Application Note

FESTO

CMMT-AS-PN controlled by Siemens Simotion P320-4 in Siemens Scout 5.3

This document describes a way to control the CMMT-AS-PN via ProfiDrive protocol 105 with a Simotion P320-4 PLC of Siemens.

CMMT-AS

100293

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1 Components/Software used

Type/Name	Version Software/Firmware	Date of manufacture
CMMT-AS-C4-3A-PN-S1	16.0.9.10	03.07.2019
Automation Suite	1.2.1.16	--
CMMT-AS Plug-in	1.1.1.8	02.10.2019
Siemens Scout	V5.3	--

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!

1.1 Topology of the tested system

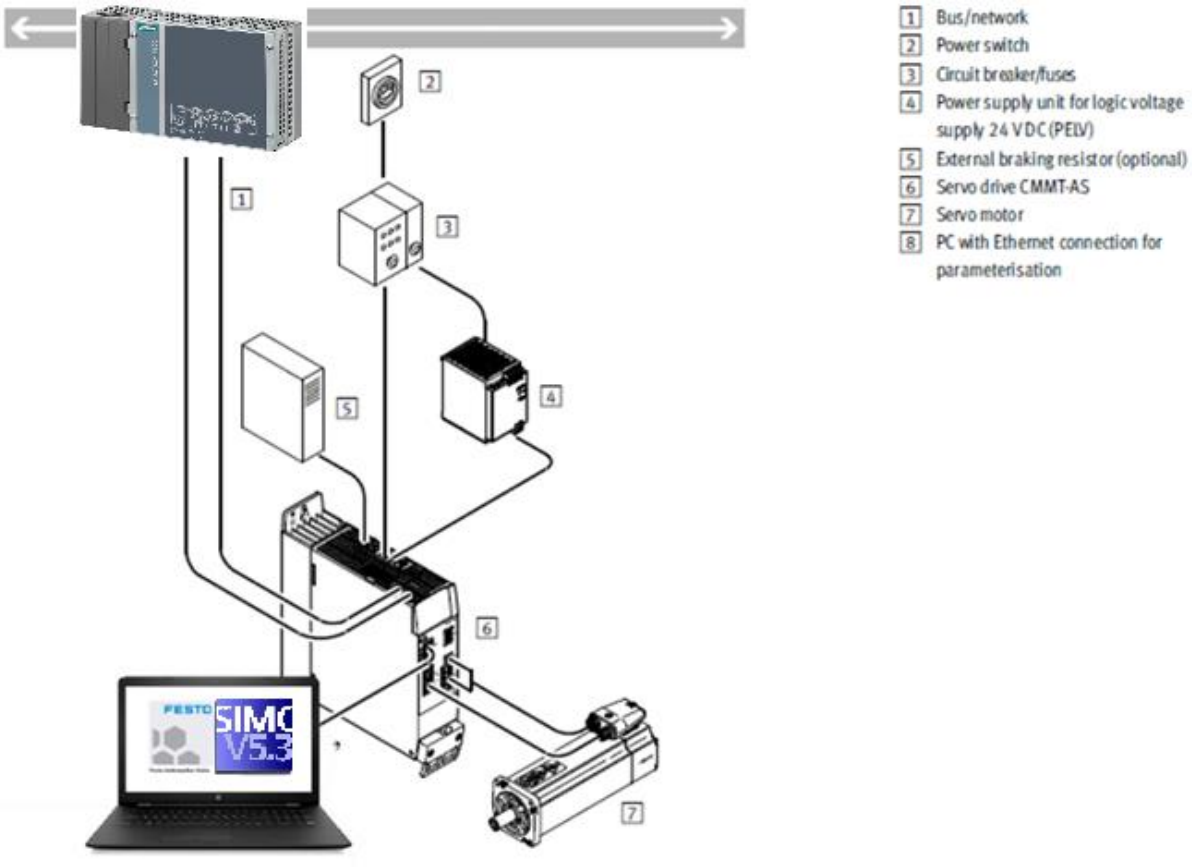


Figure 1.1 : overview of tested system

Please refer to the picture above and make sure all wires are correctly placed and connected

To confiture and run the system for commissioning, it is necessary to install named software in the table 1.1 above on your laptop or other PC system which you will do commissioning with.

2 Application Description

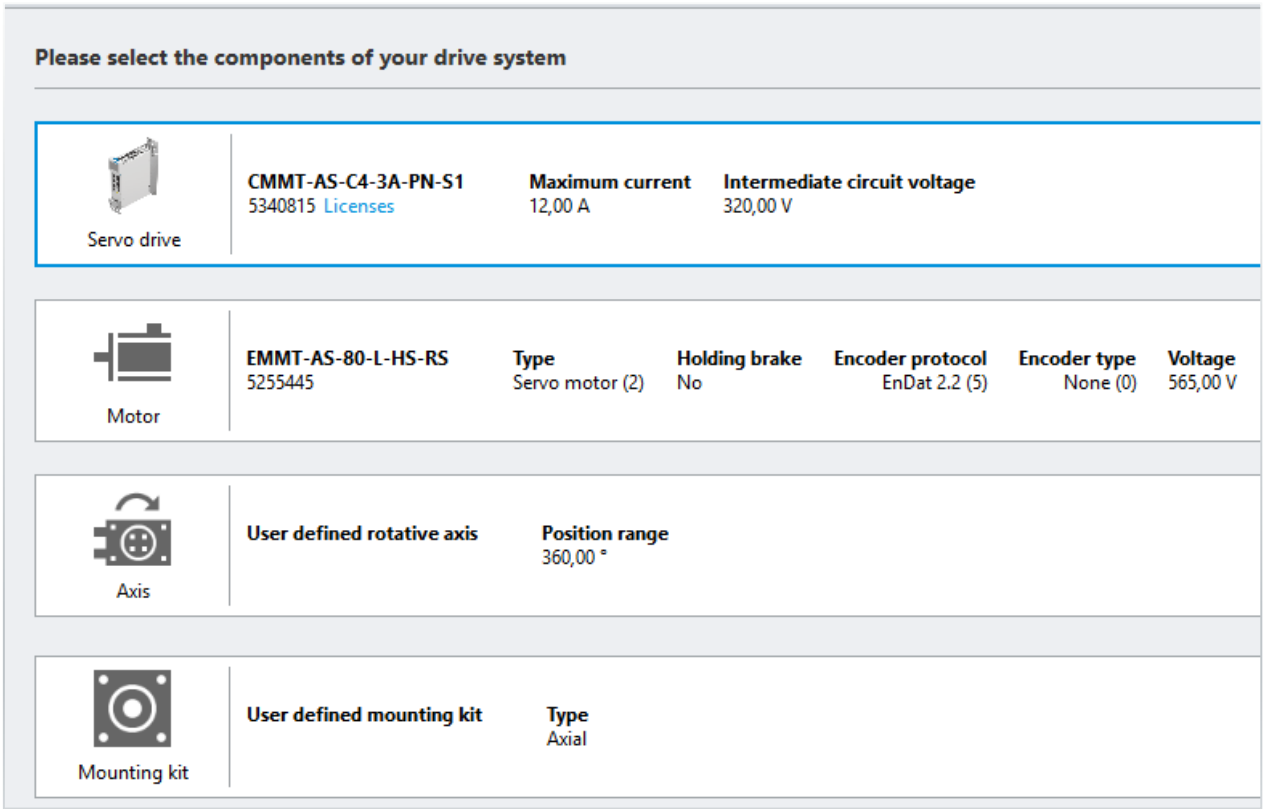
This part of the documentation describes a connectivity and configuration of the motor drive CMMT-AS-..-PN within a Profinet network controlled via Siemens Simotion PLC controller. The used bus protocol within this Application Note is an Application Class 4 and Telegram 105 which are specifically defined by Siemens for interpolated motion over Profinet. It is targeted at people who are already familiar with this protocol, Festo Automation Suite and Siemens Scout software.

3 Configuration of parameters in Automation Suite

3.1 Automation Suite related parameters

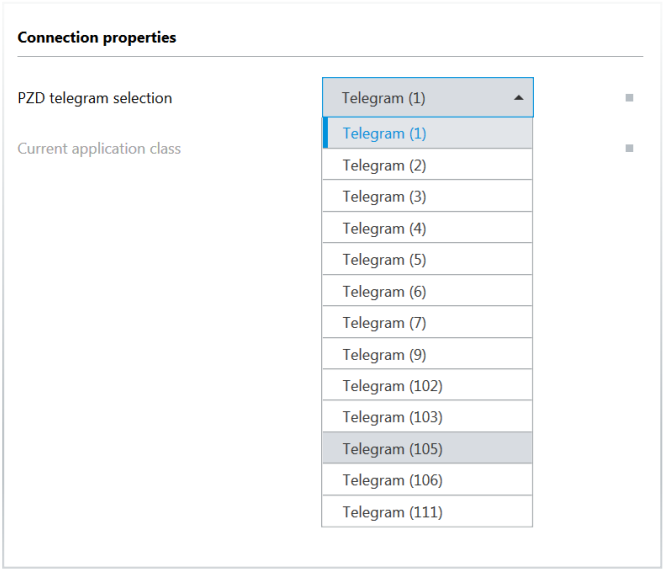
On the Device Configuration tab you can select the components of your drive system.

It is not necessary to define the axis used and the type of Mounting kit. The mechanical data will be selected at a later stage in Tia Portal inside the parameter of the Technology Object. Select user defined rotative axis and flag unlimited axis. Select also user defined Mounting kit.



3.2 Telegram

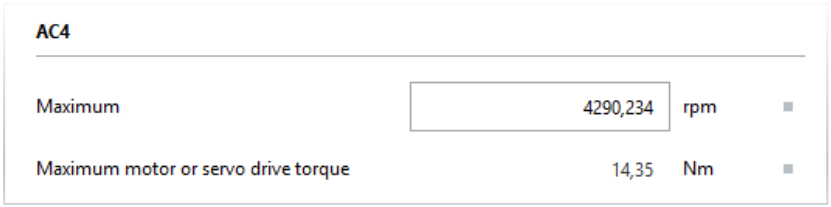
On the Fieldbus tab you can find the parameters that are related to the communication with the host system.
In order to achieve the best performance, select Telegram 105 under the PZD telegram selection.



Now you can connect to the device and transfer the parameters from the project to the device.

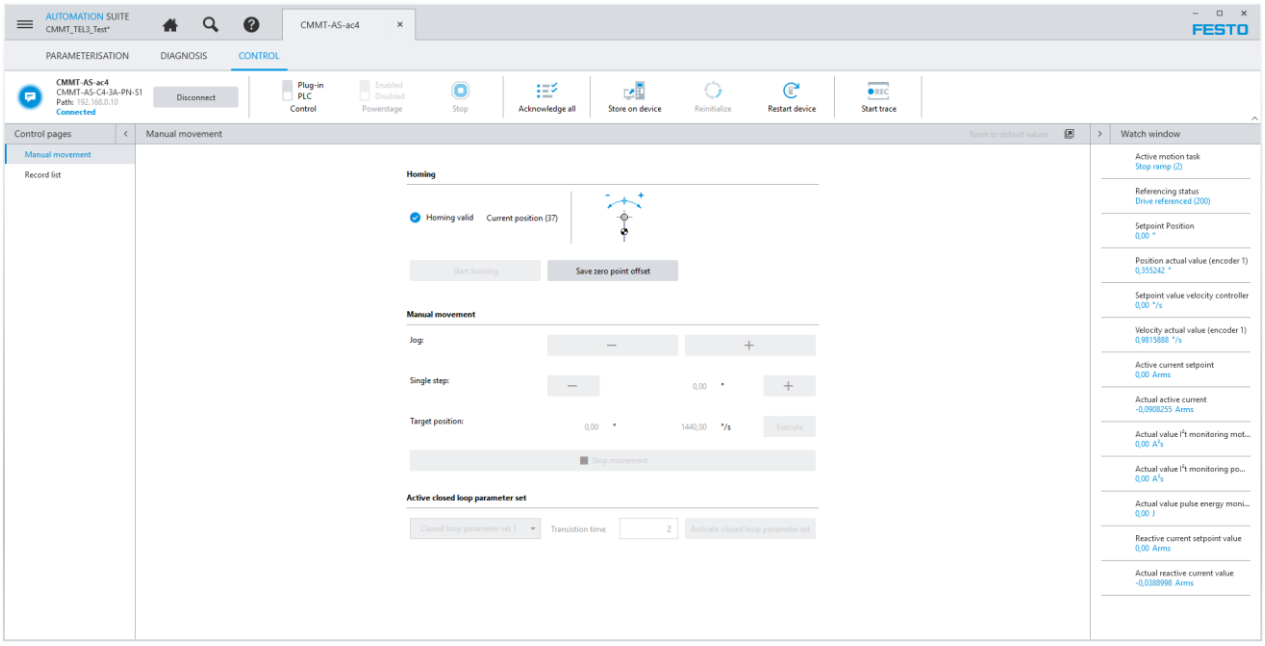
3.3 AC4 Parameters

After the download, stay online a take note under the Fieldbus tab the AC4 Parameters. The parameters below will be important during the configuration of the technology object in the Siemens Scout project.

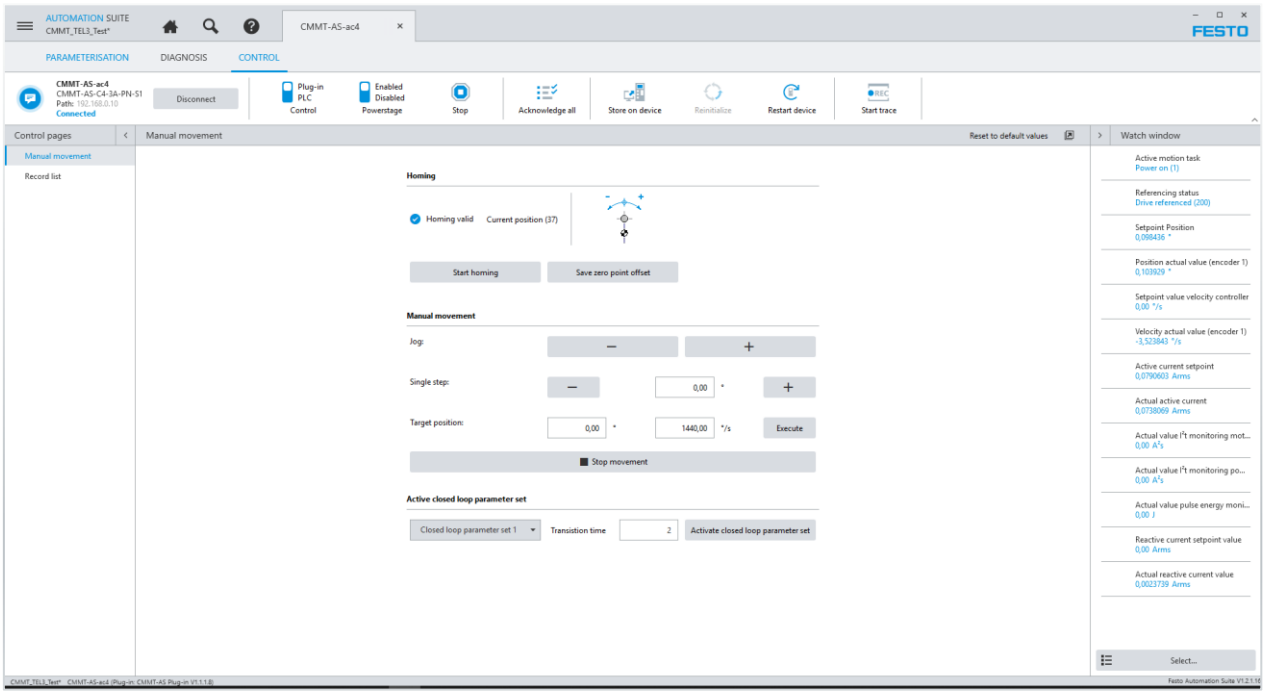


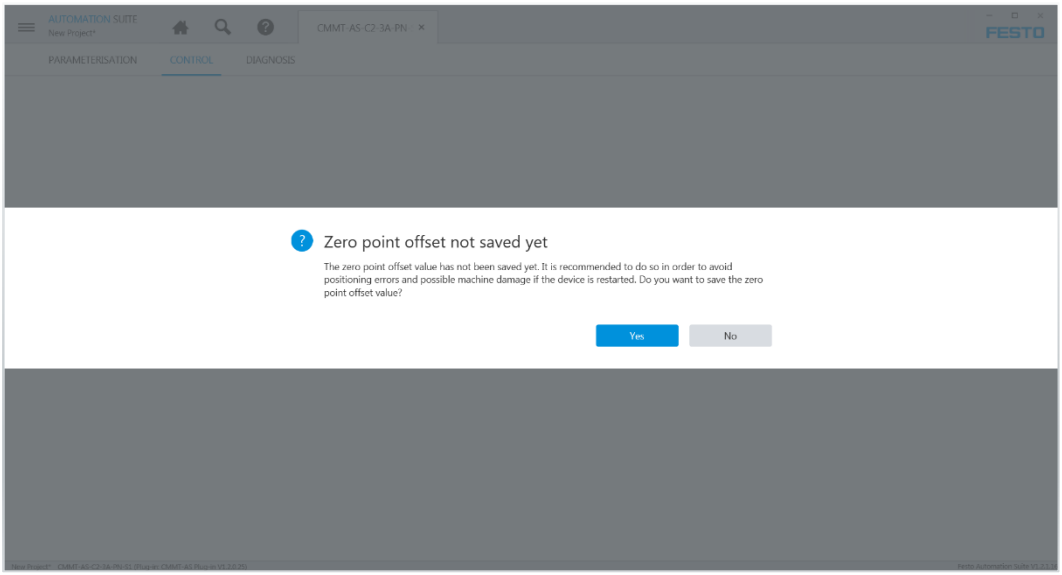
3.4 Commissioning the drive in Automation Suite

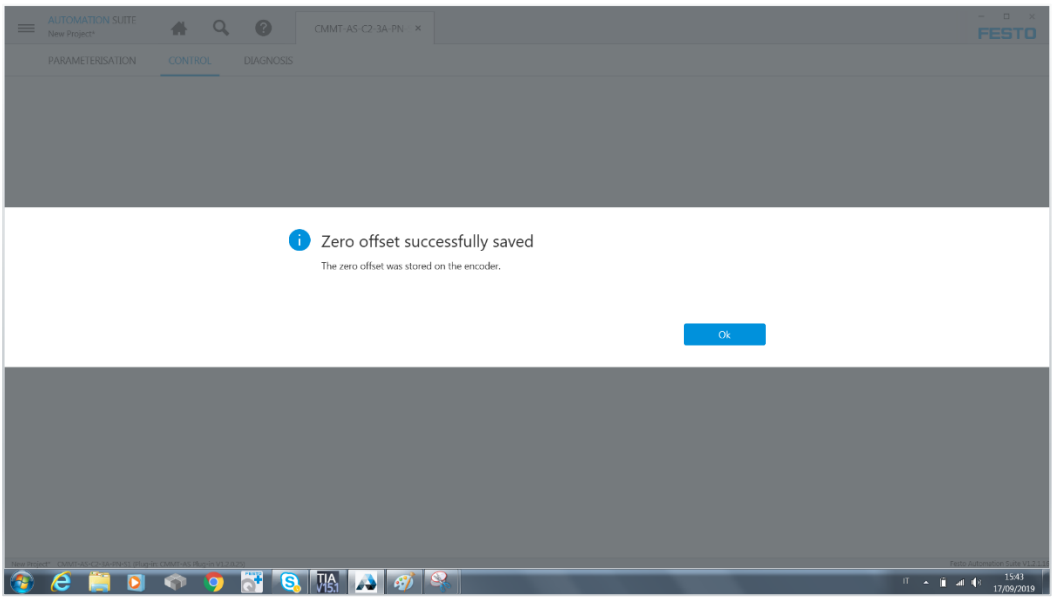
Switch On the Control Configuration tab. Now you can enable the plug-in to take the control of the drive, and after that you can power-on clicking on “Enable Powerstage” switch.



Now you can perform the homing of the drive and save the zero point offset.







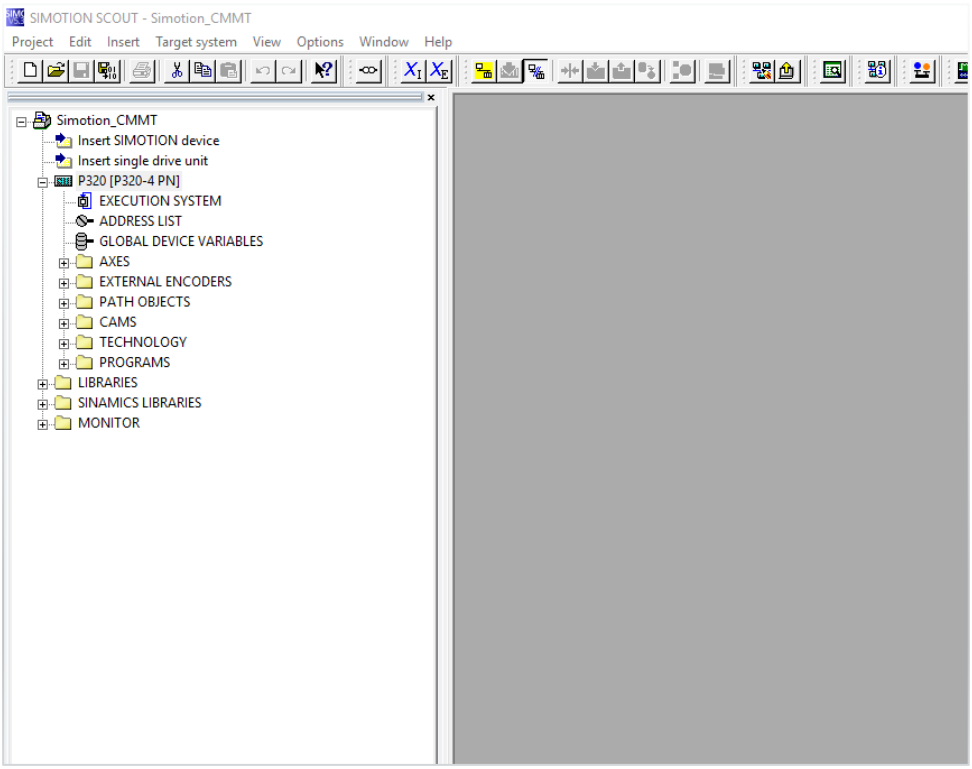
Warning

Before switching to the Scout project configuration, it is mandatory to perform an homing with the saving of the zero point offset.

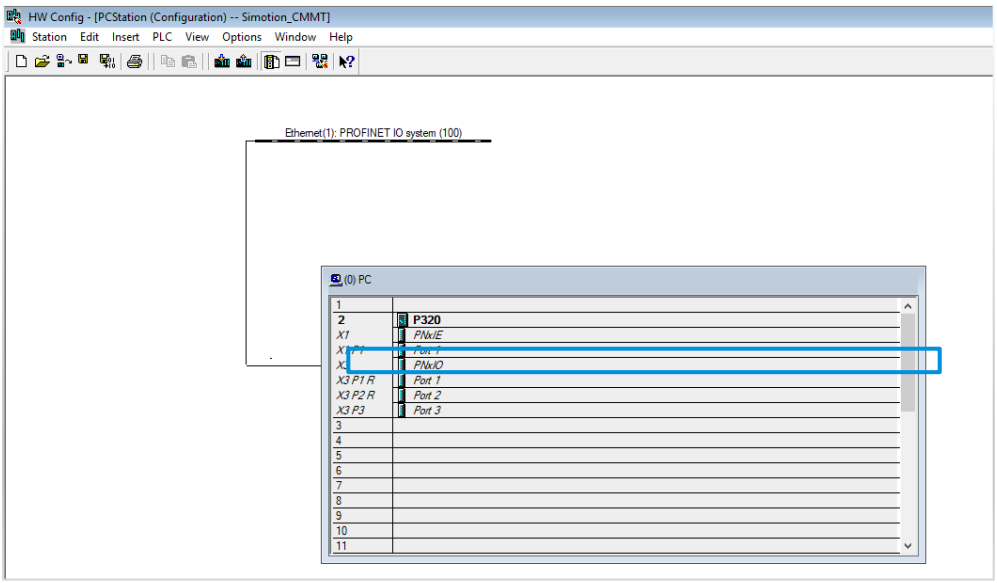
4 Setting up Siemens Scout

4.1 Making the Hardware Configuration of the Scout project

4.1.1 Create a new project and add your PLC:



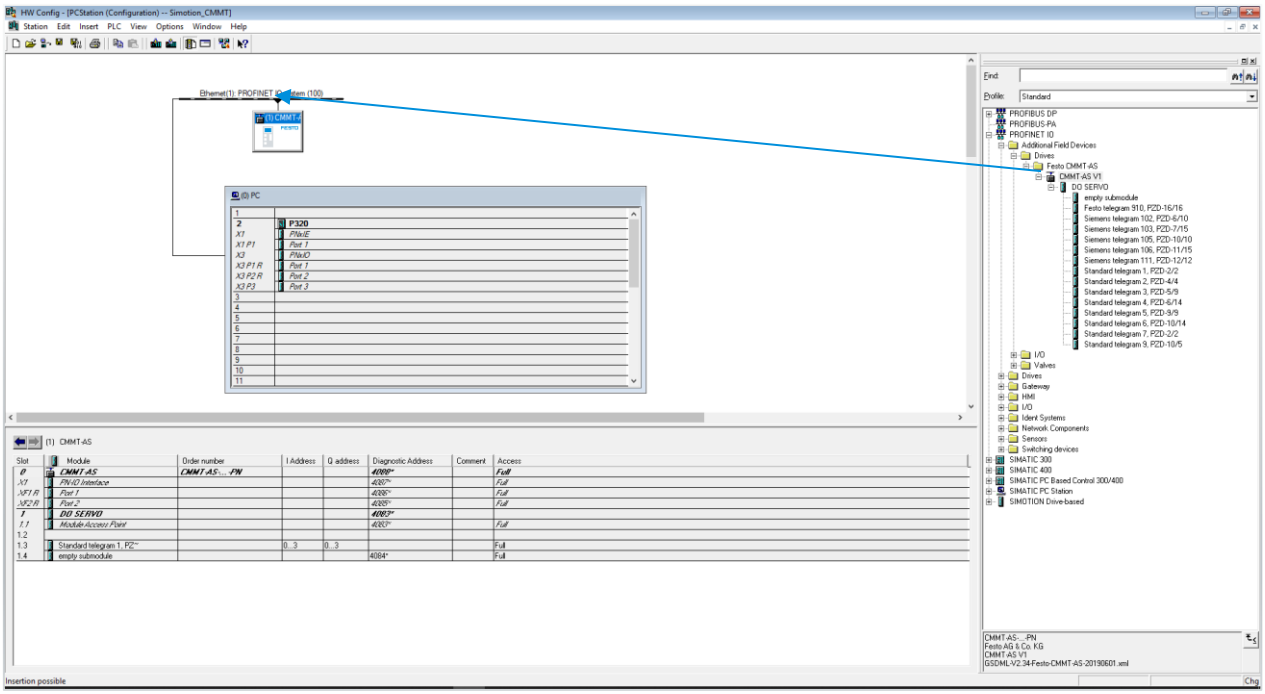
4.1.2 Change to **'Hardware Configuration'** tab, select the ProfiNet port of your PLC, navigate to **'Insert'** and insert a **ProfiNet IO System**.



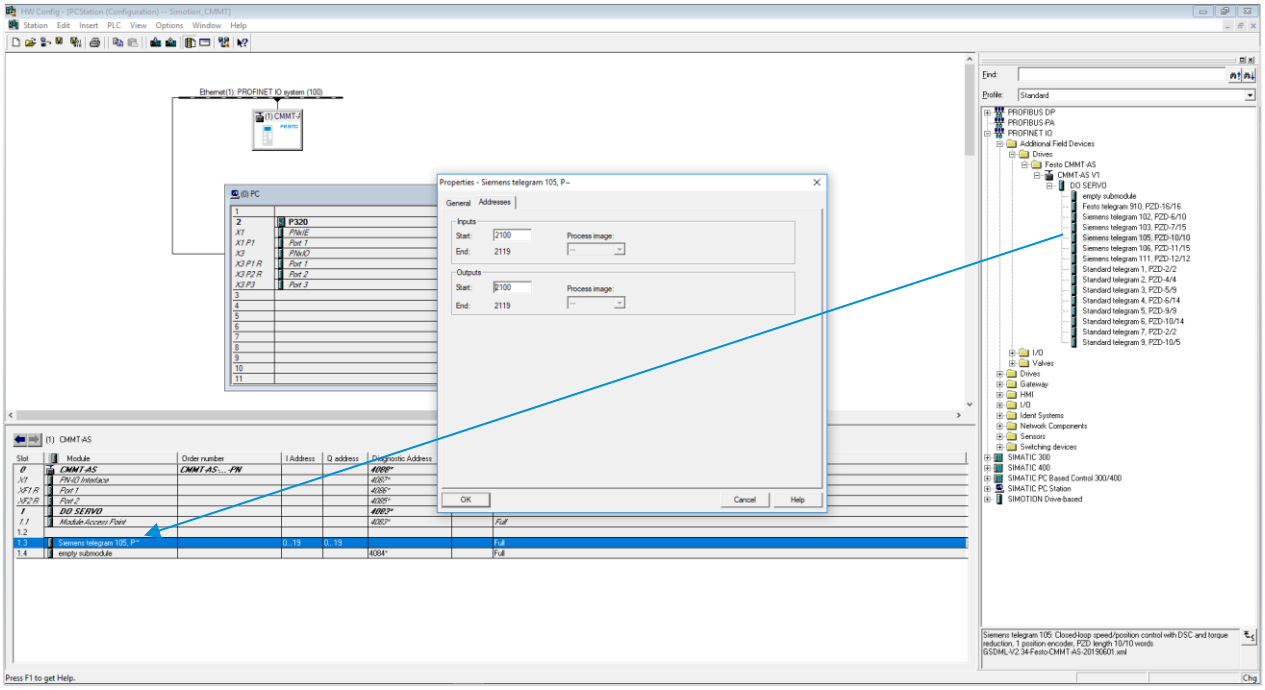
4.1.3 Install the GSD File for the CMMT Controller. In this example it's the following GSD File:

'GSDML-V2.34-Festo-CMMT-AS-20190601.xml'

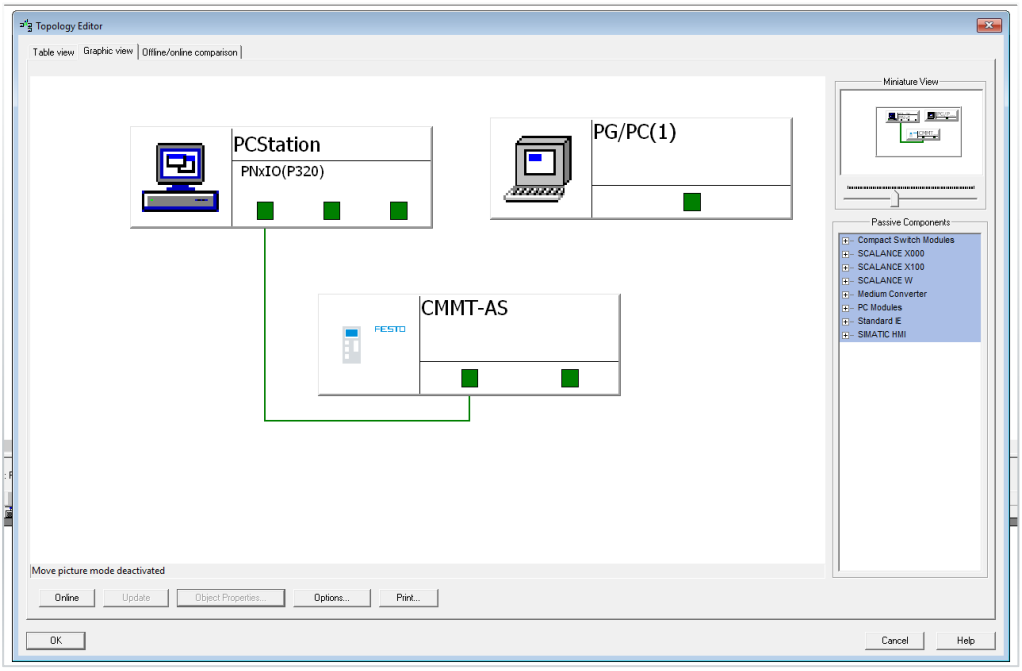
After installing the GSD File, go to the Hardware Catalogue → ProfiNet IO and Drag and Drop the CMMT to the ProfiNet IO System.



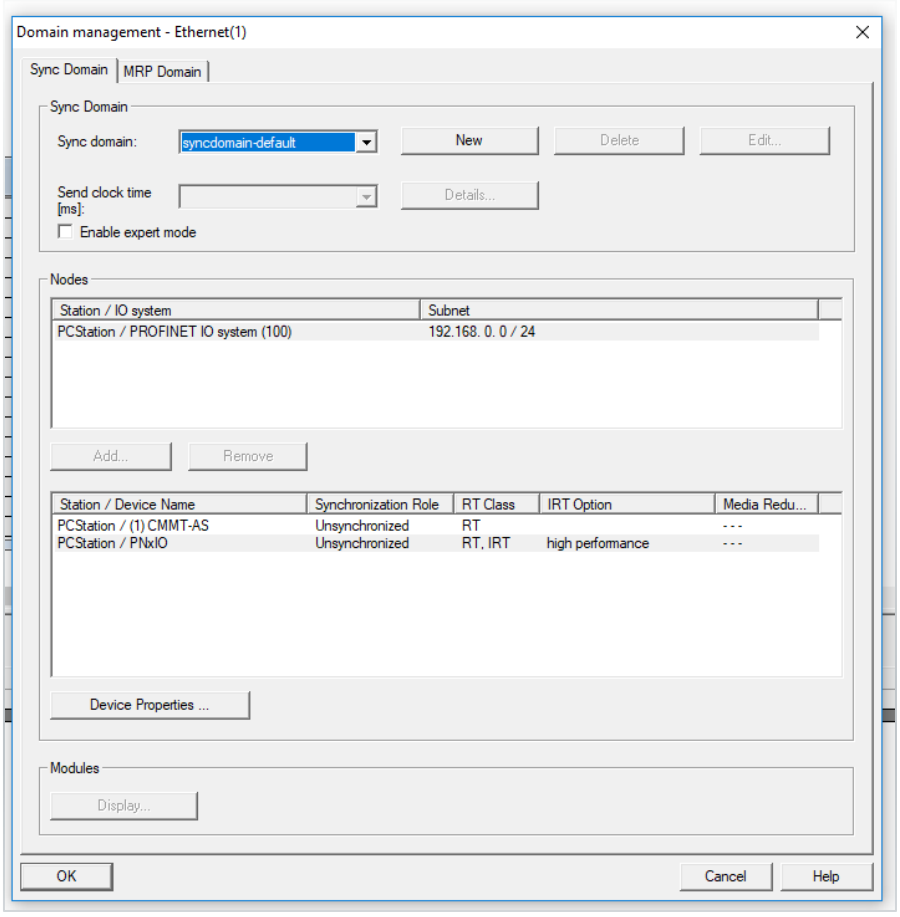
4.1.4 Delete the **'Standard telegram 1, PZ~'** and Drag and Drop the **'Standard telegram 105, PZD-10/10'** to Slot 1.3. Double click on Slot 1.3 and change the inputs and output addresses to a value › 64. E.g. 2100.



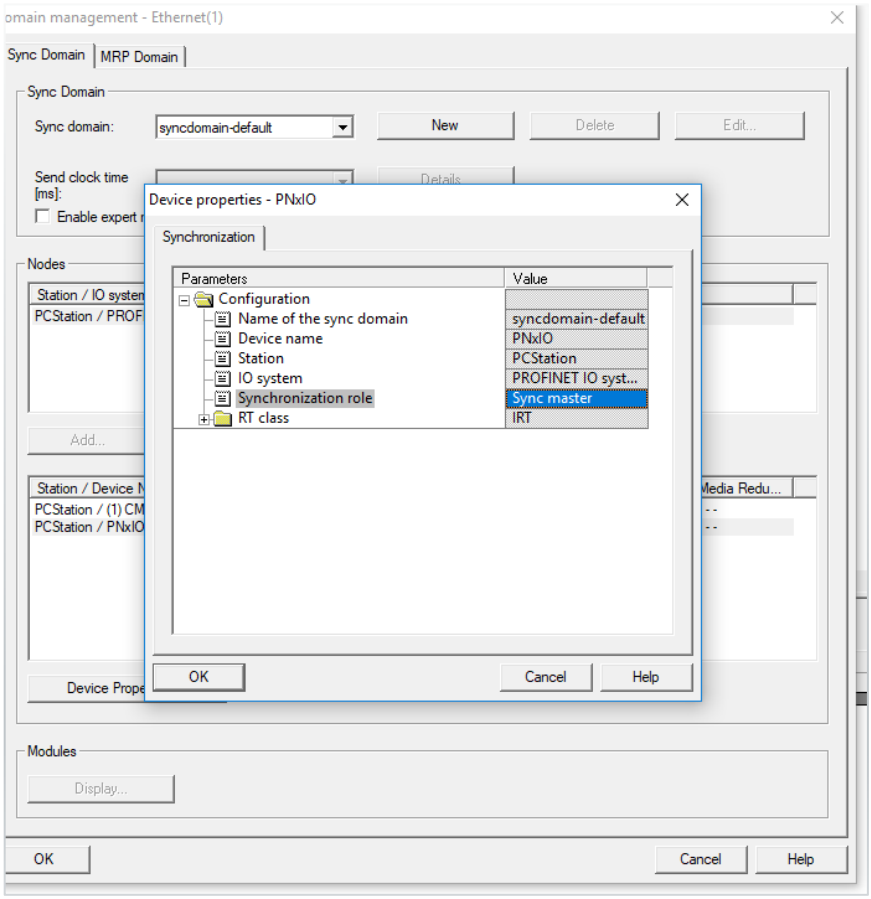
4.1.5 Right click on the ProfiNet IO System and go to **ProfiNet IO topology**. Switch to **'Graphic View'** tab and connect the **CMMT-AS Port1 (XF1 R)** with the **PCStation Port1(X3 P1 R)** (or whatever your configuration looks like)**.** Click on 'OK' and save your configurations.



4.1.6 Right click on the ProfiNet IO System and go to **'ProfiNet IO Domain Management…'**. Select **'PCStation/PNxIO'** in the lower window and go to **'Device Properties'**.

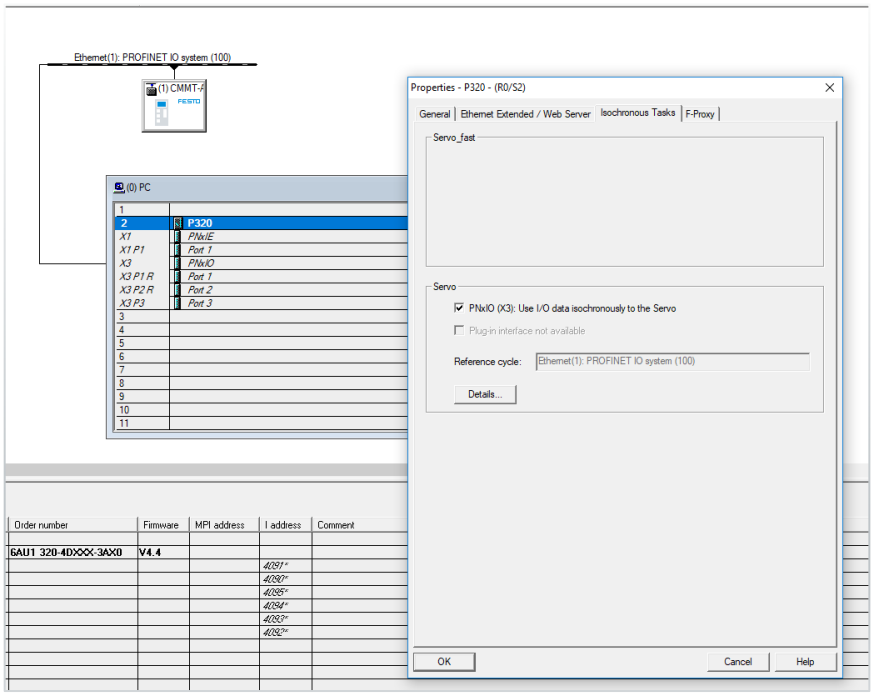


4.1.7 Change the Synchronization role to **‘Sync master’** and save your configuration by a click on OK.

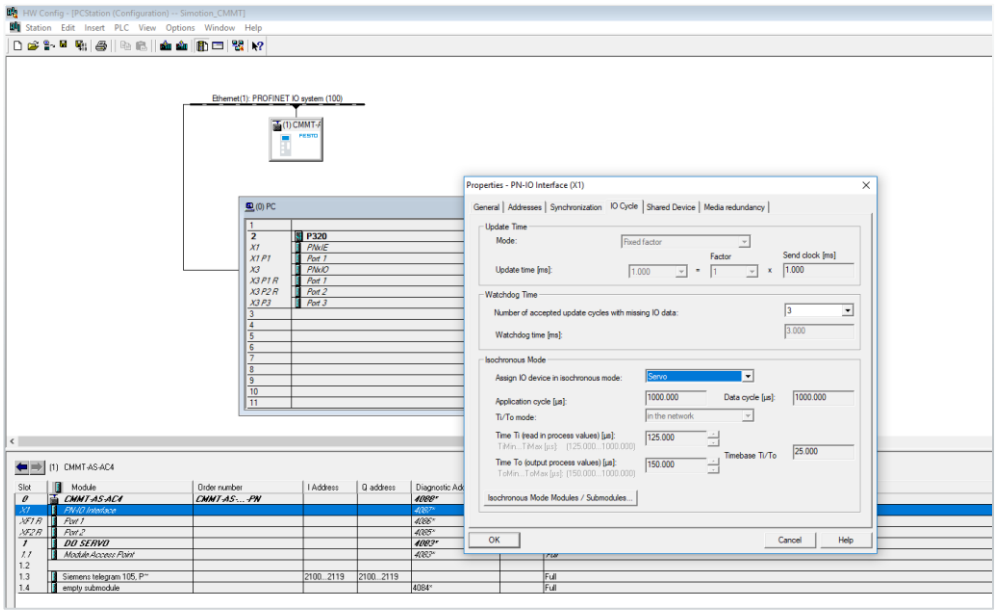


4.1.8 Repeat the step of 4.1.7 and change the role of the CMMT to **‘Sync slave’**.

4.1.9 Double click on Slot 2 of the PC Station in the Hardware Manager and go to **‘Isochronous Tasks’** and set the checkbox **‘PNxIO (X3): Use I/O data isochronously to the Servo’**. End your action by clicking on ‘OK’.



4.1.10 Select the CMMT in the Harware Configuration and double click on the ProfiNet Port. In the drop down menu you select: **‘Assign IO device in isochronous mode: Servo’**.



4.1.11 Via the tab **‘PLC’ → ‘Ethernet’ → ‘Ethernet Node’** you navigate to **‘Nodes accessible online’** and search for the ProfiNet Devices. Make sure, that the ProfiNet Name of the CMMT and the Simotion are clearly defined in your project. Compare the ProfiNet name you can find online with your configured device name by simply double clicking on the CMMT in the Hardware Manager.

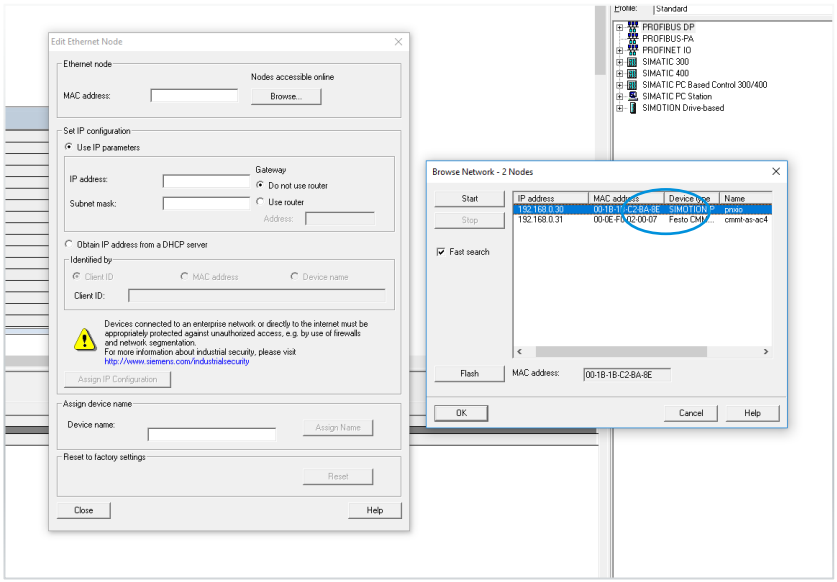


Figure 1: online devices with ProfiNet names

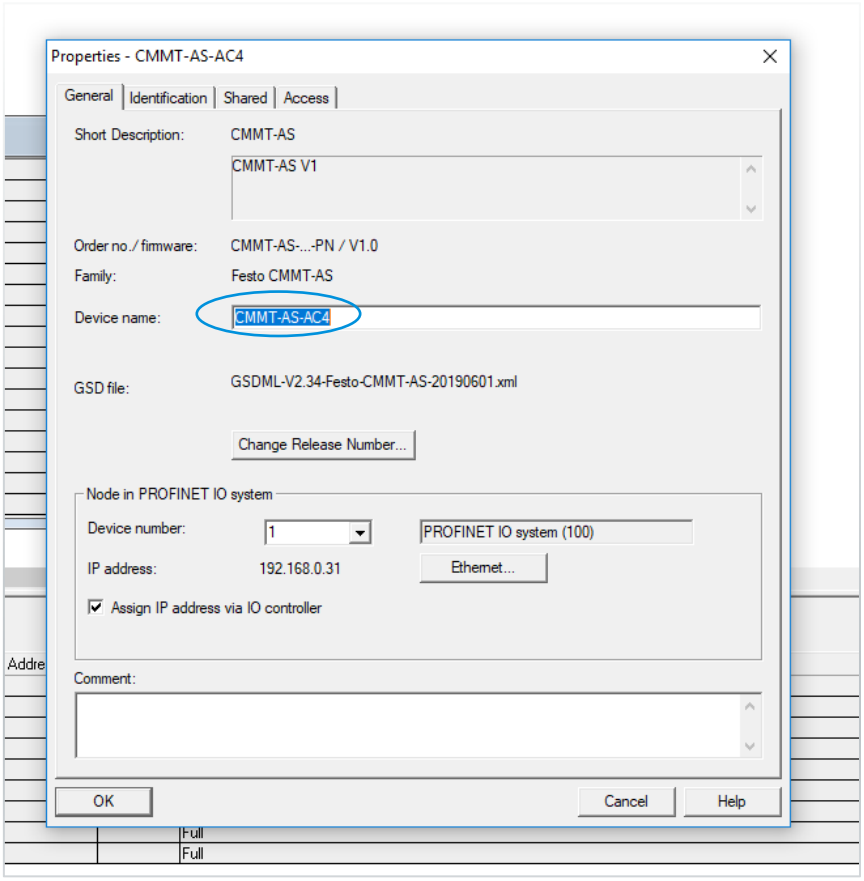
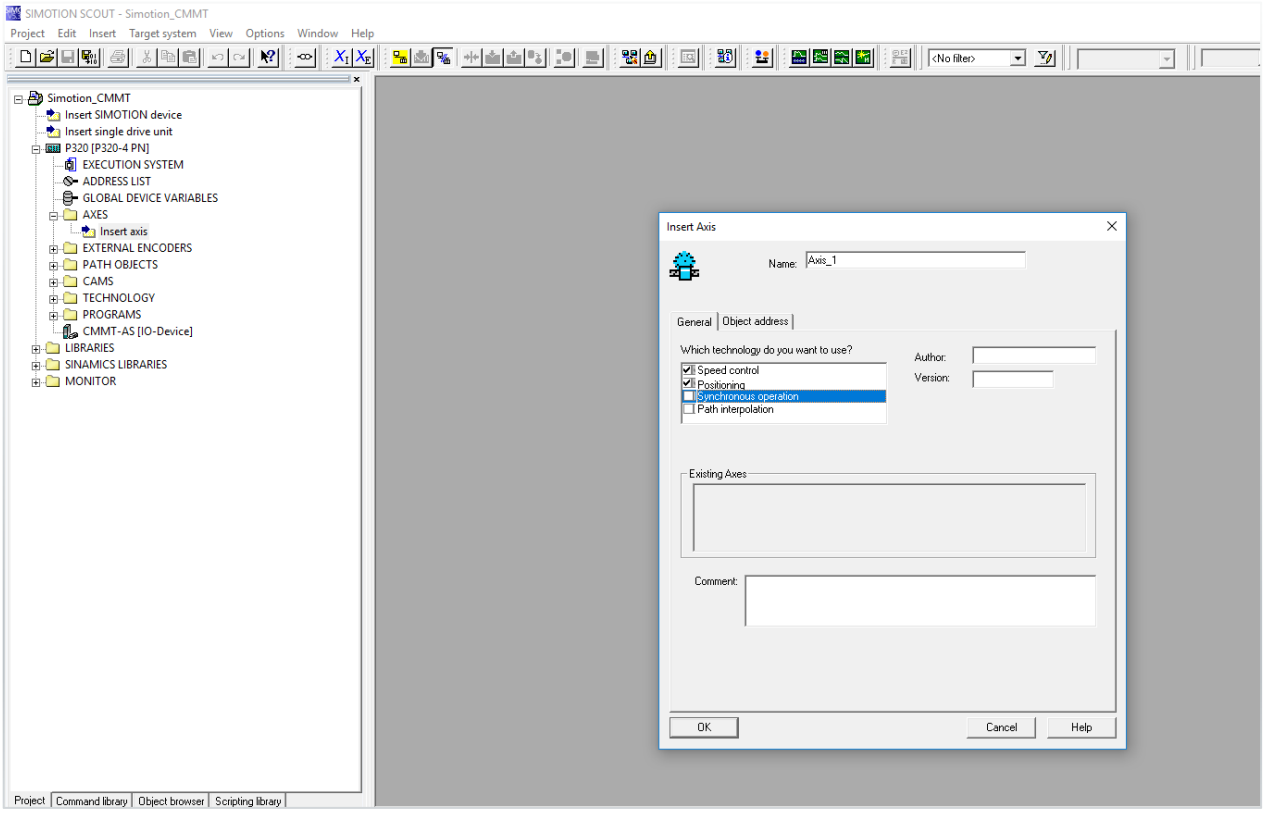


Figure 2: Configured ProfiNet device name

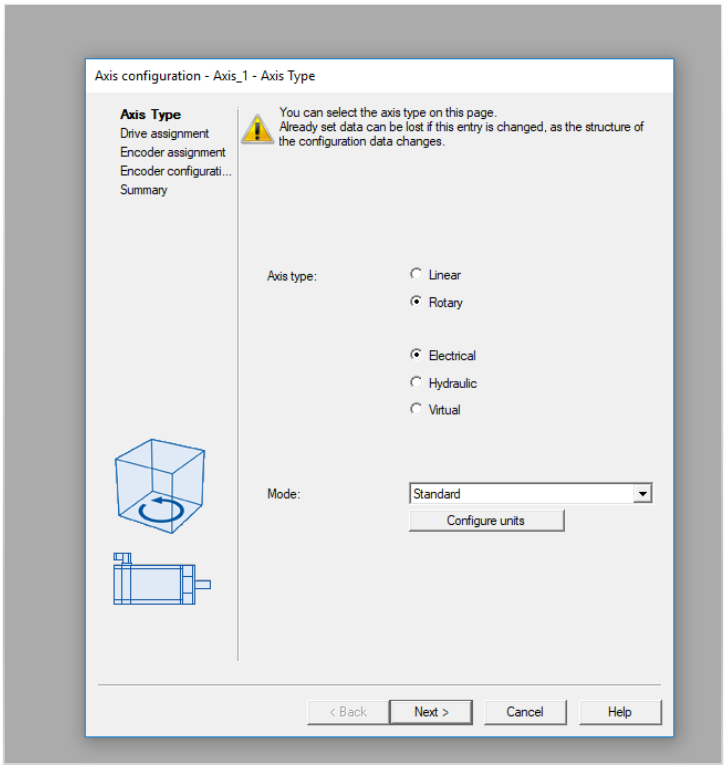
4.1.12 Save and compile your hardware configuration and download it to the Siemens PLC.

4.2 Making the Configuration of technological object

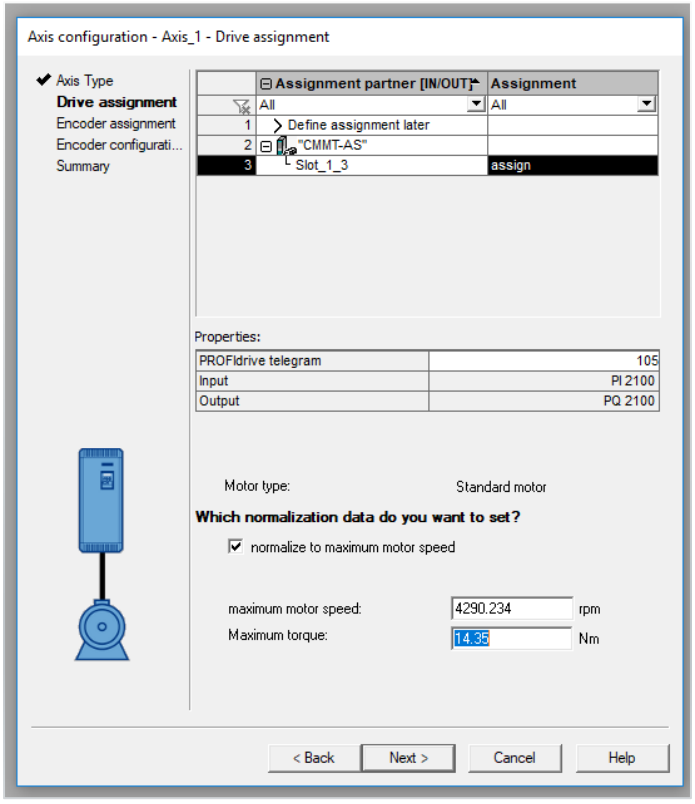
4.2.1 Create a new technological object:



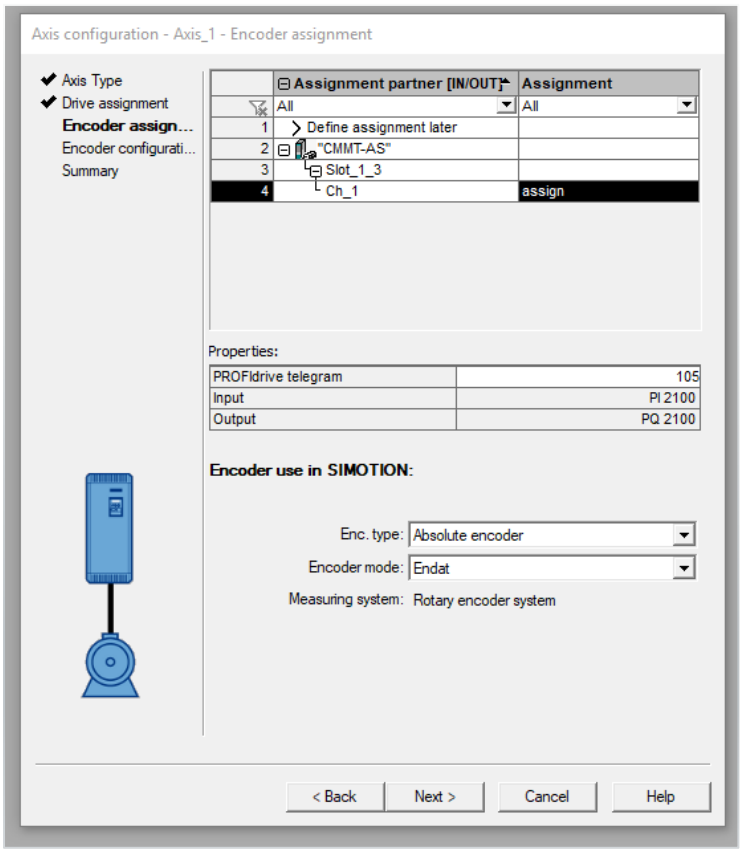
4.2.2 Select the entry "Rotary" and "Electrical".



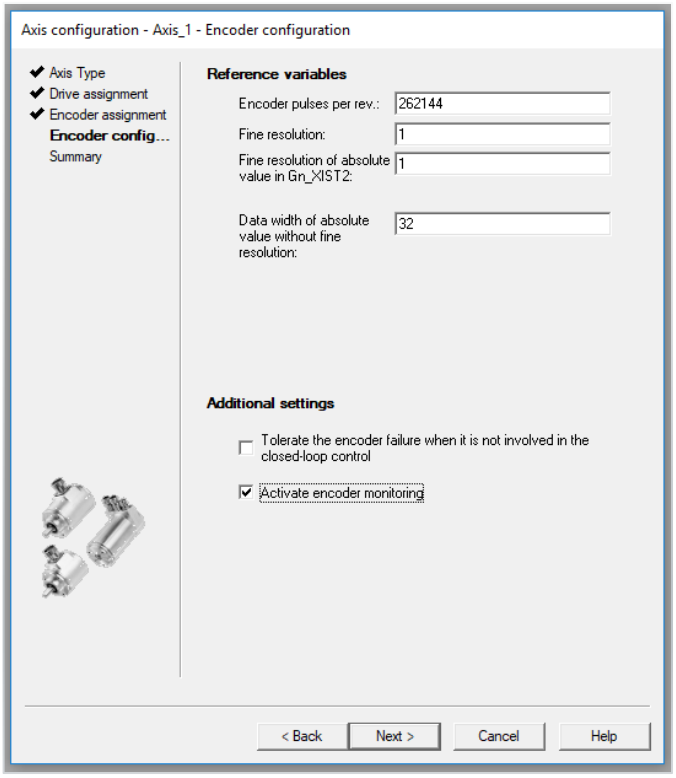
4.2.3 Use the parameters from the Automation Suite project under AC4 form 3.3 to configure the motor parameters. Set the checkbox **'normalize to maximum motor speed'**.



4.2.4 Configure the Encoder use as **'Absolute Encoder'** with **'Endat'** method.

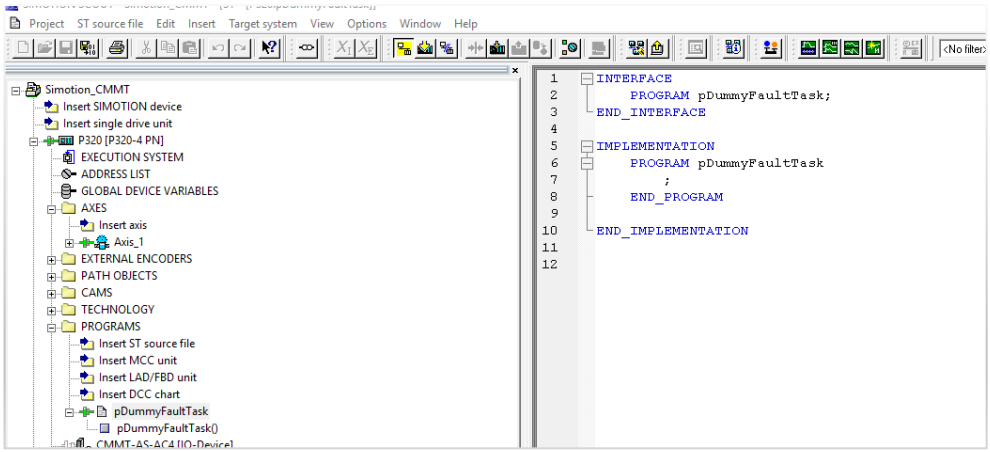


4.2.5 Set the encoder values as followed.

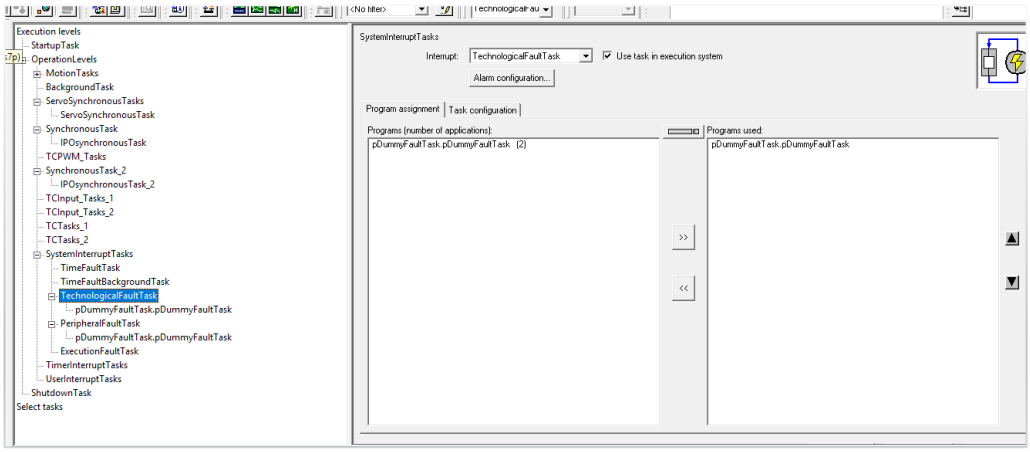


4.3 Movement via Control Panel

4.3.1 Insert a program **'pDummyFaultTask'** with following program code:

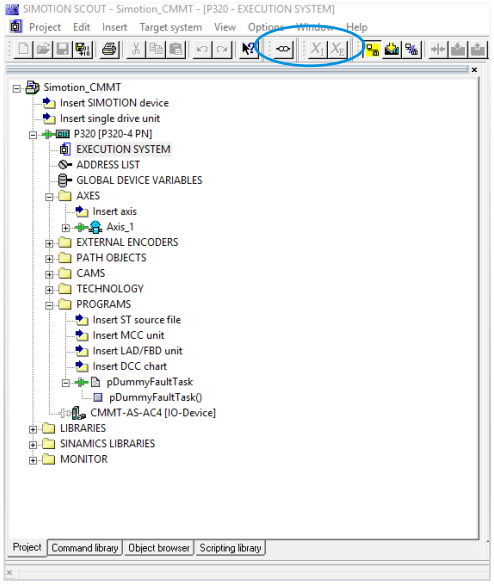


4.3.2 Bind it to the **'EXECUTION SXSTEM'** under **'TechnologicalFaultTask'** and **'PeripheralFaultTask'**

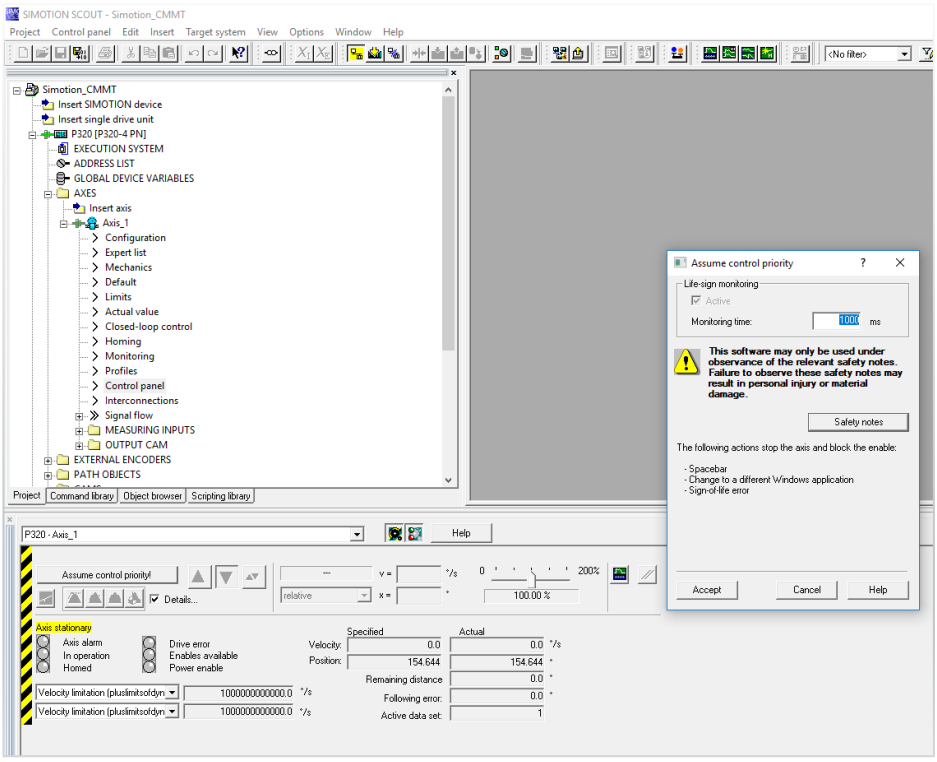


4.4 Compile and Download the program

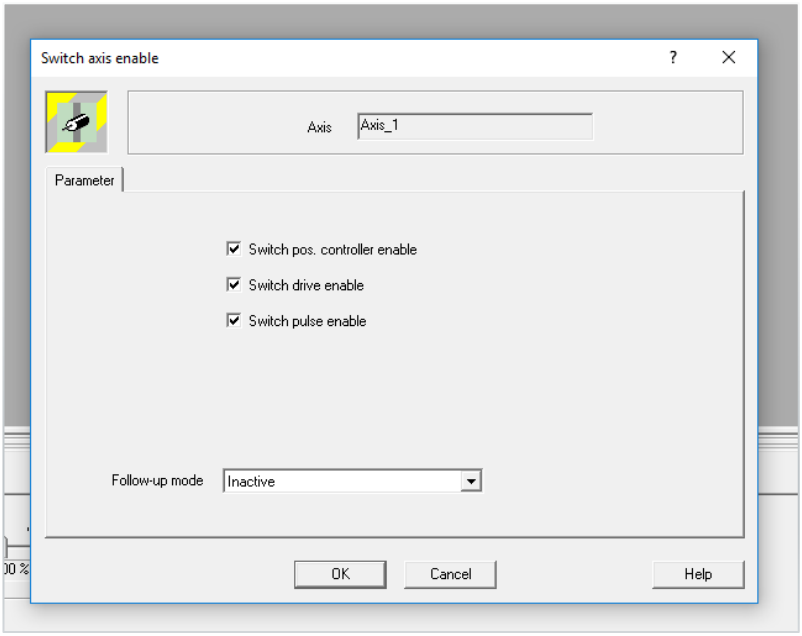
Save and compile the project, go online and download the project to your PLC.



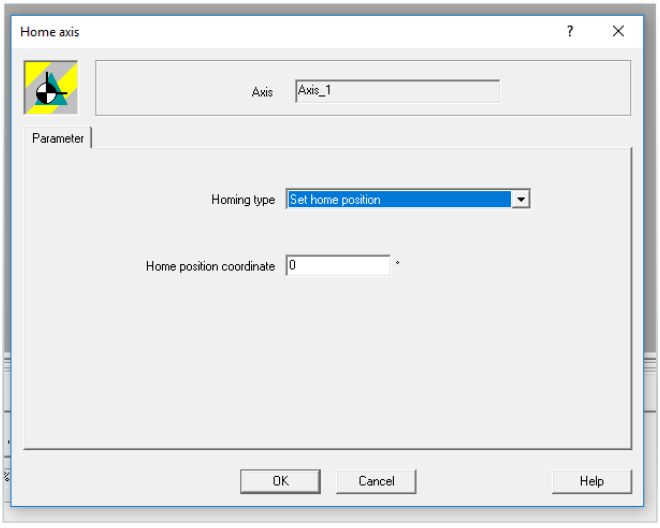
4.4.1 Go to **'Axis_1' → 'Control Panel' → and click on 'Assume control priority'** and accept the upcoming pop up window for the Life-sign-monitoring. You should see the actual position of your axis under **'Position'**.



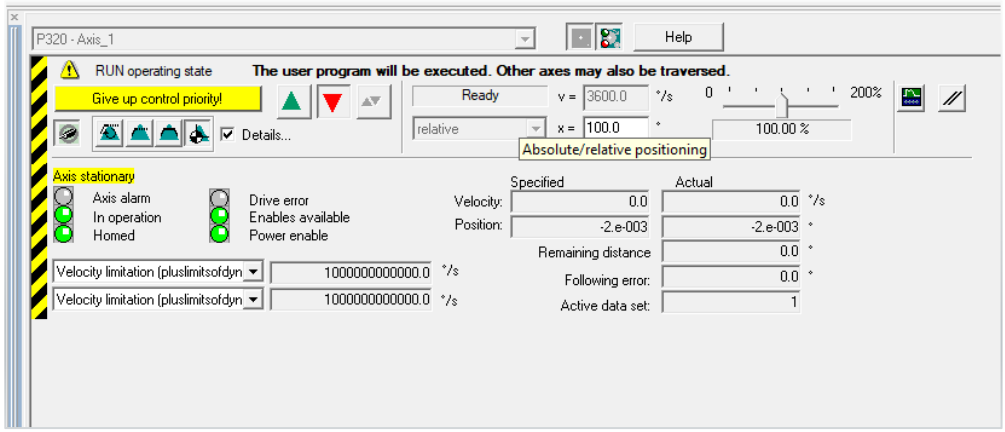
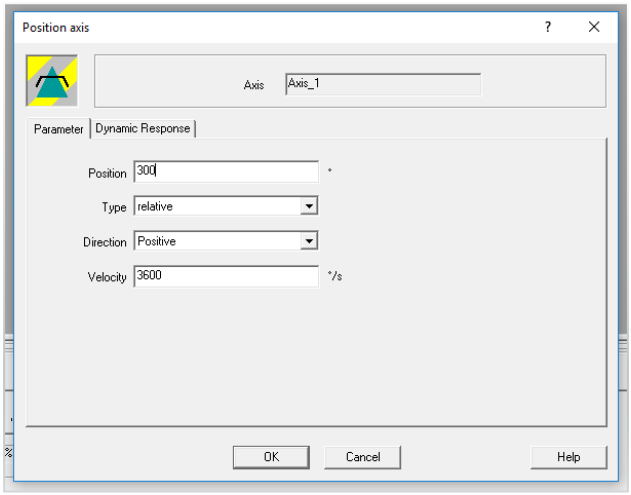
4.4.2 Enable the axis and accept the upcoming pop up window by clicking OK.



4.4.3 Click on homing and select Homing type: **'Set home position'**. **Set Home position coordinate := 0°.**



4.4.4 Then click on Start Motion . The Position should now change to 0° and the Homed LED should change to green.



4.4.5 After homing the drive, you can now do a positioning command via click on . After click on OK, you can start the movement with a click on Start Motion . The axis now should move and the position should change to 300°.