               | Position Record Selected Bit 2                                      | Position Record Selected Bit 1                              | Position Record Selected Bit 0         |
|         | WORD2  | POS_STW2 or Epos_STW2                                                                               | Traversing Task is Active                                              | Travel to Fixed Stop is Active                                         | Fixed EndStop Clamping Torque Reached | Fixed Stop Reached                                               | Direct Output 2 via Positioning Record                                                                  | Direct Output 1 via Positioning Record                                                                                                                                                                                                       | Actual Position = Cam Switch Position 1                                    | Actual Position = Cam Switch Position 0                          | Positive Software Limit Switch is Activated | Negative Software Limit Switch is Activated | Axis is Moving Negative                       | Axis is Moving Positive                    | -FW Pending-<br>Printing Mark outside window | Ready to Accept new Setpoint                                        | Velocity Limit is Active                                    | Tracking Mode is Active                |
|         | WORD3  | ZSW2                                                                                                | Sign-Of-Life                                                           |                                                                        | Device specific                       | Device specific                                                  | Device specific                                                                                         | Device specific                                                                                                                                                                                                                              | Device specific                                                            | Device specific                                                  | Device specific                             | Device specific                             | Device specific                               | Device specific                            | Device specific                              | Device specific                                                     | Device specific                                             | Device specific                        |
|         | WORD4  | MELW                                                                                                | Reserved B15                                                           | Reserved B14                                                           | Pulses Enabled                        | Drive Ready                                                      | Controller Enable                                                                                       | Reserved B10                                                                                                                                                                                                                                 | Reserved B9                                                                | Speed Setpoint - Actual Deviation Within tolerance               | No alarm, thermal overload, power unit      | No motor over-temperature alarm             | Variable signaling function                   | Reserved B4                                | Setpoint(n) speed threshold value 2          | Setpoint(n) speed threshold value 3                                 | Torque (Tn) torque threshold value 2                        | 0 = Ramping Completed                  |
|         | WORD5  | ZSW1_A                                                                                              | Actual Position Value<br>FAS P1.139                                    |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD6  | ZSW1_B                                                                                              | Actual Velocity Value                                                  |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD7  | ZSW1_C                                                                                              | Actual Fault Number                                                    |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD8  | ZSW1_D                                                                                              | Active Warning Number                                                  |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD9  | FAULT_CODE                                                                                          | Not Used                                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD10 | WARN_CODE                                                                                           | Not Used                                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD11 | Reserved                                                                                            | Not Used                                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
| CONTROL | WORD0  | STW1                                                                                                | Device specific                                                        | Device specific                                                        | Device specific                       | STW1.12 Release Holding Brake<br>ConfigEP05.15<br>FAS P1.1147120 | Home/Reference Task Start                                                                               | Control By PLC                                                                                                                                                                                                                               | log2                                                                       | log1                                                             | Fault Acknowledge<br>AutoError              | Traversing Task Activate<br>ExecuteMode     | Intermediate Stop Disable<br>IntermediateStop | Traversing Task Enable<br>CancelTraversing | Enable Operation                             | STW1.2 Quick Stop Disable<br>ConfigEP05.1<br>FAS P1.1147020         | STW1.1 Coast Stop Disable<br>ConfigEP05.0<br>FAS P1.1147010 | Power Stage Pulses Enable<br>EnableAut |
|         | WORD1  | POS_STW1 or Epos_STW1                                                                               | MDI Selection<br>0=Record Mode<br>1=Direct Mode                        | signal Setup Selected                                                  | Reserved B13                          | Constant Takeover                                                | Reserved B11                                                                                            | 0 = Absolute positioning through the shortest distance<br>1 = Absolute positioning/MDI direction selection, positive<br>2 = Absolute positioning/MDI direction selection, negative<br>3 = Absolute positioning through the shortest distance | Direct Mode Absolute Positioning Active                                    | Reserved B7                                                      | Reserved B6                                 | Position Record Selected Bit 6              | Position Record Selected Bit 5                | Position Record Selected Bit 4             | Position Record Selected Bit 3               | Position Record Selected Bit 2                                      | Position Record Selected Bit 1                              | Position Record Selected Bit 0         |
|         | WORD2  | POS_STW2 or Epos_STW2                                                                               | POS_STW2.15 Hardware Limits Enable<br>ConfigEP05.3<br>FAS-P1.112414150 | POS_STW2.14 Software Limits Enable<br>ConfigEP05.2<br>FAS-P1.112414140 | Reserved B13                          | Reserved B12                                                     | ROS_STW2.11 Touch Probe Edge<br>0 = Rising edge<br>1 = Falling edge<br>ConfigEP05.4<br>FAS-P1.112414130 | ROS_STW2.10 Select Touch Probe<br>0 = Probe 1 Active<br>1 = Probe 2 Active<br>ConfigEP05.5<br>FAS-P1.112414100                                                                                                                               | Start Reference Search<br>0 = positive direction<br>1 = negative direction | Reference Select<br>1 = Flying Reference<br>0 = Search Reference | Reserved B7                                 | Reserved B6                                 | Logging<br>1 = incremental<br>0 = velocity    | Reserved B4                                | Reserved B3                                  | ROS_STW2.2 Reference Cam Active<br>ConfigEP05.6<br>FAS-P1.112414170 | Set Reference Point                                         | Tracking Mode Active                   |
|         | WORD3  | STW2                                                                                                | Master Sign-Of-Life                                                    |                                                                        | Motor Switchover Completed            | Reserved B10                                                     | Global Trigger Command                                                                                  | STW2.8 Travel to Fixed EndStop (Torque Mode) Enable<br>ConfigEP05.30<br>FAS P1.1148080                                                                                                                                                       | Parking Axis Enable                                                        | Reset I-Component                                                | Global Start                                | DOS Bit 4                                   | DOS Bit 3                                     | DOS Bit 2                                  | DOS Bit 1                                    | DOS Bit 0                                                           | DOS Bit 0                                                   |                                        |
|         | WORD4  | OVERRIDE                                                                                            | Position Velocity Override                                             |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD5  | MDI_TARPOS                                                                                          | MDI (Manual Data Input) Position Target<br>FAS P1.1128064              |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD6  | MDI_TARPOS                                                                                          | MDI (Manual Data Input) Velocity Target                                |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD7  | MDI_VELOCITY                                                                                        | MDI Percent Acceleration                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD8  | MDI_VELOCITY                                                                                        | MDI Percent Deceleration                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD9  | MDI_Acc                                                                                             | Not Used                                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD10 | MDI_DEC                                                                                             | Not Used                                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |
|         | WORD11 | Reserved                                                                                            | Not Used                                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                  |                                             |                                             |                                               |                                            |                                              |                                                                     |                                                             |                                        |

|                  |  |                     |       |      |       |  |  |  |  |  |  |  |  |  |  |  |           |
|------------------|--|---------------------|-------|------|-------|--|--|--|--|--|--|--|--|--|--|--|-----------|
| new_Controller_0 |  | pd_out              |       |      |       |  |  |  |  |  |  |  |  |  |  |  |           |
|                  |  | control_word1[0-15] |       |      |       |  |  |  |  |  |  |  |  |  |  |  |           |
|                  |  | control_word1[0]    | True  | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[1]    | True  | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[2]    | True  | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[3]    | True  | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[4]    | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[5]    | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[6]    | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[7]    | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[8]    | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[9]    | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[10]   | True  | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[11]   | True  | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[12]   | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[13]   | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[14]   | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |
|                  |  | control_word1[15]   | False | TRUE | FALSE |  |  |  |  |  |  |  |  |  |  |  | Boolean ▼ |



## Transfer to Controller and control using watch table

### •Absolute Positioning:

1. Activate MDI function and direct mode absolute positioning by toggling bit 8 and bit 15 of PZD2(POS\_STW1 or Epos\_STW1))

| PDP MODE                                                                                |                          |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|-----------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|-----------------------------------------------|--------------------------------------------|---------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------|
| NOTE: Telegram 111 is a SIEMENS specific extension of PROFIDrive (Siemens telegram 111) |                          |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| WORD0                                                                                   | ZSW1                     | B15                                                                    | B14                                                                    | B13                                   | B12                                                              | B11                                                                                                     | B10                                                                                                                                                                                                                                          | B9                                                                         | B8                                                                                     | B7                                          | B6                                          | B5                                            | B4                                         | B3                                          | B2                                                          | B1                                                          | B0                                          |
| STATUS                                                                                  | Device specific          | Device specific                                                        | Device specific                                                        | Drive Stopped<br>AutoFeed             | Travel Task Acknowledge<br>AutoStop                              | Home Position Set<br>AutoRef                                                                            | Target Position Reached<br>AutoPos                                                                                                                                                                                                           | PLC Control Requested                                                      | Following Error Within Tolerance Range                                                 | Warning Active<br>AutoWarn                  | Switch On Inhibited<br>LockOn               | Quick Stop Not Active                         | Coast Stop Not Active                      | Fault Active<br>AutoError                   | Operation Enabled<br>AutoEnabled                            | Ready To Operate<br>AutoReady                               | Ready To Switch On                          |
|                                                                                         | POS_STW1 or Epos_STW1    | MDI Active Selection<br>0=Record Mode<br>1=Direct Mode                 | -FW Pending-<br>MDI Setup Active                                       | Position Record Task Is Active        | -FW Pending-<br>Flying Reference Active                          | Homing Task Is Active                                                                                   | Jogging Task Is Active                                                                                                                                                                                                                       | Positive Hardware Limit Switch Is Activated                                | Negative Hardware Limit Switch Is Activated                                            | Reserved B7                                 | Position Record Selected Bit 6              | Position Record Selected Bit 5                | Position Record Selected Bit 4             | Position Record Selected Bit 3              | Position Record Selected Bit 2                              | Position Record Selected Bit 1                              | Position Record Selected Bit 0              |
|                                                                                         | POS_STW2 or Epos_STW2    | Traversing Task Is Active                                              | Travel to Fixed Stop Is Active                                         | Fixed EndStop Clamping Torque Reached | Feed Stop Reached                                                | Direct Output 2 via Positioning Record                                                                  | Direct Output 1 via Positioning Record                                                                                                                                                                                                       | Actual Position - Cam Switch Position 1                                    | Actual Position - Cam Switch Position 0                                                | Positive Software Limit Switch Is Activated | Negative Software Limit Switch Is Activated | Axis Is Moving Negative                       | Axis Is Moving Positive                    | -FW Pending-<br>Priming Mark outside window | Ready To Accept new Setpoint                                | Velocity Limit Is Active                                    | Tracking Mode Is Active                     |
|                                                                                         | ZSW2                     | Sign-Of-Life                                                           |                                                                        |                                       |                                                                  | Device specific                                                                                         | Device specific                                                                                                                                                                                                                              | Device specific                                                            | Device specific                                                                        | Device specific                             | Device specific                             | Device specific                               | Device specific                            | Device specific                             | Device specific                                             | Device specific                                             | Device specific                             |
|                                                                                         | MEL0W                    | Reserved B15                                                           | Reserved B14                                                           | Pulses Enabled                        | Drive Ready                                                      | Controller Enable                                                                                       | Reserved B10                                                                                                                                                                                                                                 | Reserved B9                                                                | Speed Setpoint - Actual Deviation Within tolerance                                     | No alarm, thermal overload, power unit      | No motor over-temperature alarm             | variable signaling function                   | Reserved B4                                | Seppoint(i) i speed threshold value 2       | Seppoint(i) i speed threshold value 3                       | Torque (%) torque threshold value 2                         | 0 = Ramping Active<br>1 = Ramping Completed |
|                                                                                         | JOSET_A                  | Actual Position Value<br>FAS P1.1138                                   |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | JOSET_A                  | Actual Velocity Value<br>FAS P1.1139                                   |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | JOSET_B                  | Actual Velocity Value<br>FAS P1.1140                                   |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | JOSET_B                  | Actual Velocity Value<br>FAS P1.1141                                   |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | FAULT_CODE               | Active Fault Number                                                    |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| WARN_CODE                                                                               | Active Warning Number    |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| Reserved                                                                                | Not Used                 |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| CONTROL                                                                                 | Device specific          | Device specific                                                        | Device specific                                                        | Device specific                       | STW1.12 Release Holding Brake<br>ConfigEP05.15<br>FAS P1.1147120 | Home/Reference Task Start                                                                               | Control By PLC                                                                                                                                                                                                                               | Ingt?                                                                      | Ingt?                                                                                  | Fault Acknowledge<br>AutoError              | Traversing Task Activate<br>ExecuteMode     | Intermediate Stop Disable<br>IntermediateStop | Traversing Task Enable<br>CancelTraversing | Enable Operation                            | STW1.2 Quick Stop Disable<br>ConfigEP05.1<br>FAS P1.1147020 | STW1.1 Coast Stop Disable<br>ConfigEP05.0<br>FAS P1.1147030 | Power Stage Pulses Enable<br>ExecuteAxis    |
|                                                                                         | POS_STW1 or Epos_STW1    | MDI Selection<br>0=Record Mode<br>1=Direct Mode                        | signal Setup Selected                                                  | Reserved B13                          | Constant Takeover                                                | Reserved B11                                                                                            | 0 = Absolute positioning through the shortest distance<br>1 = Absolute positioning/MDI direction selection, positive<br>2 = Absolute positioning/MDI direction selection, negative<br>3 = Absolute positioning through the shortest distance | Direct Mode Absolute Positioning Active                                    | Reserved B7                                                                            | Position Record Select Bit 6                | Position Record Select Bit 5                | Position Record Select Bit 4                  | Position Record Select Bit 3               | Position Record Select Bit 2                | Position Record Select Bit 1                                | Position Record Select Bit 0                                |                                             |
|                                                                                         | POS_STW2 or Epos_STW2    | POS_STW2.15 Hardware Limits Enable<br>ConfigEP05.3<br>FAS-P1.112414150 | POS_STW2.14 Software Limits Enable<br>ConfigEP05.2<br>FAS-P1.112414160 | Reserved B13                          | Reserved B12                                                     | POS_STW2.11 Touch Probe Edge<br>0 = Rising edge<br>1 = Falling edge<br>ConfigEP05.4<br>FAS-P1.112414170 | POS_STW2.10 Select Touch Probe<br>0 = Probe 1 Active<br>1 = Probe 2 Active<br>ConfigEP05.5<br>FAS-P1.112414180                                                                                                                               | Start Reference Search<br>0 = positive direction<br>1 = negative direction | Reference Select<br>1 = Flying Reference<br>0 = Search Reference                       | Reserved B7                                 | Reserved B6                                 | 1= RAMPING<br>0 = velocity                    | Reserved B4                                | Reserved B3                                 | POS_STW2.2 Reference Cam Active<br>ConfigEP05.6<br>FAS-???  | Set Reference Point                                         |                                             |
|                                                                                         | STW2                     | Master Sign-Of-Life                                                    |                                                                        |                                       |                                                                  | Motor Switchover Completed                                                                              | Reserved B10                                                                                                                                                                                                                                 | Global Trigger Command                                                     | STW2.8 Travel to Fixed EndStop (Torque Mode) Enable<br>ConfigEP05.30<br>FAS P1.1148000 | Parking Axis Enable                         | Reset I-Component                           | Global Start                                  | DOS Bit 4                                  | DOS Bit 3                                   | DOS Bit 2                                                   | DOS Bit 1                                                   | DOS Bit 0                                   |
|                                                                                         | OVERRIDE                 | Position Velocity Override                                             |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | MDI_TARPOS               | MDI (Manual Data Input) Position Target<br>FAS P1.1128004              |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | MDI_TARPOS               | MDI (Manual Data Input) Position Target<br>FAS P1.1128004              |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | MDI_VELOCITY             | MDI (Manual Data Input) Velocity Target                                |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | MDI_VELOCITY             | MDI (Manual Data Input) Velocity Target                                |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | MDI_ACE                  | MDI Percent Acceleration                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| MDI_DEC                                                                                 | MDI Percent Deceleration |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| Reserved                                                                                | Not Used                 |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |

| ▼ epos_stw1[0-15] |       |      |       |  |  |  |  |  |  |      |  |  |  |  |         |   |
|-------------------|-------|------|-------|--|--|--|--|--|--|------|--|--|--|--|---------|---|
| epos_stw1[0]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[1]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[2]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[3]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[4]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[5]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[6]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[7]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[8]      | True  | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[9]      | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[10]     | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[11]     | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[12]     | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[13]     | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[14]     | False | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |
| epos_stw1[15]     | True  | True | False |  |  |  |  |  |  | bool |  |  |  |  | Boolean | ▼ |

2. Set acceleration and deceleration override value (100%=16#4000 or 10#16384)

| NOTE: Telegram 111 is a SIEMENS specific extension of PROFIDrive (Siemens telegram 111) |           |                          |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|-----------------------------------------------------------------------------------------|-----------|--------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|-----------------------------------------------|--------------------------------------------|---------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------|
| PDP MODE                                                                                |           |                          |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD0     | ZSW1                     | B15                                                                    | B14                                                                    | B13                                   | B12                                                              | B11                                                                                                     | B10                                                                                                                                                                                                                                          | B9                                                                         | B8                                                                                     | B7                                          | B6                                          | B5                                            | B4                                         | B3                                          | B2                                                          | B1                                                          | B0                                          |
| STATUS                                                                                  |           | Device specific          | Device specific                                                        | Drive Stopped<br>AutoFeed                                              | Travel Task Acknowledge<br>AutoStop   | Home Position Set<br>AutoRef                                     | Target Position Reached<br>AutoPos                                                                      | PLC Control Requested                                                                                                                                                                                                                        | Following Error Tolerance Range                                            | Warning Active<br>AutoWarn                                                             | Switch On Inhibited<br>LockOn               | Quick Stop Not Active                       | Coast Stop Not Active                         | Fault Active<br>AutoError                  | Operation Enabled<br>AutoEnabled            | Ready To Operate<br>AutoReady                               | Ready To Switch On                                          |                                             |
|                                                                                         | WORD1     | POS_STW1 or Epos_STW1    | MDI Active Selection<br>0=Record Mode<br>1=Direct Mode                 | -FW Pending-<br>MDI Setup Active                                       | Position Record Task Is Active        | -FW Pending-<br>Flying Reference Active                          | Homing Task Is Active                                                                                   | Jogging Task Is Active                                                                                                                                                                                                                       | Positive Hardware Limit Switch Is Activated                                | Negative Hardware Limit Switch Is Activated                                            | Reserved B7                                 | Position Record Selected Bit 6              | Position Record Selected Bit 5                | Position Record Selected Bit 4             | Position Record Selected Bit 3              | Position Record Selected Bit 2                              | Position Record Selected Bit 1                              | Position Record Selected Bit 0              |
|                                                                                         | WORD2     | POS_STW2 or Epos_STW2    | Traversing Task Is Active                                              | Travel to Fixed Stop Is Active                                         | Fixed EndStop Clamping Torque Reached | Feed Stop Reached                                                | Direct Output 2 via Positioning Record                                                                  | Direct Output 1 via Positioning Record                                                                                                                                                                                                       | Actual Position - Cam Switch Position 1                                    | Actual Position - Cam Switch Position 0                                                | Positive Software Limit Switch Is Activated | Negative Software Limit Switch Is Activated | Axis Is Moving Negative                       | Axis Is Moving Positive                    | -FW Pending-<br>Priming Mark outside window | Ready To Accept new Setpoint                                | Velocity Limit Is Active                                    | Tracking Mode Is Active                     |
|                                                                                         | WORD3     | ZSW2                     | Sign-Of-Life                                                           |                                                                        |                                       |                                                                  | Device specific                                                                                         | Device specific                                                                                                                                                                                                                              | Device specific                                                            | Device specific                                                                        | Device specific                             | Device specific                             | Device specific                               | Device specific                            | Device specific                             | Device specific                                             | Device specific                                             | Device specific                             |
|                                                                                         | WORD4     | MEL0W                    | Reserved B15                                                           | Reserved B14                                                           | Pulses Enabled                        | Drive Ready                                                      | Controller Enable                                                                                       | Reserved B10                                                                                                                                                                                                                                 | Reserved B9                                                                | Speed Setpoint - Actual Deviation Within tolerance                                     | No alarm, thermal overload, power unit      | No motor over-temperature alarm             | variable signaling function                   | Reserved B4                                | Seppoint(i) i speed threshold value 2       | Seppoint(i) i speed threshold value 3                       | Torque (%) torque threshold value 2                         | 0 = Ramping Active<br>1 = Ramping Completed |
|                                                                                         | WORD5     | JOSET_A                  | Actual Position Value<br>FAS P1.1138                                   |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD6     | JOSET_A                  | Actual Velocity Value<br>FAS P1.1139                                   |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD7     | JOSET_B                  | Actual Velocity Value<br>FAS P1.1140                                   |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD8     | JOSET_B                  | Actual Velocity Value<br>FAS P1.1141                                   |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD9     | FAULT_CODE               | Active Fault Number                                                    |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| WORD10                                                                                  | WARN_CODE | Active Warning Number    |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| WORD11                                                                                  | Reserved  | Not Used                 |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| CONTROL                                                                                 | WORD0     | STW1                     | Device specific                                                        | Device specific                                                        | Device specific                       | STW1.12 Release Holding Brake<br>ConfigEP05.15<br>FAS P1.1147120 | Home/Reference Task Start                                                                               | Control By PLC                                                                                                                                                                                                                               | Ingt?                                                                      | Ingt?                                                                                  | Fault Acknowledge<br>AutoError              | Traversing Task Activate<br>ExecuteMode     | Intermediate Stop Disable<br>IntermediateStop | Traversing Task Enable<br>CancelTraversing | Enable Operation                            | STW1.2 Quick Stop Disable<br>ConfigEP05.1<br>FAS P1.1147020 | STW1.1 Coast Stop Disable<br>ConfigEP05.0<br>FAS P1.1147030 | Power Stage Pulses Enable<br>ExecuteAxis    |
|                                                                                         | WORD1     | POS_STW1 or Epos_STW1    | MDI Selection<br>0=Record Mode<br>1=Direct Mode                        | signal Setup Selected                                                  | Reserved B13                          | Constant Takeover                                                | Reserved B11                                                                                            | 0 = Absolute positioning through the shortest distance<br>1 = Absolute positioning/MDI direction selection, positive<br>2 = Absolute positioning/MDI direction selection, negative<br>3 = Absolute positioning through the shortest distance | Direct Mode Absolute Positioning Active                                    | Reserved B7                                                                            | Position Record Select Bit 6                | Position Record Select Bit 5                | Position Record Select Bit 4                  | Position Record Select Bit 3               | Position Record Select Bit 2                | Position Record Select Bit 1                                | Position Record Select Bit 0                                |                                             |
|                                                                                         | WORD2     | POS_STW2 or Epos_STW2    | POS_STW2.15 Hardware Limits Enable<br>ConfigEP05.3<br>FAS-P1.112414150 | POS_STW2.14 Software Limits Enable<br>ConfigEP05.2<br>FAS-P1.112414160 | Reserved B13                          | Reserved B12                                                     | POS_STW2.11 Touch Probe Edge<br>0 = Rising edge<br>1 = Falling edge<br>ConfigEP05.4<br>FAS-P1.112414170 | POS_STW2.10 Select Touch Probe<br>0 = Probe 1 Active<br>1 = Probe 2 Active<br>ConfigEP05.5<br>FAS-P1.112414180                                                                                                                               | Start Reference Search<br>0 = positive direction<br>1 = negative direction | Reference Select<br>1 = Flying Reference<br>0 = Search Reference                       | Reserved B7                                 | Reserved B6                                 | 1= RAMPING<br>0 = velocity                    | Reserved B4                                | Reserved B3                                 | POS_STW2.2 Reference Cam Active<br>ConfigEP05.6<br>FAS-???  | Set Reference Point                                         | Tracking Mode Active                        |
|                                                                                         | WORD3     | STW2                     | Master Sign-Of-Life                                                    |                                                                        |                                       |                                                                  | Motor Switchover Completed                                                                              | Reserved B10                                                                                                                                                                                                                                 | Global Trigger Command                                                     | STW2.8 Travel to Fixed EndStop (Torque Mode) Enable<br>ConfigEP05.30<br>FAS P1.1148000 | Parking Axis Enable                         | Reset I-Component                           | Global Start                                  | DOS Bit 4                                  | DOS Bit 3                                   | DOS Bit 2                                                   | DOS Bit 1                                                   | DOS Bit 0                                   |
|                                                                                         | WORD4     | OVERRIDE                 | Position Velocity Override                                             |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD5     | MDI_TARPOS               | MDI (Manual Data Input) Position Target<br>FAS P1.1128004              |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD6     | MDI_TARPOS               | MDI (Manual Data Input) Position Target<br>FAS P1.1128004              |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD7     | MDI_VELOCITY             | MDI (Manual Data Input) Velocity Target                                |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD8     | MDI_VELOCITY             | MDI (Manual Data Input) Velocity Target                                |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
|                                                                                         | WORD9     | MDI_ACE                  | MDI Percent Acceleration                                               |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| WORD10                                                                                  | MDI_DEC   | MDI Percent Deceleration |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |
| WORD11                                                                                  | Reserved  | Not Used                 |                                                                        |                                                                        |                                       |                                                                  |                                                                                                         |                                                                                                                                                                                                                                              |                                                                            |                                                                                        |                                             |                                             |                                               |                                            |                                             |                                                             |                                                             |                                             |

### Transfer to Controller and control using watch table

|                     |      |      |  |       |             |
|---------------------|------|------|--|-------|-------------|
| control_word2[0-15] |      |      |  |       |             |
| velocity_override   | 4000 | 4000 |  | WORD  | Hexadecimal |
| pos_setpoint        | 0    |      |  | DWORD | Decimal     |
| vel_setpoint        | 0    |      |  | DWORD | Decimal     |
| acc_override        | 4000 | 4000 |  | WORD  | Hexadecimal |
| dec_override        | 4000 | 4000 |  | WORD  | Hexadecimal |
| reserved            | 0000 |      |  | WORD  | Hexadecimal |

3. Set the position command and velocity command value and pay attention to the scaling setting in FAS

| NOTE: Telegram 111 is a Siemens specific extension of PROFINET (See extension telegram 113) |                             |                                                        |                                     |                                      |                                          |                                        |                                        |                                             |                                                    |                                                    |                                             |                                |                                |                                               |                                    |                                     |                                         |
|---------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------|-------------------------------------|--------------------------------------|------------------------------------------|----------------------------------------|----------------------------------------|---------------------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------|--------------------------------|--------------------------------|-----------------------------------------------|------------------------------------|-------------------------------------|-----------------------------------------|
| PP MODE                                                                                     |                             |                                                        |                                     |                                      |                                          |                                        |                                        |                                             |                                                    |                                                    |                                             |                                |                                |                                               |                                    |                                     |                                         |
|                                                                                             | B0                          | B1                                                     | B2                                  | B3                                   | B4                                       | B5                                     | B6                                     | B7                                          | B8                                                 | B9                                                 | B10                                         | B11                            | B12                            | B13                                           | B14                                | B15                                 | B16                                     |
| WORD0                                                                                       | ZSW1                        | Device specific                                        | Device specific                     | Drive Stopped<br>AutoStart           | Travel Stop Acknowledge<br>AutoStart     | Home Position Set<br>AutoStart         | Target Position Reached<br>AutoStart   | PLC Control Requested                       | Following Error Within Tolerance Range             | Warning Active                                     | Switch On Inhibited Lockout                 | Quick Stop Not Active          | Coast Stop Not Active          | Fault Active<br>AutoStart                     | Operation Enabled<br>AutoStart     | Ready To Operate<br>AutoStart       | Ready To Switch On                      |
| WORD1                                                                                       | POS_SW11<br>or<br>Epos_SW11 | MDI Active Selection<br>0=Record Mode<br>1=Direct Mode | - FW Pending:<br>MDI Setup Selected | Position Record Task is Active       | - FW Pending:<br>Flying Reference Active | Homing Task is Active                  | Jogging Task is Active                 | Positive Hardware Limit Switch is Activated | Negative Hardware Limit Switch is Activated        | Reserved B7                                        | Position Record Selected Bit 6              | Position Record Selected Bit 5 | Position Record Selected Bit 4 | Position Record Selected Bit 3                | Position Record Selected Bit 2     | Position Record Selected Bit 1      | Position Record Selected Bit 0          |
| WORD2                                                                                       | POS_SW21<br>or<br>Epos_SW21 | Traveling Task is Active                               | Travel to Feed Stop is Active       | Feed EndStop Clamping Torque Reached | Feed Stop Reached                        | Direct Output 2 via Positioning Record | Direct Output 1 via Positioning Record | Actual Position<br>Can Switch Position 0    | Actual Position<br>Can Switch Position 0           | Positive Software Limit Switch is Activated        | Negative Software Limit Switch is Activated | And is Moving Positive         | And is Moving Negative         | - FW Pending:<br>Drilling Mark outside window | Ready to Accept new-Setpoint       | Velocity Limit is Active            | Tracking Mode is Active                 |
| WORD3                                                                                       | ZSW2                        | Sign-Off-Life                                          | Sign-Off-Life                       | Pulses Enabled                       | Drive Ready                              | Controller Enable                      | Reserved B10                           | Reserved B9                                 | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit             | No motor over-temperature alarm             | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD4                                                                                       | MEL0W                       | Reserved B15                                           | Reserved B14                        | Pulses Enabled                       | Drive Ready                              | Controller Enable                      | Reserved B10                           | Reserved B9                                 | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD5                                                                                       | OST_A                       |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD6                                                                                       | OST_B                       |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD7                                                                                       | OST_C                       |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD8                                                                                       | FAST_CODE                   |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD9                                                                                       | WARN_CODE                   |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD10                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD11                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD12                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD13                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD14                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD15                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD16                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD17                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD18                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD19                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD20                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD21                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD22                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD23                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD24                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD25                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD26                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD27                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD28                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD29                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD30                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD31                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD32                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD33                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD34                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD35                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD36                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD37                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD38                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD39                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD40                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD41                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD42                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD43                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD44                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD45                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD46                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD47                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD48                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD49                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD50                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD51                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD52                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD53                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD54                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD55                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD56                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD57                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD58                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD59                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD60                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD61                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD62                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD63                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD64                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD65                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD66                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD67                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD68                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance | No alarm, thermal overload, power unit      | Variable signaling function    | Reserved B4                    | Segment(0) speed threshold value 2            | Segment(0) speed threshold value 3 | Torque(Tq) torque threshold value 2 | 0=Ramping Active<br>1=Ramping Completed |
| WORD69                                                                                      | Reserved                    |                                                        |                                     |                                      |                                          |                                        |                                        |                                             | Actual Position value<br>RAS P1.11241328           | Speed Setpoint - Actual Deviation Within tolerance |                                             |                                |                                |                                               |                                    |                                     |                                         |

4. Start task by toggling bit 6 of PZD1(STW1)

[illegible]



Transfer to Controller and control using watch table

|                     |       |      |       |  |           |  |         |  |
|---------------------|-------|------|-------|--|-----------|--|---------|--|
| pd_out              |       |      |       |  | PD_OUTPUT |  |         |  |
| control_word1[0-15] |       |      |       |  |           |  |         |  |
| control_word1[0]    | True  | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[1]    | True  | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[2]    | True  | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[3]    | True  | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[4]    | True  | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[5]    | True  | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[6]    | True  | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[7]    | False | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[8]    | False | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[9]    | False | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[10]   | True  | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[11]   | False | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[12]   | False | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[13]   | False | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[14]   | False | TRUE | FALSE |  | bool      |  | Boolean |  |
| control_word1[15]   | False | TRUE | FALSE |  | bool      |  | Boolean |  |

## 6 Introduction: EtherNet/IP process data

The CMMT in EtherNet/IP uses a PROFIDrive communication profile. It is possible to use Telegrams 1 (simple speed control), 102 (advanced speed control) and 111 (position control). The telegram used is selected via Automation Suite.

PD Telegram 1:  
Basic Speed Control

| WORD | INPUT                | OUTPUT             |
|------|----------------------|--------------------|
| 1.   | Control Word 1       | Status Word 1      |
| 2.   | Speed Setpoint Value | Actual Speed Value |



PD Telegram 102:  
Advanced Speed Control

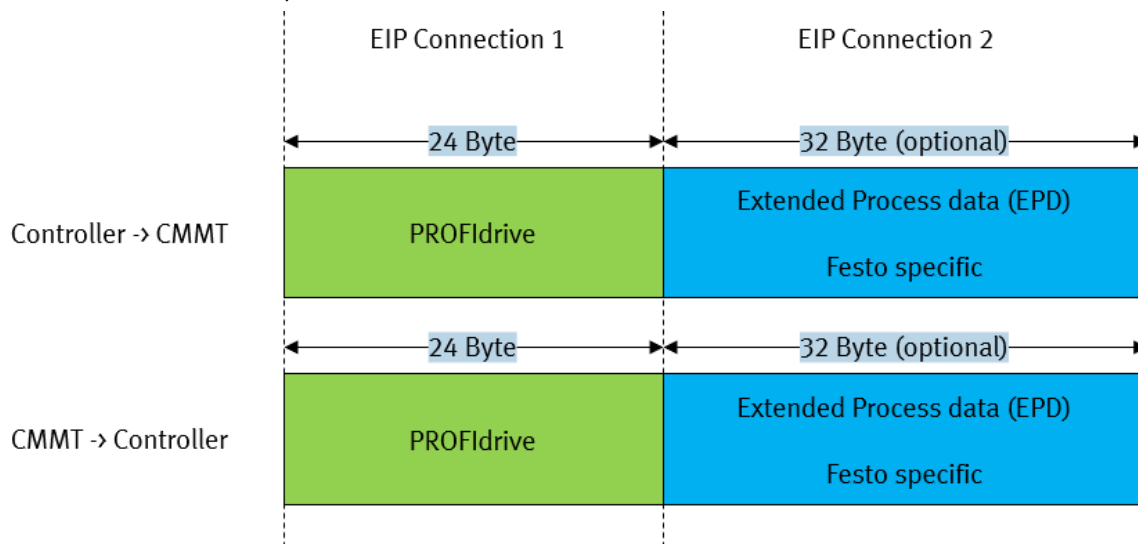
| WORD | INPUT                  | OUTPUT                    |
|------|------------------------|---------------------------|
| 1.   | Control Word 1         | Status Word 1             |
| 2.   | Speed Setpoint         | Speed Actual              |
| 3.   |                        |                           |
| 4.   | Control Word 2         | Status Word 2             |
| 5.   | Torque Reduction       | MELDW Status Word         |
| 6.   | Encoder Control Word 1 | Encoder Status Word 1     |
| 7.   |                        | Encoder Position G1_XIST1 |
| 8.   |                        |                           |
| 9.   |                        | Encoder Position G1_XIST2 |
| 10.  |                        |                           |

PD Telegram 111:  
EPOS mode

| WORD | INPUT                    | OUTPUT                |
|------|--------------------------|-----------------------|
| 1.   | Control Word 1           | Status Word 1         |
| 2.   | Pos Control Word 1       | Pos Status Word 1     |
| 3.   | Pos Control Word 2       | Pos Status Word 2     |
| 4.   | Control Word 2           | Status Word 2         |
| 5.   | Velocity Override        | MELDW Status Word     |
| 6.   |                          |                       |
| 7.   | MDI Position Setpoint    | Position Actual Value |
| 8.   |                          |                       |
| 9.   | MDI Velocity Setpoint    | Velocity Actual Value |
| 10.  |                          |                       |
| 11.  | MDI Percent Acceleration | Active Fault Number   |
| 12.  | MDI Percent Deceleration | Active Warning Number |
| 13.  | User Selectable          | User Selectable       |

The process data are:

- PROFIDrive Telegram
- Extended Process Data (optional)



The Extended Process Data (EPD) can be configured through Festo Automation Suite:

- Up to 8 inputs and outputs can be parameterized.
- Up to 32 Byte Input, 32 Byte Output.
- Once activated the length is fixed by 32 Bytes.