

CMMT Integration with Schneider PLC Using Ethernet/IP.

This Application Note explains the Function Blocks which allows the user to integrate CMMT controller with Schneider PLC and Unity Software using Ethernet/IP

CMMT

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1 Components/Software used

1.1 Software Used

Type/Name	Software Version
Festo Automation Suite	V2.1.0.519
Festo Field Device Tool	V2.10.1.46069
Schneider Unity Pro S	V14.1 192211A

Table 1.1: Softwares used

1.2 Hardware Used

Type/Name	Firmware Version
Festo Automation Suite	V2.1.0.519
Festo Field Device Tool	V2.10.1.46069
CMMT Drive	V19.0.3.94_release
Servo Motor	Based on Application
Motor Power Cable	Based on Application
Motor Encoder Cable	Based on Application
Servo Drive Connection Terminal Blocks	Based on Application
Ethernet Cable	NEBC-R3G4-ES-1-S-R3G4-ET
Schneider PLC	M340 P3420302 + NOC0401

Table 1.2: Hardware used

2 APPLICATION DESCRIPTION

The main use of this application note is to describe the communication between CMMT Servo Drive and Schneider controller through Ethernet/IP protocol

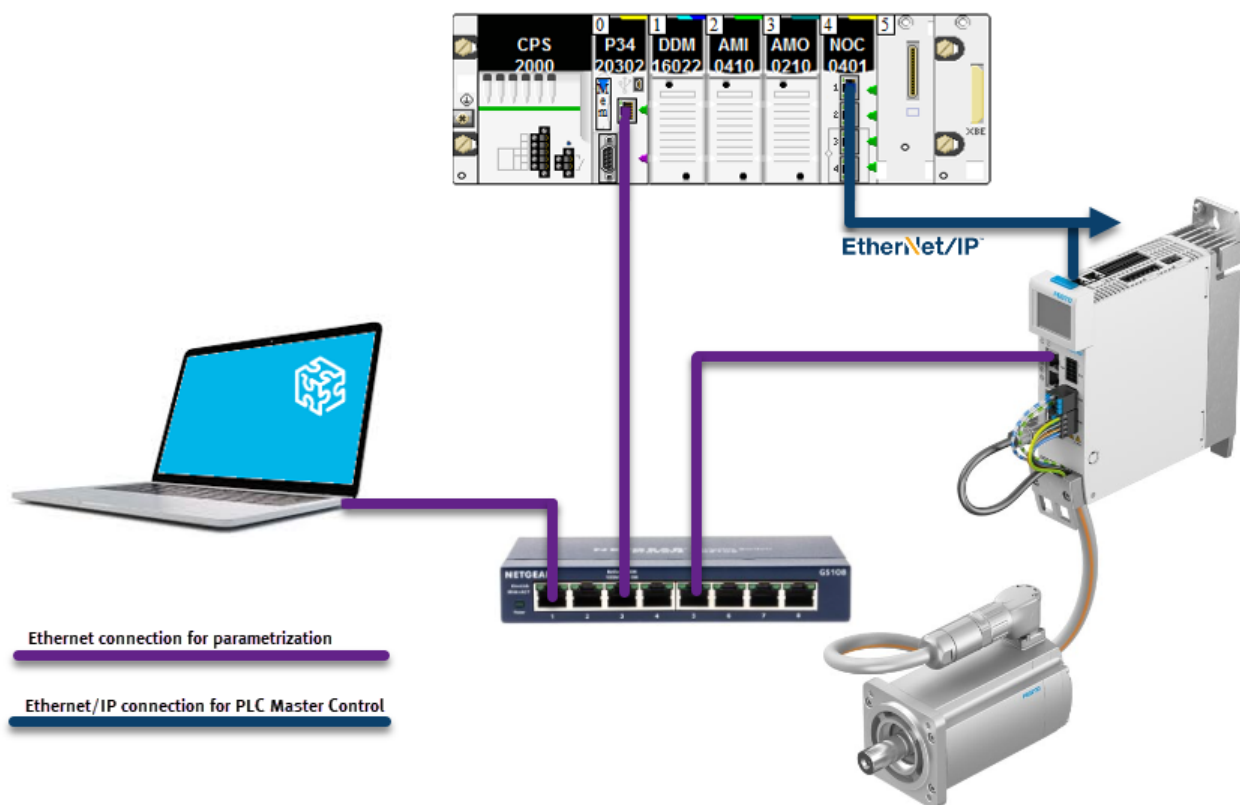
This application note explains in details the contents of the **Festo_PTP_Drives** library which is used for integrating Schneider Unity PLC with CMMT Controller via Ethernet/IP

The application note has the description for the following:

- PtP_Drives_Festo Function Block explanation.
- Configuration of CMMT controller as Ethernet/IP slave in Schneider PLC.
- Integration of **Festo_PTP_Drives** library into Unity project.
- Description on the working of the PtP_Drives_Festo library.

2.1 Topology

When we want to communicate between Schneider PLC and CMMT motor controller via Ethernet/IP protocol the following topology must be followed.



NOTE

- The ethernet Interface address of PLC, CMMT controller and the PC used for programming the PLC must be in the same range.

3 IP ADDRESS CONFIGURATION OF CMMT CONTROLLER PARAMETERIZATION PORT

The IP address of the CMMT Controller can be configured in 2 ways namely:

- Configuration of CMMT Drive Parameterization port X18 using Festo Field Device Tool.
- Configuration of CMMT Drive Parameterization port X18 using Festo Automation Suite.

3.1 Configuration of CMMT Drive Parameterization port X18 using Festo Field Device Tool

This chapter describes about IP address configuration of CMMT drive parametrizing port using Festo Field Device Tool.



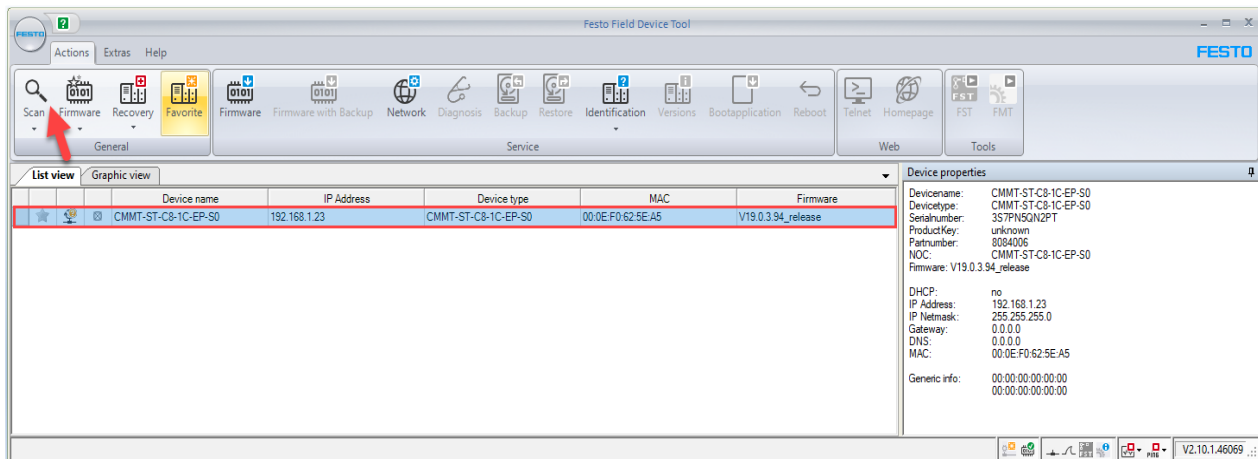
Note

- Before starting CMMT drive IP address configuration process makes sure the hardware connection between PC & servo drive is done as per communication architecture shown in Chapter 2.1. In the Chapter 2.1 yellow color connection is only for parametrization. After parametrization to establish connection with PLC, connect the PC with Ethernet switch as shown dotted blue color line.
- User can download the Festo Field Device Tool form Festo support portal website using below link.

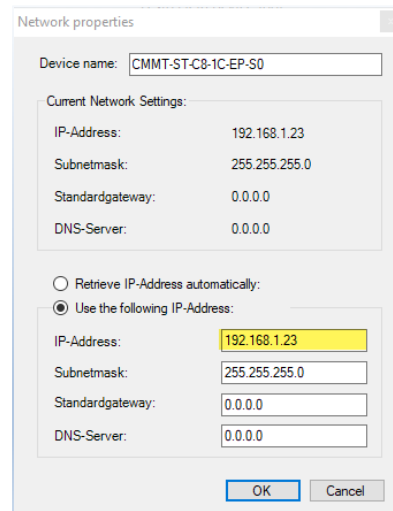
https://www.festo.com/net/fr_fr/SupportPortal/Downloads/281501/216381/2020.11.16.1%5BFestoFieldDeviceTool2.10.2.36790%5D.exe

The following steps must be followed for configuring the IP address of CMMT controller via Festo Field Device Tool:

1. Open the Festo Field Device tool. Once the FFT is opened the below view will be displayed.



2. To find the devices connected to the network click on the Scan symbol. Once the scan is completed the list of devices connected in the network appears.
3. Right click on the CMMT. Then click on network parameters to open the Network Configuration window.



Network properties

Device name: CMMT-ST-C8-1C-EP-S0

Current Network Settings:

IP-Address:	192.168.1.23
Subnetmask:	255.255.255.0
Standardgateway:	0.0.0.0
DNS-Server:	0.0.0.0

☐ Retrieve IP-Address automatically:
☒ Use the following IP-Address:

IP-Address:	192.168.1.23
Subnetmask:	255.255.255.0
Standardgateway:	0.0.0.0
DNS-Server:	0.0.0.0

OK Cancel

3.2 IP Address Configuration of CMMT Drive Parametrizing Port - X18 (Using FAS)

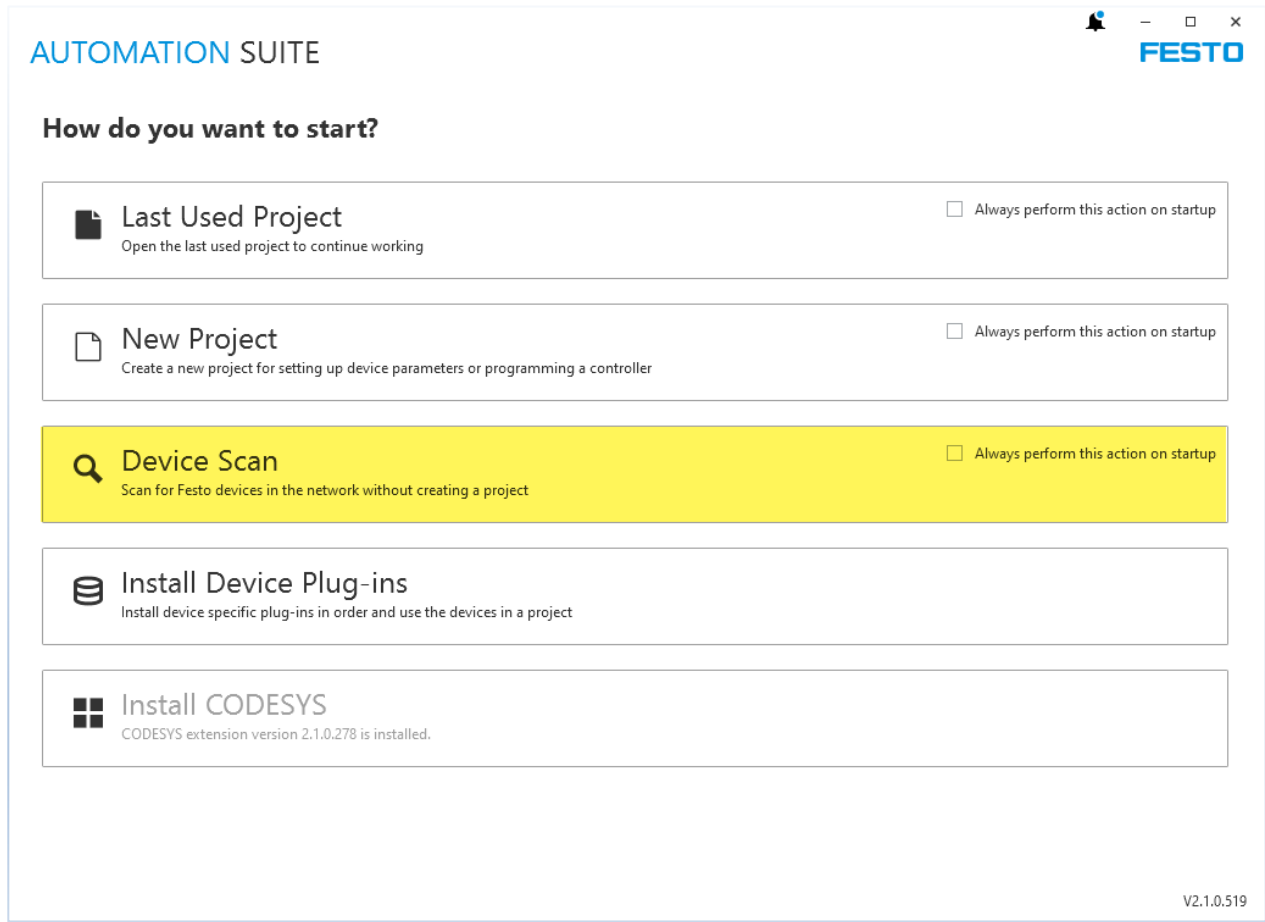
This chapter describes IP address configuration of CMMT drive parametrizing port using Festo Automation Suite.



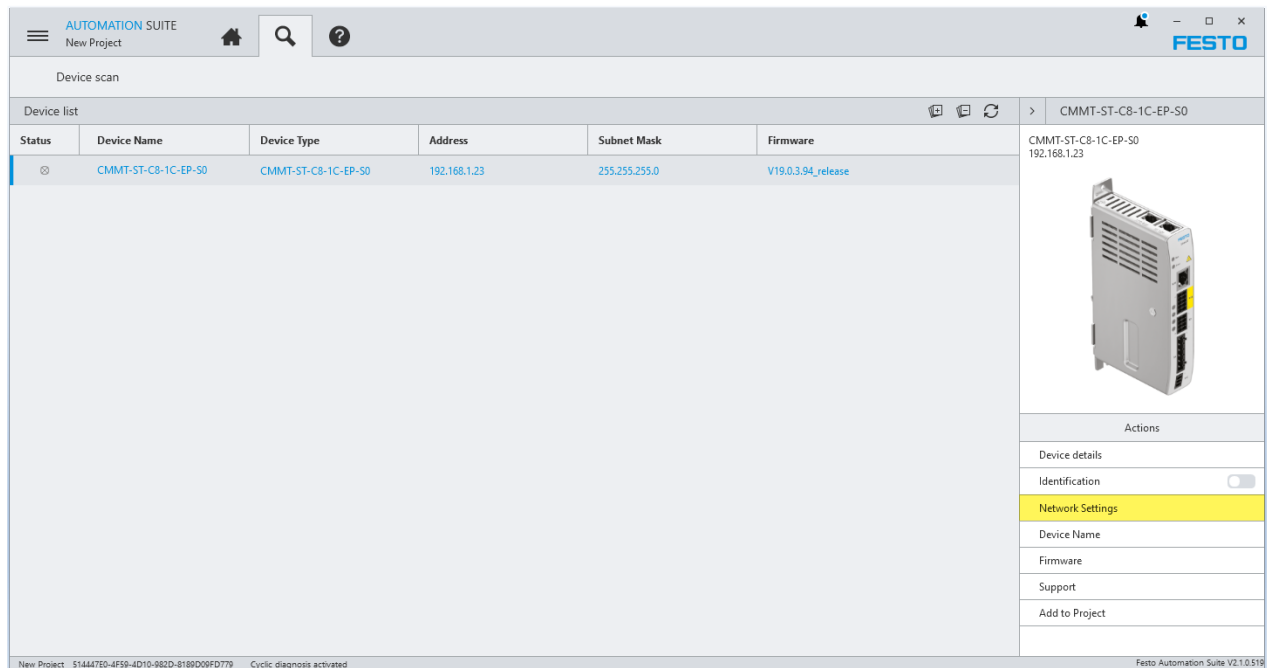
Note

- Before starting CMMT drive IP address configuration process makes sure the hardware connection between PC & servo drive is done as per communication architecture shown in Chapter 2.1. In the Chapter 2.1 yellow color connection is only for parametrization. After parametrization to establish connection with PLC, connect the PC with Ethernet switch as shown dotted blue color line.
- User can download the Festo Automation Suite form Festo support portal website using below link.
https://www.festo.com/net/fr_fr/SupportPortal/Downloads/645294/704880/FestoAutomation-Suite_2.1.0.519.exe

1. Open Festo Automation Suite Software. The following view will be displayed.



2. Click on **Device scan** to search the devices connected on the network to the PC.
3. Once the device scan is completed, the devices connected in the network will appear as shown below.



4. Click on Network Settings to open the Network Settings tab.

5. The Network Settings tab will be as shown below:

>
CMMT-ST-C8-1C-EP-S0

CMMT-ST-C8-1C-EP-S0
192.168.1.23



< Actions
Network Settings

DHCP:
☐ Enable

Address:
192 . 168 . 1 . 23

Subnet Mask:
255 . 255 . 255 . 0

Gateway:
0 . 0 . 0 . 0

DNS:
0 . 0 . 0 . 0

Activate New Settings

6. After changing the IP address click on the button **“Activate New Settings”**.

4 CMMT SERVO DRIVE FUNDAMENTAL CONFIGURATION

4.1 Linear Axis Configuration



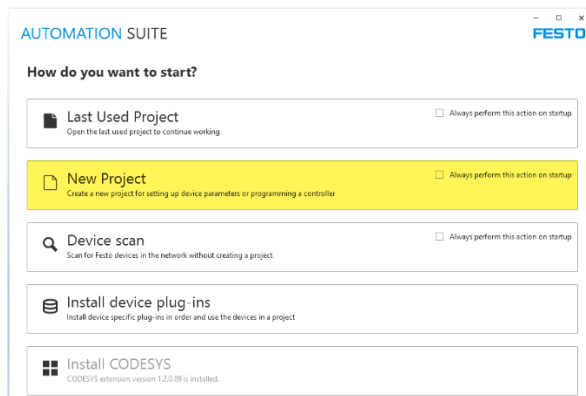
Note

- If user looking for Rotary Axis configuration skip this chapter and jump to [Chapter 4.2](#).

This chapter describes the parameterization of the CMMT drive for a linear axis to move 100 mm stroke length with 0.50 m/s as base speed & current position as homing mode.

Step – 1

- Open the Automation Suite software from Windows **Start > Festo Software > AUTOMATION SUITE** and select “**New Project**” from start-up menu.

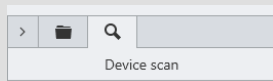


Step – 2

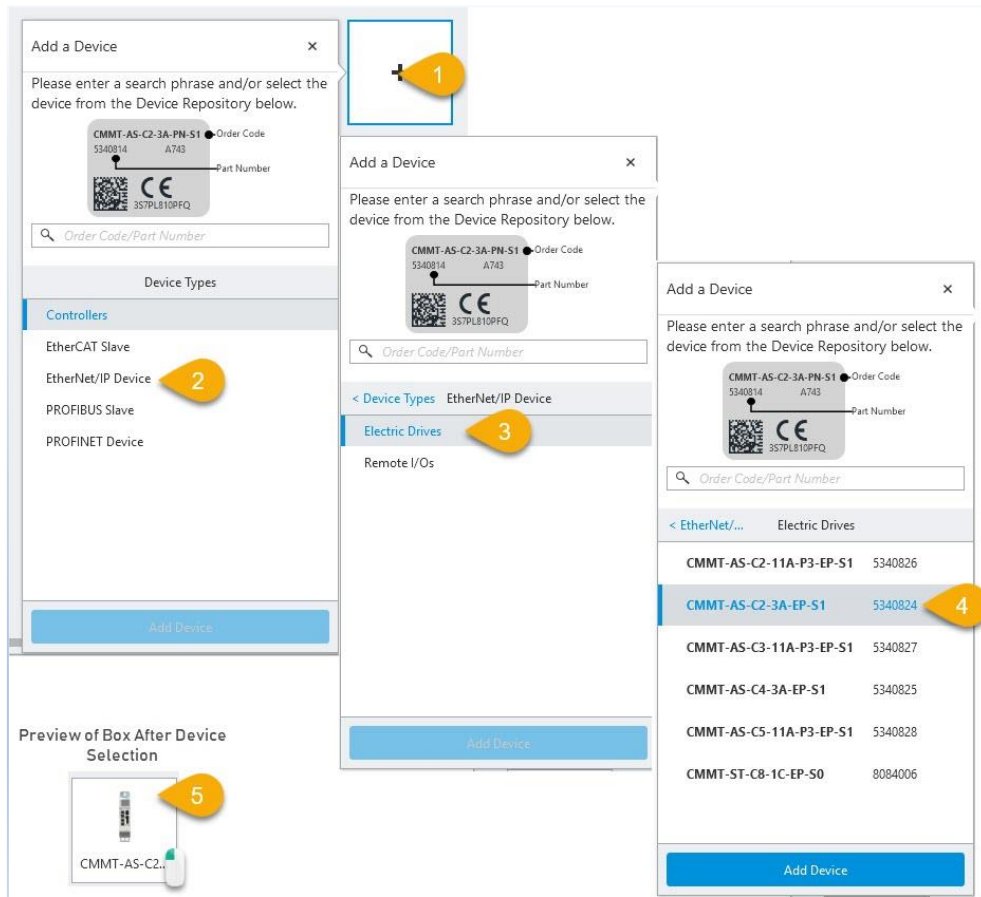


Note

- Follow this step if drive is not online. If drive is connected with PC as shown in [Chapter 2.1](#), simply click Device scan from home (Next to device Repository) and online devices will be visible in available devices list. Select the correct device based on its configured name & IP address then double click.



1. Select any empty device box and click add button.
2. Select “**Ethernet/IP Device**” from Add a Device menu.
3. Select “**Electric Drives**” from device type menu.
4. **Select correct drive part number** from electric drives list. As per this sample application CMMT-AS-C2-3A-EP-S1 is selected.
5. Double click the newly added drive to initialize configuration parameters.

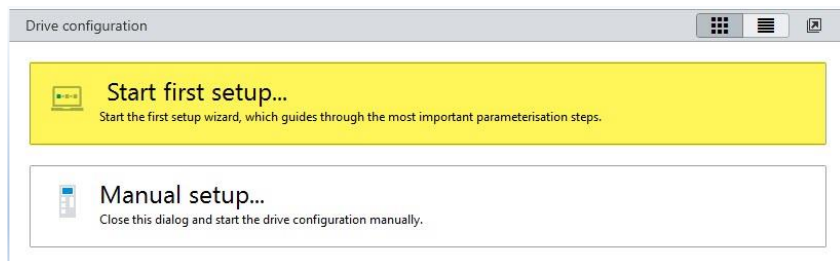
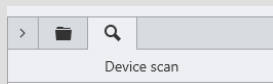


Step – 3



Note

- Follow the above step if drive is not online. If drive is connected with PC as shown in [chapter 2.1](#) simply click Device scan (Last Most in Right Side) and online devices will be visible in available devices list. Select the correct device based on Its configured name & IP address.



- Select “**Start first setup**” from drive configuration menu.

Step – 4

1. Click **“Motor”** from components of drive system menu for specific motor model.
2. **Select correct motor** based on its **part number** and double click. As per this sample application “EMME-AS-40-S-LV-AS” motor is used.
3. Cross verify the motor parameters & click apply button to ensure motor configuration.

Motor selection window details:

Search results	Selected component
EMME-AS-40-S-LV-AS 2082428	Motor type: Servo motor (2)
EMME-AS-40-S-LV-ASB 2082430	Holding brake: No
	Rated voltage: 360.00 V
	Maximum rotation velocity: 10000.00 rpm
	Rated velocity: 9000.00 rpm
	Maximum current: 3.20 Arms
	Rated current: 0.70 Arms
	Standstill current: 0.80 Arms

- View of motor tab after configuration

	EMME-AS-40-S-LV-AS 2082428	Type Servo motor (2)	Holding brake No	Encoder protocol Hiperface (0)	Encoder type Single turn (1)	Voltage 360.00 V	
--	-------------------------------	-------------------------	---------------------	-----------------------------------	---------------------------------	---------------------	--

Step – 5

- This step describes the axis type configuration. As specified initially here axis configuration is done for 100 mm in linear stroke length. This configuration will change based on user application type.

Please select the components of your drive system



CMMT-AS-C4-3A-EP-S1
5340825 Licenses

Maximum current
12.00 A

Intermediate circuit voltage
320.00 V

Servo drive



EMME-AS-40-S-LV-AS

Type

Holding brake

Encoder protocol
Interface (0)

Encoder type
Single turn (1)

Voltage
360.00 V

Motor

Please enter a search phrase and/or select a device from the list below.

CMMT-AS-C4-3A-EP-S1
5340814 A743
357PL810PFQ

Order code

Part number

Axis

Search results

User defined linear axis

User defined rotative axis

DGE-8-%%-ZR 193739

DGE-8-%%-ZR-HD12-GK 193739

DGE-8-%%-ZR-HD8-GK 193739

Select axis

User defined linear axis

Current user unit
Metric [m, m/s, ...] (6)

Motion
Linear

Unlimited axis
☐ Active

Working stroke
100.00 mm

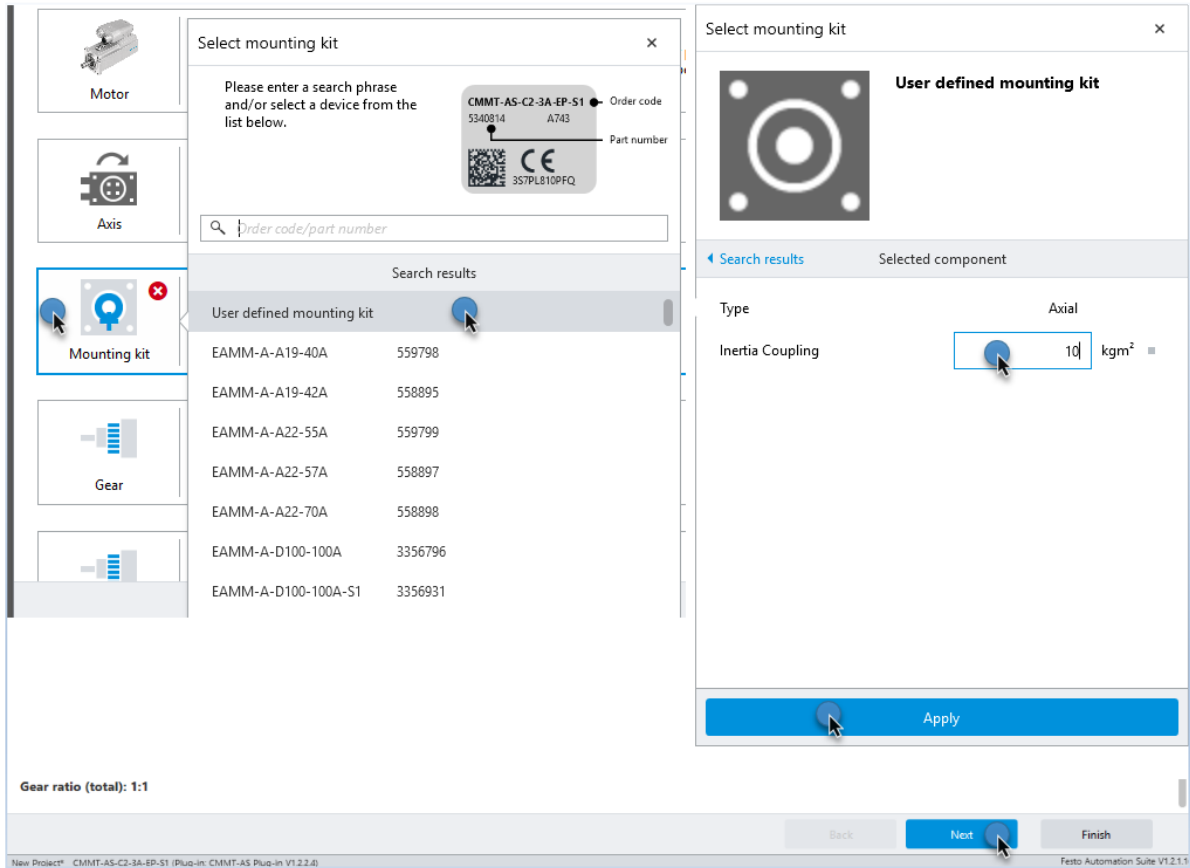
Feed constant
10.00 mm/r

Design axis
Single axis (0)

Apply

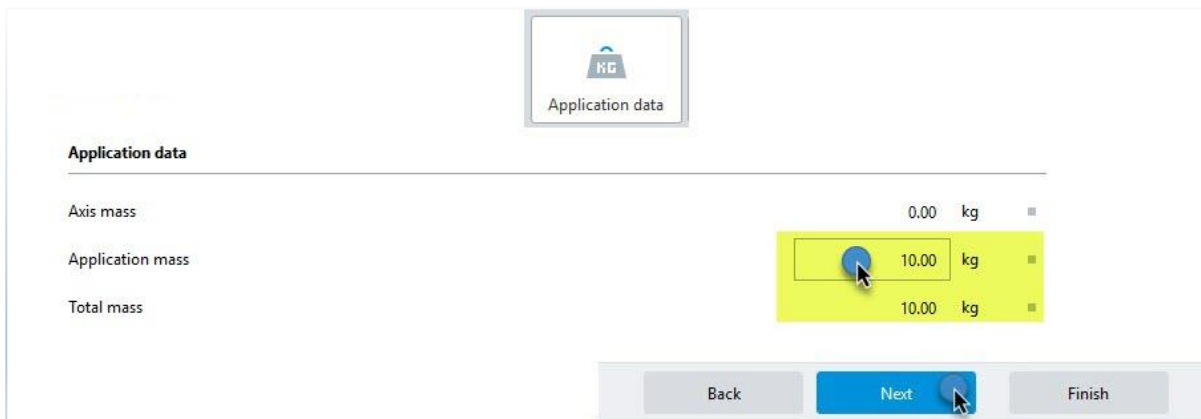
Step – 6

- This step illustrates the mounting kit configuration. This configuration will vary depending on user application type. At the end of this step click next button to move to next level configuration.



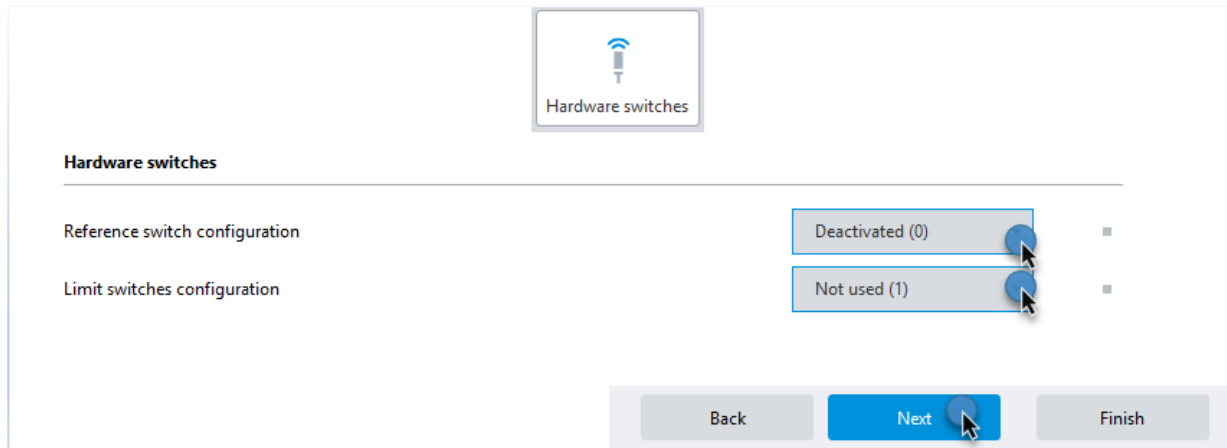
Step – 7

- Specify inertia value of user application. This parameter value will vary depending on application type. Click next button for next level configuration.



Step -8

- Select the homing & maximum limit switch connection type. Click next button for next level configuration.



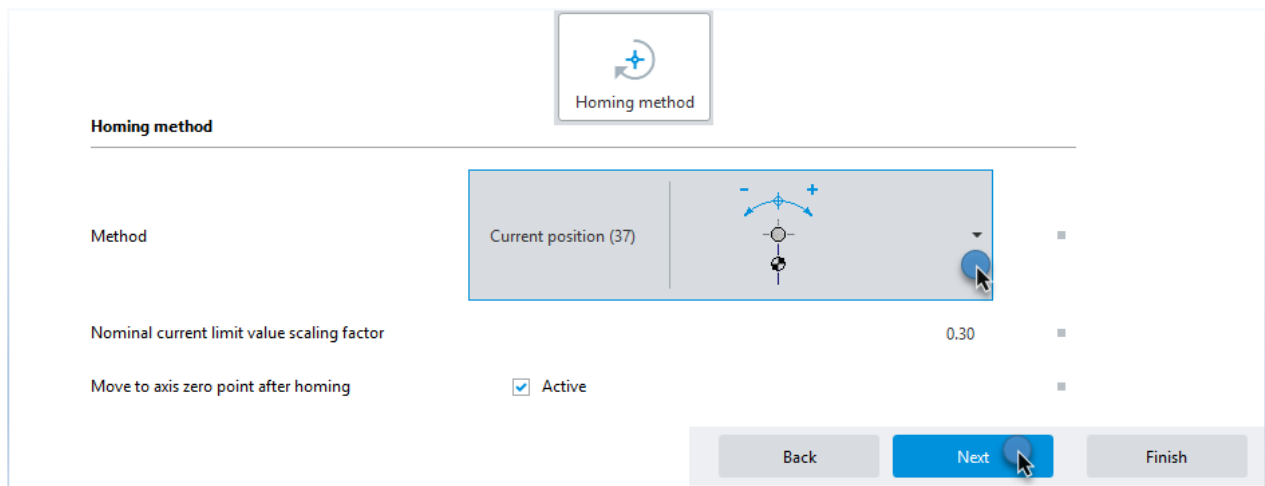

Hardware switches

Hardware switches

Reference switch configuration	Deactivated (0)	■
Limit switches configuration	Not used (1)	■

Step – 9

- Select homing method. As per this sample application “**Current Position**” mode is selected, but the user should select the homing mode depending on the application requirement. Click next button for next level of configuration.



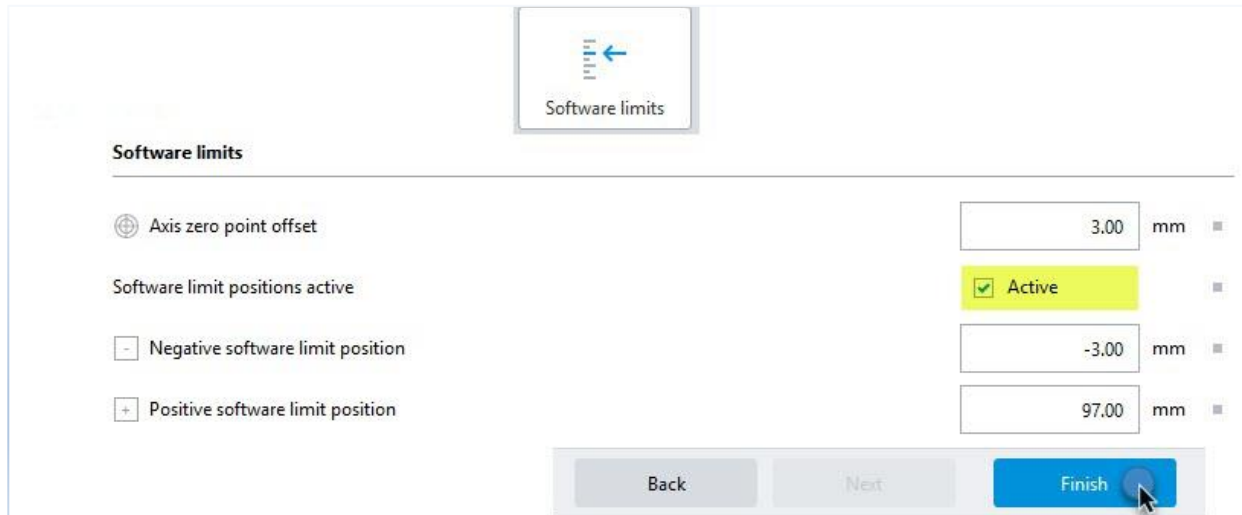

Homing method

Homing method

Method	Current position (37)	■
Nominal current limit value scaling factor	0.30	■
Move to axis zero point after homing	☒ Active	■

Step – 10

- Here user can enable the maximum & minimum values of software limits as per application requirements. Finally click **“Finish”** button to complete the configuration.



Software limits

Axis zero point offset 3.00 mm

Software limit positions active ☒ Active

Negative software limit position -3.00 mm

Positive software limit position 97.00 mm

Back Next Finish

Step – 11

- At this stage all the fundamental configurations of drive system are done. In case of any correction in parameter is required, tool will indicate number of **“correction parameters”** (Right most top corner in FAS tool) as shown in the below picture. So, to correct parameter value click the **“Correction parameters”** button and click apply button to apply system generated recommended values.



4.2 Rotary Axis Configuration

This chapter describes the parameterization of the CMMT drive for a rotary axis to move 1000 revolution forward and reverse with 1000 RPM base speed & current position as homing mode.

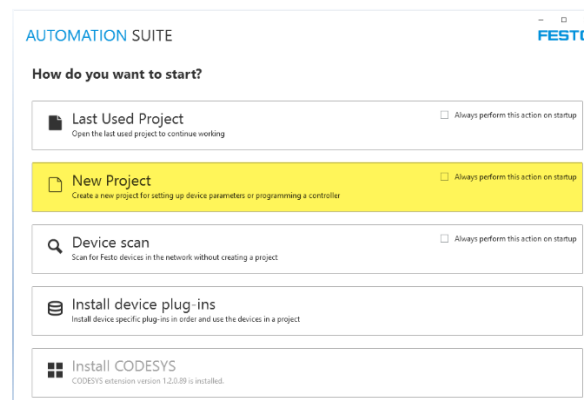


Note

- If user looking for Linear Axis configuration skip this chapter and jump to [Chapter 4.1](#).

Step – 1

Open the Automation Suite software from Windows **Start > Festo Software > AUTOMATION SUITE** and select **“New Project”** from start-up menu.

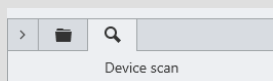


Step – 2

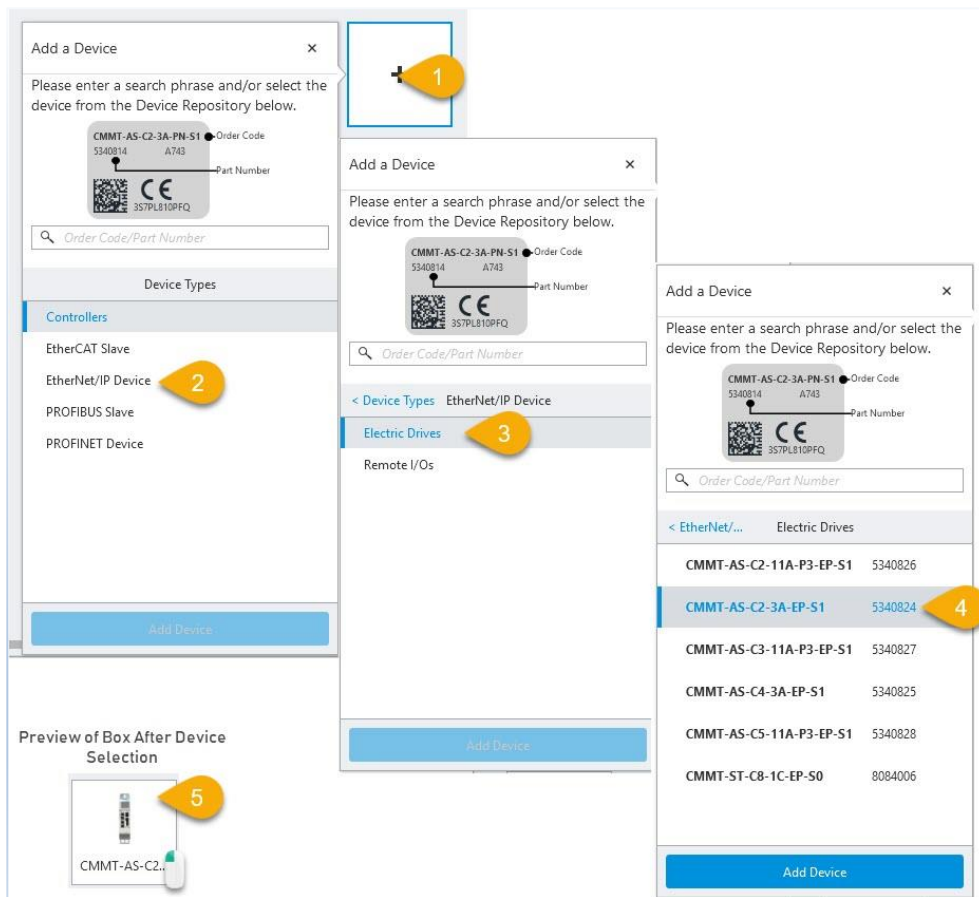


Note

- Follow this step if drive is not in online. If drive is connected with PC as shown in [Chapter 2.1](#) simply click Device scan from home (Next to device Repository) and online devices will be visible in available devices list. Select the correct device based on Its configured name & IP address then double click.



1. Select any empty device box and click add button.
2. Select **“Ethernet/IP Device”** from Add a Device menu.
3. Select **“Electric Drives”** from device type menu.
4. **Select correct drive part number** from electric drives list. As per this sample application CMMT-AS-C2-3A-EP-S1 is selected.
5. Double click the newly added drive to initialize configuration parameters.

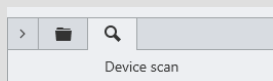


Step – 3

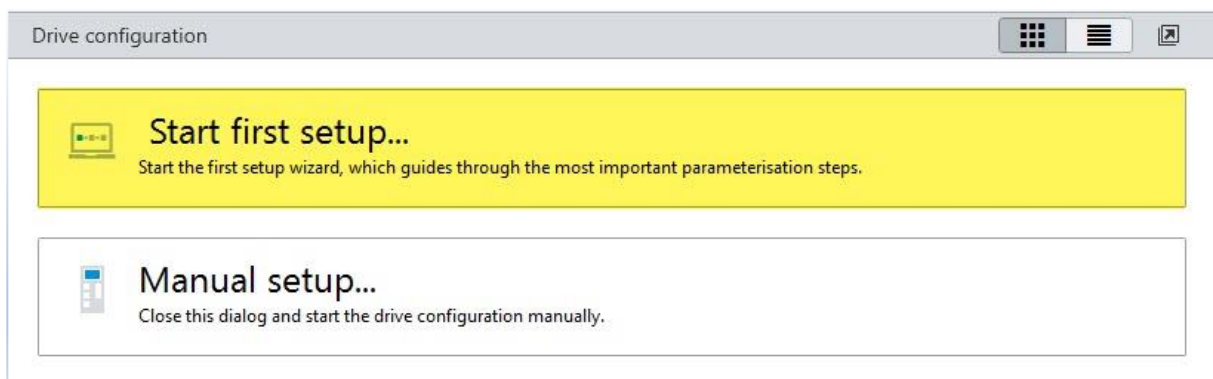


Note

- Follow the below step if drive is not in online. If drive is connected with PC as shown in [Chapter 2.1](#) simply click Device scan (Last Most in Right Side) and online devices will be visible in available devices list. Select the correct device based on Its configured name & IP address.



- Select **“Start first setup”** from drive configuration menu.



Step – 4

- Click **“Motor”** from components of drive system menu for specific motor model.
- Select **correct motor** based on its **part number** and double click. As per this sample application “EMME-AS-40-S-LV-AS” motor is used.
- Cross verify the motor parameters & click apply button to ensure motor configuration.

- | | | | | | | | |
|--|---|--|------------------------------------|--|--|------------------------------------|--------------------------------------|
|  <p>Motor</p> | <p>EMME-40-S-LV-AS
2082428</p> | <p>Type
Servo motor (2)</p> | <p>Holding brake
No</p> | <p>Encoder protocol
Hiperface (0)</p> | <p>Encoder type
Single turn (1)</p> | <p>Voltage
360.00 V</p> | <div> <div></div> <div></div> </div> |
|--|---|--|------------------------------------|--|--|------------------------------------|--------------------------------------|

Step – 5

- This step describes the axis type configuration. As specified initially here axis configuration is done for 1000 rotation in forward & reverse. This configuration will change based on user application type.

Please select the components of your drive system

Servo drive

CMMT-AS-C2-3A-EP-S1
5340824 Licenses

Maximum current
6.00 A

Intermediate circuit voltage
320.00 V

Motor

Axis

Mounting kit

Gear

Select axis

Please enter a search phrase and/or select a device from the list below.

CMMT-AS-C2-3A-EP-S1
5340824 A743
357PL810PFQ

Order code

Part number

Search results

User defined linear axis

User defined rotative axis

DGE-8-%%-ZR 193739

DGE-8-%%-ZR-HD12-GK 193739

DGE-8-%%-ZR-HD8-GK 193739

Select axis

User defined rotative axis

Current user unit
Rev [rev, rpm, ...] (3)

Motion
Rotative

Unlimited axis
☐ Active

Position range
1000 r

Design axis
Single axis (0)

Apply

Step – 6

- This step illustrates mounting kit configuration. This configuration will vary depending on user application type. At the end of this step click next button to move to next level configuration.

Select mounting kit

Please enter a search phrase and/or select a device from the list below.

CMMT-AS-C2-3A-EP-S1
5340824 A743
357PL810PFQ

Order code

Part number

Search results

User defined mounting kit

EAMM-A-A19-40A 559798

EAMM-A-A19-42A 558895

EAMM-A-A22-55A 559799

EAMM-A-A22-57A 558897

EAMM-A-A22-70A 558898

EAMM-A-D100-100A 3356796

EAMM-A-D100-100A-S1 3356931

Select mounting kit

User defined mounting kit

Type
Axial

Inertia Coupling
10 kgm²

Apply

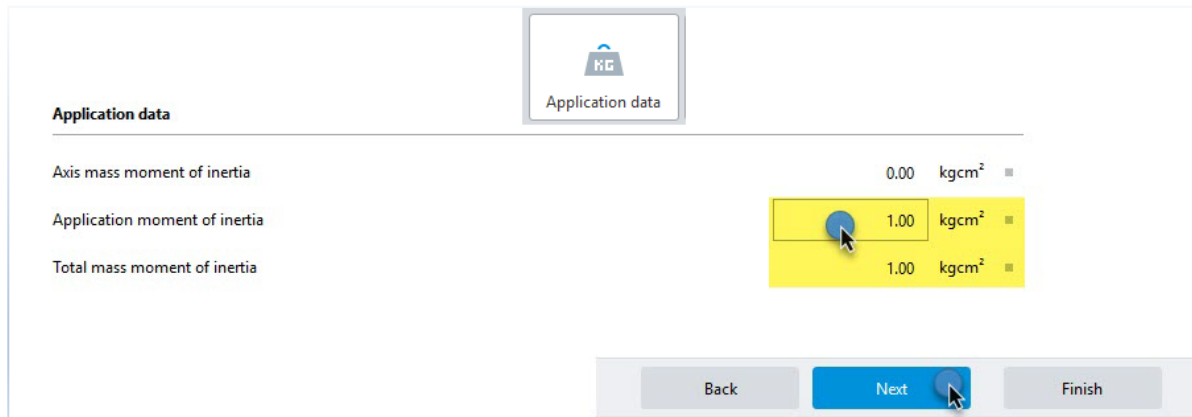
Gear ratio (total): 1:1

Back Next Finish

New Project: CMMT-AS-C2-3A-EP-S1 (Plug-in: CMMT-AS Plug-in V1.2.2.8) Festo Automation Suite V1.2.1.1

Step – 7

- Specify inertia value of user application. This parameter value will vary depending on application type. Click next button for next level configuration.



Application data

Axis mass moment of inertia 0.00 kgcm²

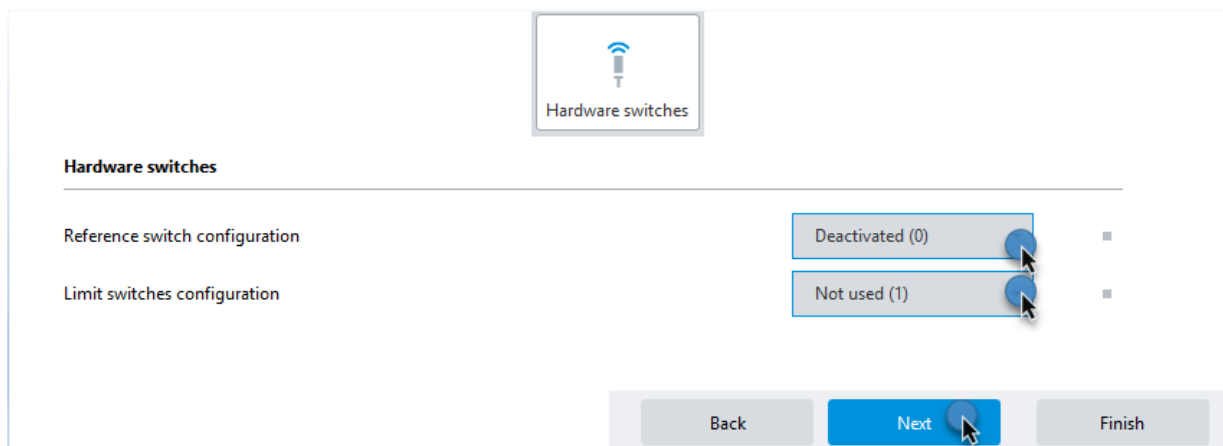
Application moment of inertia 1.00 kgcm²

Total mass moment of inertia 1.00 kgcm²

Back Next Finish

Step -8

- Select the homing & maximum limit switch connection type. Click next button for next level configuration.



Hardware switches

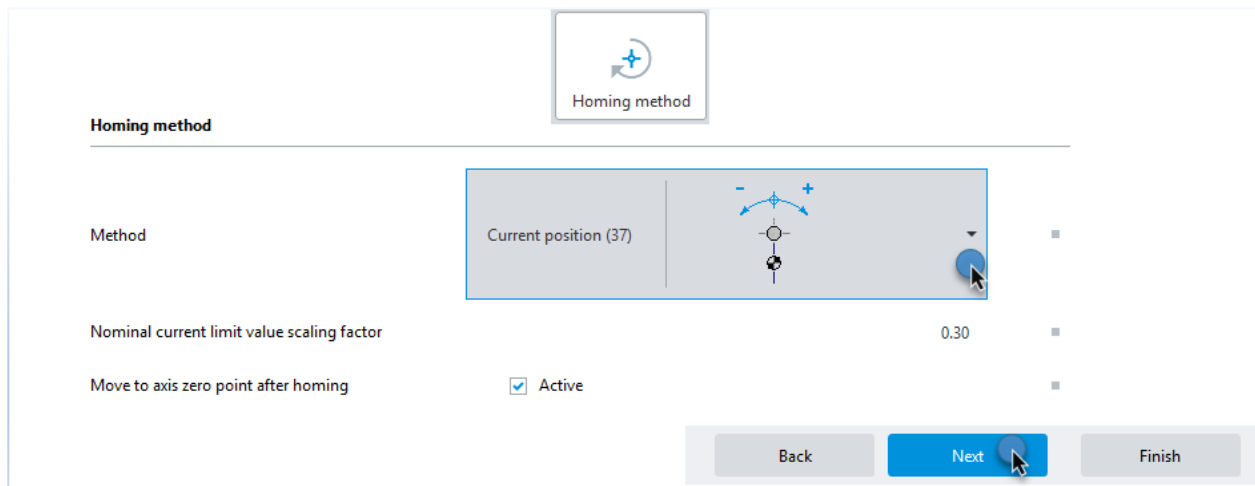
Reference switch configuration Deactivated (0)

Limit switches configuration Not used (1)

Back Next Finish

Step – 9

Select homing method. As per this sample application “**Current Position**” mode is selected, but the user should select the homing mode depending on the application requirement. Click next button for next level of configuration.



Homing method

Method: Current position (37)

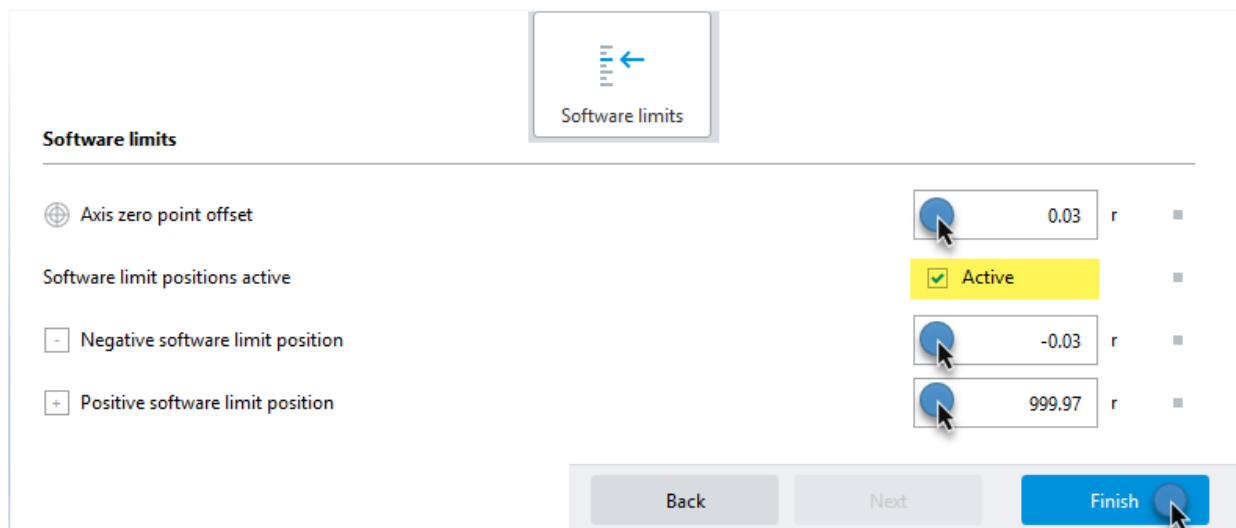
Nominal current limit value scaling factor: 0.30

Move to axis zero point after homing: ☒ Active

Back Next Finish

Step – 10

- Here user can enable the maximum & minimum values of software limits as per application requirements. Finally click **“Finish”** button to complete the configuration.



Software limits

Axis zero point offset: 0.03

Software limit positions active: ☒ Active

Negative software limit position: -0.03

Positive software limit position: 999.97

Back Next Finish

Step – 11

At this stage all the fundamental configurations of drive system are done. In case of any correction in parameter is required software, tool will indicate number of **“correction parameters”** (Right most top corner in FAS tool) as shown in the below picture. So, to correct parameter value click the **“Correction parameters”** button and click apply button to apply system generated recommended values.



4.3 CMMT Drive Parameterization for Integrate with PLC

This chapter will describe parameterization of CMMT drive to establish communication with PLC through Telegram 111. Also, it describes some additional parameters like Factor group, Reference values, p interface, User defined limits.

Step – 1



Note

- Follow this step when drive is available for online connection. If drive is not available simply skip this step and jump to next step.

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

The screenshot shows the 'PARAMETERISATION' tab of the software. On the left, the drive status is 'Disconnected' with IP '192.150.3.7'. A yellow callout '1' points to the 'Path' field. A 'Connect' button is visible. On the right, the 'Device Communication' window is open, showing the IP address '192.168.1.7' entered. Below this, a table lists 'Available Devices'.

Status	Identify	Device Name	Device Type	IP Address
⊗	☐	CMMT1	CMMT-AS	192.168.1.7

A yellow callout '2' points to the 'Use IP Address for Device Communication' button at the bottom right of the window. Below the main drive status, a 'Status When Drive is in On-line' section shows the drive as 'Connected' with IP '192.168.1.7' and a 'Disconnect' button.

Step – 2

- 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

2. 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

Factor group		
Current user unit	Metric [m, m/s, ...] (6)	
Position	-6	
Velocity	-3	



Note

- For more details about fieldbus scaling refer chapter name “**Scaling of internal units for the fieldbus**” in user manual.
- Different user unit can't be set for Position, Velocity, Acceleration & Jerk.
- The maximum value limit for 32-bit DINT data type variable is 2,147,483,647. So, plan scaling factor within the limit.

Step – 3

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

Reference values		
Base value speed	0.50	m/s
Base value speed (controller)	3000.00	rpm
Base value acceleration	1.00	m/s ²
Base value deceleration	1.00	m/s ²



Note

- Base speed value does not affect the speed of the drive, but it will affect 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).

Step – 4

- Enter the IP address & Subnet mask for Ethernet/IP interface (the same will be the IP address of the Modbus TCP interface of CMMT). This communication interface is used to establish connection with PLC to receive control command & to send signal feedbacks.

Configuration		
Activate DHCP	☐ Active	■
IP address	192 . 168 . 1 . 20	■
Subnet mask	255 . 255 . 255 . 0	■
Gateway address	0 . 0 . 0 . 0	■

**Note**

- IP address series of Modbus TCP interface must match with PLC IP address series to establish connection.

Step – 5

- Select the connection properties as “**Telegram (111)**” from **PARAMETERISATION > Fieldbus > Connection properties**.

Connection properties	
Telegram selection	Telegram (111) ▼ ■
Current application class	Application class 1 (1) ■

Step – 6

- Select the medium to enable the servo drive. The selection must be either “**I/O and fieldbus (0)**” or “**Fieldbus**” to control the drive through fieldbus.

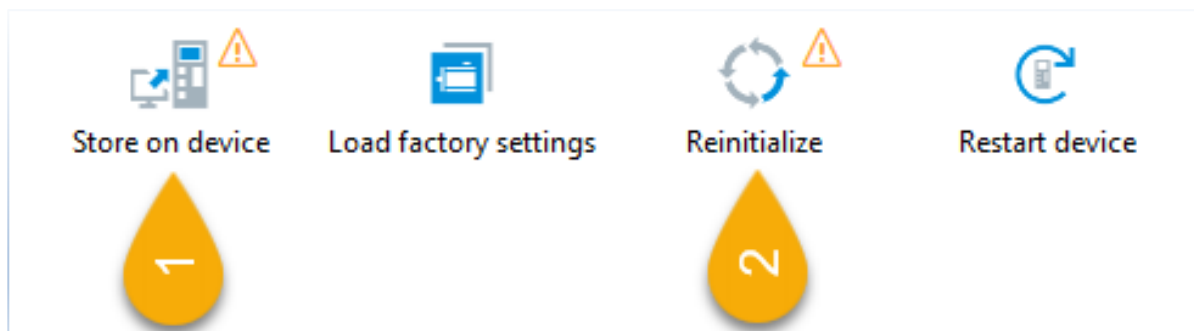
Enable servo drive

Activation via

I/O and fieldbus (0)
I/O and fieldbus (0)
I/O (1)
Fieldbus (2)
I/O and Plug-in (3)
Plug-in (4)

Step – 7

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

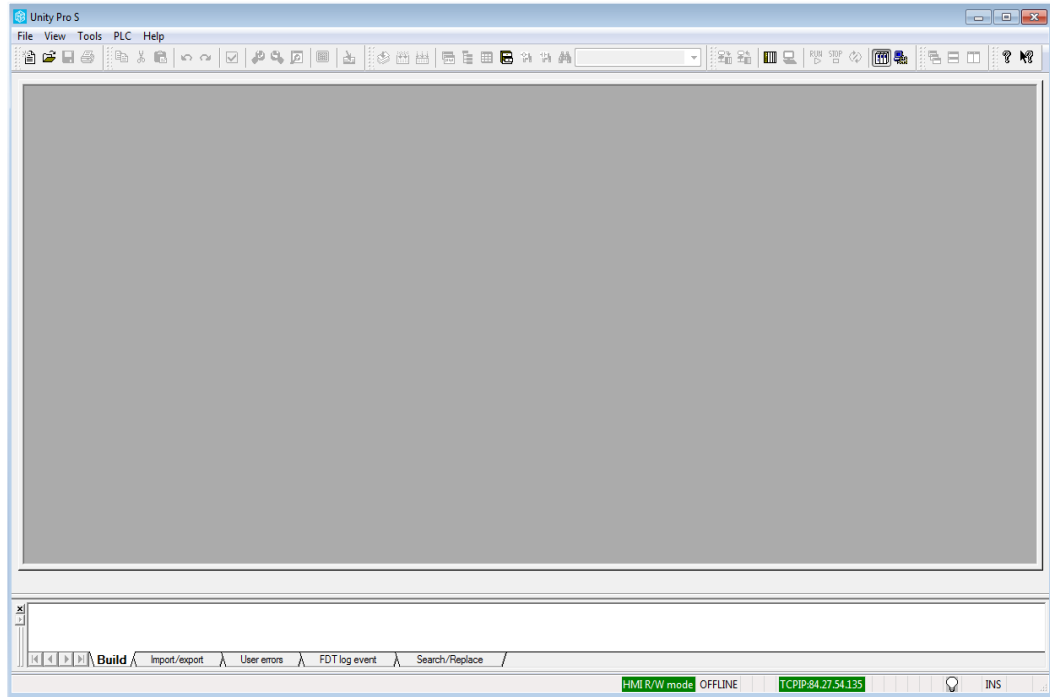
**Note**

- The triangle warning symbol on both buttons indicates action required.
- All the modified parameters will be automatically erased from drive during power restart if modified parameters are not stored in the drive.
- It's mandatory to reinitialize the drive for some parameter modification. If drive is not reinitialized the drive performance remains same as like previous configuration.

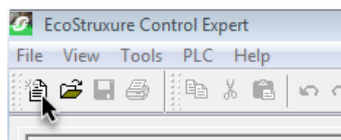
5 CONFIGURING SCHNEIDER PLC IN UNITY

5.1 Create a new project in Unity.

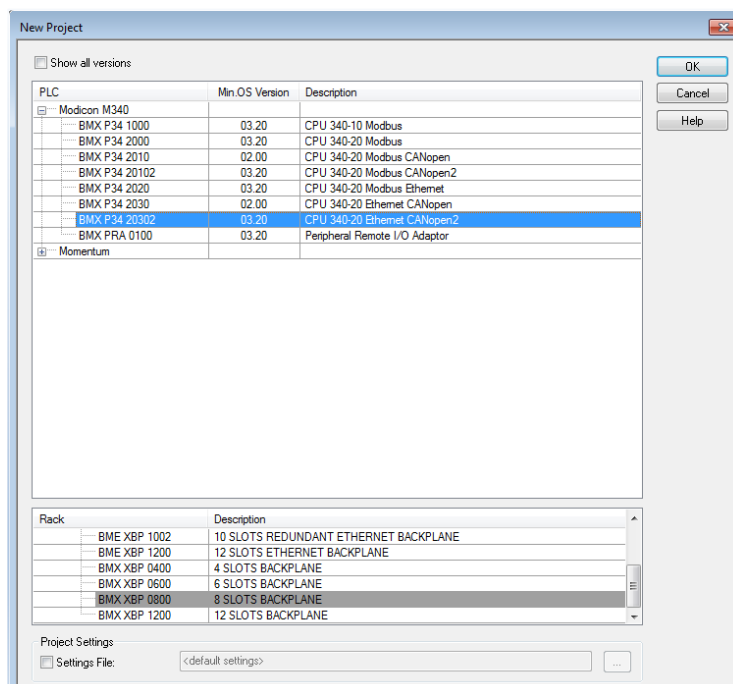
1. Open the Unity software in your system.



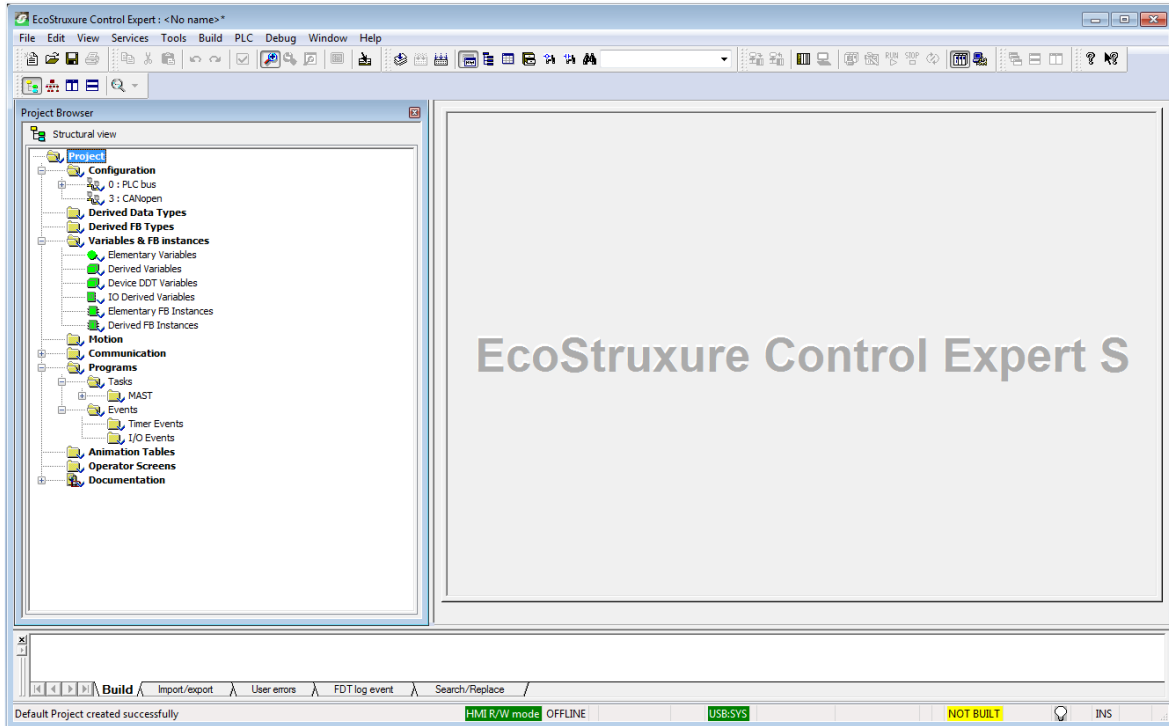
2. create a new project.



3. The project creation wizard appears as shown below, select your **CPU + Rack** and click OK.



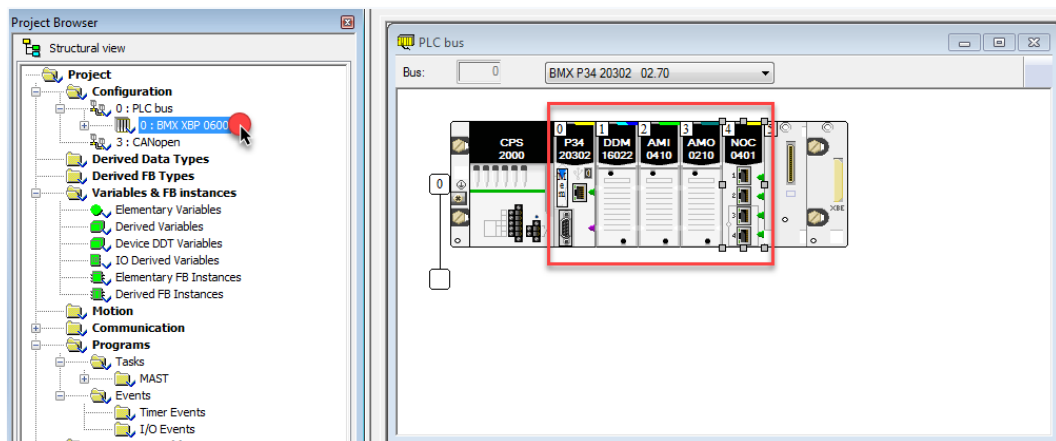
- Then the project view looks as shown below.



5.2 Configure the actual hardware configuration of the controller.

The actual hardware configuration of the controller must be configured manually by searching in the list for each rack position.

- Double click on the Rack in the PLC Bus configuration, then choose the right cards for each position.

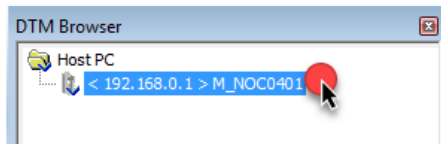


- Once the configuration is finished you can close the PLC Bus windows.

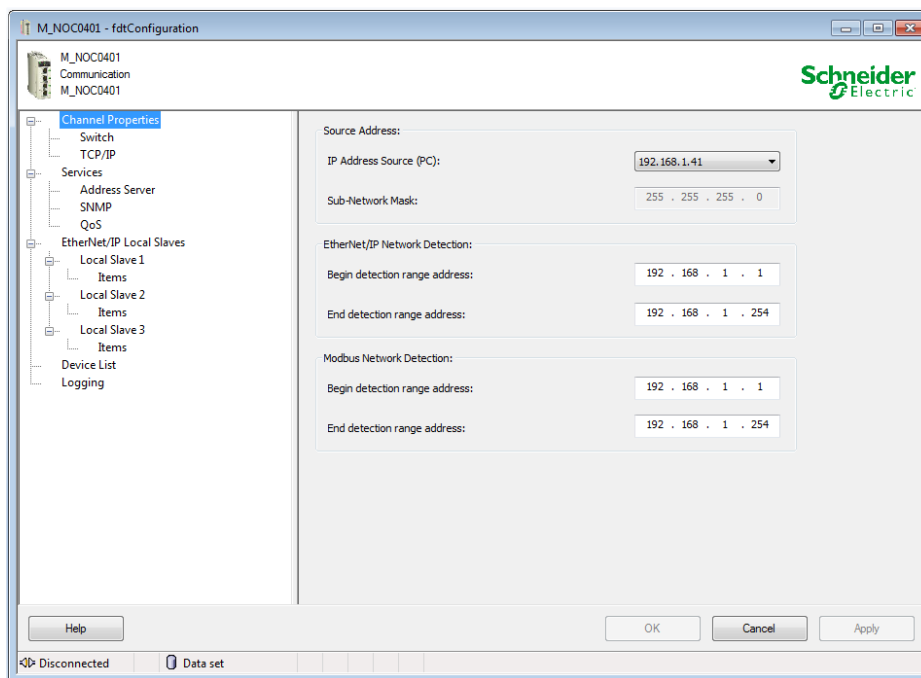
5.3 Configuration of your communication card, NOC401.

For the Ethernet/IP communication we need to configure the NOC401 card.

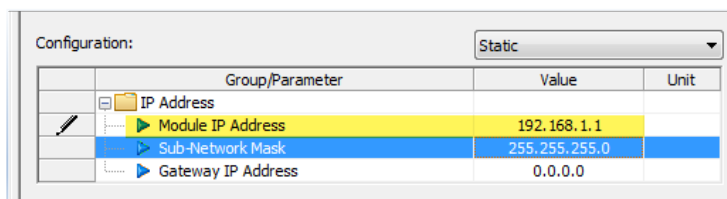
1. Open the DTM Browser: **Tool >> DTM Browser**
2. **Double click on your NOC401 card**



3. This is the configuration windows



4. Click on TCP/IP and set the **module IP address**



Then click on the **Apply** Button

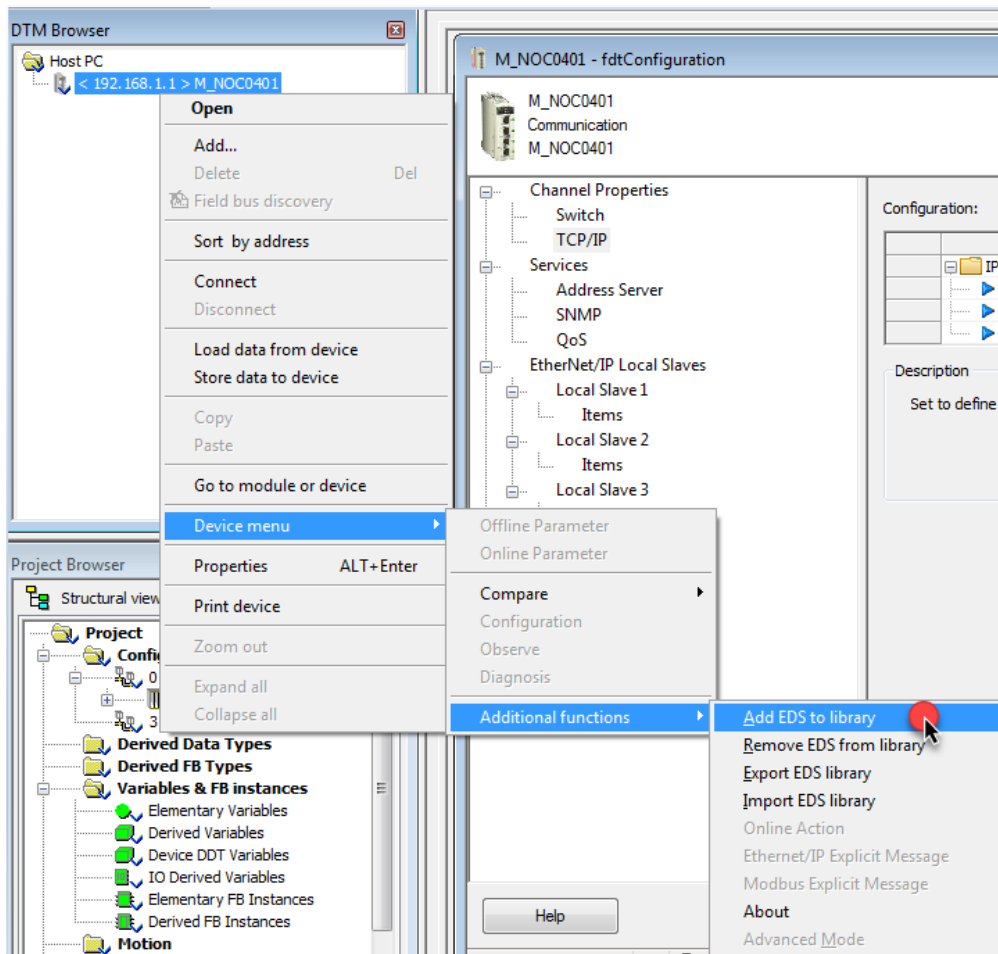


NOTE

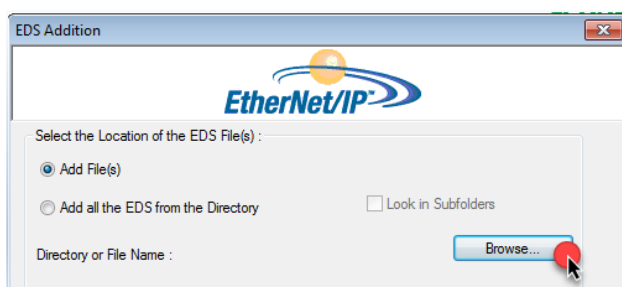
- The IP address of the NOC401 module and CMMT controller must be in the same range for successful communication to be established.

5.4 Add the EDS file to the library.

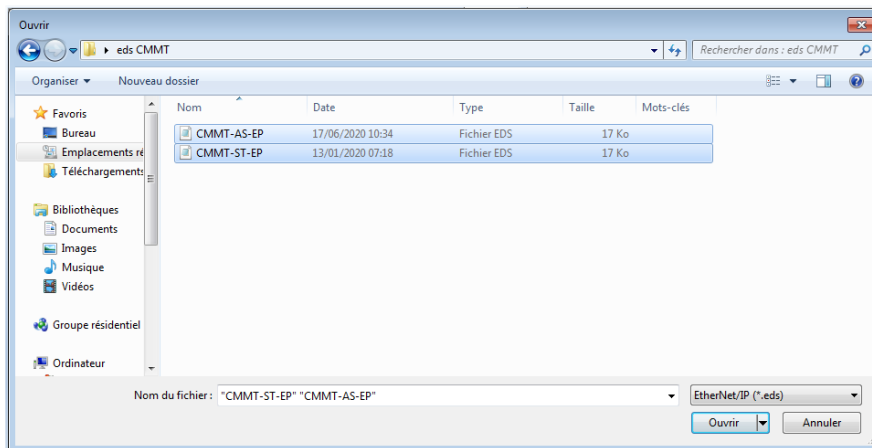
1. Right click on the **NOC Card >> Device menu >> Additional Functions >> Add EDS to library**



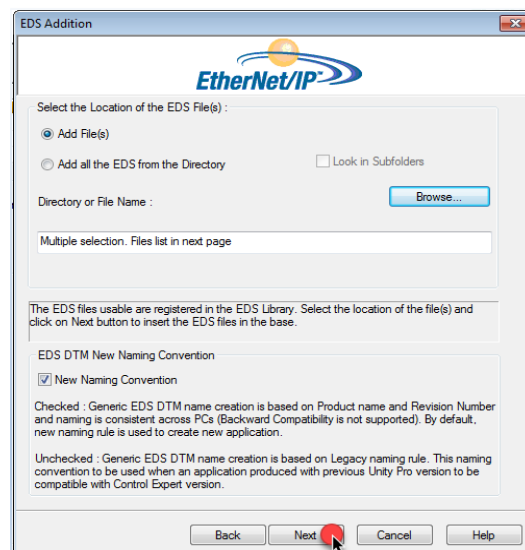
2. Choose Add File(s) and Browse on your folder to find the eds files



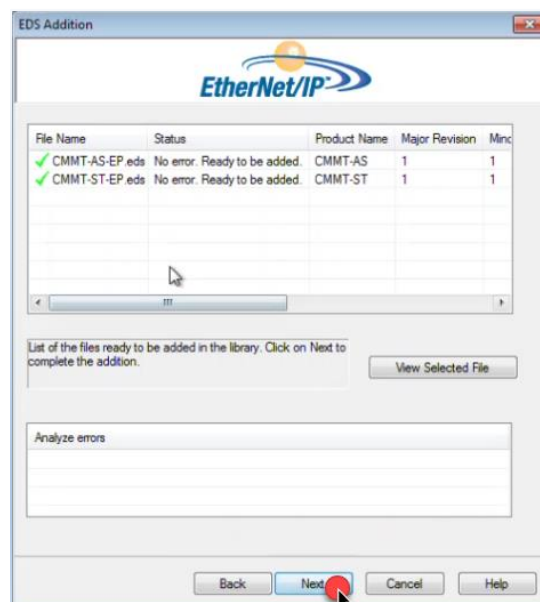
3. Select one or more EDS files.



4. Click on Next button.

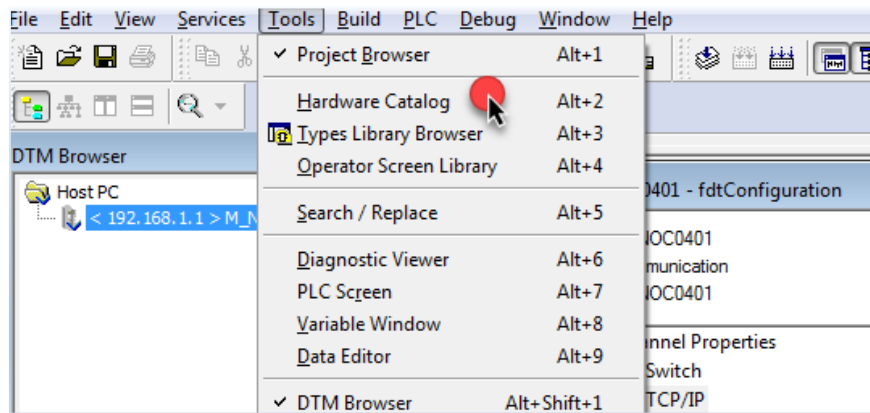


5. Here are shown the EDS files that will be added to the library

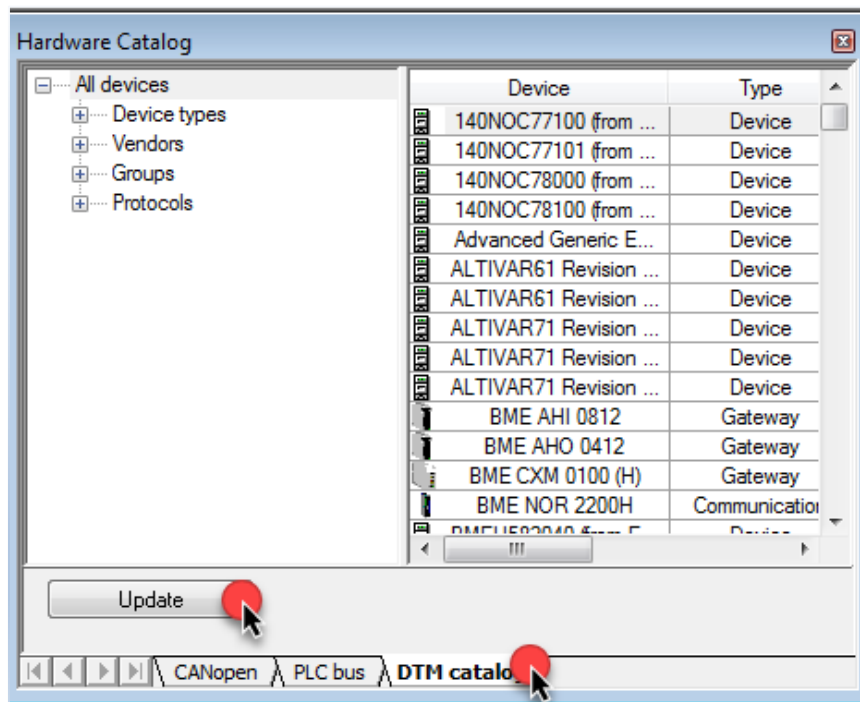


6. Click on Next again and Finish.
7. Then we need to update the Hardware Catalog

Open It: **Tool >> Hardware Catalog**



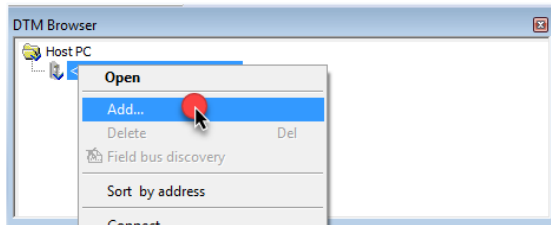
8. Click on **Update** in the **DTM catalog** menu



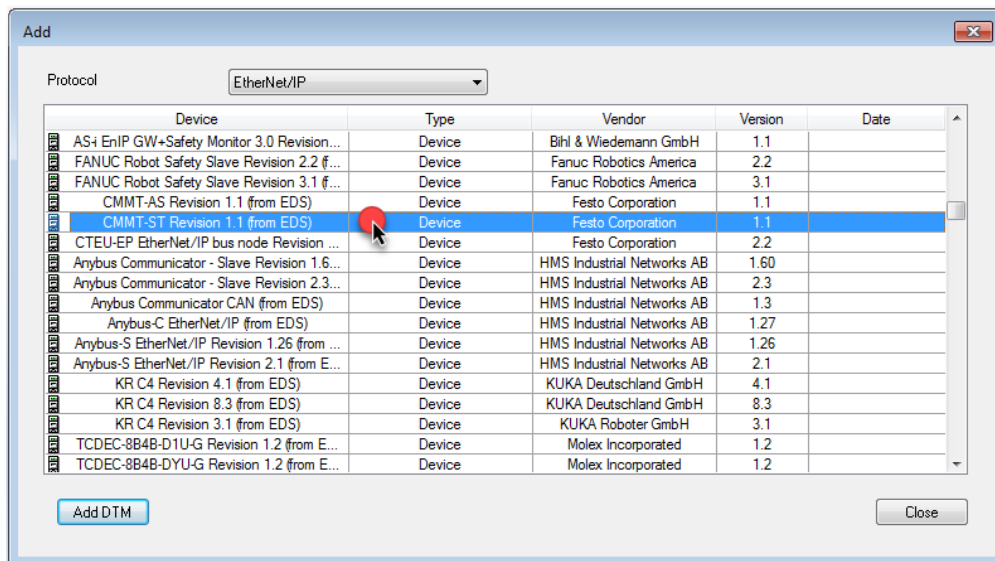
6 CONFIGURING CMMT CONTROLLER AS ETHERNET/IP SLAVE IN ECOSTRUXURE.

6.1 Add a new CMMT

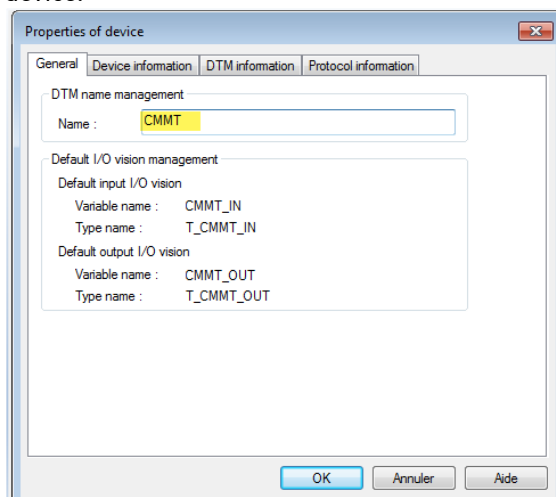
1. Right click on the NOC401 card >> Add



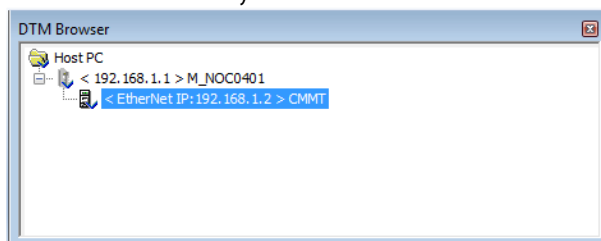
2. Double click on the chosen device: **CMMT-ST ...**



3. You can change the device name, and you see the generated Input and Output variable name for your device.



4. Click on OK and now you see the CMMT in the device tree



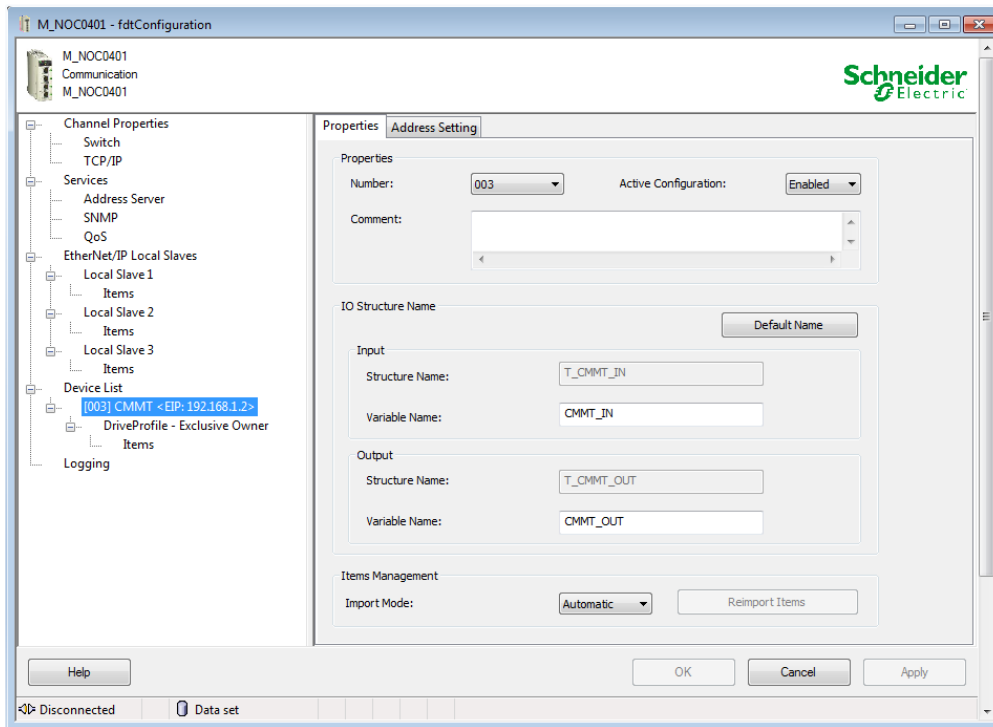
7 CONFIGURING THE DEVICE IN NOC401 CONFIGURATION MENU

The Ethernet/IP slave must be configured, **IP address** and the **items** for proper data communication.

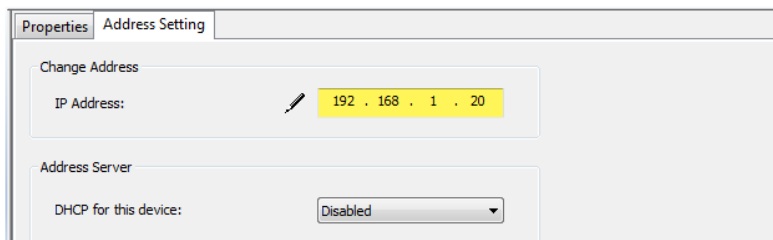
The following steps describe how to configure the CMMT slave.

7.1 Configure the IP address

1. Select the CMMT in the device list.



2. In the **Address Setting** tab, change the **IP Address**.



Enter and Apply to validate the new data.



NOTE

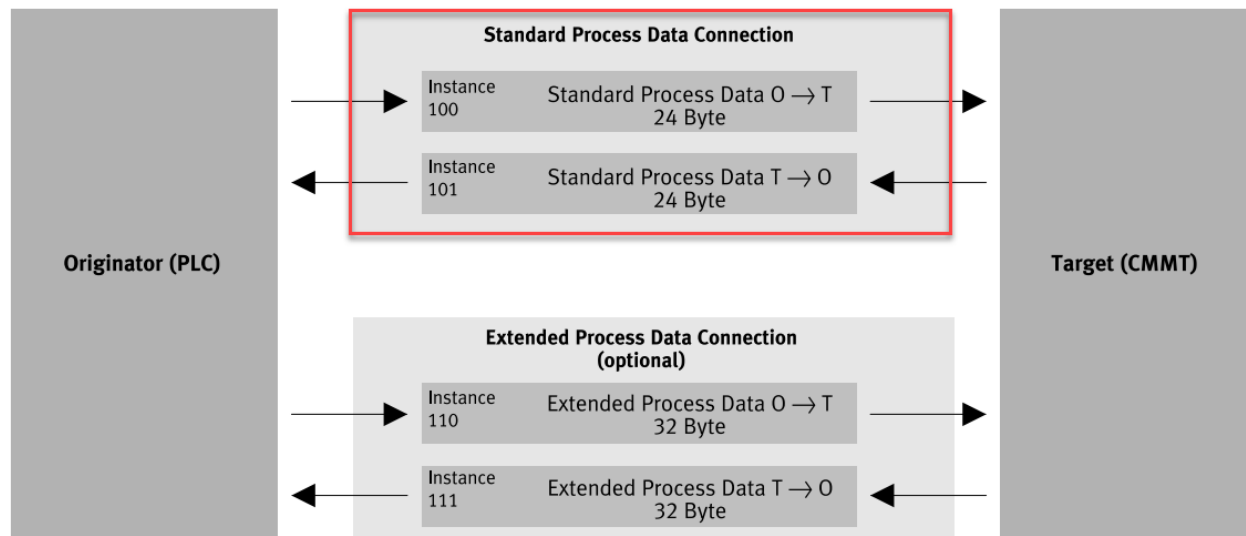
- The IP address of the CMMT must be the same in Festo Automation Suite configuration for successful communication to be established.

Configuration

Activate DHCP	☐ Active	■
IP address	192 . 168 . 1 . 20	■
Subnet mask	255 . 255 . 255 . 0	■
Gateway address	0 . 0 . 0 . 0	■

7.2 Configure the items

The Standard Process Data Connection has **24 bytes** for each direction.

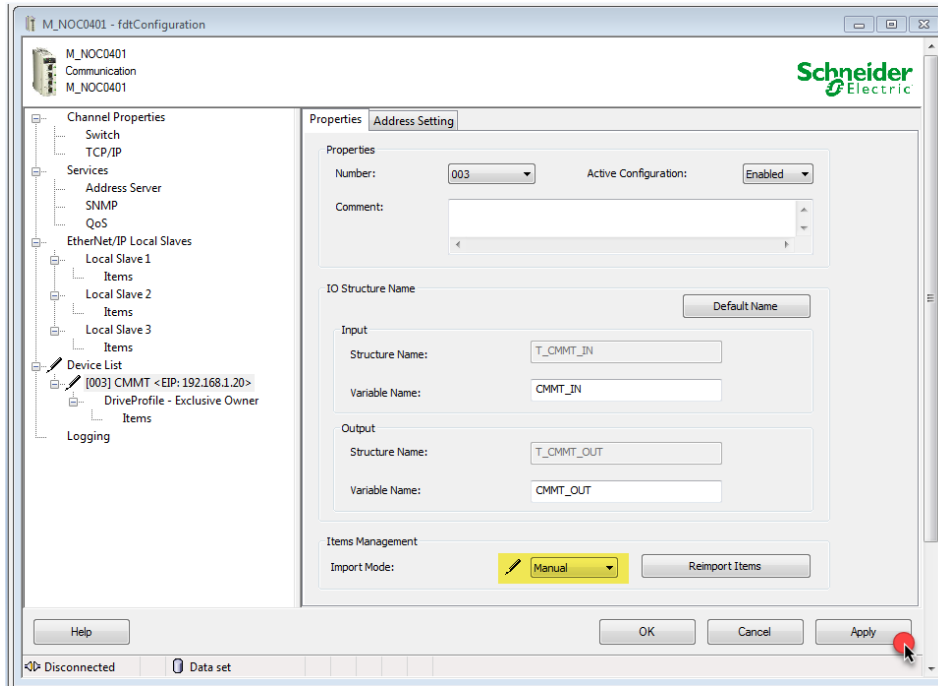


We need to configure Items for the **Telegram 111** where the 24 bytes are store in **12 Unsigned Integer**.

We will configure Items has an **array of 12 WORD** for the **Input** and **Output** Data.

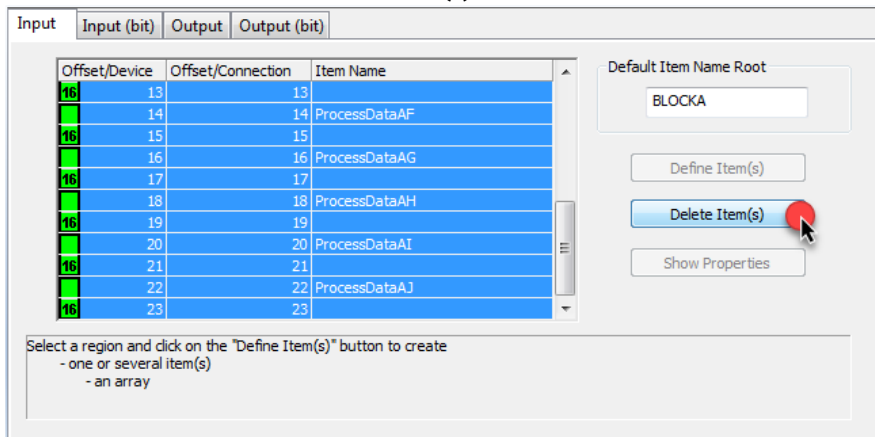
Telegram						
No.	1		102		111	
PZD1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1
PZD2	NSOLL_A	NIST_A	NSOLL_B	NIST_B	POS_STW1	POS_ZSW1
PZD3					POS_STW2	POS_ZSW2
PZD4			STW2	ZSW2	STW2	ZSW2
PZD5			MOMRED	MELDW	OVERRIDE	MELDW
PZD6			G1_STW	G1_ZSW	MDI_TARPOS	XIST_A
PZD7				G1_XIST- 1		
PZD8					MDI_VELOCITY	NIST_B
PZD9				G1_XIST- 2		
PZD10					MDI_ACC	FAULT_CODE
PZD11					MDI_DEC	WARN_CODE
PZD12					Reserved	Reserved

1. In the **Properties** tab change the **items import** mode to **manual** and Apply.

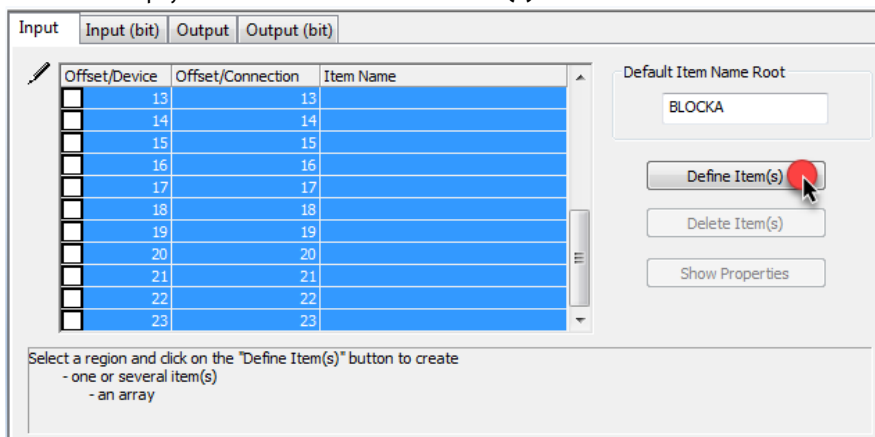


2. Click on Items to configure it.
In the **Input** and **Output** tab you must delete all the items to redefine it.

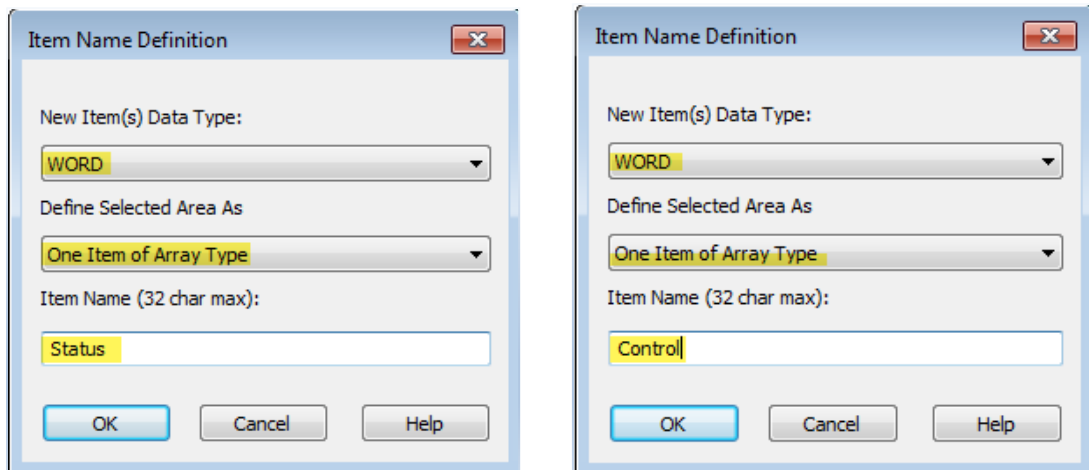
Select all lines and click on **Delete Item(s)**



Select all empty line and click on **Define Item(s)**

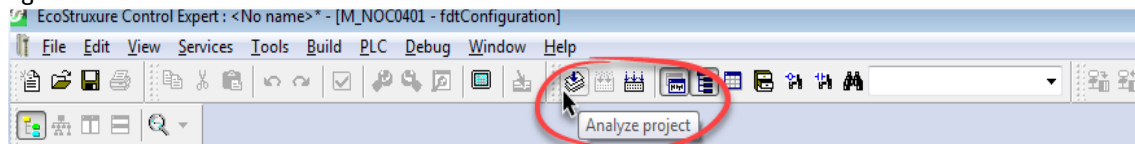


Define selected area as an **Array of WORD** and i.e. give the name Status for Input and Control for Output

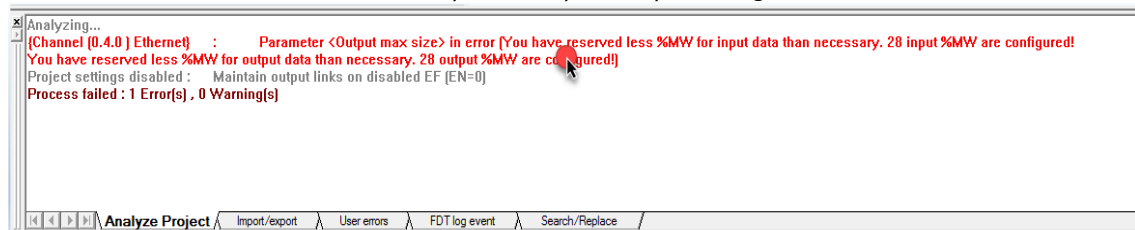


Finish by click on Apply button.

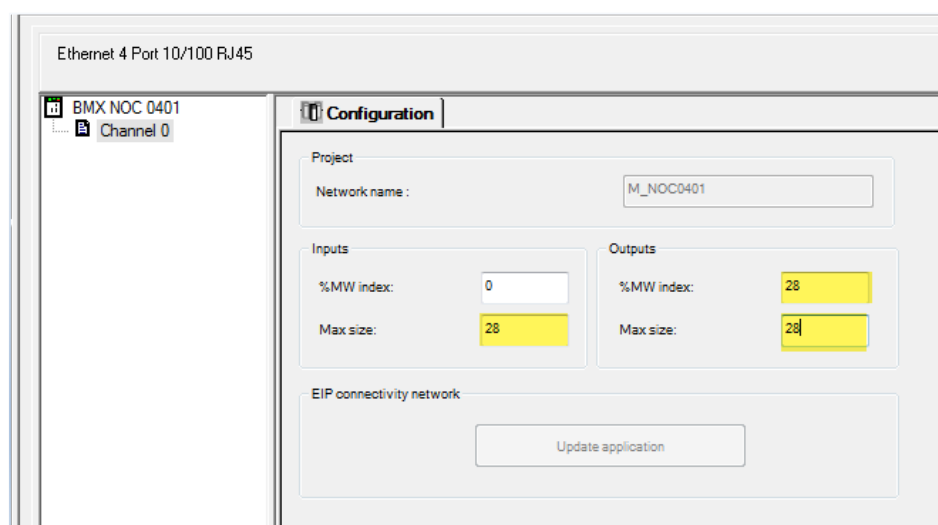
3. Analyse you project and you will find an error because Input and Output address are not correctly configured.



You can double click on the red line to open the Input/Output configuration windows.



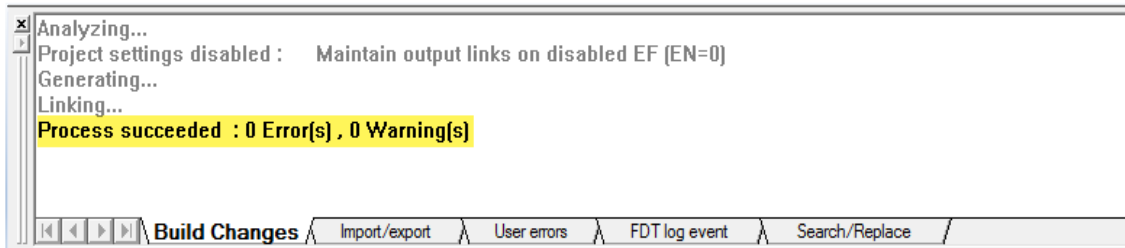
Then change the value by following the analyser recommendation



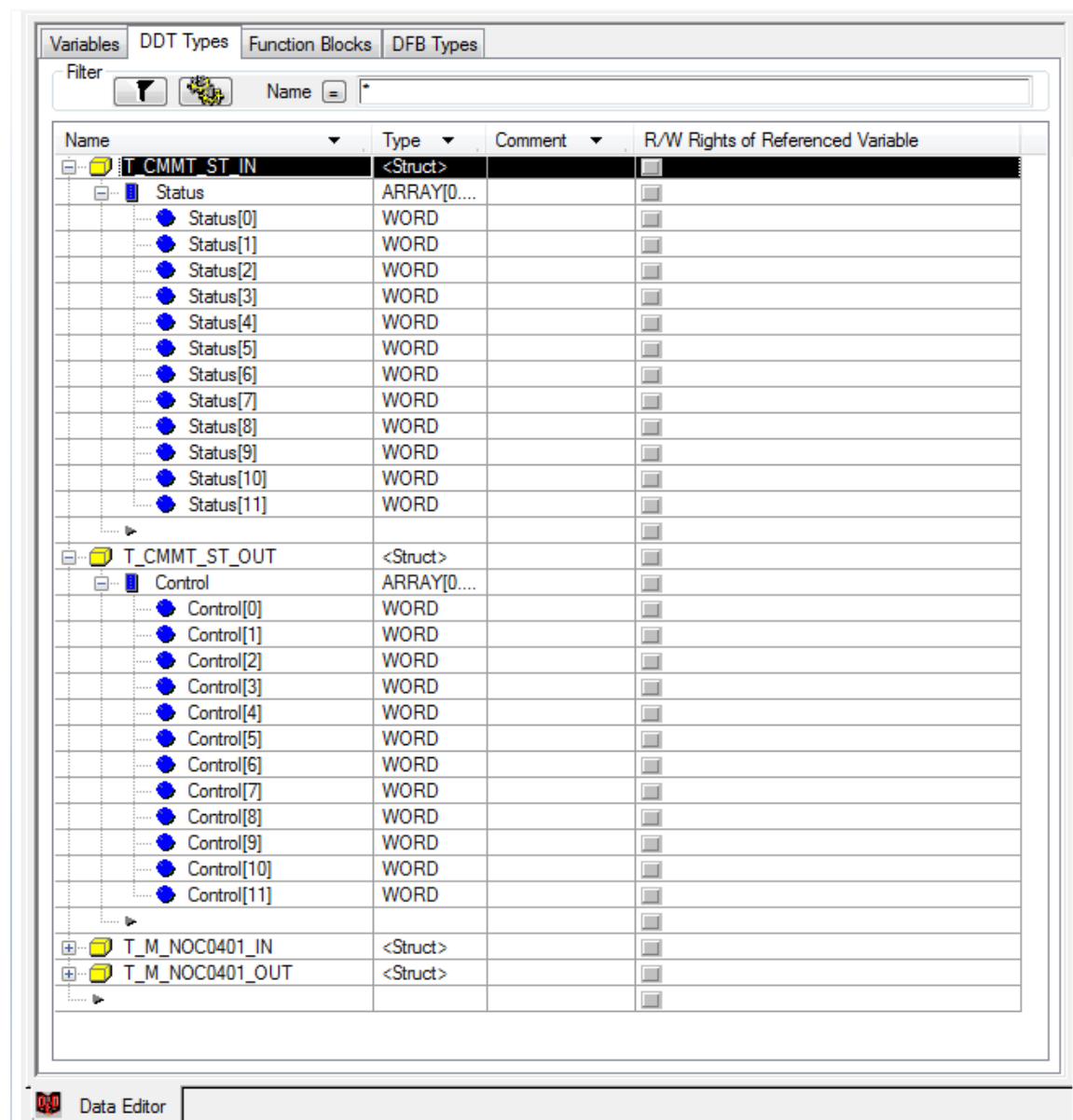
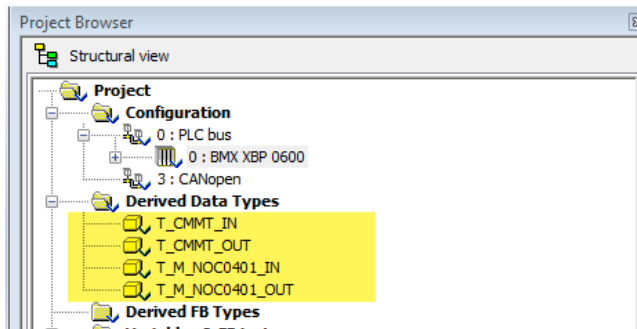
NOTE

Close the windows to validate the modifications.

4. If you re-analyze your project, there is no error.



In the Project Browser, you can see the derived data types generated for the NOC401 and the CMMT.



8 ELEMENTS OF THE PtP_Drives_Festo FUNCTION BLOCK

The **PtP_Drives_Festo** function bloc has the following elements:

- Function Block
- Derived Data Types

Function Blocks

There is one function block in the library namely:

- PtP_Drives_Festo

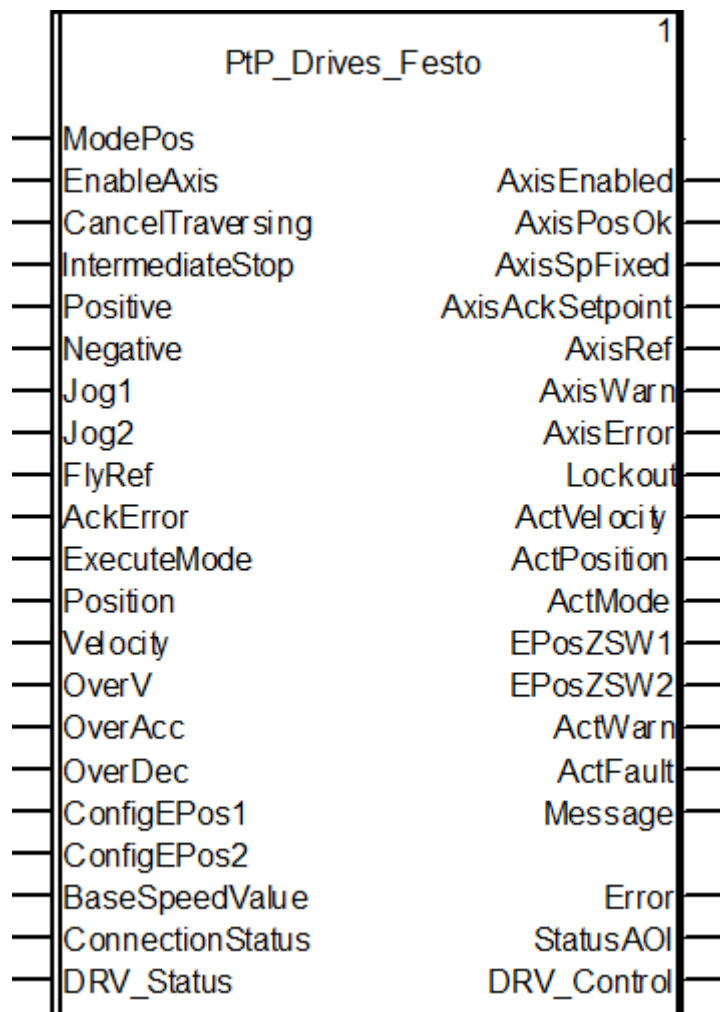
8.1 PtP_Drives_Festo

PtP_Drives_Festo Function Block is used for controlling the drive in the following modes.

- Relative Position Mode
- Absolute Position Mode
- Go to Home/Reference using Festo Automation Suite Configuration
- Set Home to Current Position
- Traversing/Record Selection Mode
- Jog Mode
- Inching/Incremental Jog Mode.

The function block also gives the various drive status related to homing, position, velocity.

The below image shows the schematic view of the Function Block.



The following tables gives a detailed explanation of the inputs, outputs and in/out data types of the function block.

8.2 INPUT DATA

Tag Name	Data Type	Function Description
DRV_Status	ARRAY [0..11] OF WORD	Gives the drive feedback.
ModePos	INT	Gives the Operating mode selection command. It has the following values. 1=MDI Relative Pos. 2=MDI Absolute Pos. 4=Home FAS Config. 5=Home Current Pos. 6=Record Select 7=Jogging 8=Inching
EnableAxis	BOOL	TRUE - Enable the axis FALSE – DISABLES the axis.
CancelTraversing	BOOL	Cancel travel task (0 – Cancel Travel) Ramp Stop @ 100% Set Deceleration Task is Rejected
IntermediateStop	BOOL	Interrupt travel task (0 – Interrupt Travel) Ramp Stop @ Current Deceleration Task is NOT Rejected
Positive	BOOL	TRUE -Travel positive direction.
Negative	BOOL	TRUE -Travel negative direction
Jog1	BOOL	TRUE – Drive jogs in Positive direction
Jog2	BOOL	TRUE – Drive jogs in negative direction
FlyRef	BOOL	Select Reference Position (1 – Select Position) Flying Referencing Active
AckError	BOOL	Clear error command (1 – Clear error)
ExecuteMode	BOOL	Execute the task (1 – Execute)
Position	REAL	Position Target Setpoint or Record table selection in traversing block mode Position Target Value x FAS=P1.7841.0.0 Factor Group for Position = 10-6 = FAS P1.11280605.0.0 Target Position MDI Example: Position Target Setpoint= 2500000 x 10 ⁻⁶ = 2500.000 mm

Tag Name	Data Type	Function Description
Velocity	REAL	Velocity Target Setpoint Velocity in User Units While using MDI (Manual Data Input) Mode Velocity Target Setpoint $\times$ FAS=P1.7842.0.0 Factor Group for Velocity = 10^{-3} $\times$ OverV FAS=P1.1309.0.0 Velocity Override = FAS P1.11280605.0.0 Profile Velocity MDI Example1: Velocity Target Setpoint = $50 \times 10^{-3} = 0.05 \text{ m/s}$ Example2: Velocity Target Setpoint = $250 \times 10^{-3} = 0.25 \text{ m/s}$
OverV	INT	Velocity override in % (0 to 199 %) OverV Value = 0-100% FAS=P1.1309.0.0 Velocity Override
OverAcc	INT	Acceleration override in % (0 to 100 %) OverAcc Target Value = 0-100% $\times$ FAS P1.11280702.0.0 Base Value Acceleration = FAS P1.11280606.0.0 Acceleration MDI
OverDec	INT	Deceleration override in % (0 to 100 %) OverDec Target Value = 0-100% $\times$ FAS P1.11280703.0.0 Base Value Deceleration = FAS P1.11280607.0.0 Deceleration MDI
ConfigEPos1	WORD	Configuration command (Bit – Granular) See Section 2.1.1 for further details
ConfigEPos2	WORD	Configuration command (Bit – Granular) See Section 2.1.2 for further details
BaseSpeedValue	REAL	Base speed value for actual speed display. Enter the same value given for parameter (P1.11280701.0.0)
ConnectionStatus	BOOL	TRUE – Communication is disconnected. FALSE – Communication is not disconnected.

Table 8.1 PtP_Drives_Festo Input Data

8.1.1 ConfigEPos1 Bit Description

ConfigEPos1 Bits	Function Description
Bit - 0	OFF2 (Pulse Enable)
Bit - 1	OFF3 (Pulse Enable)
Bit - 2	Software Limits Enable FAS=P1.112414140.0.0
Bit - 3	Hardware Limits Enable FAS=P1.112414150.0.0
Bit - 4	Probe Edge Evaluation
Bit - 5	Select Probe
Bit - 6	External Block Change (via BUS)
Bit - 7	-FW Pending - Signal Source Reference Mark
Bit - 8	-FW Pending - Continuous Setpoint Transfer MDI
Bit - 9	- FW Pending - DDS Bit 0
Bit - 10	- FW Pending - DDS Bit 1
Bit - 11	- FW Pending - DDS Bit 2
Bit - 12	- FW Pending - DDS Bit 3
Bit - 13	- FW Pending - DDS Bit 4
Bit - 14	- FW Pending - Parking Axis Selection
Bit - 15	Motor Brake 0=Close 1=Open

Table 8.2 ConfigEPos1 description

8.1.2 ConfigEPos2 Bit Description

ConfigEPos2 Bits	Function Description
Bit - 0 to Bit - 13	Reserved
Bit - 14	STW2.8 Travel to Fixed Stop
Bit - 15	Reserved

Table 8.3 ConfigEPos2 description

8.2 OUTPUT DATA

Tag Name	Data Type	Function Description
AxisEnabled	BOOL	TRUE - Axis enabled feedback Drive Ready and Switched On/Enabled
AxisPosOk	BOOL	TRUE - Axis reached target position Reached & Motion Complete
AxisSpFixed	BOOL	TRUE -Setpoint is stationary feedback
AxisAckSetpoint	BOOL	TRUE - Acknowledge setpoint
AxisRef	BOOL	TRUE -Referencing/Homing is Completed
AxisWarn	BOOL	TRUE - Drive has a warning message (Warning Active)
AxisError	BOOL	TRUE -Drive has an error message (Error Active)
Lockout	BOOL	TRUE - Switching ON inhibited (ON Inhibited)
ActVelocity	REAL	Actual velocity feedback (Feedback value scaled by base speed value)
ActPosition	REAL	Axis actual position feedback
ActMode	STRING	Actual mode selection feedback 'no_mode' = 0 ; Mode not selected 'MDI_Rel_Pos' = 1 ; MDI Relative Pos 'MDI_Abs_Pos' = 2 ; MDI Absolute Pos 'not_available' = 3 ; not available 'Home_FAS' = 4 ; Home FAS Config. 'Home_Current_Pos' = 5 ; Home Current Pos. 'Record_Select' = 6 ; Record Select 'Jogging' = 7; Jogging 'Inching' = 8 ; Inching
EposZSW1	WORD	Status of Epos ZSW1 (Bit – Granular) See Section 2.1.3 for further details
EposZSW2	WORD	Status of Epos ZSW2 (Bit – Granular) See Section 2.1.4 for further details
ActWarn	WORD	Actual warning number
ActFault	WORD	Actual fault number
Message	STRING[60]	Actual error message
Error	BOOL	TRUE -AOI Fault Active
StatusAOI	DINT	AOI Status Code: See Section 2.1.4 for further details

Table 8.4 Output Data description

8.2.1 Epos ZSW1 Bit Details

EPos ZSW1 Bits	Function Description
Bit - 0	Position Record Selected Bit 0
Bit - 1	Position Record Selected Bit 1
Bit - 2	Position Record Selected Bit 2
Bit - 3	Position Record Selected Bit 3
Bit - 4	Position Record Selected Bit 4
Bit - 5	Position Record Selected Bit 5
Bit - 6	Position Record Selected Bit 6
Bit - 7	Reserved
Bit - 8	Negative Hardware Limit Switch is Activated
Bit - 9	Positive Hardware Limit Switch is Activated
Bit - 10	Jogging Task is Active
Bit - 11	Homing Task is Active
Bit - 12	- FW Pending - Flying Reference Active
Bit - 13	Position Record Task is Active
Bit - 14	- FW Pending - MDI Setup Active
Bit - 15	MDI Mode is Active

Table 8.5 EPosZSW1 description

8.2.2 Epos ZSW2 Bit Details

EPos ZSW2 Bits	Function Description
Bit - 0	Tracking Mode Active
Bit - 1	Velocity Limit Active
Bit - 2	Ready to Accept new Setpoint
Bit - 3	- FW Pending - PrintMark OutSide Outer Window
Bit - 4	Axis is Moving Positive
Bit - 5	Axis is Moving Negative
Bit - 6	Negative Software Limit Switch is Activated
Bit - 7	Positive Software Limit Switch is Activated
Bit - 8	Actual Position <= CAM Position 1
Bit - 9	Actual Position <= CAM Position 2
Bit - 10	Direct Output 1 Via Traversing Block
Bit - 11	Direct Output 2 Via Traversing Block
Bit - 12	Fixed STOP Reached
Bit - 13	Fixed STOP Clamping Torque Reached
Bit - 14	Travel to Fixed STOP Active
Bit - 15	Traversing Task Active

Table 8.6 EPosZSW2 description

8.2.3 Diagnostic Messages

The function block gives multiple types of diagnostic messages. The following chapter will describe how to handle & solve them.

Function Block Faults

Status Error Number	Case	Remedy
16#7002	No Error	--
16#8401	Alarm message(s) in the drive	Check the error code in ActFaulted tag
16#8402	Switching ON is Inhibited.	Check whether axis is parked, Safety functions active & Parameter P10 $\leftrightarrow$ 0
16#8403	- FW Pending - Flying Reference could NOT be Started	Check for pending alarms / faults in the drive
16#8600	Communication Disconnected	Check the communication connections/ setting between drive and PLC
16#8202	Incorrect Operating Mode Selected	Set ModePos tag value between 1 to 8
16#8203	Incorrect parameterization of the override inputs	Check the setting of override inputs
16#8204	Invalid traversing block number	Enter the traversing block number from 0 to 127

Table 8.7 PtP_Drives_Festo status description

9 PtP_Drives_Festo FUNCTIONS

This chapter describes the configuration of **PtP_Drives_Festo** Function Block for different operation modes, Enabling & Stopping the axis, Enabling hardware & software position limits as well as Actual speed monitoring.

9.1 Axis Enabling & Stopping

For axis enabling following tags configuration must be done.

- “**ConfigEPos1**” Bit 0 & Bit1(OFF2 & OFF3) must be **TRUE**.
- “**AxisError**” & “**Lockout**” output tags must be **FALSE** to ensure drive is in ready state.
- “**ModePos**” value must be between 1 to 8.
- “**CancelTraversing**” (Reject traversing task) & “**IntermediateStop**” (intermediate stop) tags must be **TRUE**.
- “**EnableAxis**” must be **TRUE** & “**AxisEnabled**” feedback should become **TRUE** after enabling the drive.
- Toggle “**AckError**” control bit to clear any error in the Function Block.

9.2 Axis Software & Hardware Position Limits Enabling

“**ConfigEPOS1 tag’s Bit 2 & 3**” are used to enable the software & hardware position limits respectively

- “**ConfigEPOS.2 = TRUE**” This means software position limit is active (Festo Automation Suite Parameter **P1.112414140.0.0**)
- “**ConfigEPos.3 = TRUE**” This means hardware position limit is active (Festo Automation Suite Parameter **P1.112414150.0.0**)

When software position limit is active please pay attention if the below parameters are configured correctly as per application requirement.

The screenshot shows the 'Axis configuration' window. On the left is a sidebar with 'Axis' selected. The main area contains several settings:

- Reversing the direction of rotation:** A circular arrow icon and a checkbox labeled 'Active' (unchecked).
- Axis zero point offset:** A text input field containing '0.03' followed by a unit 'r'.
- Software limit positions active:** A checkbox labeled 'Active' (checked).
- Negative software limit position:** A text input field containing '-0.03' followed by a unit 'r'.
- Positive software limit position:** A text input field containing '999.97' followed by a unit 'r'.

The last two rows are highlighted in yellow.

9.3 Axis Actual Speed Monitoring

User can monitor the actual speed of the axis in the variable “**ActVelocity**”. The actual speed of the axis is scaled from 0 to 100% depending on the base speed value of parameter number (**P1.11280701.0.0**). So, it is mandatory to enter the same value in input tag “**BaseSpeedValue**” of the Function Block as like parameter number (**P1.11280701.0.0**).



Note

- Make sure the Function Block input tag “**BaseSpeedValue**” & Festo Automation Suite parameter number (**P1.11280701.0.0**) values are same. Function Block will display wrong velocity value If both values are not equal.

9.4 PtP_Drives_Festo Modes of Operation

The PtP_Drives_Festo will control the drive in the following modes

- **ModePos – 1:** Relative Positioning
- **ModePos – 2:** Absolute Positioning
- **ModePos – 3:** Not Supported
- **ModePos – 4:** Home/Reference using Festo Automation Suite Configuration
- **ModePos – 5:** Home to Current Position
- **ModePos – 6:** Traversing/Record Select Mode
- **ModePos – 7:** Jog
- **ModePos – 8:** Inching/Incremental Jog Mode

9.4.1 Relative Positioning Mode [ModePos – 1]

1. Configurations for Relative Positioning Mode

- Set the “**ModePos**” value to 1. Ensure the output tag “**ActMode**” has the same value as ModePos.
- Enable axis by toggling “**EnableAxis**” command tag. Ensure the output tag “**AxisEnabled**” is **TRUE**.
- Axis must be referenced by toggling “**FlyRef**” input tag. User could also use other modes like mode 4 or 5 to set the reference point for an axis.
- “**CancelTraversing**” and “**IntermediateStop**” command tags must be in **TRUE** state.
- Enter the percentage of Override acceleration, Override deceleration & Override velocity in “**Over-Acc**”, “**OverDec**” & “**OverV**” respective input tags.
- The status tags “**AxisEnabled**” & “**AxisRef**” must be true. Also, status tag “**Error**” must be false.

2. Sequence Command

- Enter the Position command value in “**Position**” tag & **Velocity** command value in “**Velocity**” tag. To move the axis in forward direction, give position command in positive value & for moving axis in reverse direction give position command in negative value (with a minus sign before the value).
- Toggle the “**ExecuteMode**” input tag to start the motion task for configured parameter. Rising edge of ExecuteMode tag will start the command. So, for every new position **ExecuteMode** tag must be toggled.
- If task is successfully completed, it is acknowledged by a rising edge of “**AxisPosOk**” output variable. Also, if the task is unsuccessful “**AxisError**” output variable will become **TRUE**.
- “**AxisSpFixed**” Status variable indicates the axis mobility status. If the axis is standby the “**Axis-SpFixed**” status variable will be high.



Note

- Refer the **Chapter – 4 from the CMMT user manual** to know the behavior of the drive in different operation modes.
- The existing running task command can be replaced by new task command only on **Mode 1 and 2**.

9.4.2 Absolute Positioning Mode [ModePos – 2]

1. Configuration for Absolute Positioning Mode

- Set the “**ModePos**” value to 2 & check the output tag “**ActMode**” has the same value as ModePos.
- Enable the axis by toggling “**EnableAxis**” input tag.
- Axis must be referenced by toggling “**FlyRef**” input tag. User can also use other modes like mode 4 or 5 to set the reference point for an axis.
- “**CancelTraversing**” and “**IntermediateStop**” input tags must be **TRUE**.
- Enter the percentage of Override acceleration, Override deceleration & Override velocity in “**Over-Acc**”, “**OverDec**” & “**OverV**” respective input tags.
- The status tags “**AxisEnabled**” & “**AxisRef**” must be **TRUE**. Also, status tag “**Error**” must be **FALSE**.

2. Sequence Command

- Enter the Position command value in “**Position**” tag & Velocity command value in “**Velocity**” tag. Give the absolute position value. The drive will decide forward & reverse direction based on its current position.
- Toggle the “**ExecuteMode**” command tag (Rising Edge) to start a motion task using the configured parameters (Every new position task would require a toggle of the “**ExecuteMode**” command tag).
- The “**AxisAckSetpoint**” status tag will be true to acknowledge the task has been started.
- If the task is successfully completed, it is acknowledged by rising edge of “**AxisPosOk**” status variable. Also, if task is unsuccessful “**AxisError**” output tag will be **TRUE**.
- “**AxisSpFixed**” Status variable indicates the axis mobility status. If the axis is standby the “**Axis-SpFixed**” status variable will be high.



Note

- Refer the **Chapter – 4 from the CMMT user manual** to know the behavior of the drive in different operation modes.
- The existing running task command can replace by new task command only on **Mode 1 and 2**.

9.4.3 Home/Reference Point using Festo Automation Suite Configuration [ModePos – 4]

The reference point approach mode is used to moves the axis to home position.

1. Configuration for Reference Point Approach Mode

- Set the “**ModePos**” value to 4 & check the output tag “**ActMode**” has the same value as ModePos.
- The status tags “**AxisEnabled**” must be true & “**Error**” must be in false to ensure no error.
- Axis must be in standstill state.

2. Sequence Command

- All the required parameters for homing will be considered from Automation Suite configuration in “Homing Parameters” like Homing mode, velocity, acceleration & deceleration.
- Toggle the “**ExecuteMode**” to start task.
- “**AxisRef**” will become true once the axis finds reference point. If an error occurs during Homing the output tag **Error** will become **TRUE**.



Note

- Refer the **Chapter – 4 from the CMMT user manual** to know the behavior of the drive in different operation modes.

9.4.4 Home to Current Position [ModePos – 5]

This mode marks current position as the reference point. This will be used when homing mode is selected as current position (37).

1. Configuration for Set Reference Point Mode

- Set the “**ModePos**” value to 5 & check the output tag “**ActMode**” has the same value as ModePos.
- The status tags “**AxisEnabled**” must be true & “**Error**” must be in false to ensure no error.
- Axis must be in standstill state.

2. Sequence Command

- Toggle the “**ExecuteMode**” to start the task.
- “**AxisRef**” will become true after execute command. If an error occurs, the output signal “**Error**” will be true.



Note

- Refer the **Chapter – 4 from the CMMT user manual** to know the behavior of the drive in different operation modes.

9.4.5 Traversing/Record Selection Mode [ModePos – 6]

Traversing Block mode is implemented via the “**Recode Table**” of drive function. This mode retrieves parameters like Velocity, Position, Acceleration & Deceleration values from record table saved in the CMMT drive. It enables the creation of automatic programs, velocity mode, force mode, travel to fixed stop and outputs to be set and reset.

1. Configuration for Traversing Block Mode

- Set the “**ModePos**” value to 6 & check the output tag “**ActMode**” has the same value as ModePos.
- Enable axis by toggling “**EnableAxis**” command tag.
- Axis must be reference by toggling “**FlyRef**” command tag.
- “**CancelTraversing**” and “**IntermediateStop**” command tags must be in **TRUE** state.
- Enter the percentage of Override acceleration, Override deceleration & Override velocity in “**Over-Acc**”, “**OverDec**” & “**OverV**” respective input tags.
- The status tags “**AxisEnabled**” & “**AxisRef**” must be **TRUE**. Also, status tag “**Error**” must be false.

2. Sequence Command

- Select the record table by entering the table number in “**Position**” command tag. The value must be between 0 to 127.
- Toggle the “**ExecuteMode**” command tag (Rising Edge) to start a motion task using the configured parameters (Every new position task would require a toggle of the “**ExecuteMode**” command tag).
- The “**AxisAckSetpoint**” status tag will be true to acknowledge the task has been started.
- If task is successfully completed, it is acknowledged by rising edge of “**AxisPosOk**” OUTPUT variable. Also, if the task is unsuccessful “**AxisError**” output variable will be **TRUE**.
- “**AxisSpFixed**” Status variable indicates the axis mobility status. If the axis is standby the “**Axis-SpFixed**” status variable will be high.



Note

- Refer the Chapter – 4 from the CMMT user manual to know the behavior of the drive in different operation modes.

9.4.6 Jog Mode [ModePos – 7]

1. Configuration for Jog Mode

- Set the “**ModePos**” value to 7 & check the feedback tag “**ActMode**” has the same value as ModePos.
- Enable axis by toggling “**EnableAxis**” command tag.
- Axis must be in standstill.
- Velocity, Acceleration & Jerk values are taken from Automation Suite configuration under **Jog Mode** tab.

2. Sequence Command

- “**Jog1**” & “**Jog2**” tags are used for Positive & Negative direction commands respectively.
- The “**ExecuteMode**” signal is not required for jog mode.



Note

- Refer the Chapter – 4 from the CMMT user manual to know the behavior of the drive in different operation modes.

9.4.7 Inching/Incremental Jog Mode [ModePos – 8]

Incremental jog mode will not work like ordinary jog mode. It will rotate the axis step by step forward or reverse based on direction selection, but ordinary jog mode rotates the axis continuously. All the configuration and command configurations are same as **ModePos – 7** but only difference is that **ModePos** value must be 8 for incremental jog mode.



Note

- The inching distance of positive & negative direction will be based on values set in parameters Relative Position Jog1 (P1.214530.0.0) & Relative Position Jog2 (P1.214538.0.0) respectively.

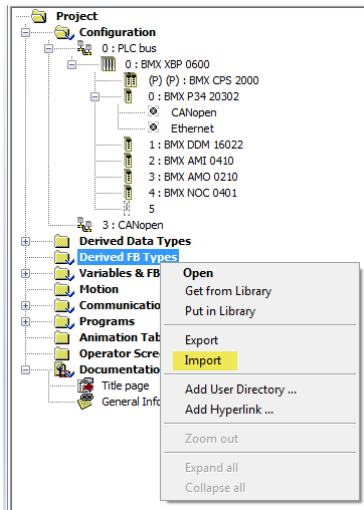
10 INTEGRATION OF Festo_PTP_Drives_t111 DFB TO ECOSTRUXURE PROJECT

This chapter will explain the following:

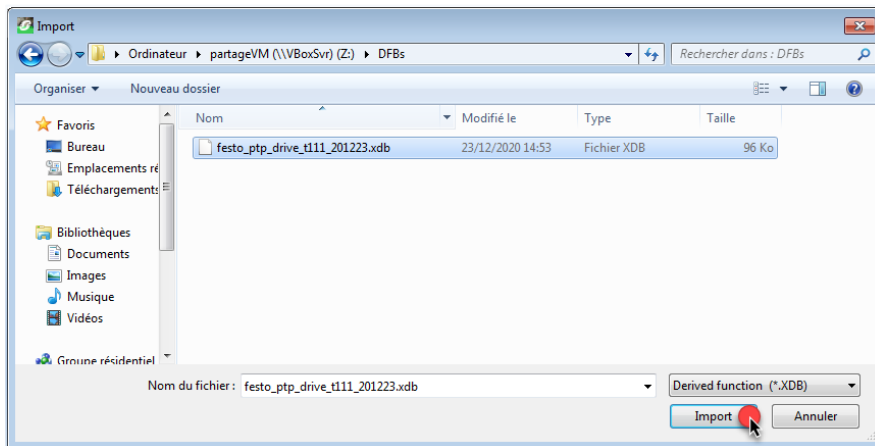
- Adding the Festo_PTP_Drives DFB to Ecostruxure project.
- Calling the PtP_Drives_Festo Function Block in the project.
- Parameterization of the instance of the PtP_Drives_Festo function block in the project.

10.1 Importing Festo_PTP_Drives_t111 Function bloc.

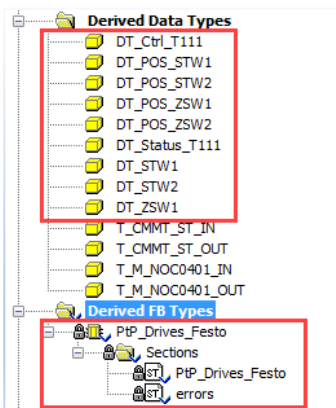
1. Right click **Derived FB Types** and select Import.



2. Select the **festo_ptp_drive_t111_xxx.xdb** and import it.



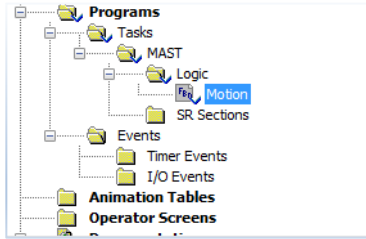
3. New elements are imported and available for the project.



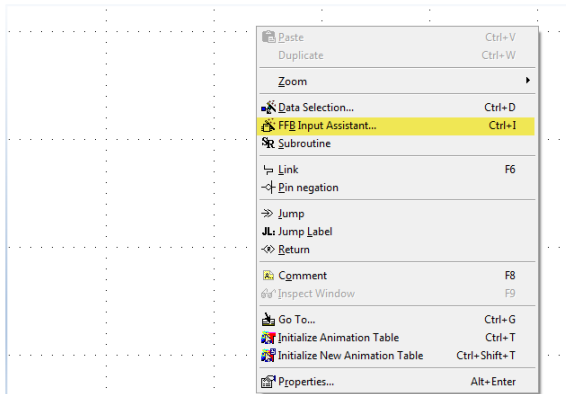
10.2 Calling the Festo_PTP_Drives_t111 Function Block to the project.

1. Create and name a new section in the **Programs >> Logic** folder.

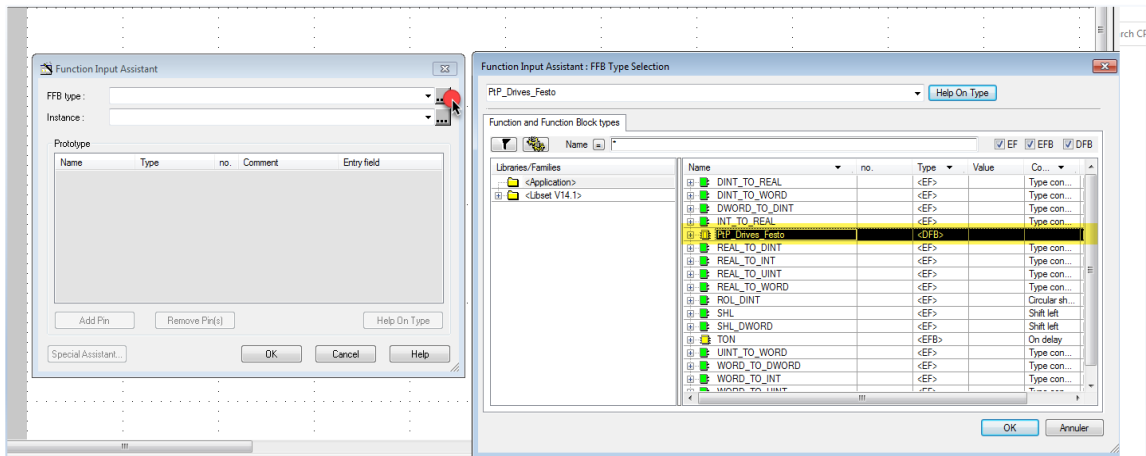
Here the section is named **Motion** and FBD language is chosen for a better understanding.



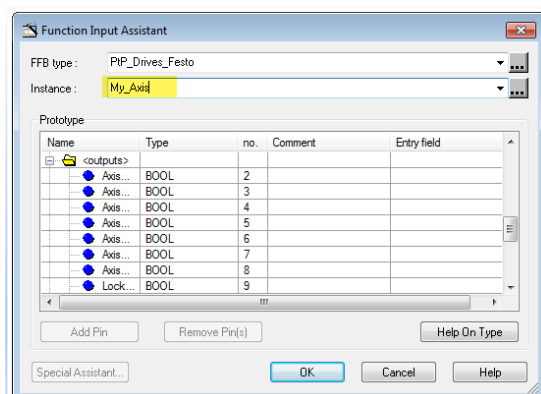
2. Call the Function Block PtP_Drives_Festo. Right Click in the PLC_PRG program editor and click **Input Assistant**.



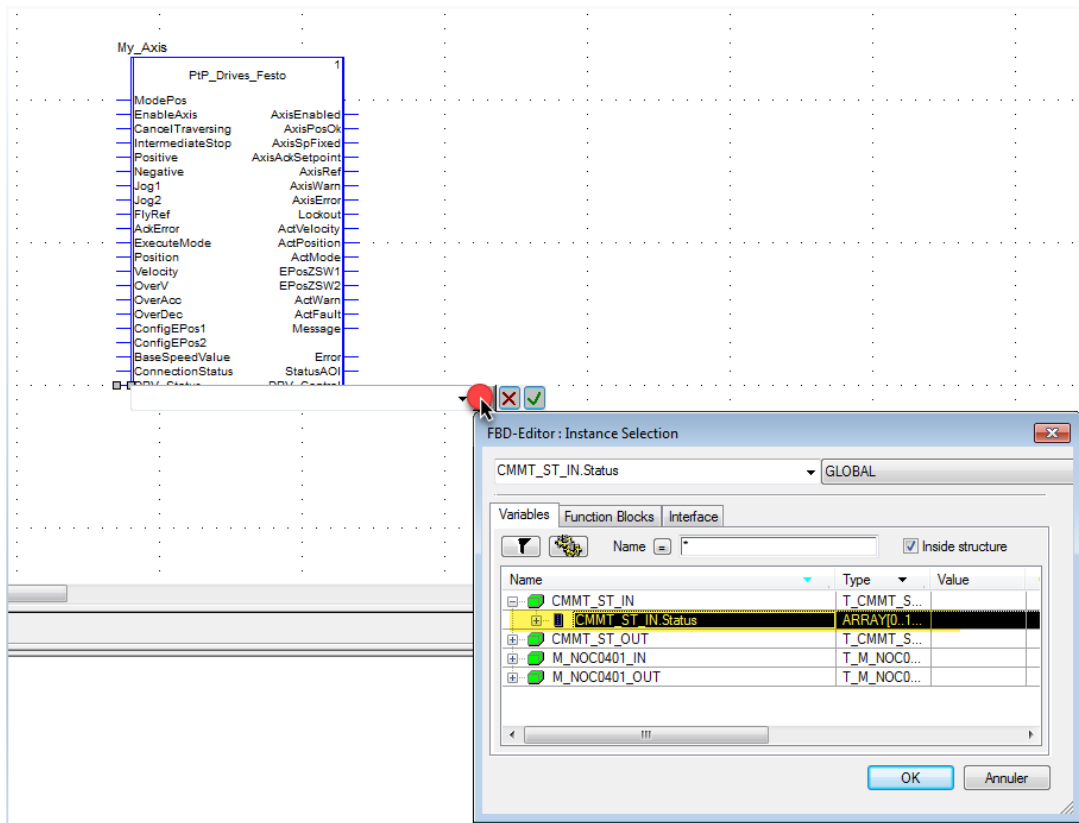
3. In the Input Assistant, select **PtP_Drives_Festo** function block as shown below.



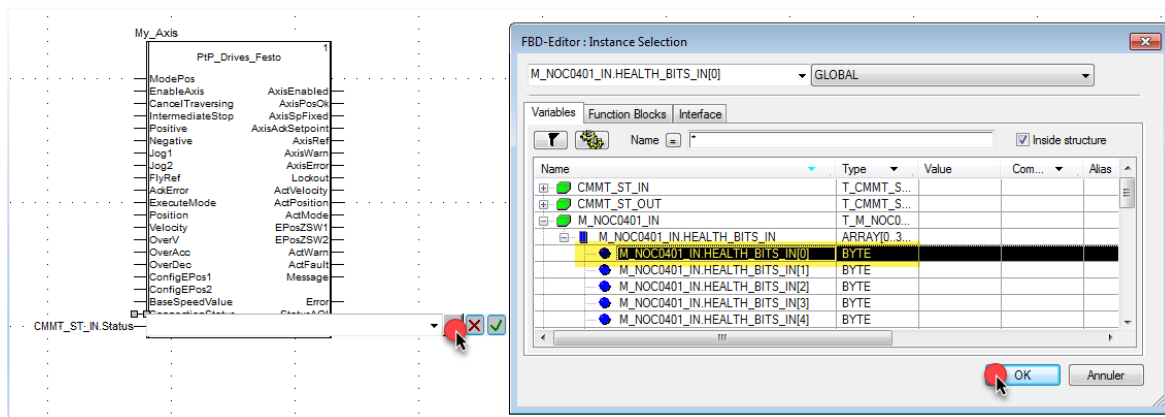
4. Give a name to the instance of PtP_Drives_Festo Function Block.



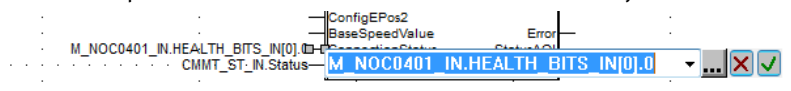
5. For **DRV_Status** and **DRV_Control** choose the variables created at the [chapter 7](#)



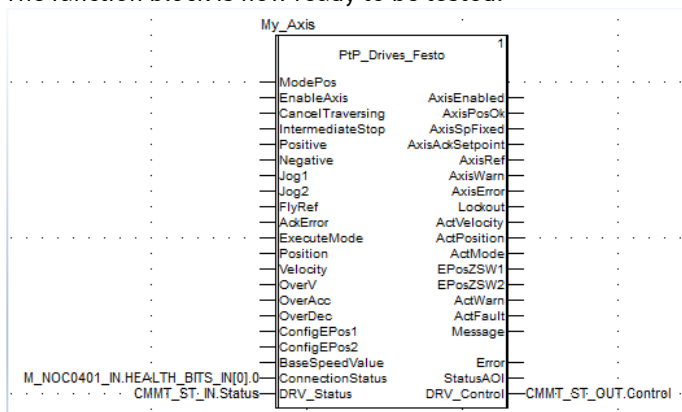
6. For the **connectionStatus**, select the right health bit of the Ethernet/IP connection.



In this sample the health bit is the first one of the first byte.



7. The function block is now ready to be tested.



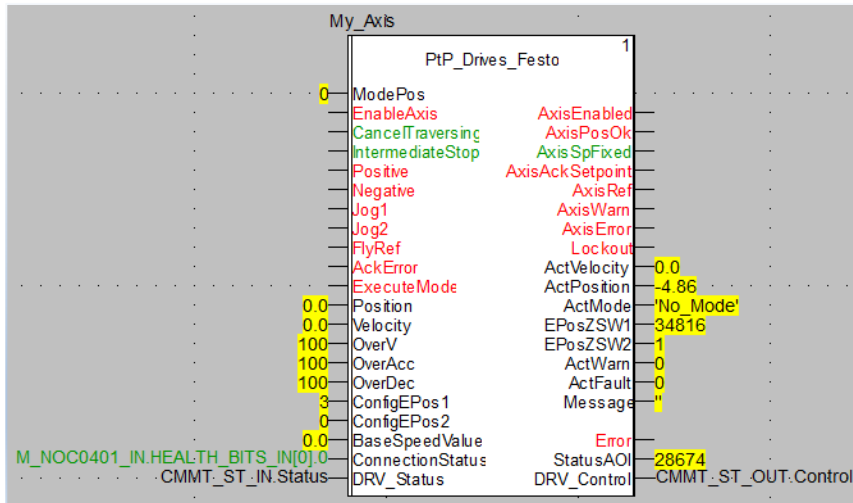
11 Testing the PtP_Drives_Festo

➔ The project is Build, transferred into the PLC, and the PLC is in RUN mode.

The function block shows that the communication is running between the PLC and the controller CMMT.

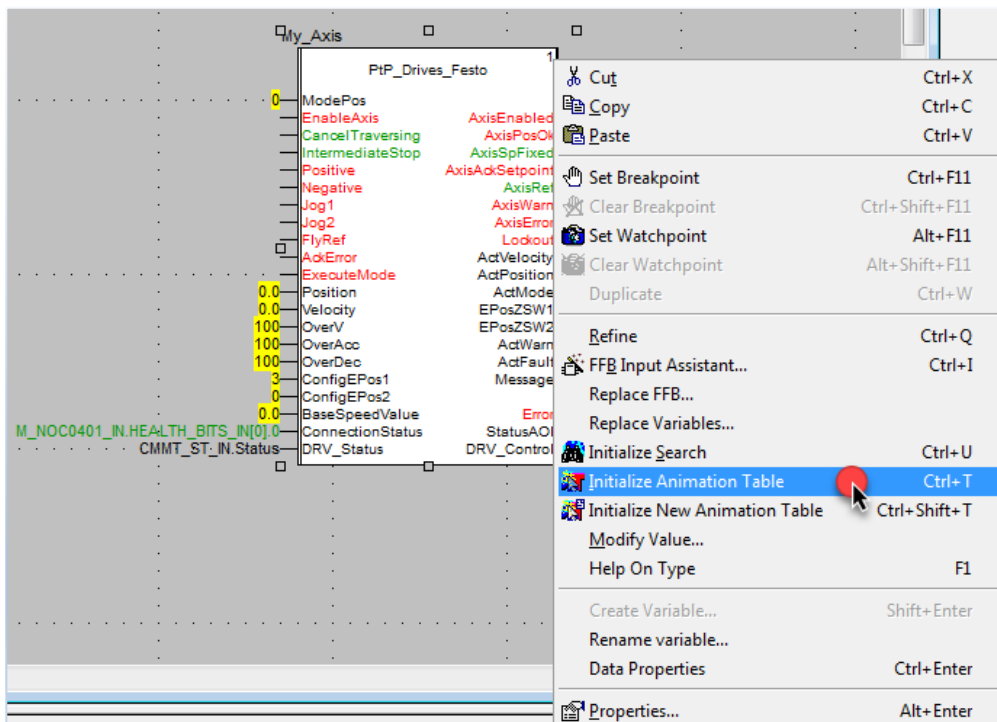
If inputs are not used by variables we can see that they are initialized to a default value:

- CancelTraversing and IntermediateStop are **TRUE**
- OverV, OverAcc, OverDec : **100%**
- ConfigEPOS1.0 and ConfigEPOS1.1 are **TRUE**



11.1 Create an animation table

For a quick test, right click on the function bloc to Initialize an animation table



This is the function block state by default.

Name	Value	Type
My_Axis.ModePos	0	INT
My_Axis.EnableAxis	0	BOOL
My_Axis.CancelTraversing	1	BOOL
My_Axis.IntermediateStop	1	BOOL
My_Axis.Positive	0	BOOL
My_Axis.Negative	0	BOOL
My_Axis.Jog1	0	BOOL
My_Axis.Jog2	0	BOOL
My_Axis.FlyRef	0	BOOL
My_Axis.AckError	0	BOOL
My_Axis.ExecuteMode	0	BOOL
My_Axis.Position	0.0	REAL
My_Axis.Velocity	0.0	REAL
My_Axis.OverV	100	INT
My_Axis.OverAcc	100	INT
My_Axis.OverDec	100	INT
My_Axis.ConfigEPos1	2#0000_0000_0000_0...	WORD
My_Axis.ConfigEPos2	0	WORD
My_Axis.BaseSpeedValue	0.0	REAL
My_Axis.ConnectionStatus	1	BOOL
My_Axis.DRV_Status	ARRAY[0..11] 0...	ARRAY[0..11] 0...
M_NOC0401_IN_HEALTH_BITS_IN[0]	1	BOOL
CMMT_ST_IN		T_CMMT_ST_IN
CMMT_ST_OUT		T_CMMT_ST_OUT

11.2 Test a simple absolute positioning movement.

→ Refer to [9.4.2](#) for more details

1. Set **BaseSpeedValue** to same FAS parameter P1.11280701 value: 18000
2. Choose the ModePos : 2 --> **ActMode** = 'MDI_Abs_Pos'
3. Set **EnableAxis** --> **AxisEnabled** = True ; **AxisPosOk** = True
4. Set **FlyRef** --> Axis is referencing like parametrized in FAS then **AxisRef** = True
5. Reset **FlyRef** --> **EposZSW1.11** = False
6. Set **Velocity** (i.e. 50) and **Position** (i.e. 180)
7. Set **ExecuteMode** --> Axis is moving to the setpoint position
AxisPosOk = False ; **AxisSpFixed** = False ; **AxisAckSetPoint** = True
8. Reset **ExecuteMode** --> **AxisAckSetPoint** = False

Axis is still moving to the setpoint position, at the motion complete **AxisPosOk** = True and **AxisSpFixed** = true.