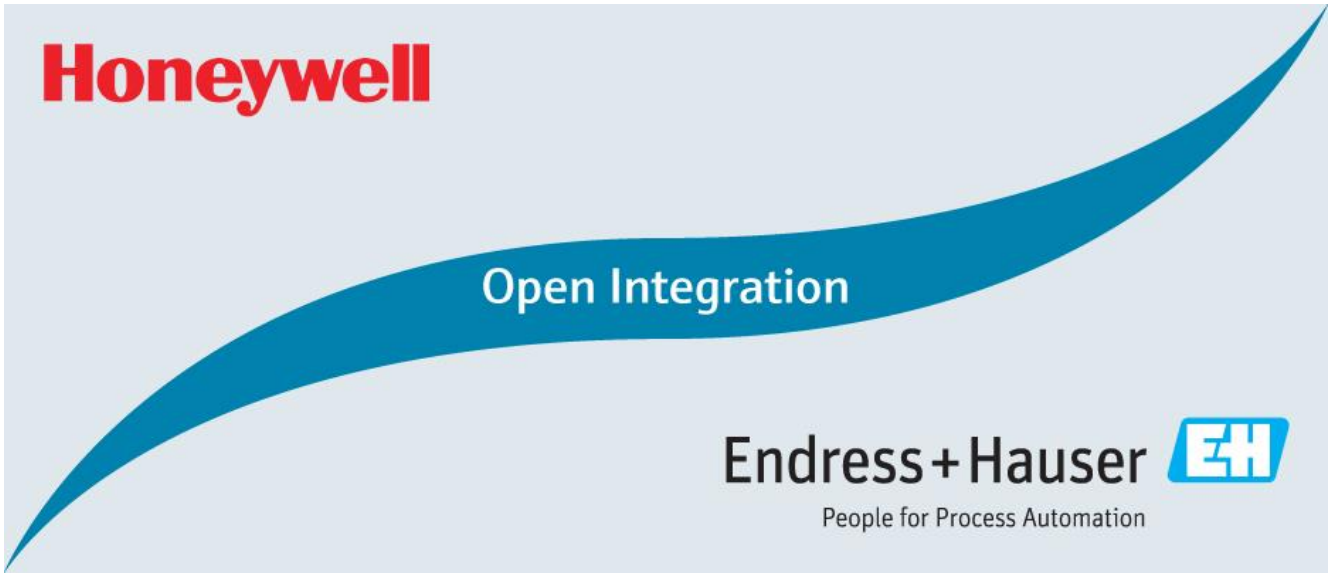
Integration Tutorial HON02

Honeywell Experion®PKS and PROFIBUS for Chemical Industry



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1 Document Information

1.1 Purpose and Scope

This document provides a step by step description on how to integrate PROFIBUS devices with a Honeywell Experion®PKS System. All content of this document is jointly developed, reviewed and approved by Honeywell and Endress+Hauser as a common deliverable of Open Integration.

1.2 Document History

This is version 1.00.00 of this document. Version history:

Version	Released	Description
1.00.00	2017-12	Initial version

1.3 Related Documents

Please refer to related documents as listed below:

Document	Description
SD02062S/04/EN/01.17	Reference Topology HON02
SD02064S/04/EN/01.17	Integration Test Summary HON02
SD02065S/04/EN/01.17	List of Tested Devices and Versions HON02

2 Pre-Requisites

Readers of this document should be familiar with related documents as listed in chapter 1.3 and basics on how to work with the Honeywell Experion®PKS and PROFIBUS in general. Please refer to recommended literature as listed in chapter 2.1.

2.1 Recommended Literature

2.1.1 Honeywell

Document	Description
EPDOC-X88	PROFIBUS Gateway Module User's Guide
EPDOC-XX11	C300 Controller User's Guide
EPDOC-XX19	Control Building User's Guide

2.1.2 Endress+Hauser

Document	Description
BA00070S	Fieldgate SFG500 Installation and Commissioning

2.1.3 Other

2.1.3.1 Pepperl+Fuchs

Document	Description
tdoct0835g_eng.pdf	POWERHUB Segment Coupler Manual
tdoct0919l_eng.pdf	Advanced Diagnostics Manual

2.2 Operable Control System

This document assumes an operable Honeywell Experion®PKS as defined by Reference Topology HON02. Please refer to the manuals listed in chapter 2.1.1 for an explanation on how to use hard- and software provided by Honeywell.

2.3 Operable Asset Management System

This document assumes an operable Honeywell Experion®FDM as well as an operable Endress+Hauser FieldCare environment as defined by Reference Topology HON02.

2.4 Operable Field Network Infrastructure

This document assumes an operable PROFIBUS DP / PA field network infrastructure as defined by Reference Topology HON02. Please refer to manuals listed in chapter 2.1.3 for installing of hardware and software provided by other parties.

2.5 Operable Field Devices

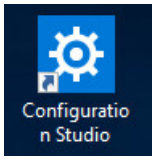
This document assumes an operable selection of Endress+Hauser PROFIBUS DP and PROFIBUS PA devices connected via the field network infrastructure, as defined by Reference Topology HON02. Each field device is adequately powered and prepared with unique tag and PROFIBUS address. If required, please refer to individual device manuals for further advice.

3 Basic Integration

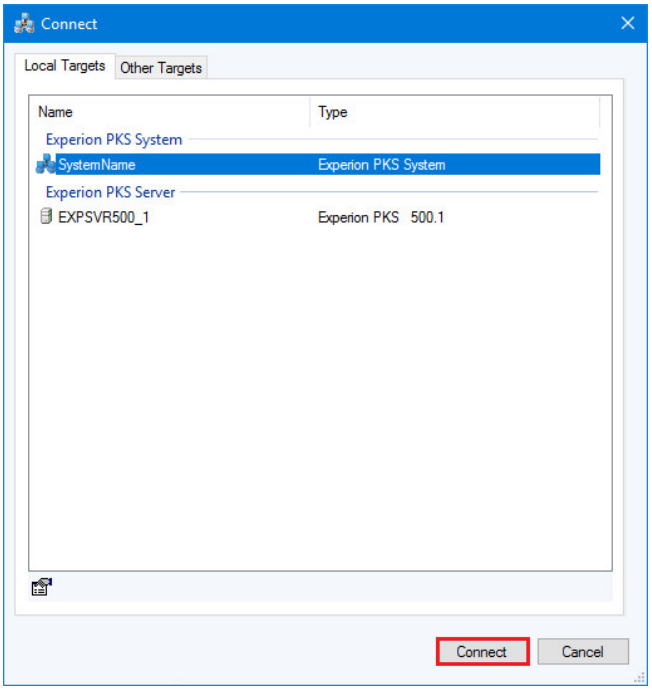
This chapter describes the main workflow for integrating PROFIBUS devices into the Honeywell Experion®PKS. As a result, the cyclic PROFIBUS communication is running and process values with status information are available within the control strategy of the system for further processing.

3.1 New Project

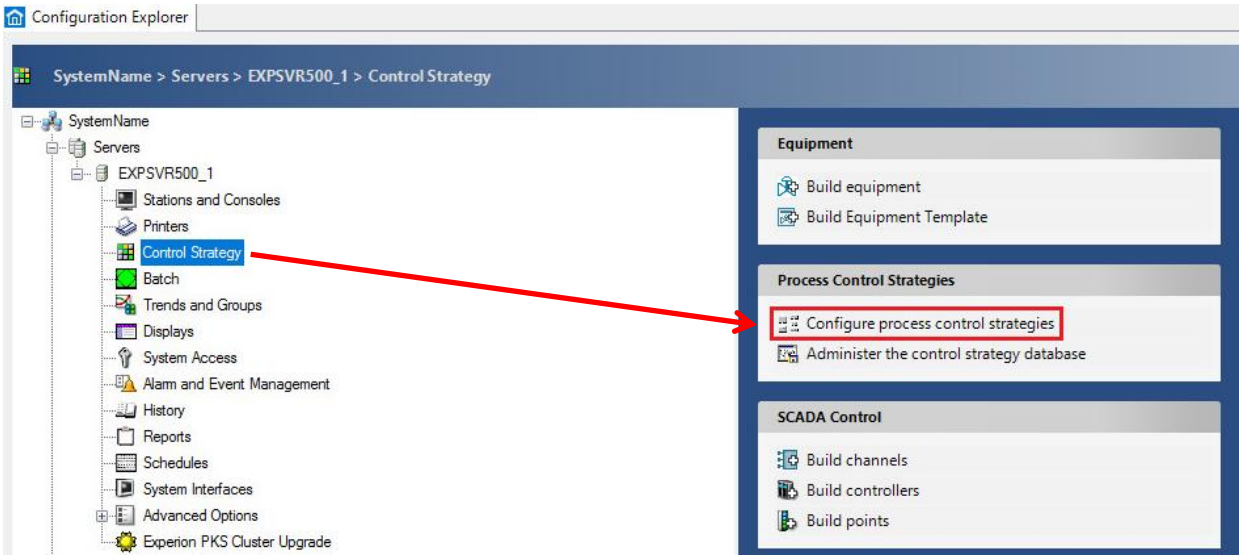
- Start the software Configuration Studio:



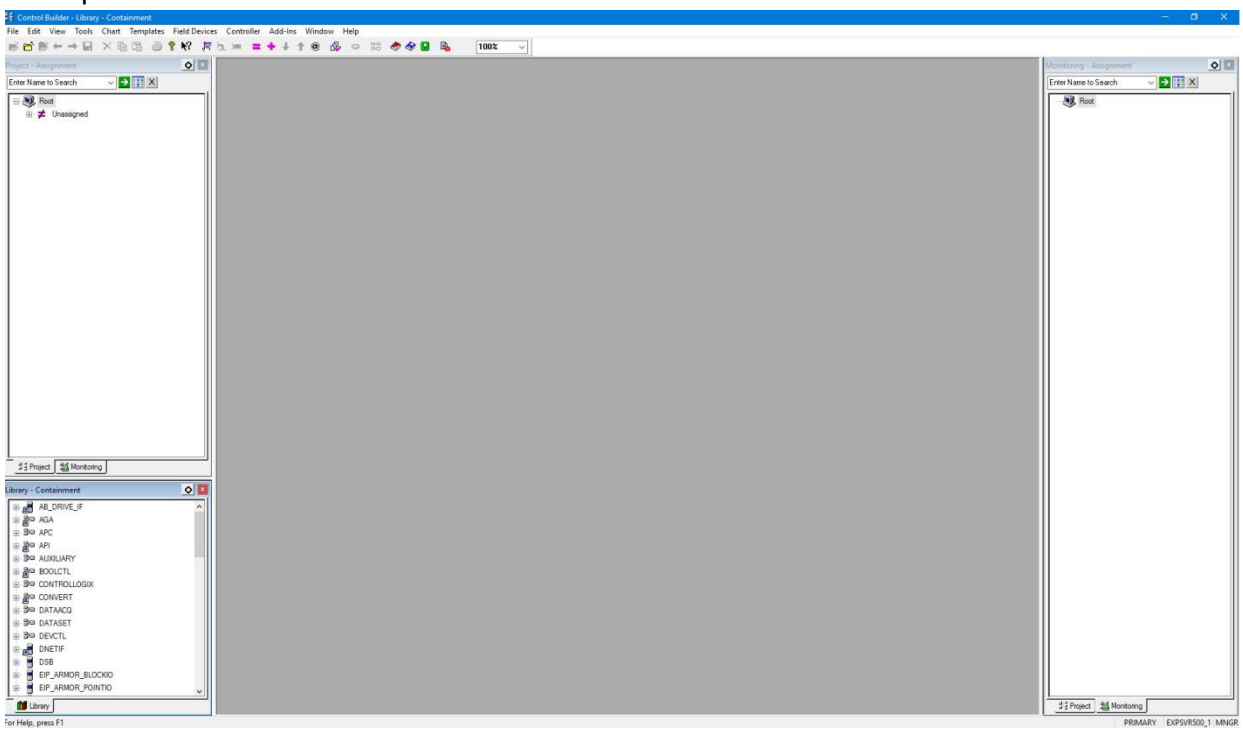
- Select the menu “SystemName” and click on the button “Connect” (Honeywell EPKS System must be connected to the network):



- Select the menu “Control Strategy” and then click on the menu “Configure process control strategies”:



- This opens the Control Builder environment:



3.2 System Configuration

This chapter explains how to configure the IP addresses in Control Builder.

- The target is to work with following network:

Component	IP Address	Subnet Mask
EPKS Server	10.126.93.48	255.255.252.0
FDM Server	10.126.93.49	255.255.252.0
Flexstation	10.126.93.50	255.255.252.0

- By using a redundant C300 Controller with a redundant PGM, Honeywell conventions state that the primary node has an odd address and that primary/secondary node addresses are subsequent:

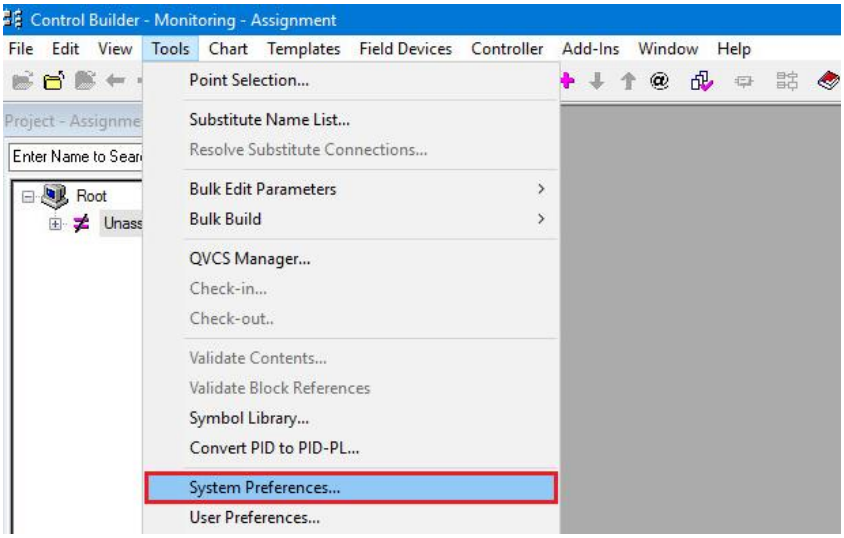
Component	IP Address	Subnet Mask
C300 Primary	10.126.93.51	255.255.252.0
C300 Secondary	10.126.93.52	255.255.252.0
PGM Primary	10.126.93.53	255.255.252.0
PGM Secondary	10.126.93.54	255.255.252.0

- This tutorial describes the configuration of one C300 controller (node address 51) with two PGM modules (node address 53 and 54):

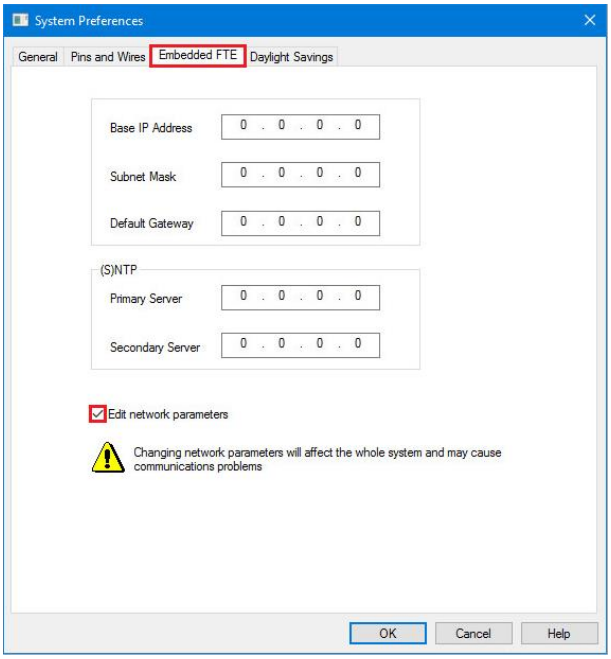
Component	IP Address	Subnet Mask
C300	10.126.93.51	255.255.252.0
PGM Primary	10.126.93.53	255.255.252.0
PGM Secondary	10.126.93.54	255.255.252.0

3.2.1 IP Network Settings

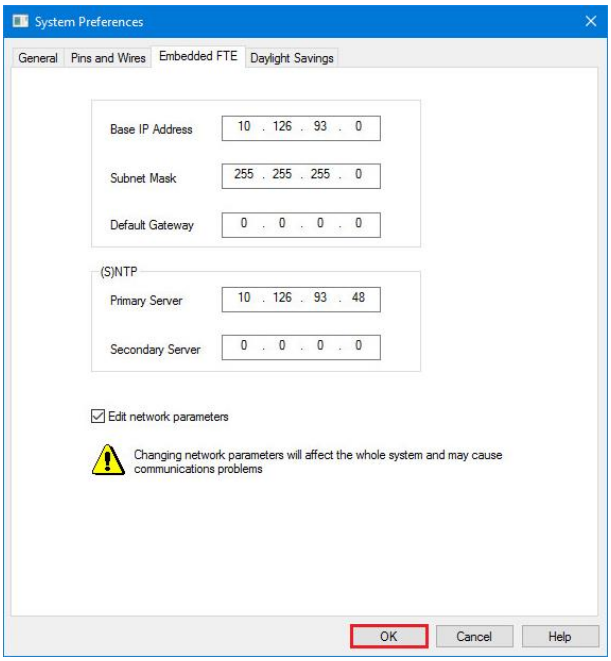
- In the toolbar, select the menu “Tools→ System Preferences”:



- Select the tab “Embedded FTE” and enable the “Edit network parameters” checkbox:



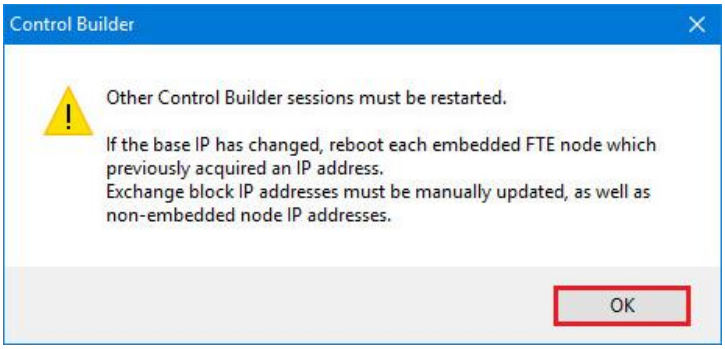
- Edit the network settings according to the corresponding network.
  In this example, following configuration has been set:



The IP address of the Primary Server (EPKS Server) is 10.126.93.48.

Click on the button “OK” to continue.

- Following message is displayed:



Click on the button "OK" and restart other Control Builder running at the system, if required.

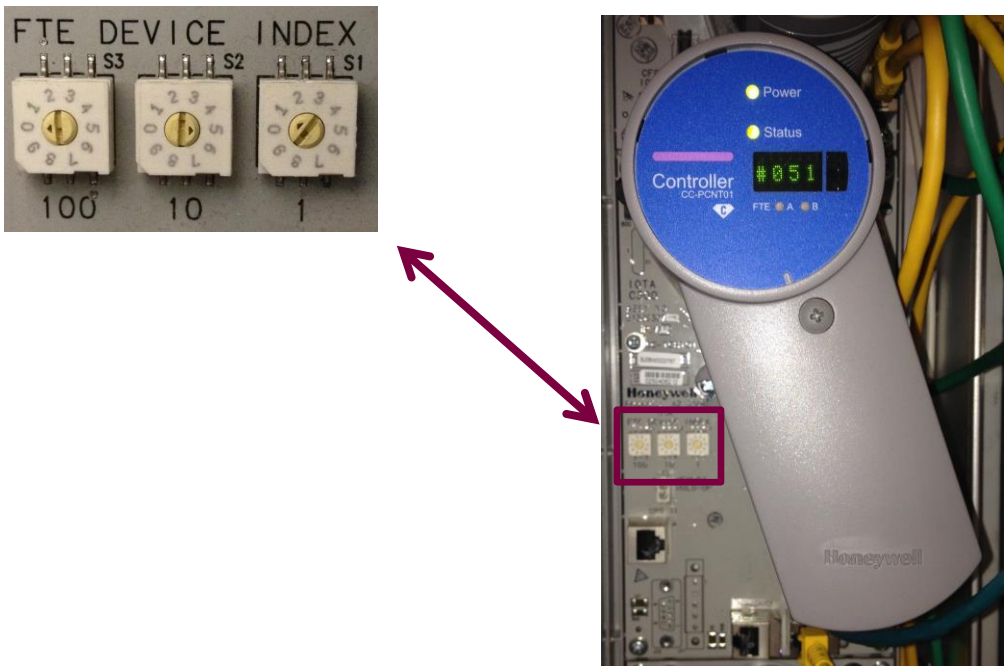
3.2.2 Control System

3.2.2.1 Firewall

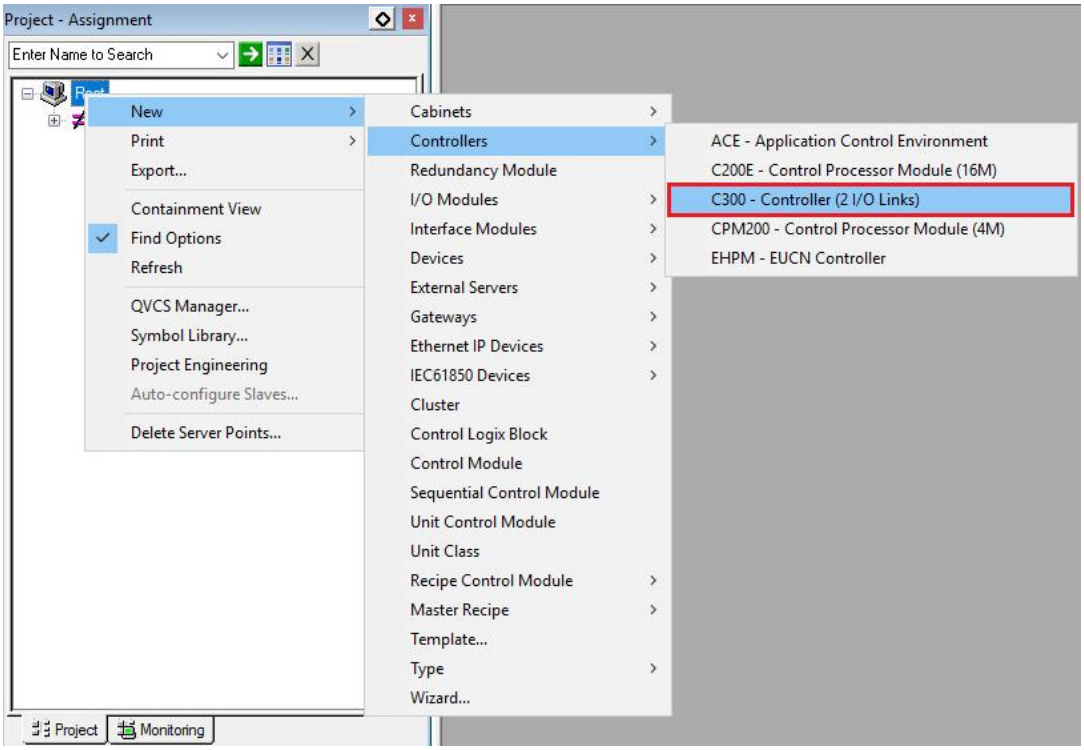
No configuration is needed for this example.

3.2.2.2 C300

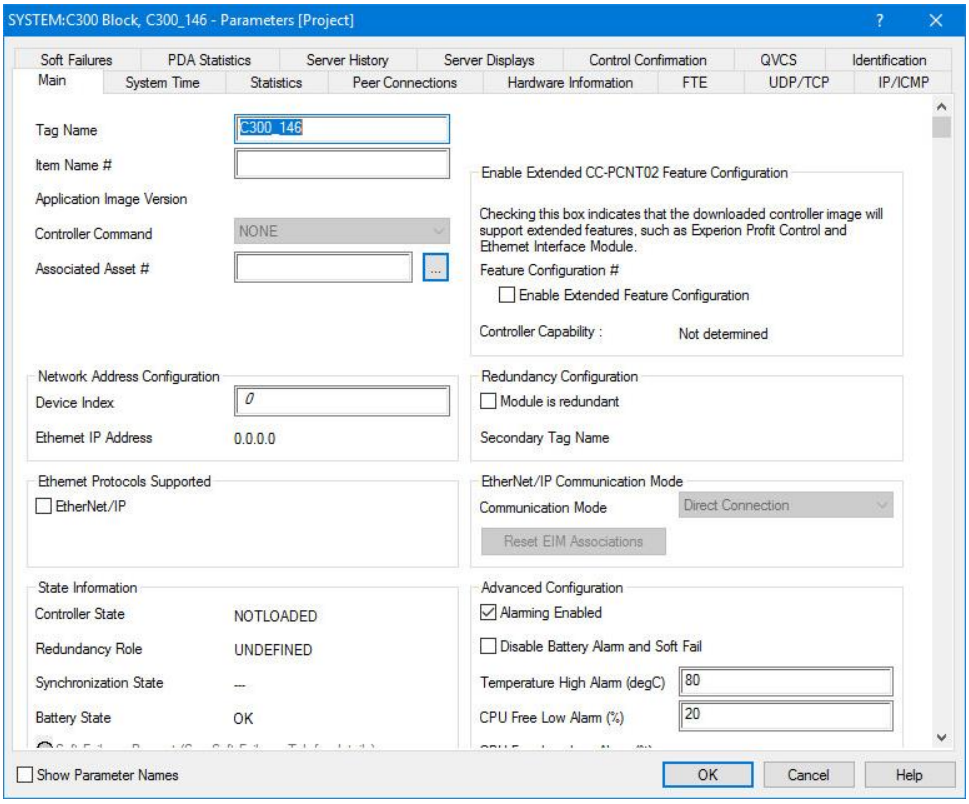
- In our example, the C300 IP address is 10.126.93.51.
  The last part of this IP address (10.126.93.**051**), which is the FTE device index, must be configured with a screwdriver on the switches of the C300 card. The first switch is set to "0", the second one to "5" and the last one to "1":



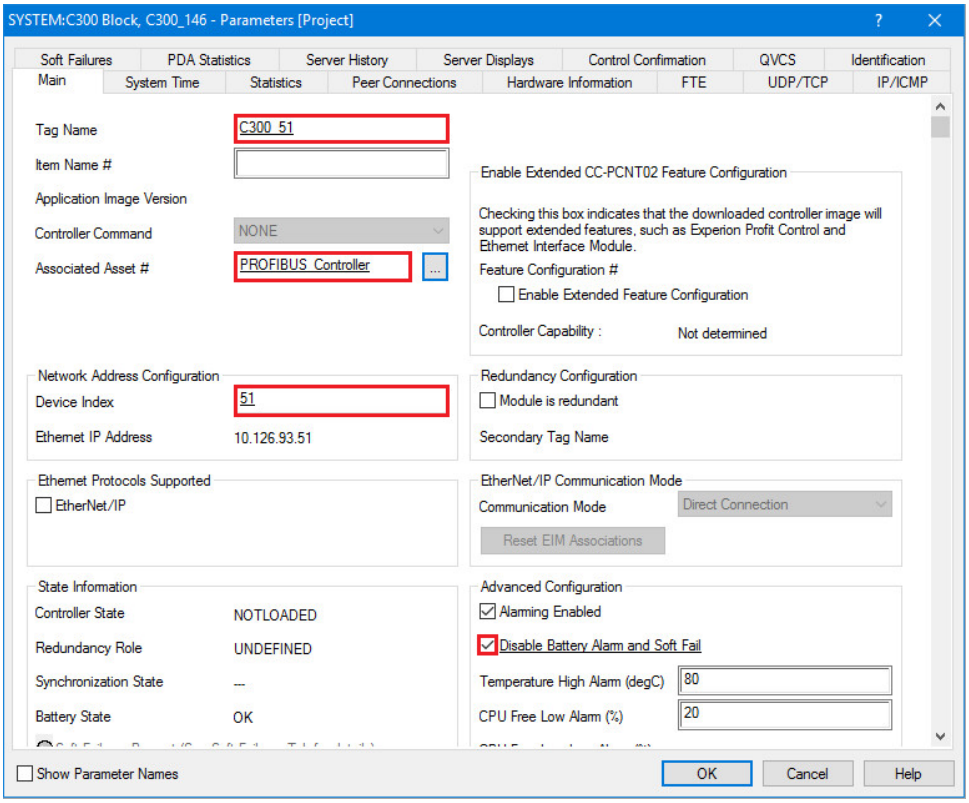
- In the Project-Assignment view, right-click on “Root” and select the option “New→Controllers→C300-Controller(2I/O Links)”:



- This opens the C300 configuration window:



- Following settings have been configured:

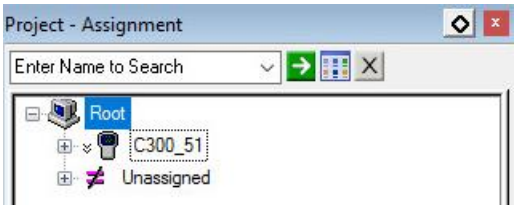


In this example,

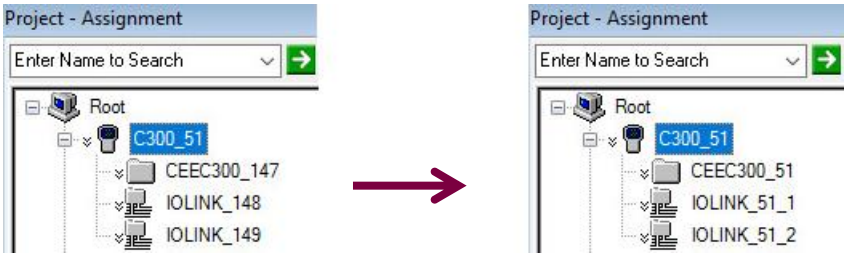
- The TAG Name is “C300_51” (name referring to the FTE device index).
- The selected Associated Asset is “PROFIBUS_Controller” (Associated Asset is an optional setting).
- The entered Device Index is 51 (index referring to the IP address).
- The option “Disable Battery Alarm and Soft Fail” shall be enabled, unless a battery support module is installed with the C300 controller.

- Click on the button “OK” to set the configuration.

- The C300 controller is successfully inserted in the project:

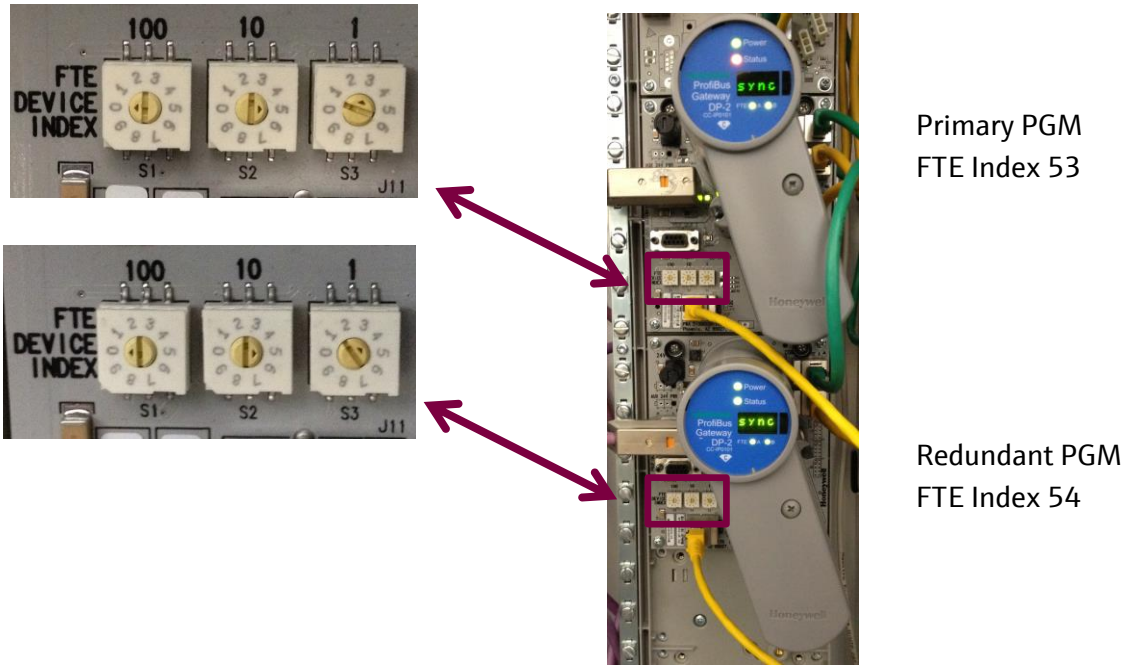


- Expand the "C300_51" menu and rename all modules for a better overview:

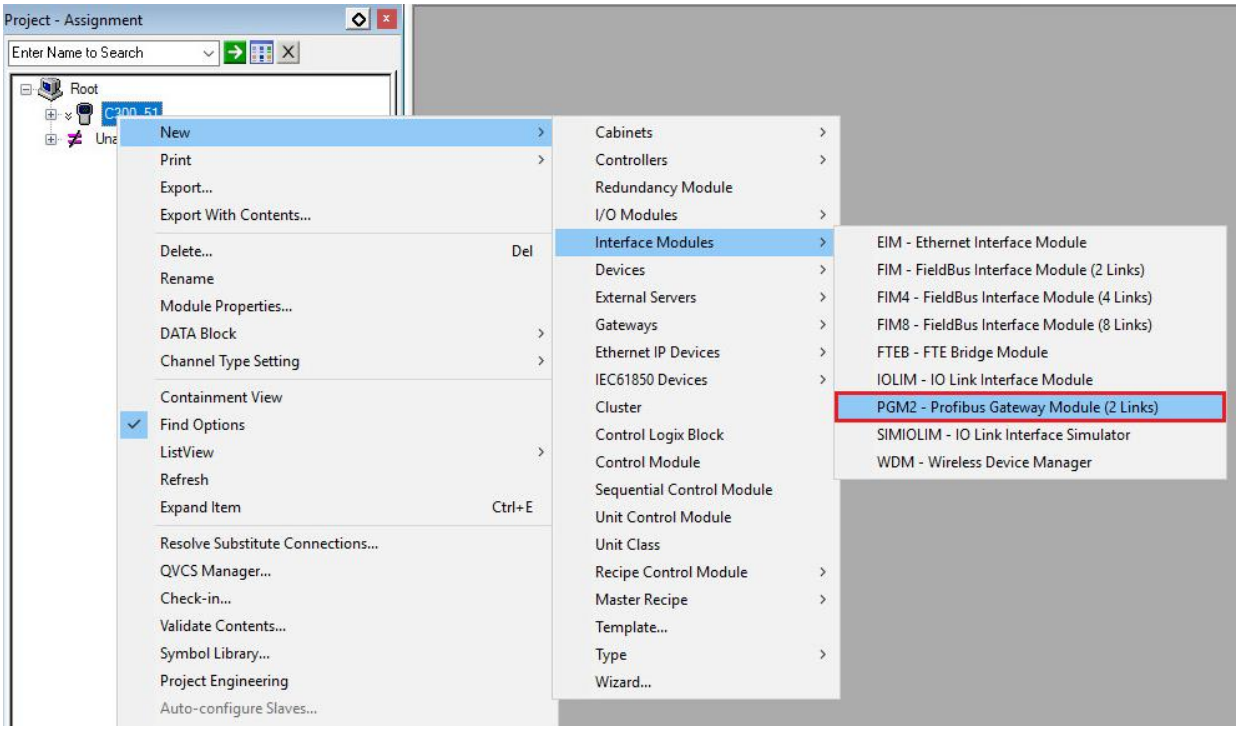


3.2.2.3 PGM

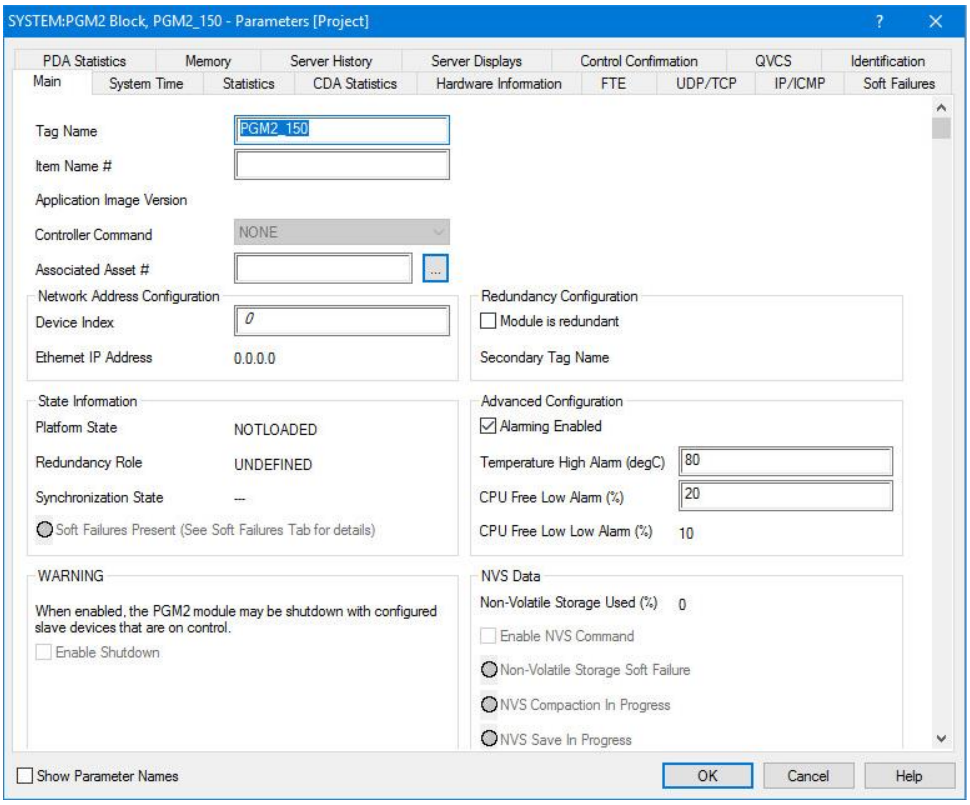
- In our example, the primary PGM IP address is 10.126.93.53 and the secondary PGM IP address is 10.126.93.54.
  The last part of the IP address (10.126.93.**053**), which is the FTE device index, must be configured with a screwdriver on the switches of the PGM card. The first switch is set to "0", the second one to "5" and the last one to "3" (Same action for the secondary PGM):



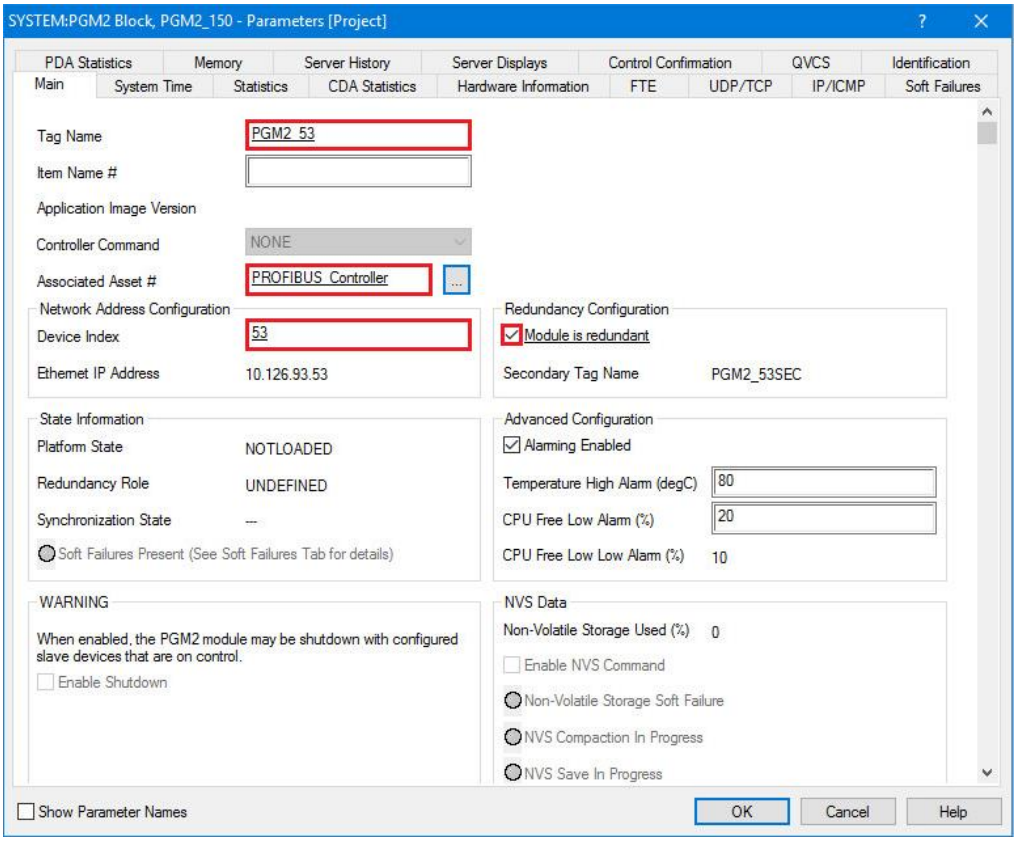
- In the Project-Assignment view, right-click on “Root” and select the option “New→Interface Modules→PGM2-Profibus Gateway Module (2 links)”:



- This opens the PGM configuration window:



- Following settings have been configured:

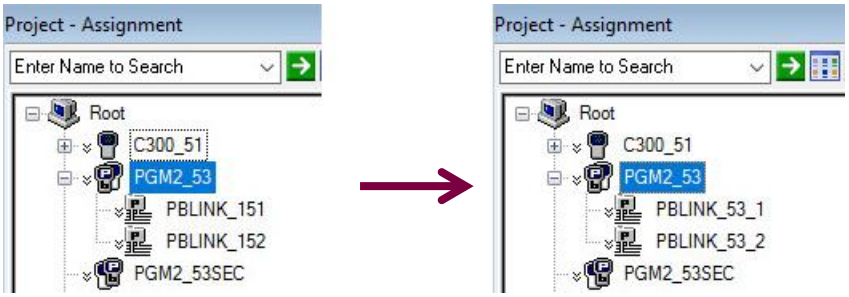


In this example,

- The TAG Name is “PGM2_53” (name referring to the FTE device index).
- The selected Associated Asset is “PROFIBUS_Controller”.
- The entered Device Index is 53.
- The option “Module is redundant” is enabled.

- Click on the button “OK” to set the configuration.

- Expand the “PGM2_53” menu and rename all modules for a better overview:



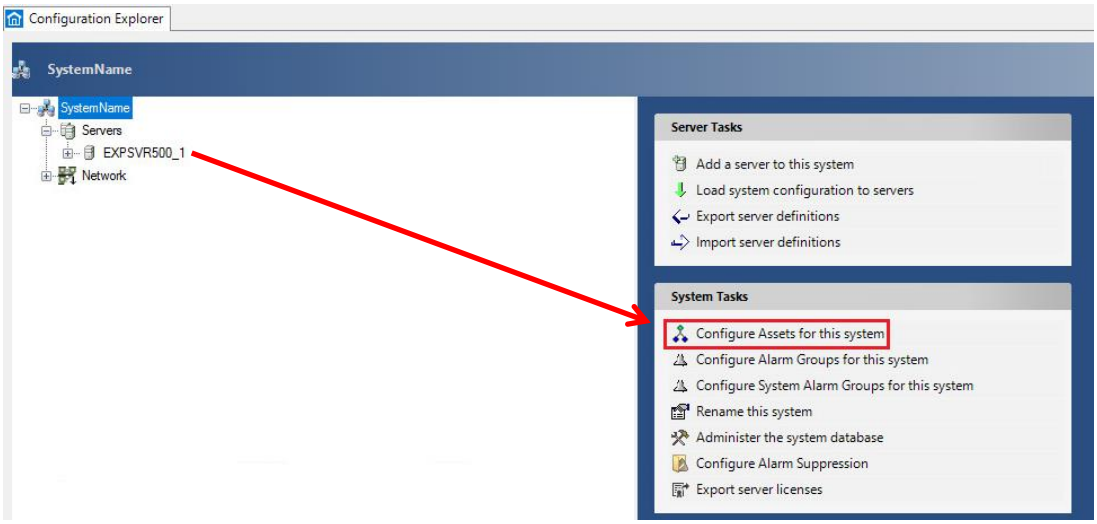
3.2.2.4 IP Settings Configuration Download

- Download the configuration of the C300 and PGM modules.
  Refer to part 3.5.1to proceed.

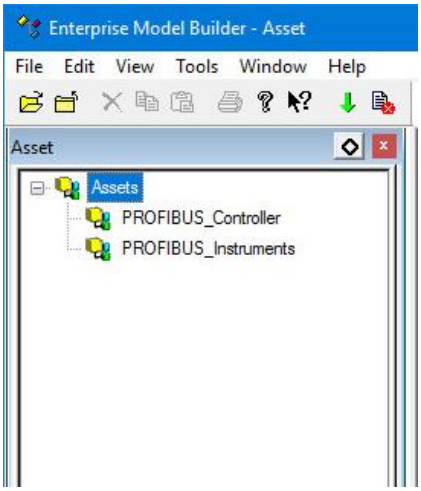
3.2.3 Enterprise Model Configuration (Asset Configuration)

Assets are used to fix the scope of responsibilities in a project. These items are mandatory for Control Strategy. This chapter explains how creating Assets.

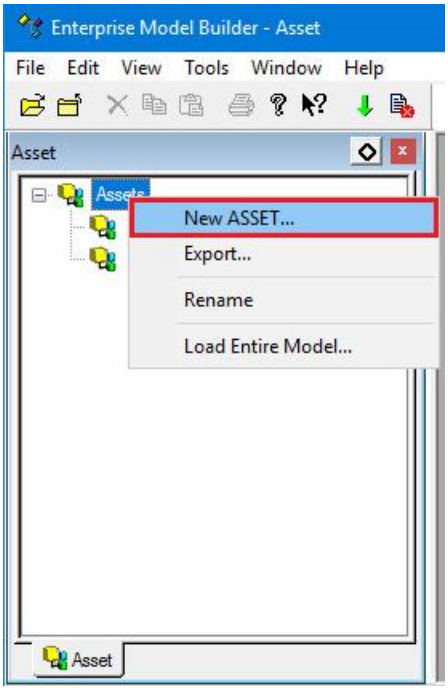
- In Configuration Studio, select "SystemName" in the Configuration Explorer and click on the menu "Configure Assets for this system":



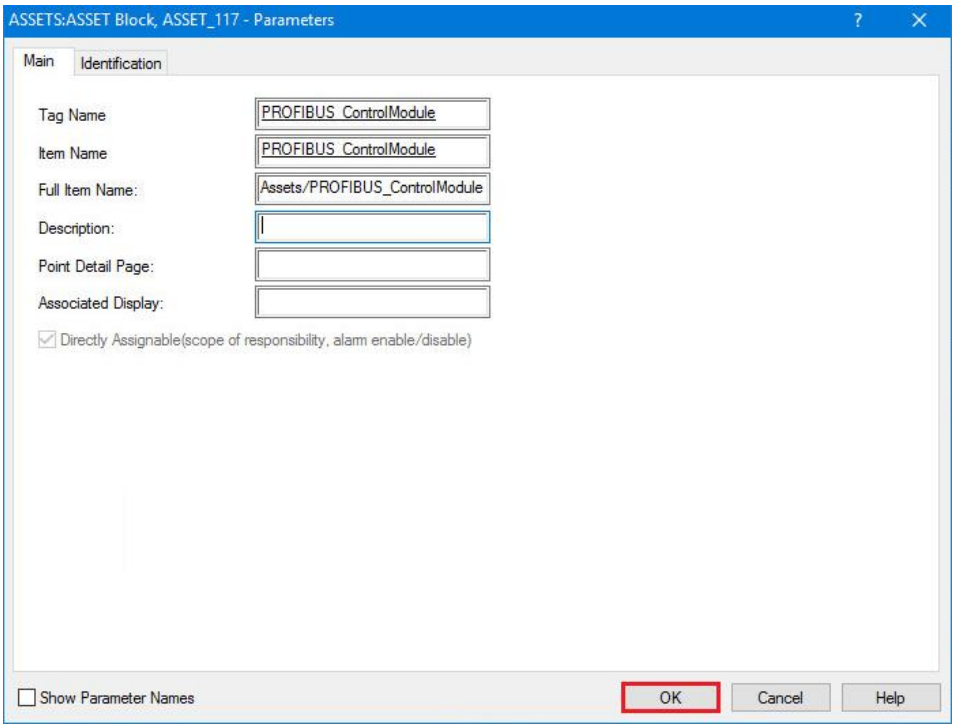
- The Assets management tool is opened and displays configured assets:



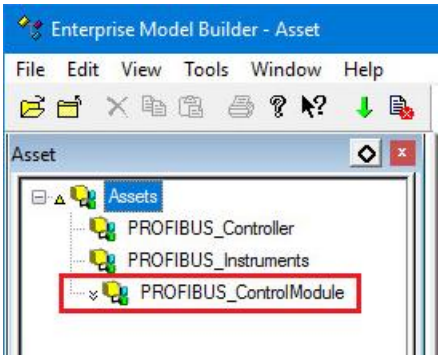
- Right-click on “Assets” and select the menu “New ASSET”:



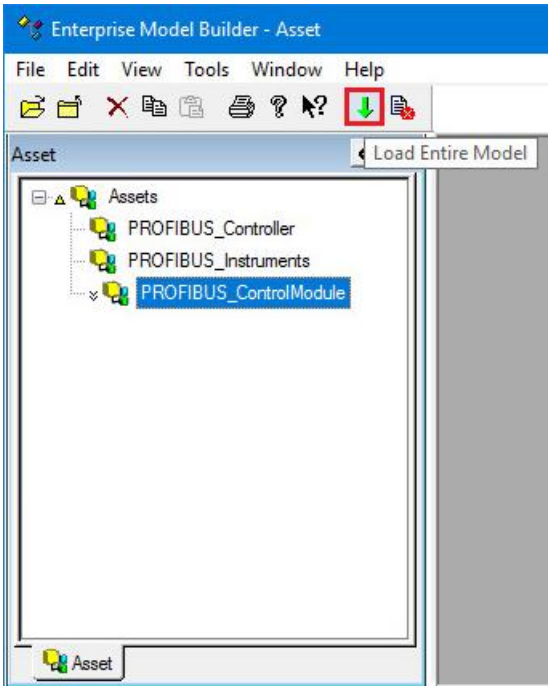
- Configure the Asset “Tag Name” and “Item Name”. The parameter “Full Item Name” is refreshed automatically. Click on the button “OK”.



- New Asset “PROFIBUS_ControlModule” has been inserted:



- Select the Assets “PROFIBUS_ControlModule” and click on the shortcut button “Load Entire Model”:

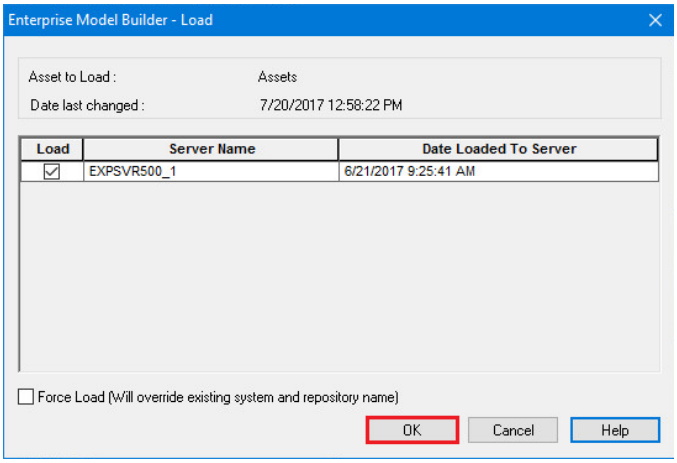


Remark:

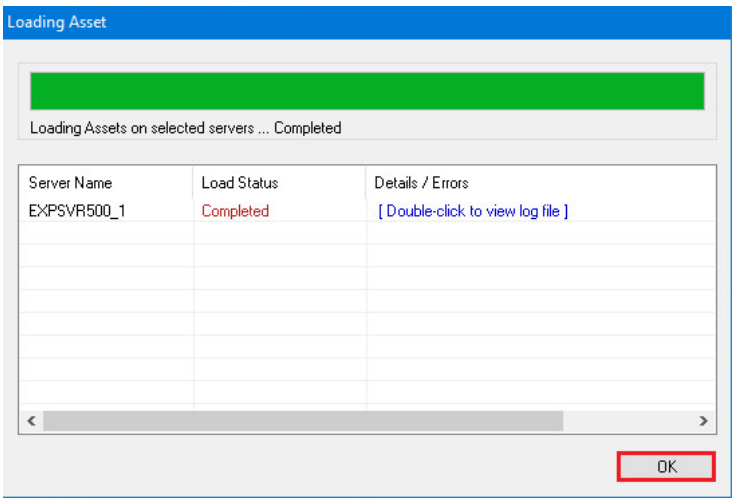
- Assets can be created as a hierarchy until 5 levels deep.

- There are direct assignable assets and non-direct assignable assets. Direct assignable assets can be directly included or excluded from a Scope of Responsibility (SOR) while non-direct assignable assets are always following the SOR assignment of its parent.

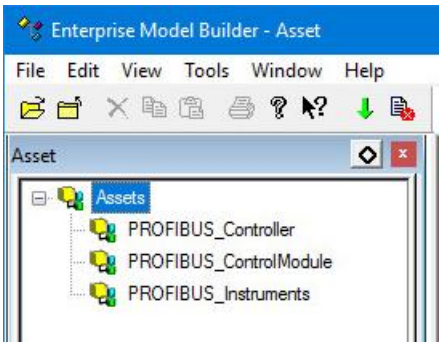
- Click on the button “OK”:



- Assets have been successfully loaded. Click on the button “OK”.



- Updated Assets:



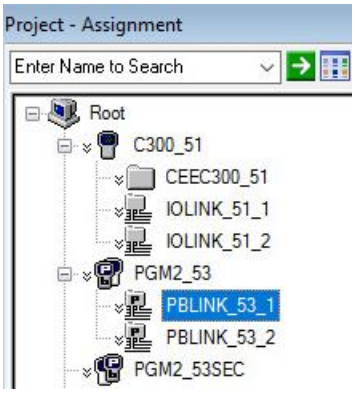
In this tutorial, the used Assets are “PROFIBUS_Controller” for the Hardware, “PROFIBUS_Instruments” for the devices and ”PROFIBUS_ControlModule” for the control strategy.

3.3 Field Network Configuration

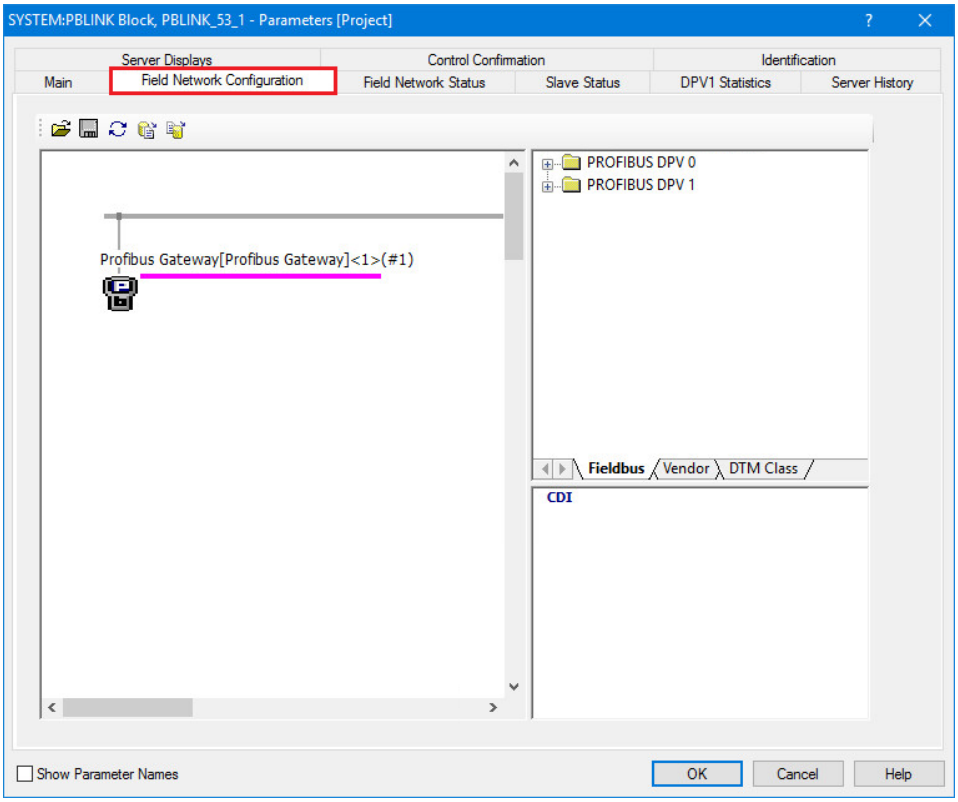
The PROFIBUS network configuration is done using the tool SYCON.net from Hilscher, which is embedded in Honeywell Control Builder.

3.3.1 PROFIBUS DP Master Configuration

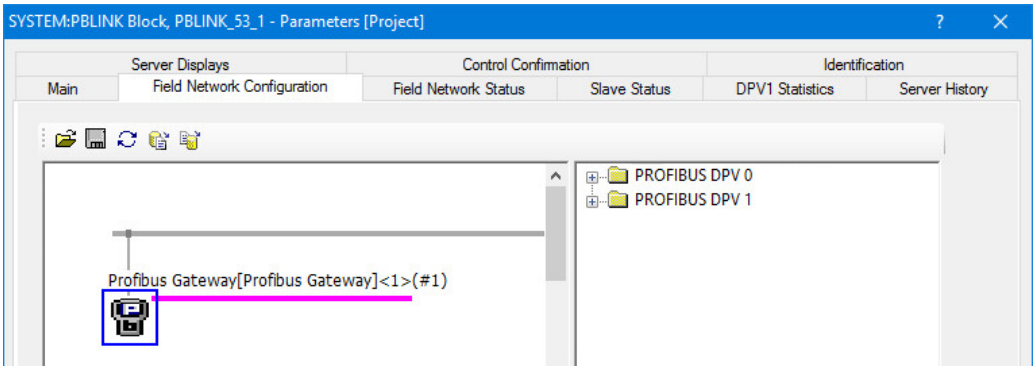
- Double-click on the menu PBLINK_53_1:



- This opens the PBLINK parameters window. Click on the tab “Field Network Configuration”:



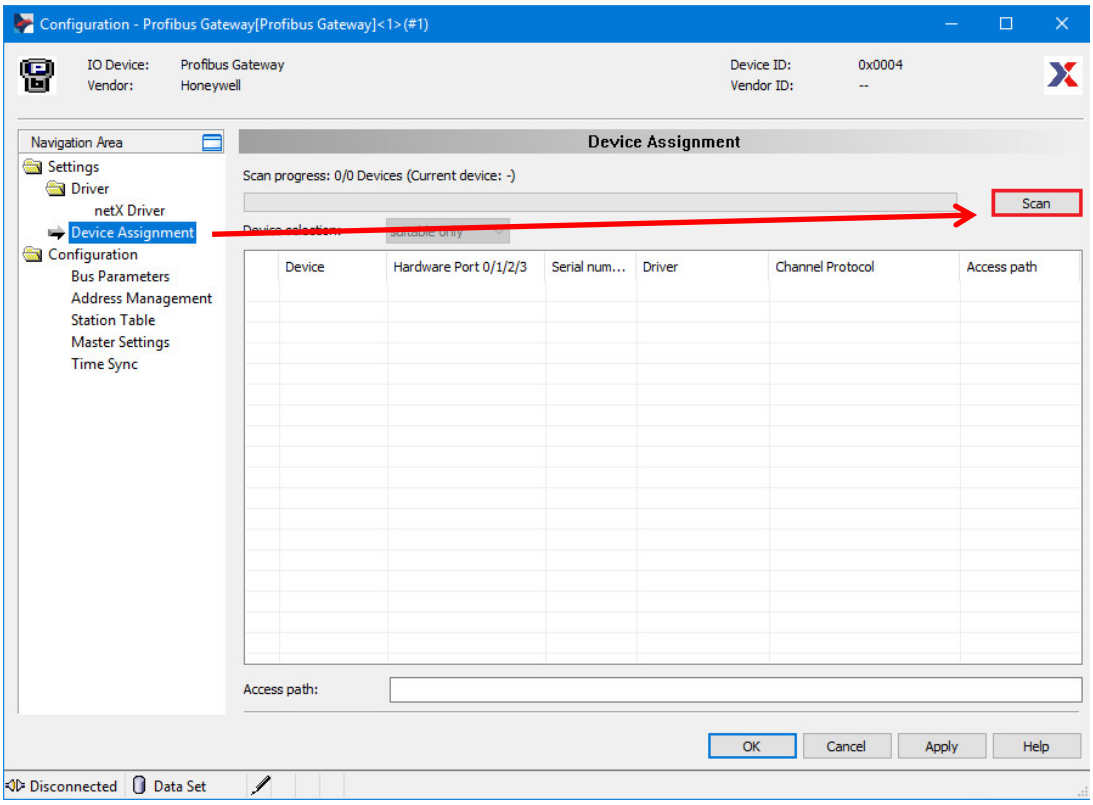
- Double-click on the “Profibus Gateway” icon:



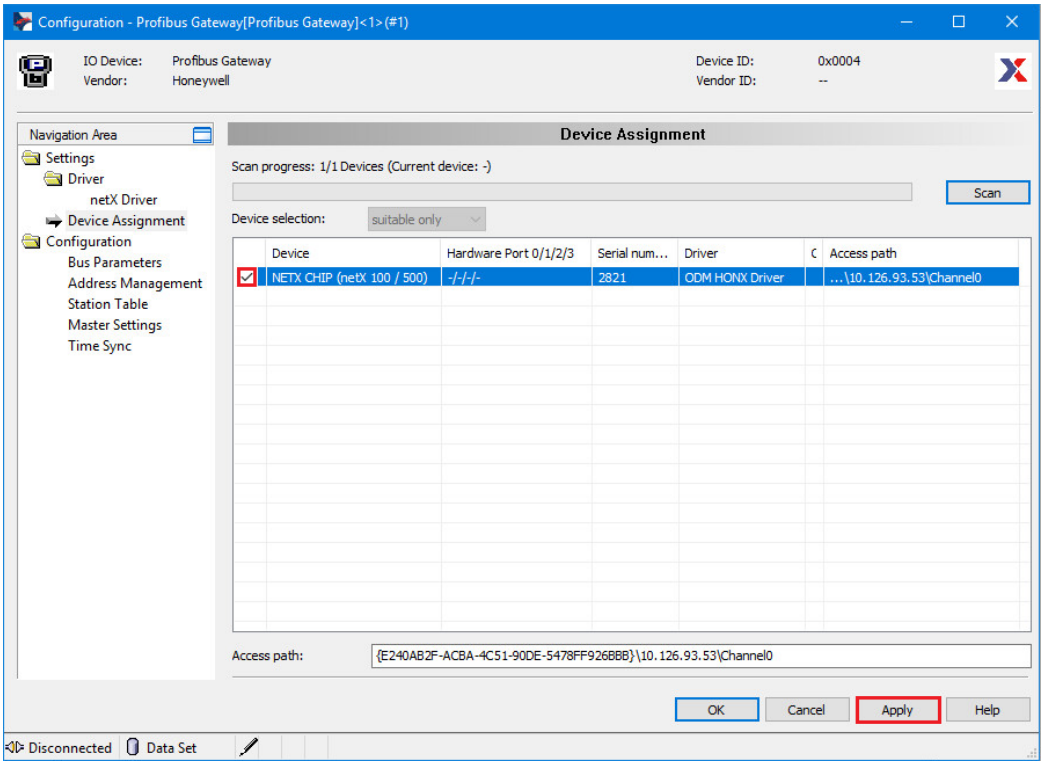
3.3.1.1 Device Assignment

The device assignment is used to link the device in SYCON.net to the PGM module.

- Select the menu “Device Assignment” and click on the button “Scan”:

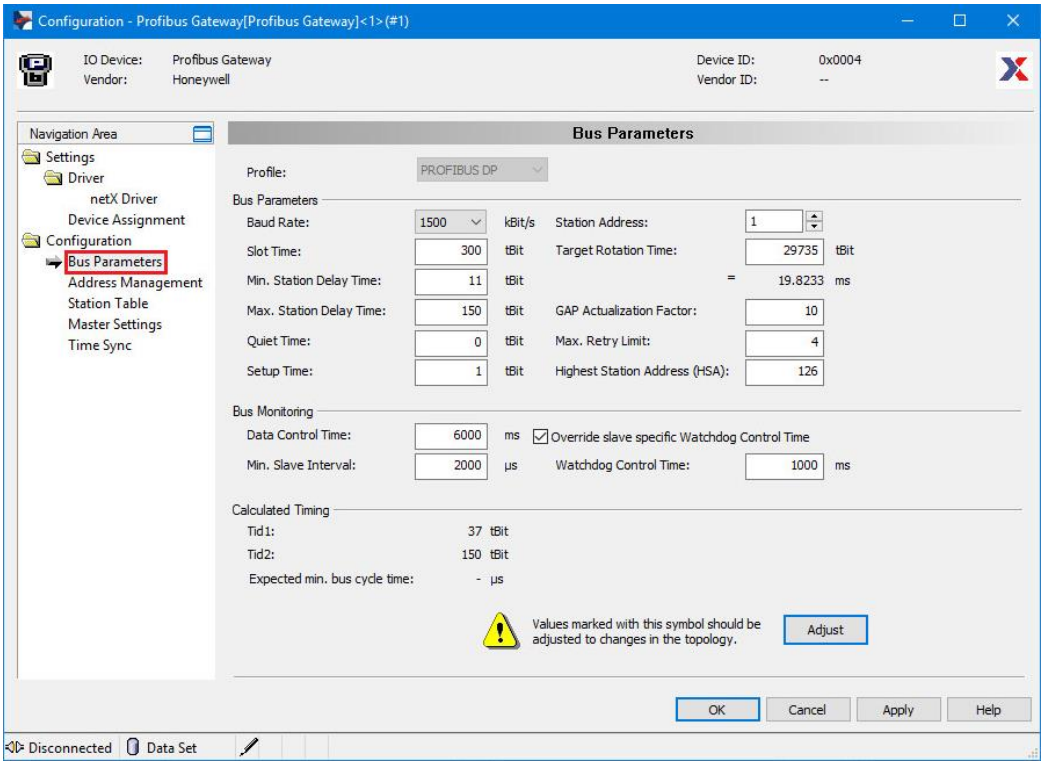


- Select the found device “NETX CHIP” and click on the button “Apply” to the assign the device:

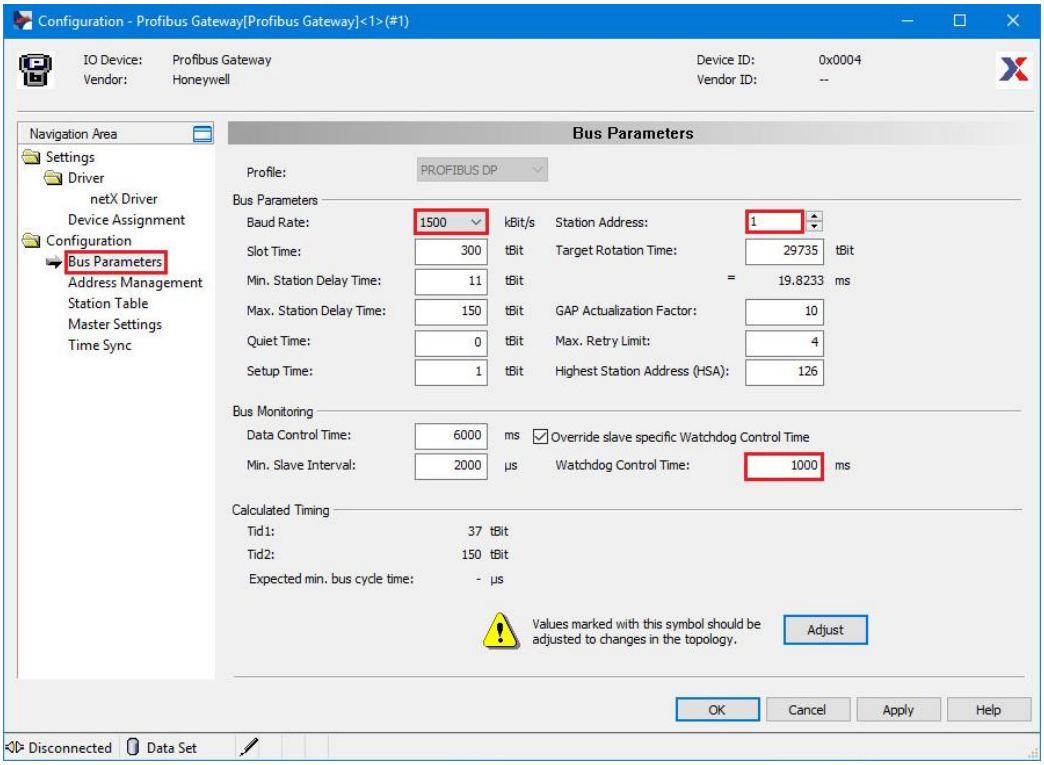


3.3.1.2 Bus Parameters

- Click on the field “Bus Parameters”:



- Configured Bus Parameters:



In this example, the Baud Rate has been configured to “1.5 MBaud”, the Station address to “1” and the Watchdog Control Time to “1000ms”. Other “Bus parameters” will be checked again after adding the PROFIBUS slaves.

- Click on the button “OK” to close the window.

Remarks

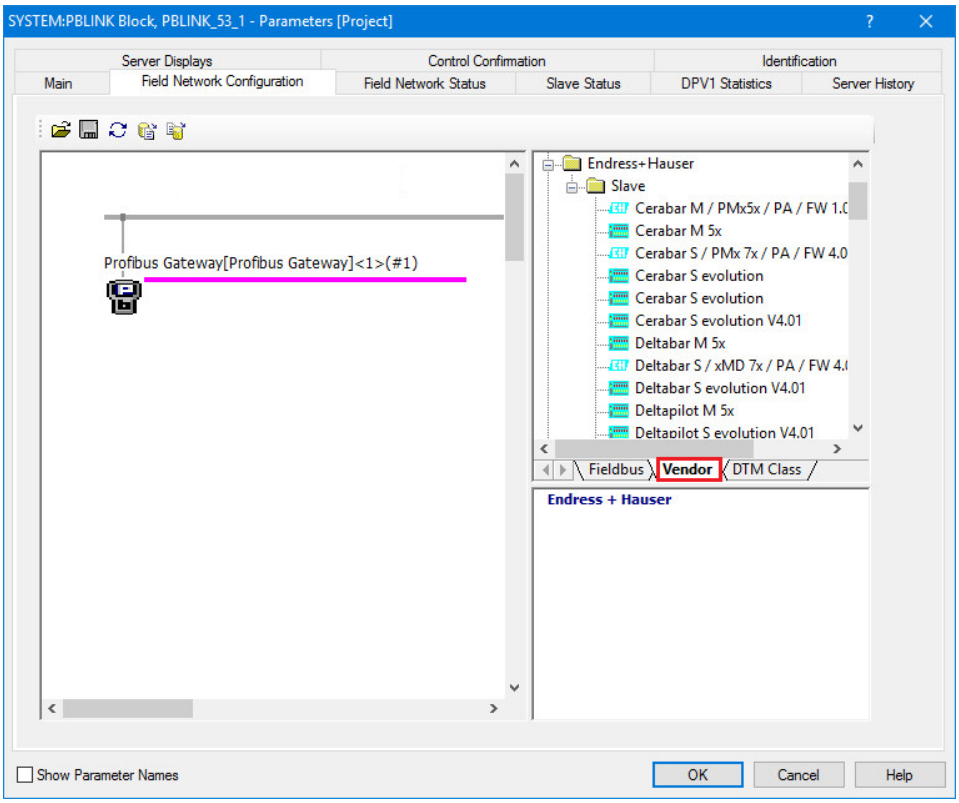
- Recommended Honeywell Watchdog Control Time and Data Control Time according the Baud Rate:

Baud Rate (Baud)	Watchdog Control Time (ms)	Data Control Time (ms)
9.6k	6000	36000
19.2k	5000	30000
45.45k	4000	24000
93.75k	3000	18000
187.5k	2000	12000
500k	1000	6000
1.5k	1000	6000

3.3.2 Field Devices Library

3.3.2.1 Overview

- The library is displayed on the right-side of the Field Network Configuration window:

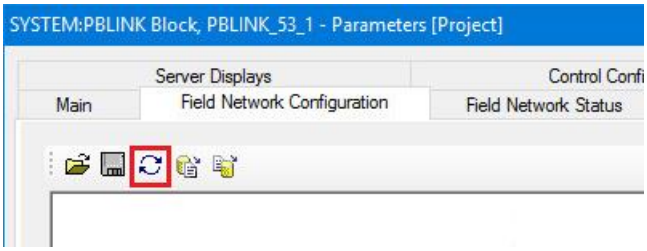


Field devices can be sorted according to three categories (Fieldbus, Vendor and DTM Class). In this example, Endress+Hauser devices are displayed with the Vendor type. The Slave family structure as defined in the GSD file is not available.

3.3.2.2 Adding a new GSD File in the Library

- There exists no function to import GSDs from the SYCON.net tool. GSD files must be copied manually in the windows path “C:\ProgramData\SYCONnet\Profibus\GSD”.

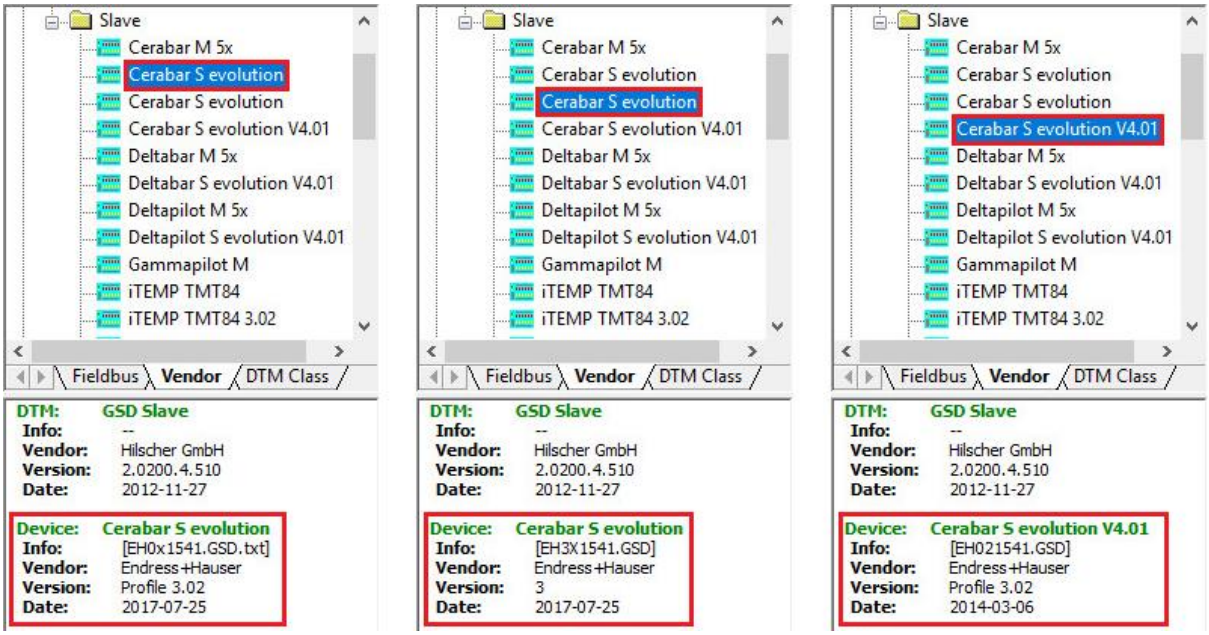
- Once the files copied, update the catalog by clicking on the small icon:



3.3.2.3 Multiple GSD revision Handling

SYCON.net can handle multiple GSD file version but only if these have different file names.

- The following example displays different GSD revisions of the Endress+Hauser Cerabar S installed in the SYCON.net catalog:



Slaves are registered with the GSD parameter “Model_Name” in the catalog. This parameter can be identical for two different device GSD revisions. That’s why the Cerabar S is registered twice in the SYCON.net catalog with the same name “Cerabar S evolution”. In that case, the only way to differentiate them is to look to the parameters “Info”, “Version” and “Date”.

3.3.2.4 Rule files

- Rule files are supporting the easy and correct configuration of the block model for the access of the PROFIBUS devices data in Experion®PKS. By this way, all device Slots are configured automatically with the correct IO module. Rule files are supporting all possible module configurations of the devices in a generic manner.

- Rule files are delivered as a XML format by Honeywell and must be copied directly in the windows path “C:\ProgramData\Honeywell\Experion PKS\PBRuleFiles”.

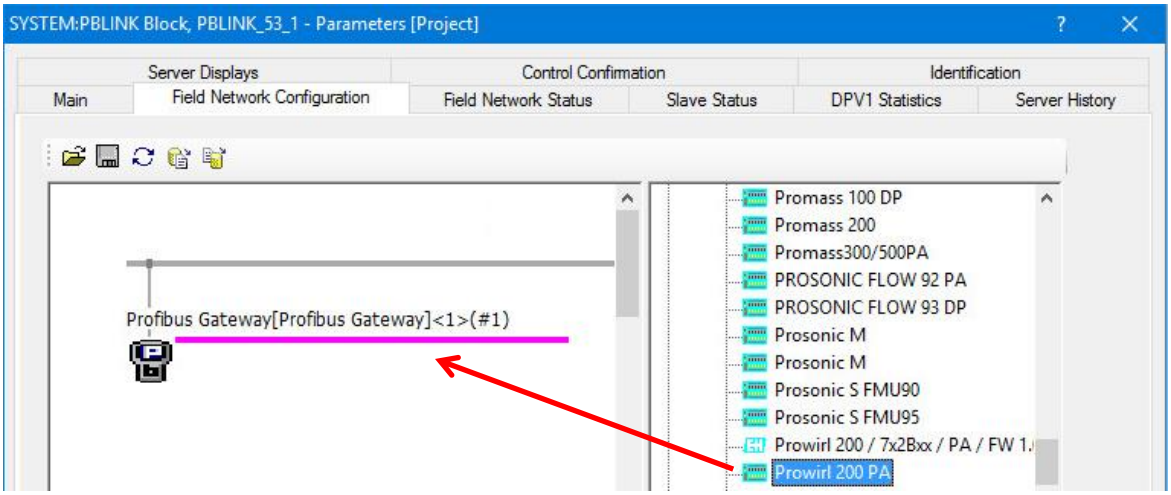
- All Rule files for Endress+Hauser PROFIBUS devices are available by Honeywell.

3.3.3 Field Device Configuration

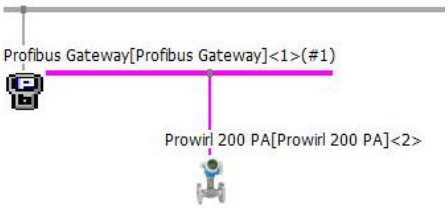
This chapter describes the steps to configure an Endress+Hauser Prowirl200 PA.

3.3.3.1 New Slave

- In the Field Network Configuration window, drag and drop a new slave on the Bus line, for example the Prowirl 200 PA:

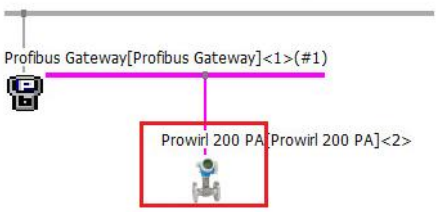


- Device is added in the network:

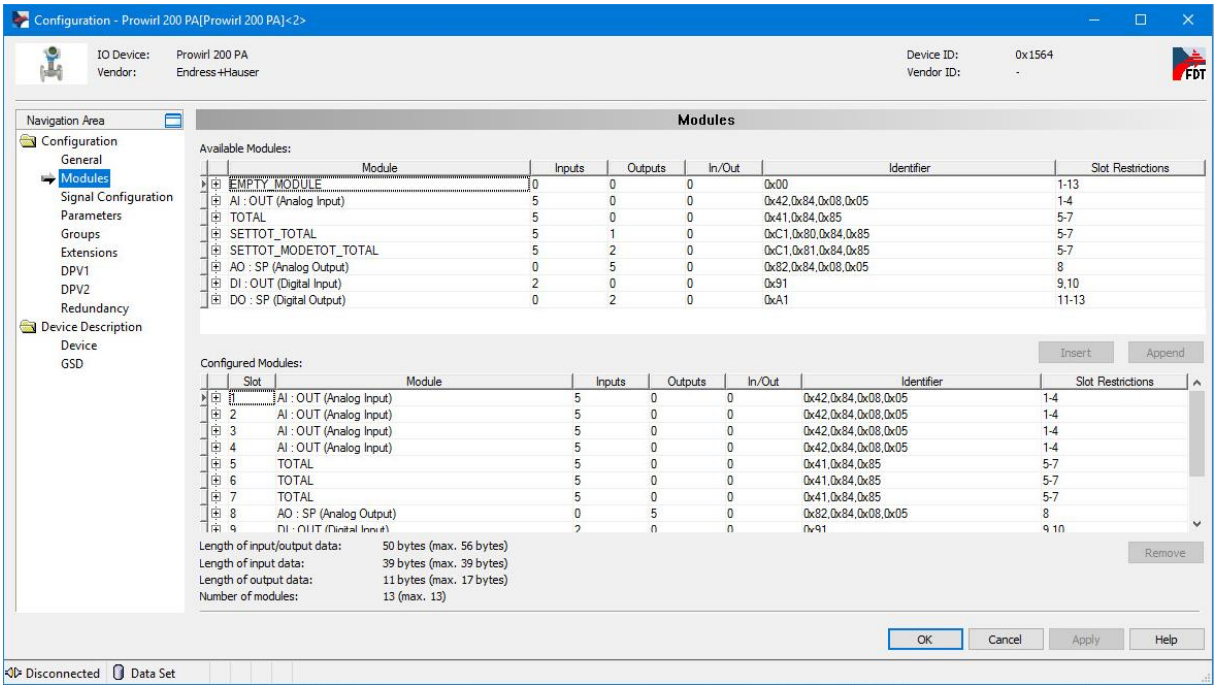


3.3.3.2 IO Modules

- Double-click on the slave:



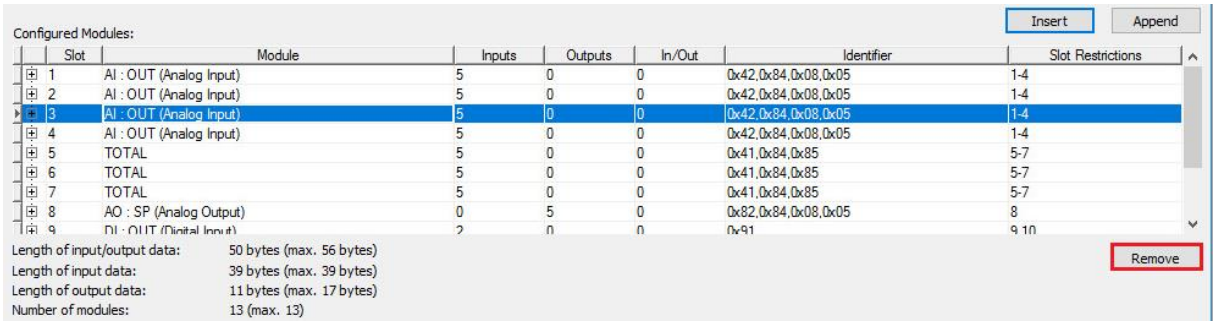
- This opens the device configuration window:



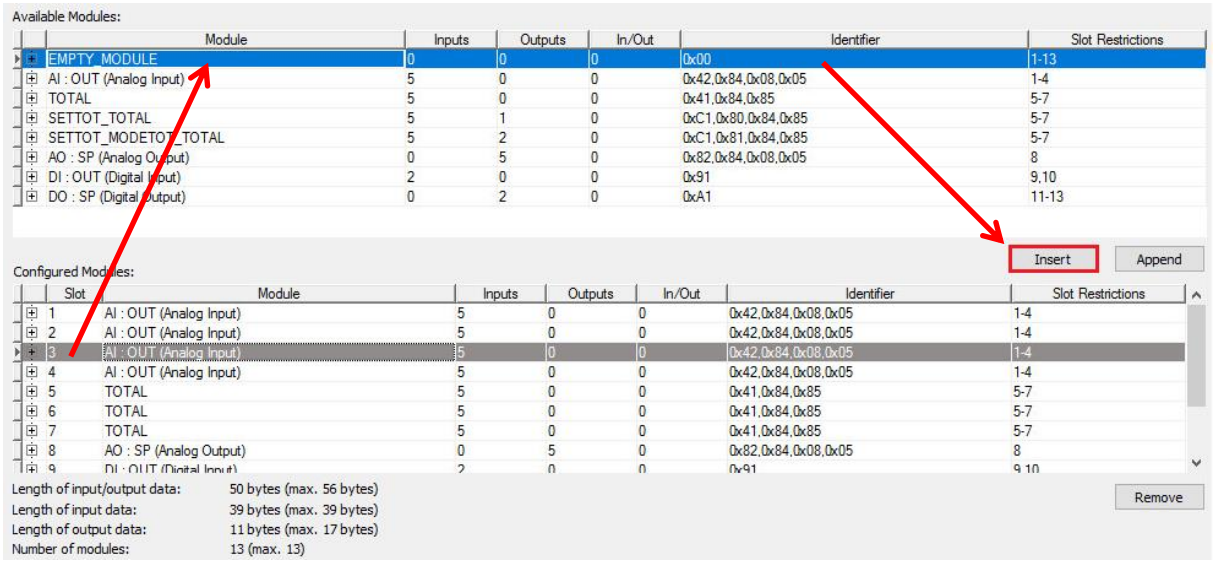
- Click on the button “Apply” and “OK”.

Remark 1

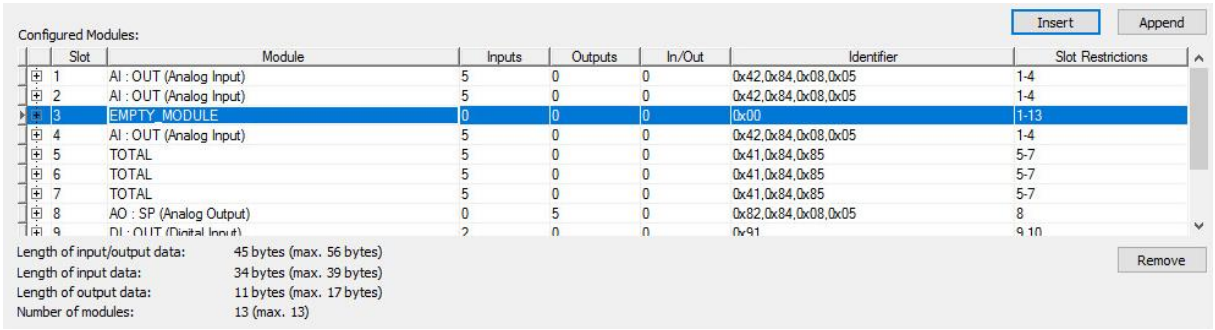
- All slots are configured automatically with their corresponding IO modules. This default IO modules configuration can be changed. Select the slot to update and click on the button “Remove”:



- In this example, the “AI” module slot is removed and replaced with an “EMPTY_MODULE”. Select at first the Slot3 in the “Configured Modules” and the “EMPTY_MODULE” in the “Available Modules” and then click on the button “Insert” (the button “Append” is setting the module after the last configured slot):

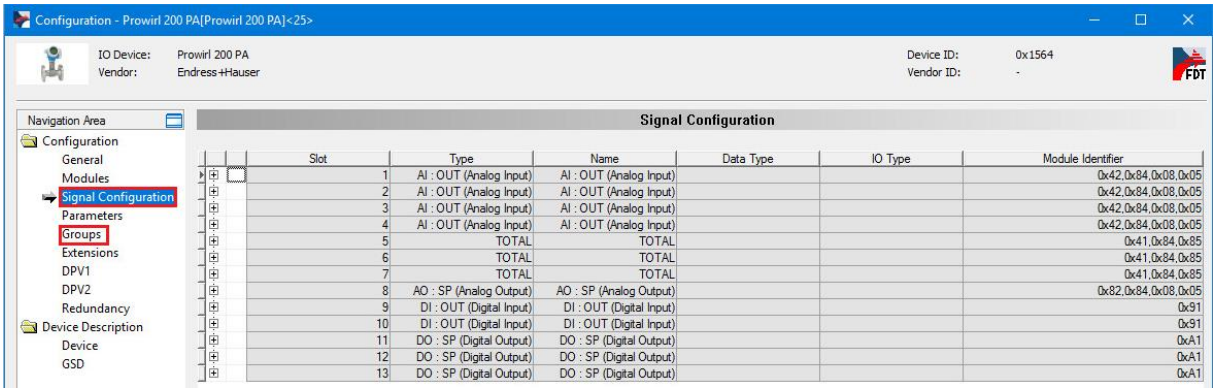


- This inserts the “EMPTY_MODULE” on Slot3:

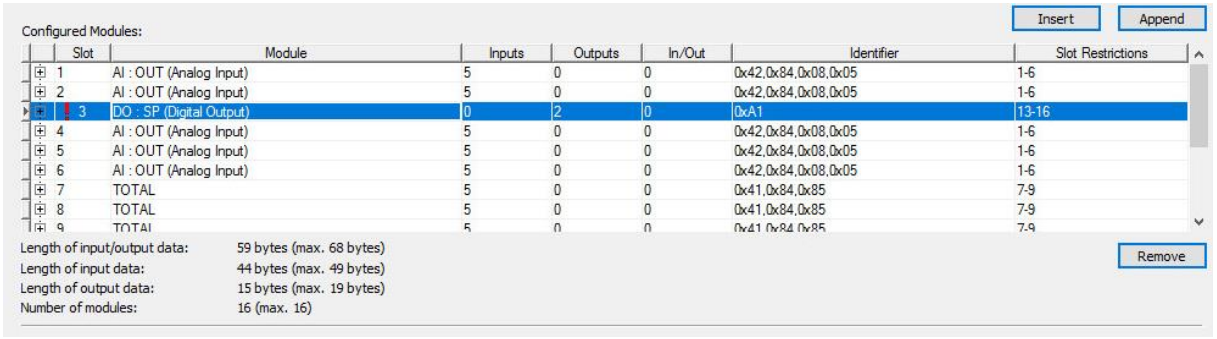


Remark 2

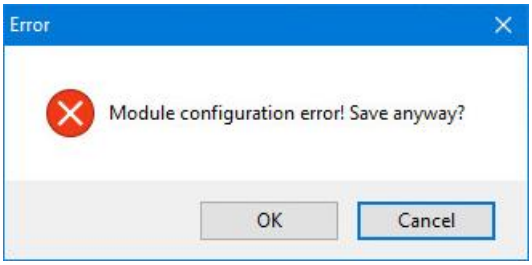
- Other options are available in the “Navigation Area” but are not relevant for this example.
  By the way, the options “Signal Configuration” and “Groups” are available in the view but are not applicable to the Honeywell Experion®PKS:



- The “Slot Restrictions” column indicates the slot range on which the IO module can be inserted. SYCON.net allows the insertion of modules out of this range but indicates an error with a red marker. In this example, the module “D0” with slot range 13-16 is inserted in slot3:



- In case of saving a wrong IO module configuration, an error message is displayed:

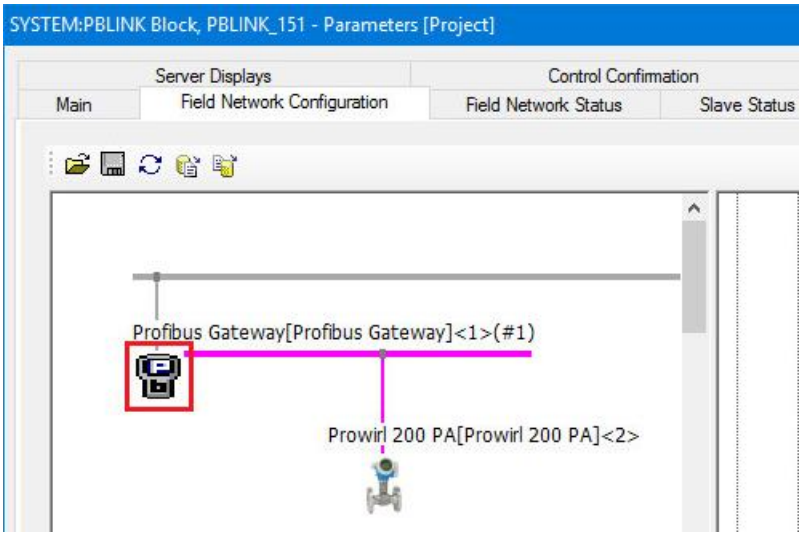


- By this way, the user can click on the button “Cancel” and look for the configuration error. However, clicking on the button “OK” is saving the wrong configuration.

- For the next steps of this tutorial, the standard configuration IO modules configuration is used.

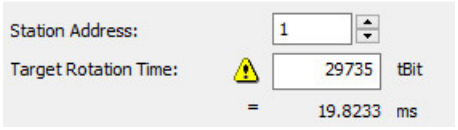
3.3.3.3 Bus Parameters Update

- Double-click on the “Profibus Gateway” icon:

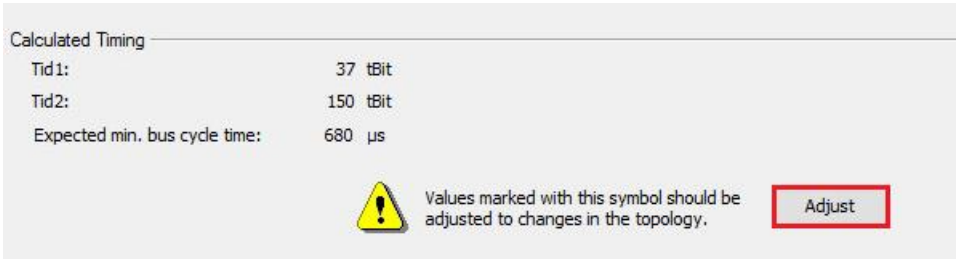


- Select the menu “Bus Parameters”:

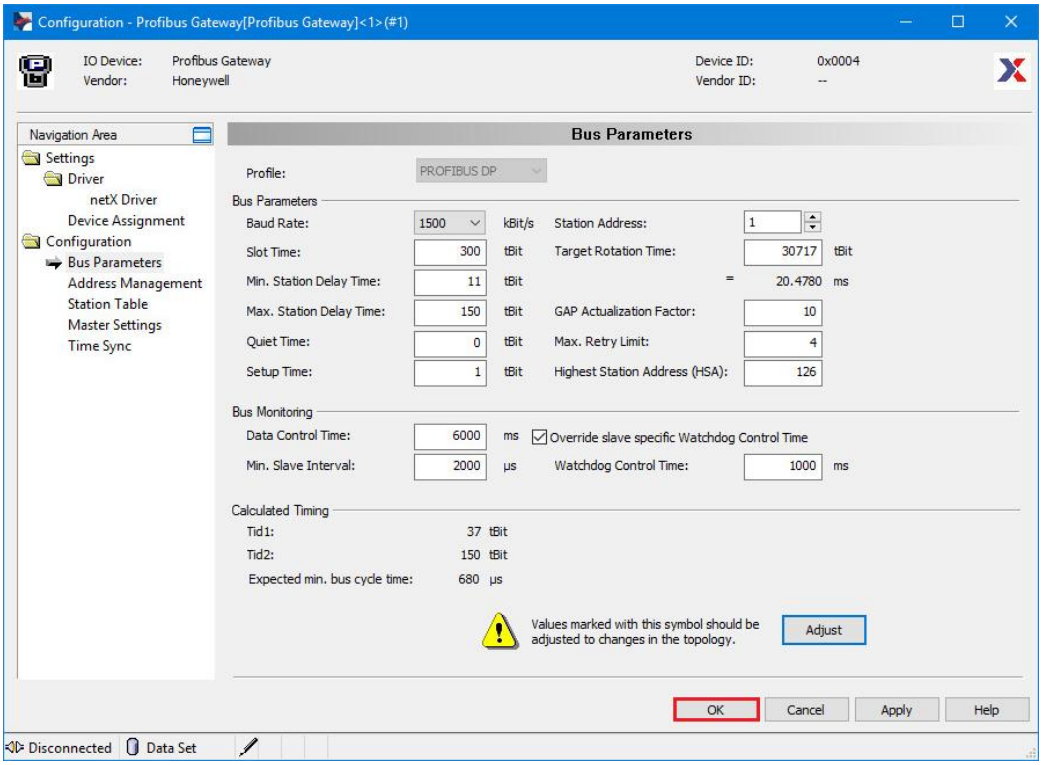
- Adding new slaves may require an update of the Target Rotation Time. In that case, the symbol “!” is displayed near the Target Rotation Time.



- Click on the button “Adjust” to recalculate the Target Rotation Time:



- Overview of the Bus parameters:



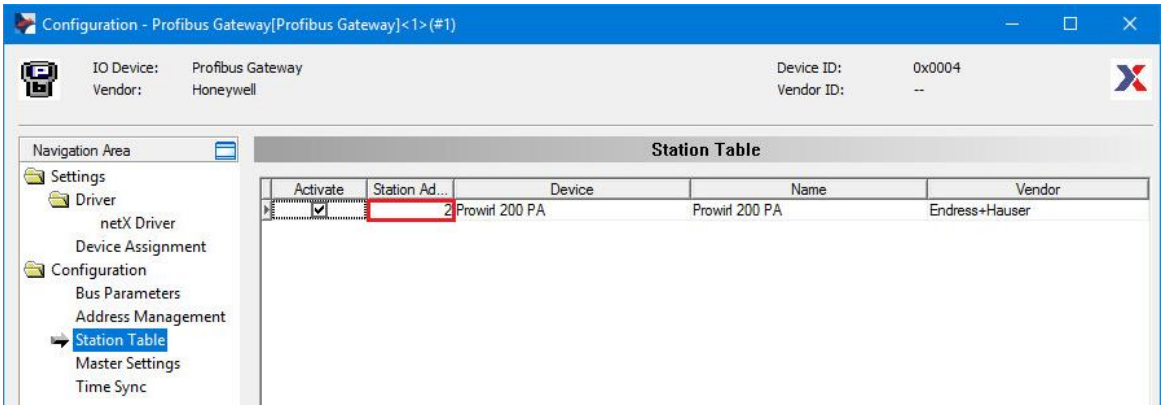
Click on the button “OK” to close the window.

Remark

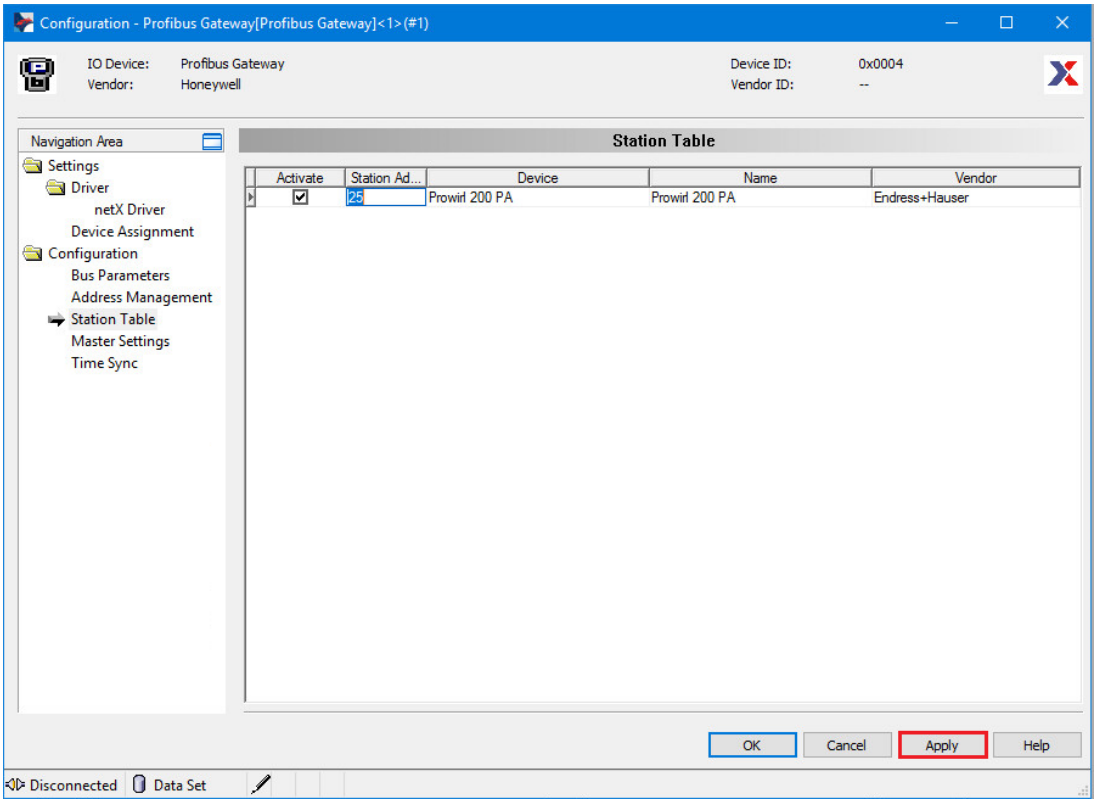
- It is recommended to tune the TTR upwards by a factor like 1.5 in order to enable easy online device additions later on.

3.3.3.4 Slave Address

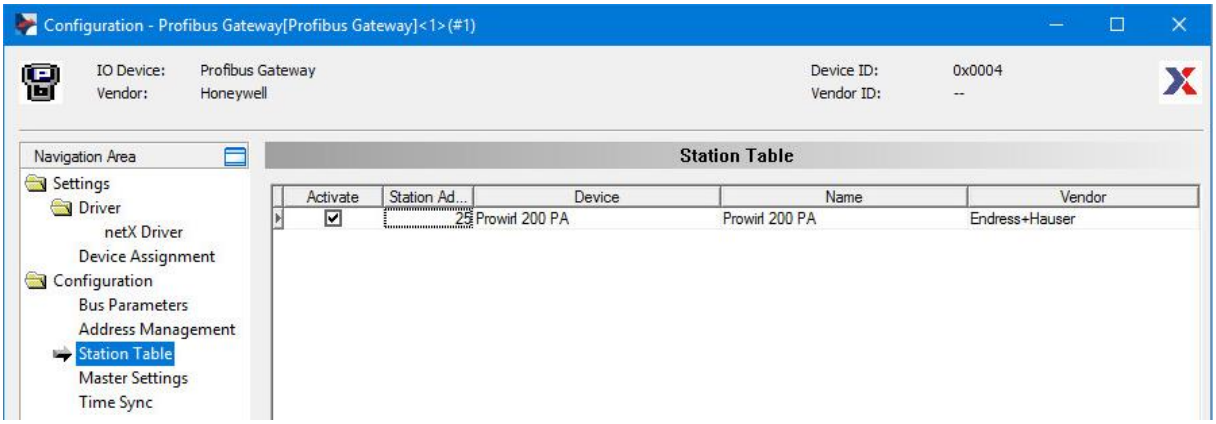
- Select the menu “Station Table” of the Navigation Area. This displays the configured station addresses:



- Double-click in the Station Address field of the Prowirl200.
  Edit the new Station Address, 25 in this example and click on the button “Apply”:



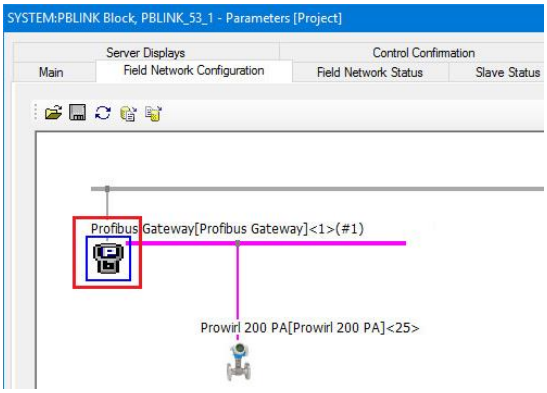
- This update the Station Address:



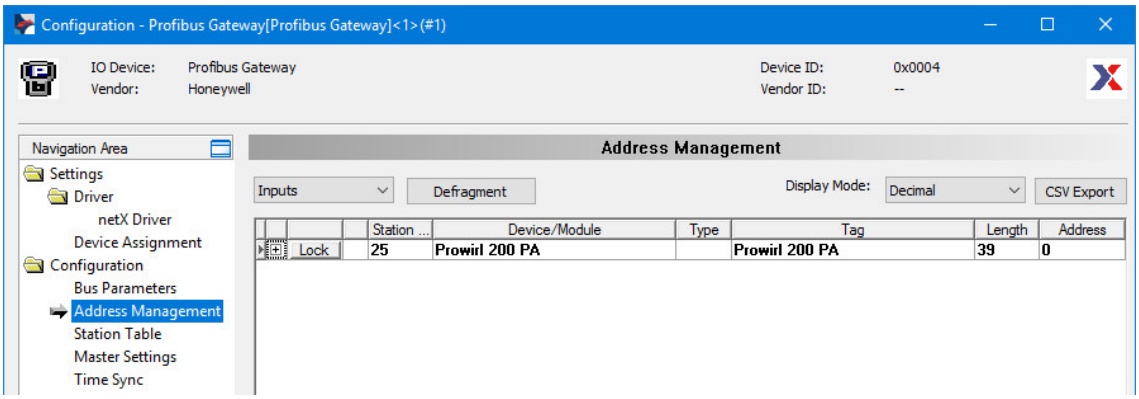
3.3.3.5 IO Modules Grouping

In order to save resources in the Device Support Block (DSB) (and for some complex devices to enable the configuration in Experion®PKS, because the resources in the PROFIBUS PA DSB are limited), it is required to group Input and Output Slots in "Virtual Modules".

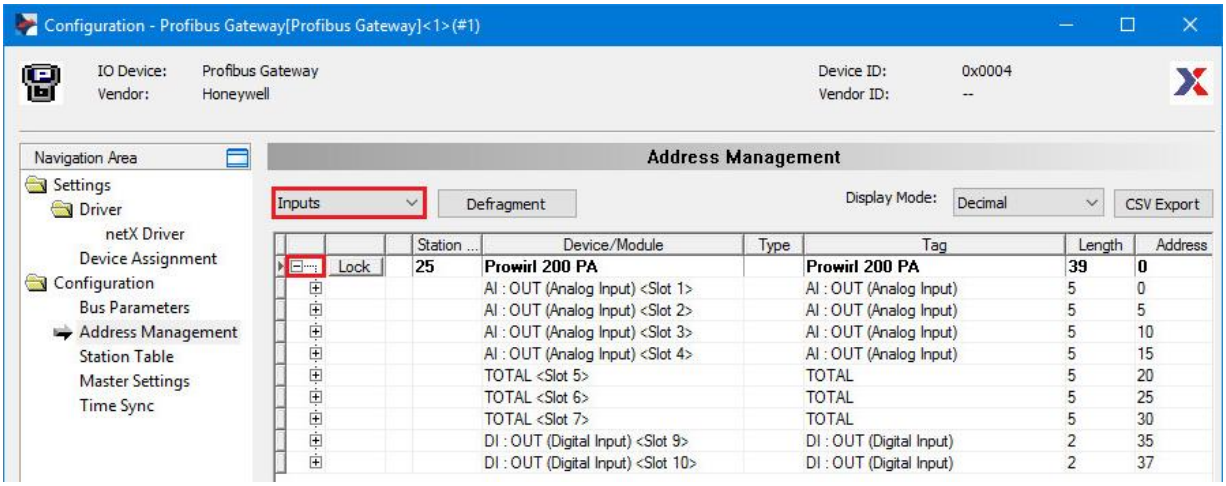
- In the "Field Network Configuration" tab, double-click on the "Profibus Gateway" icon:



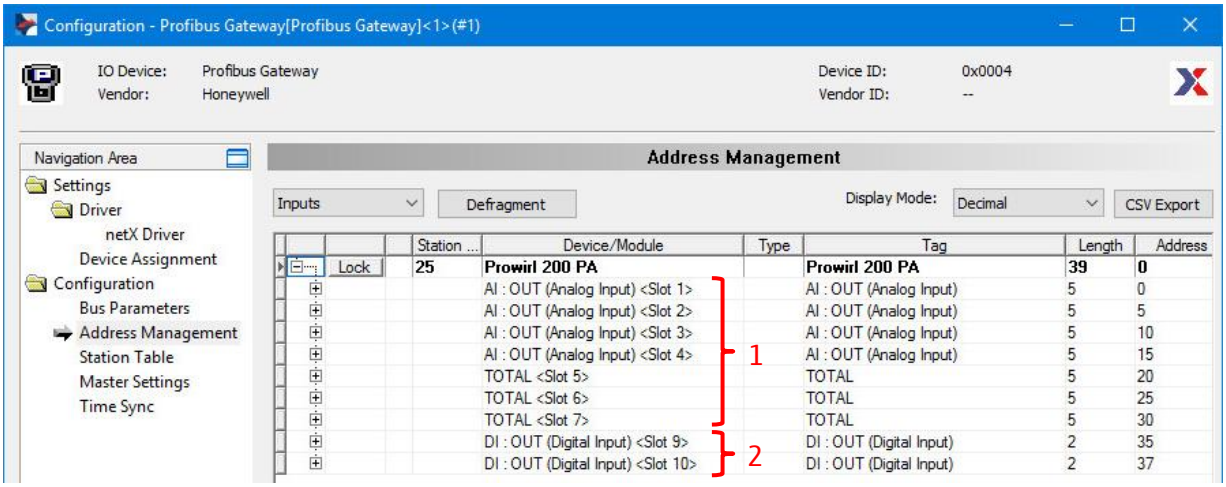
- Select the menu "Address Management":



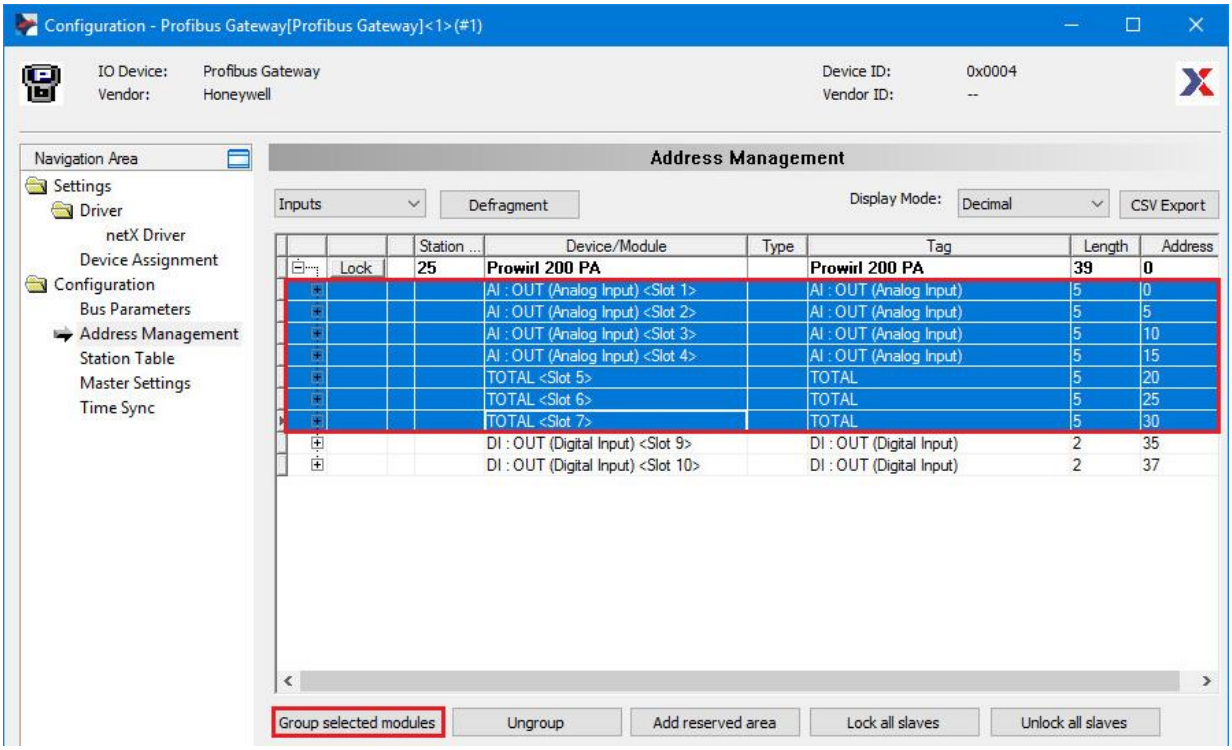
- Inputs and Outputs Slot configuration are not displayed in the same view. Select the filter to select either the "Inputs" or "Outputs". Then expand the device configuration to see all configured Slots:



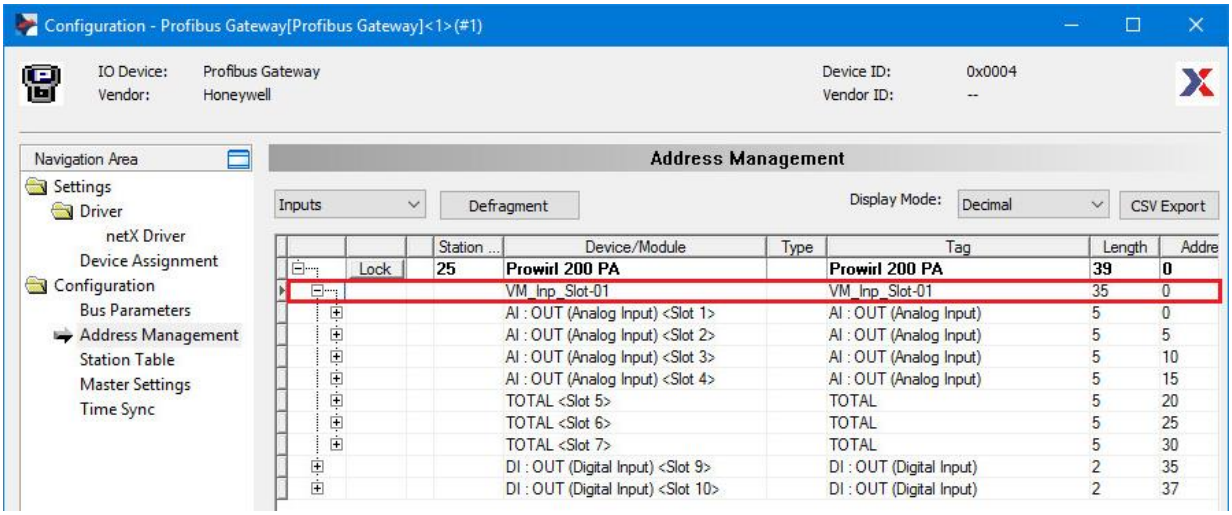
- Group as possible successive the Input Slots index. In this example, Slot 1 to 9 and Slots 11 to 12 are grouped:



- For grouping some Slots, select the slots (SHIFT+Click) and click on the button “Group selected modules”:

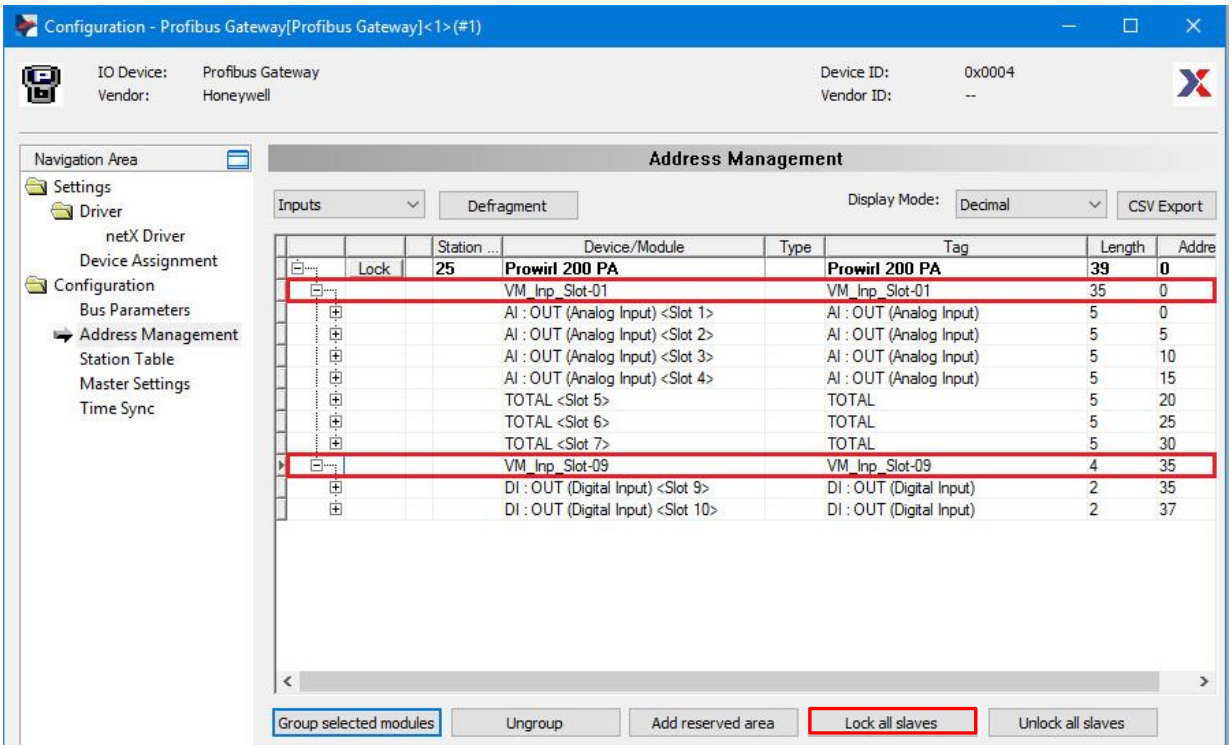


- This groups Slots 1 to 9 are in one virtual module called “VM_Inp_Slot-01”:



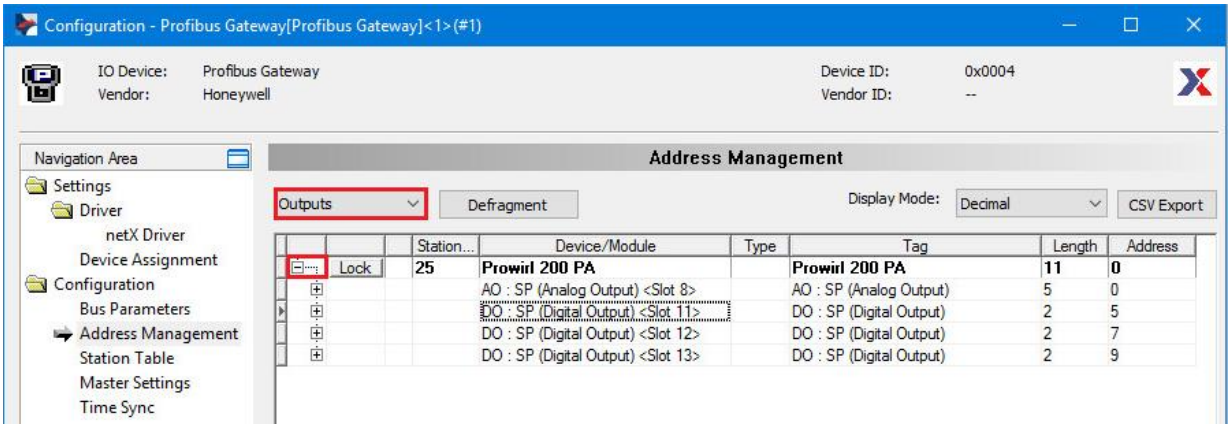
For Endress+Hauser devices, which are all using the generic PROFIBUS PA DSB, the maximum size of group contains 8 modules (i.e. 8 values). If the device provides more modules (i.e. values) two or more groups are required – even if they are in subsequent slots.

- The same workflow is done for the other input slots:

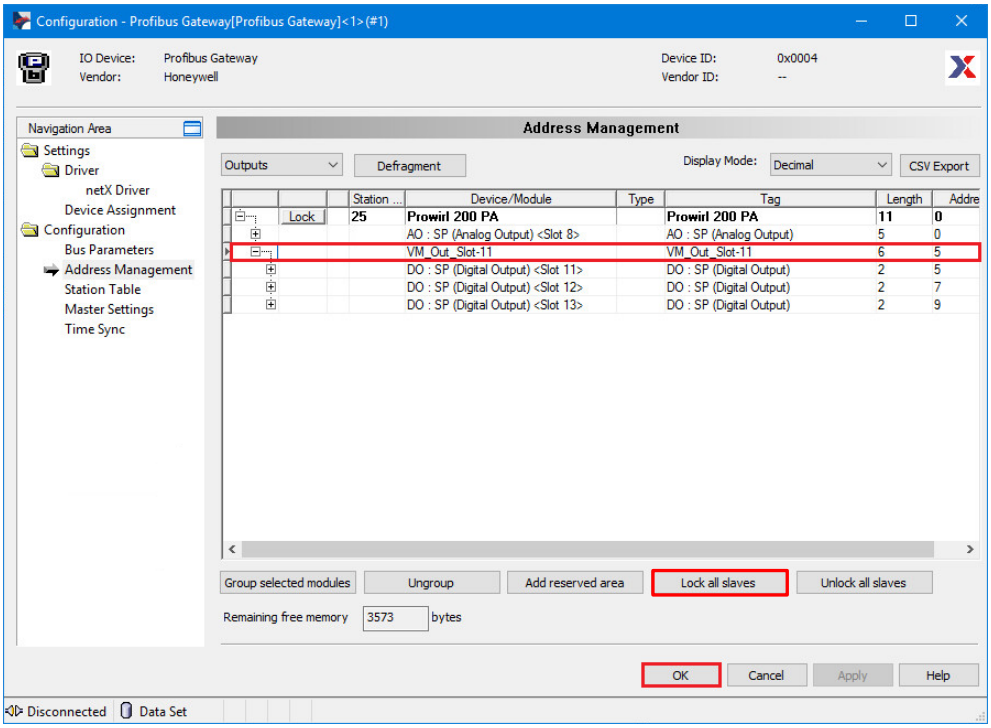


Click on the button “Lock all slaves”.

- Select the Outputs Slots and expand the Slots configuration:



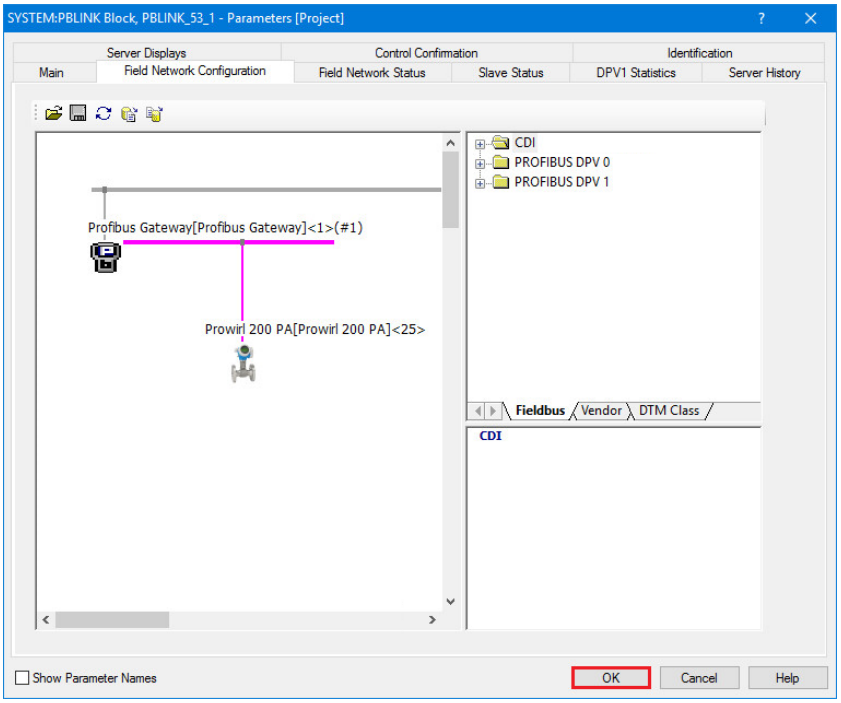
- Group as possible successive the Output Slots index. In this example, Slot 10 cannot be grouped and Slot 13 to 16 are grouped:



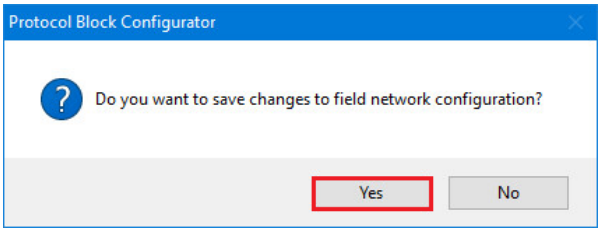
Click on the button “Lock all slaves” and then on the button “OK” to save the “Profibus Gateway” configuration.

It is strongly recommended to lock input and output configurations. This freezes the memory arrangements for the slave and would enable to reconfigure, add or remove devices without affecting other devices.

- Click on the button “OK” to close the “PBLNK_53_1” parameter window:

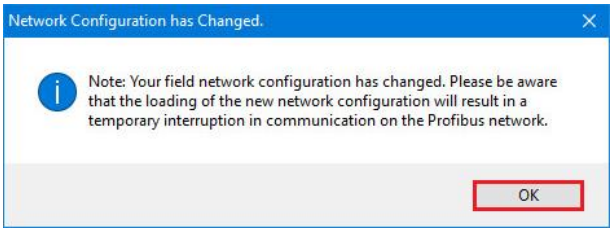


- Following message appears:



Click on the button “Yes” to proceed.

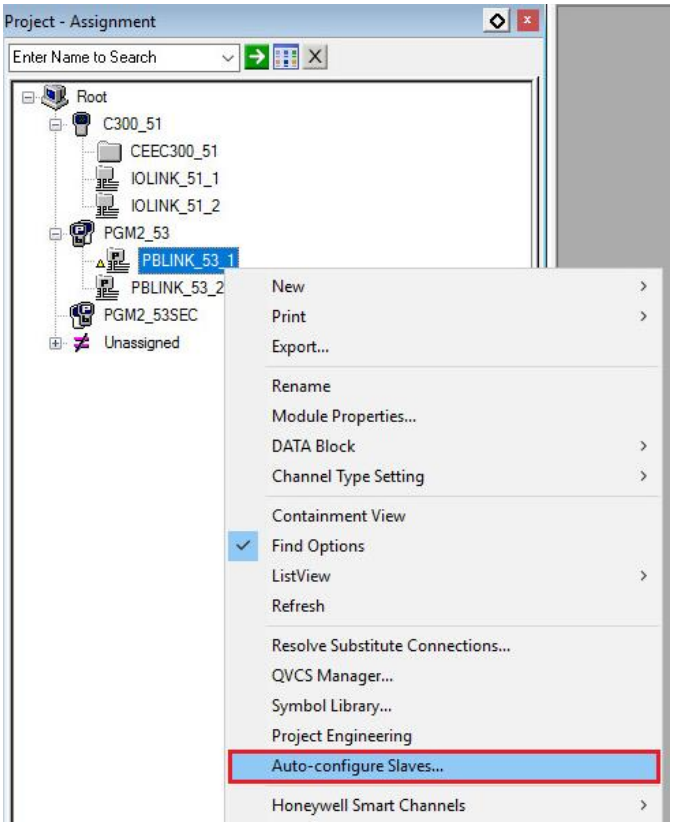
- Following message appears:



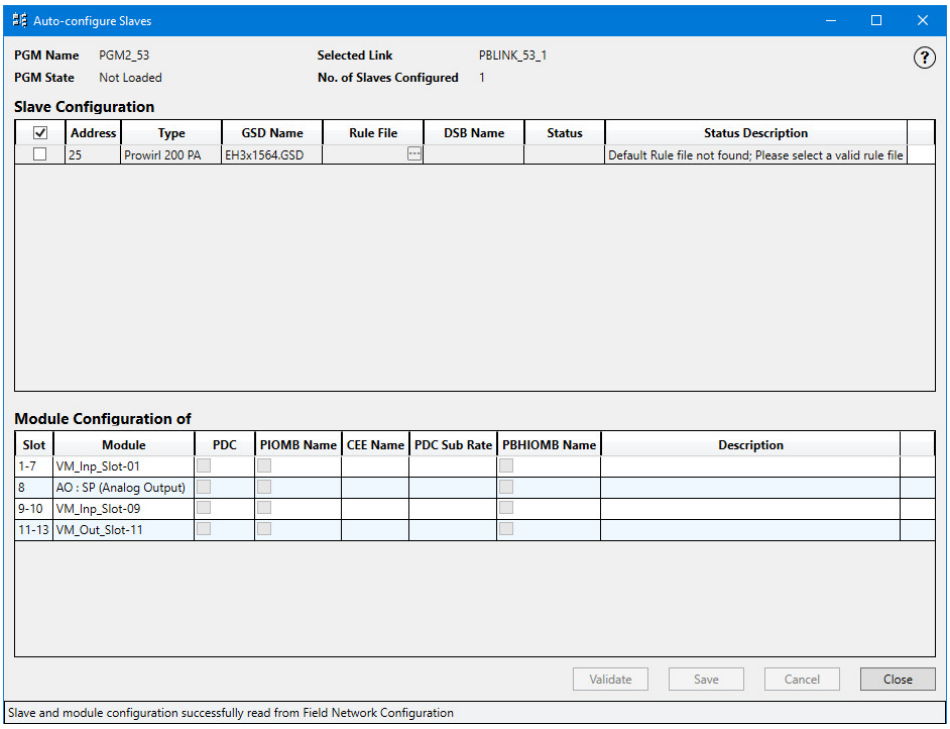
Click on the button “OK” to proceed.

3.3.3.6 Auto-Configure Slaves

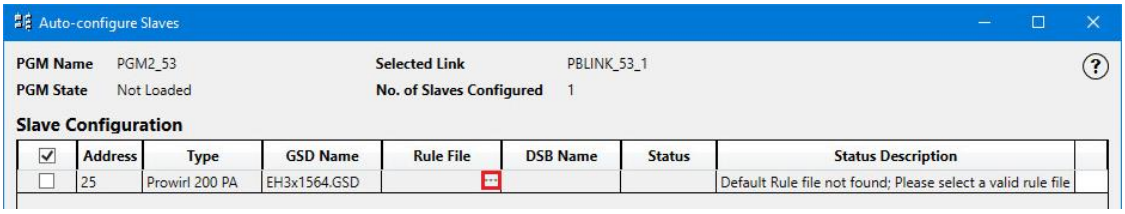
- In the Project view, right-click on “PBLINK_53_1” and select the option “Auto-configure Slaves…”.



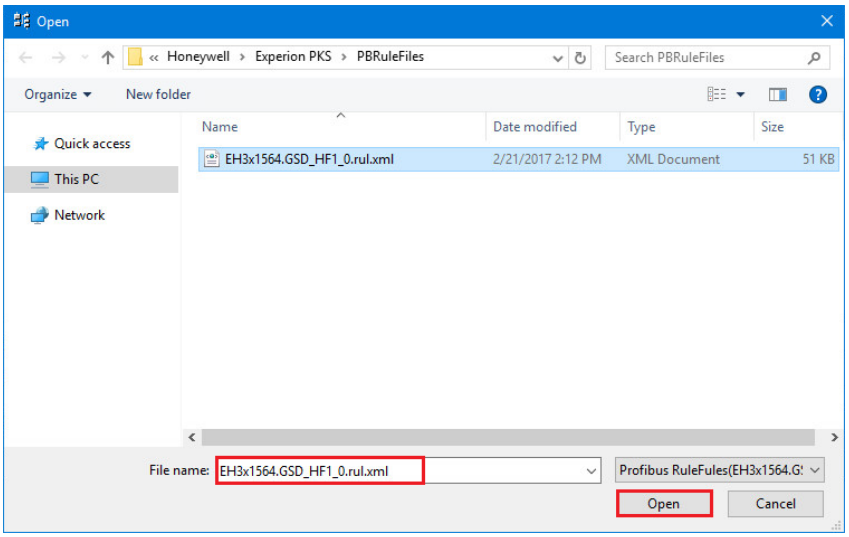
- This opens following window:



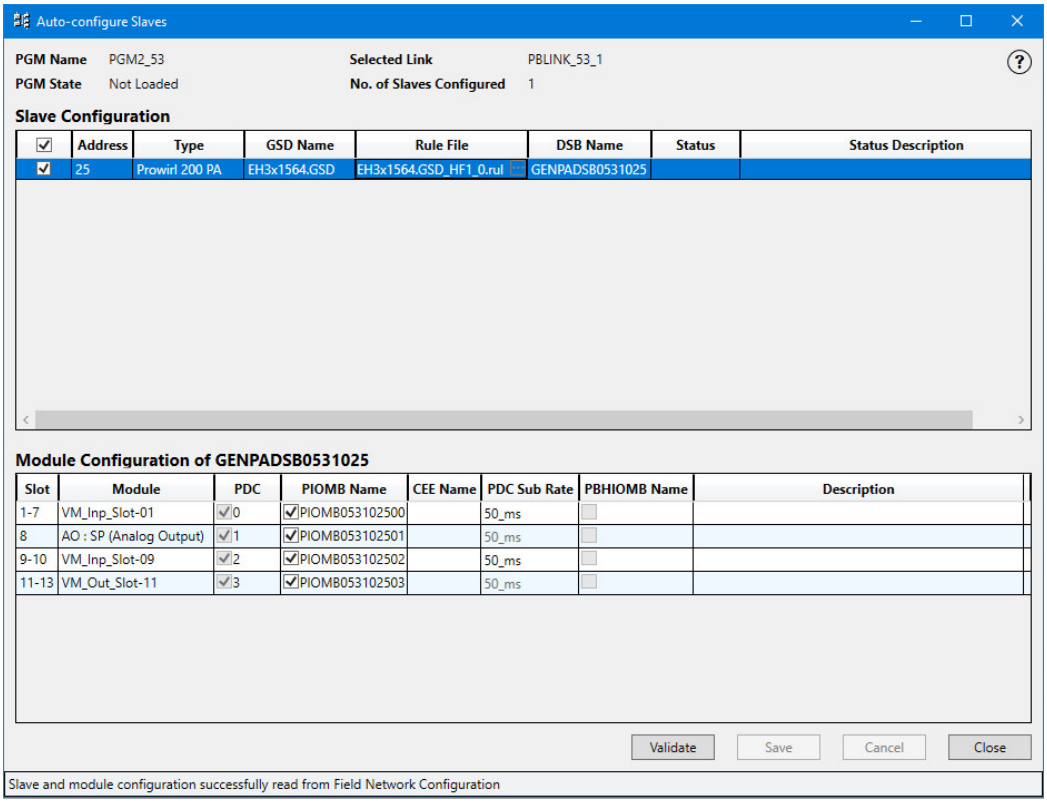
- Click on the "…" icon in the "Slave Configuration" part:



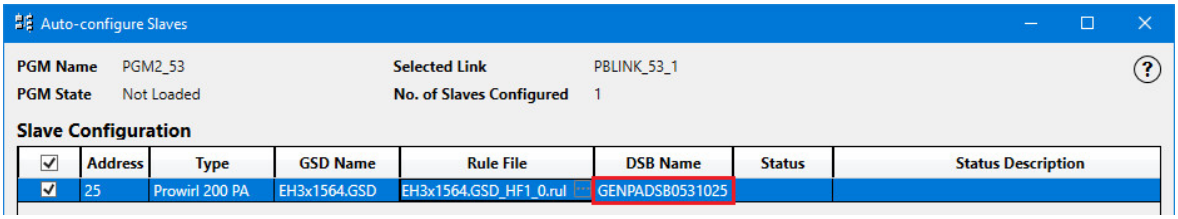
- Select the corresponding device Rule and click on the button "Open":



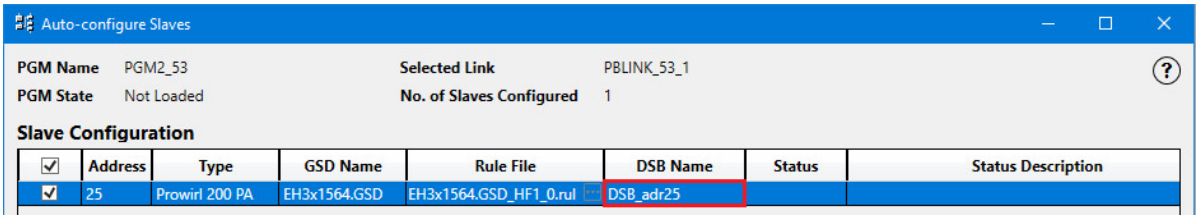
- This configures the DSB:



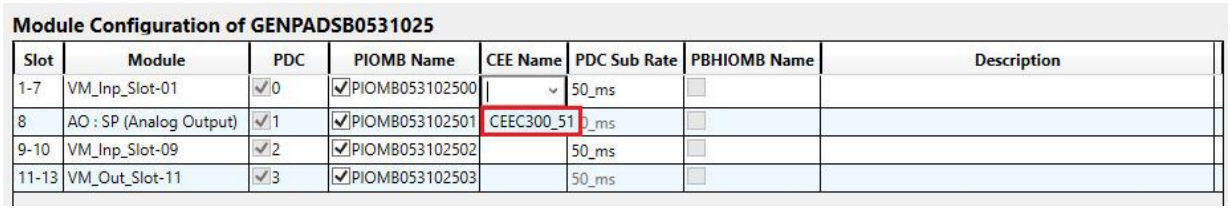
- Update the DSB Name if needed. Click in the DSB Name field:



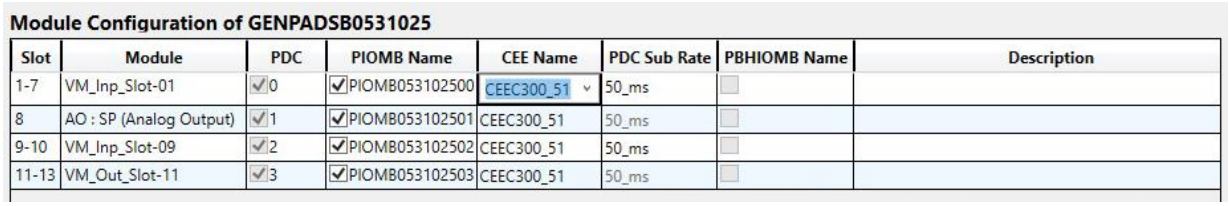
- Enter a new DSB Name, for example "DSB_adr_25":



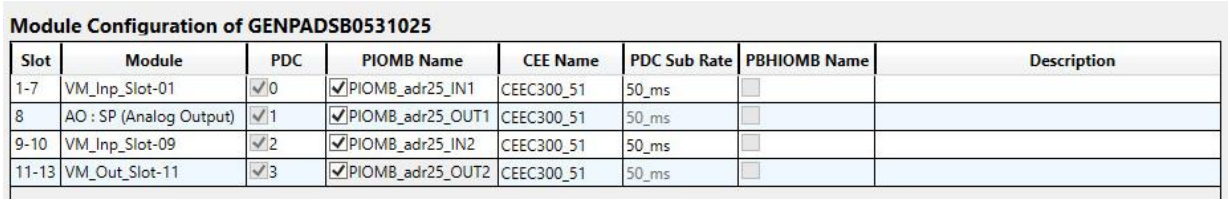
- In the Module Configuration part, click in the field CEE Name of "VM_Inp_Slot-01" and select the CEE300_51:



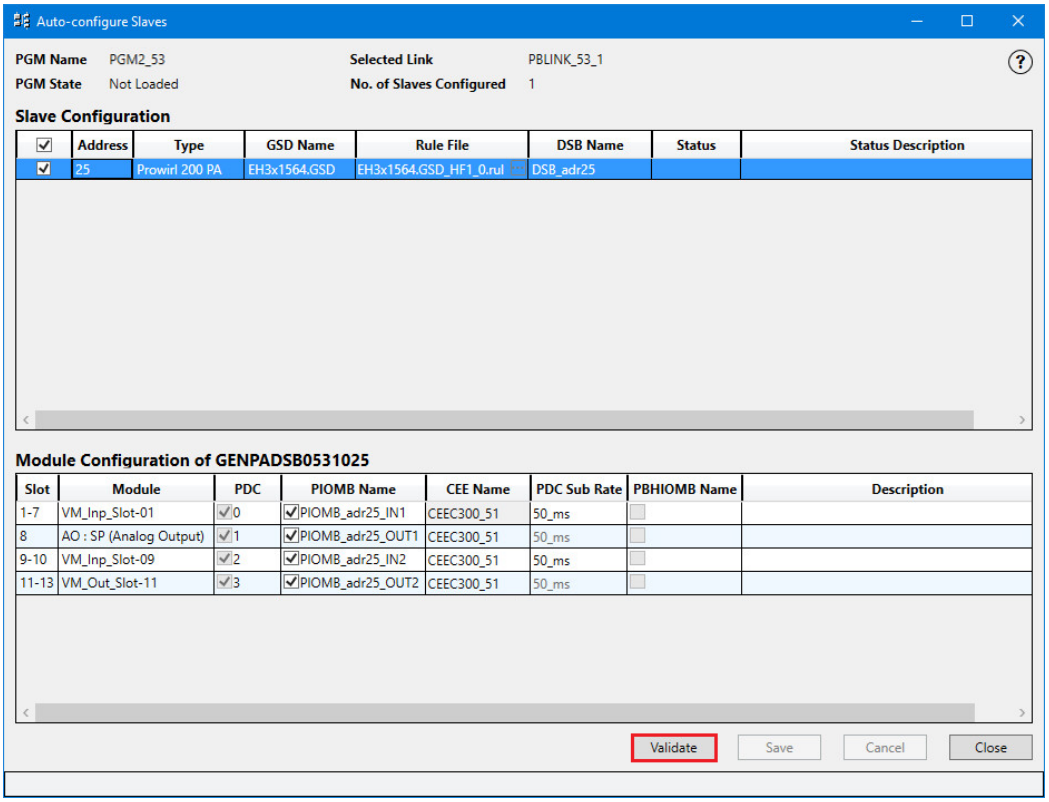
- This updates automatically all other CEE Name fields:



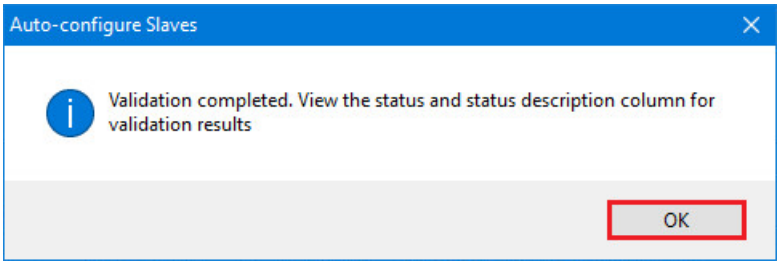
- Change PIOMB Names if needed:



- Click on the button “Validate”:

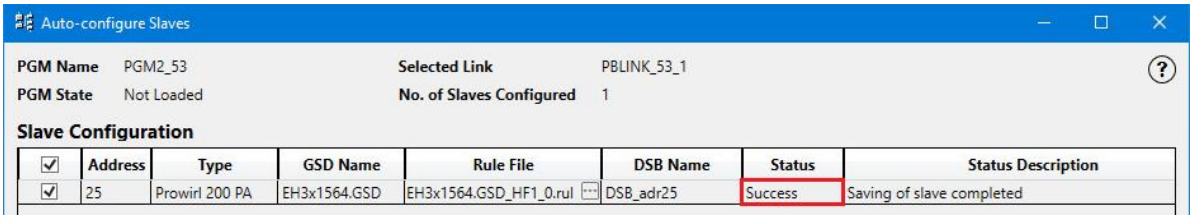


- Following window appears:

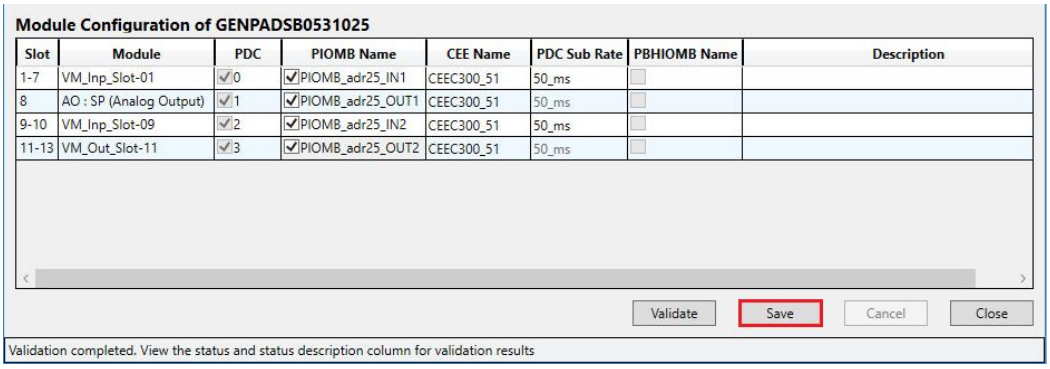


Click on the button “OK”.

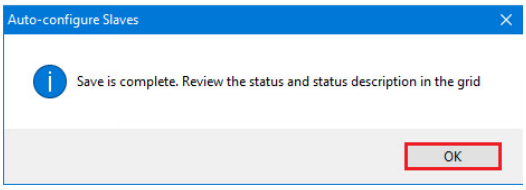
- Status is changed to “Success””:



- Save the configuration by clicking on the button “Save”:

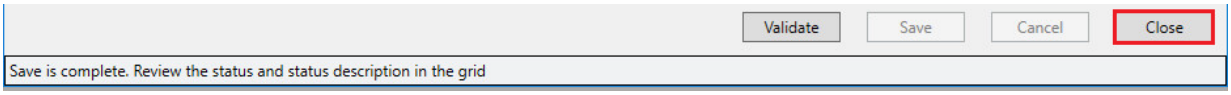


- Saving is complete

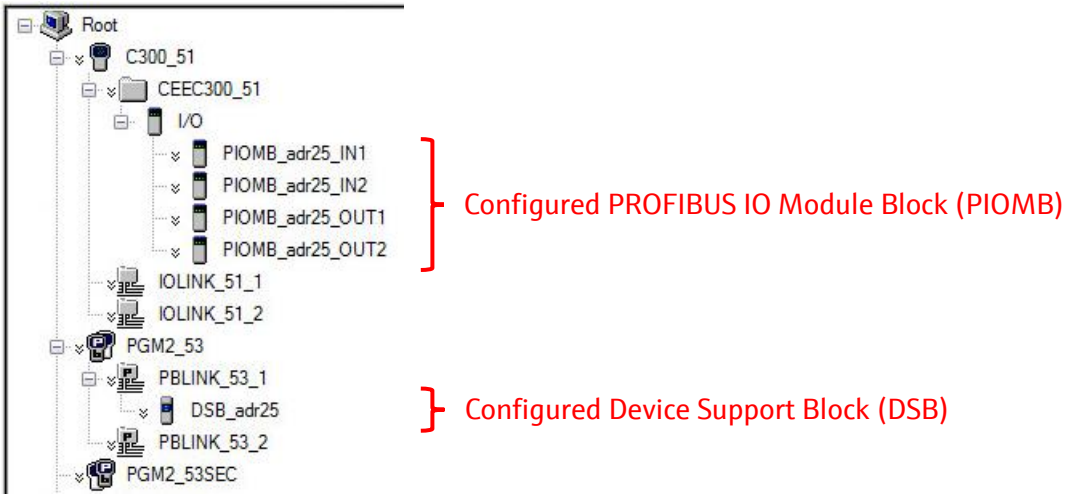


Click on the button “OK” of the message box “Auto-configure Slaves”.

- Click on the button “Close”:



- In the project view, expand the menus “CEE300_51” and “PBLINK_53_1” to see the configured modules:

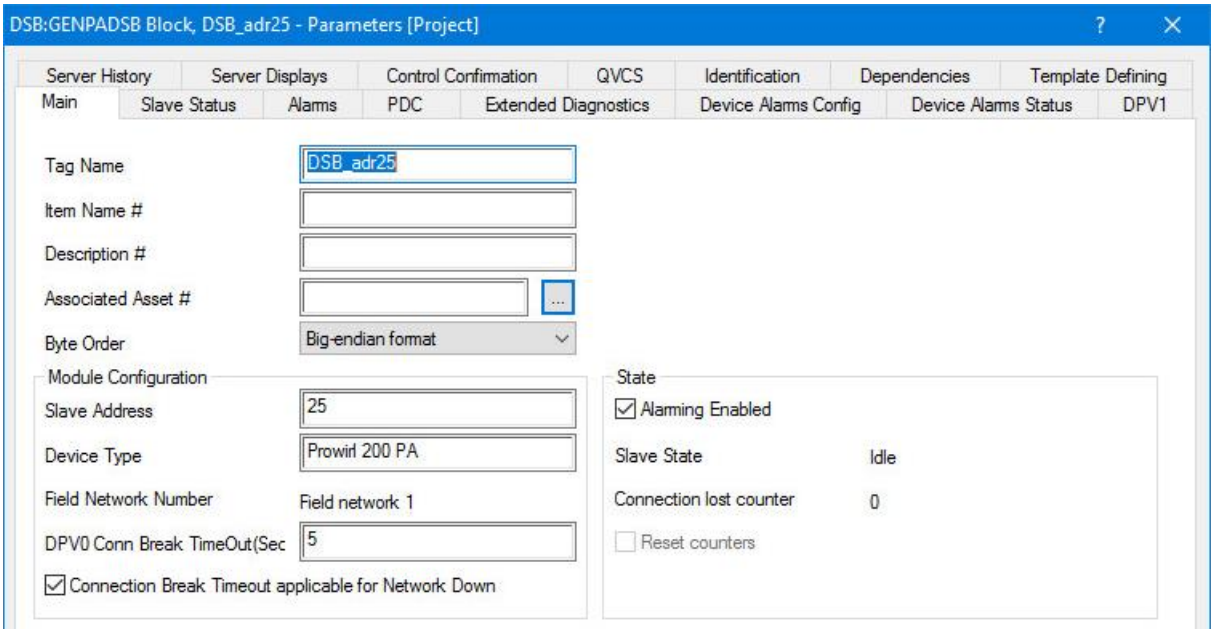


3.3.3.7 Device Support Block (DSB)

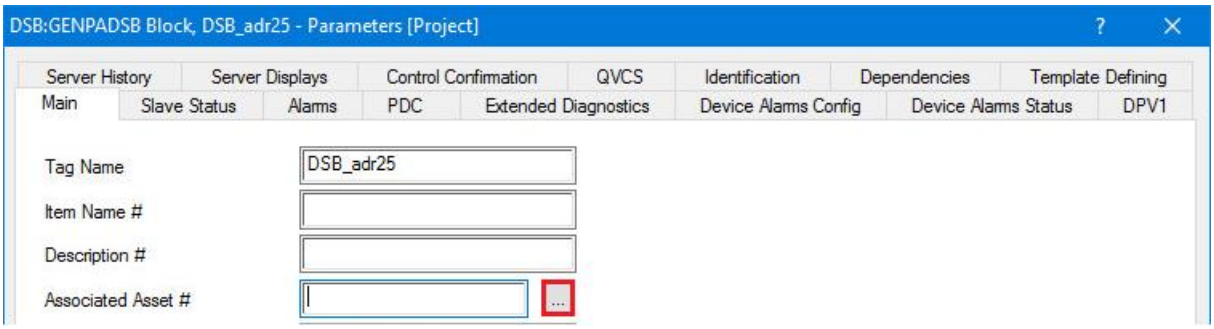
This chapter describes some useful settings of the DSB module. All these settings are automatically populated with default best practice values by the Auto-Configure Slave tool rule files.

Associate Asset (Optional configuration)

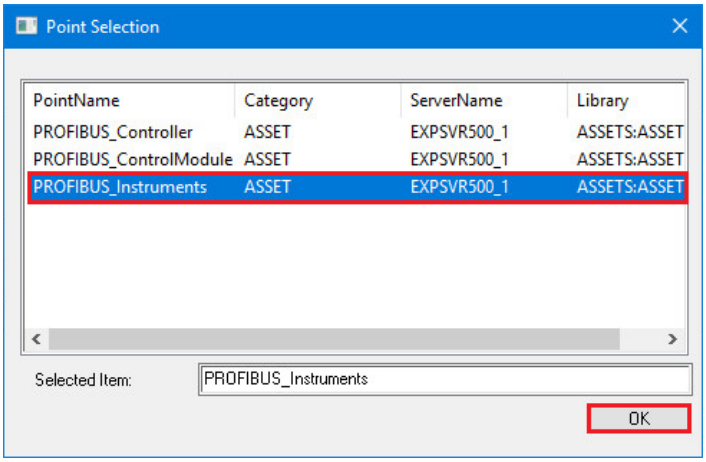
- Double-click on the Prowirl200 DSB "DSB_adr25":



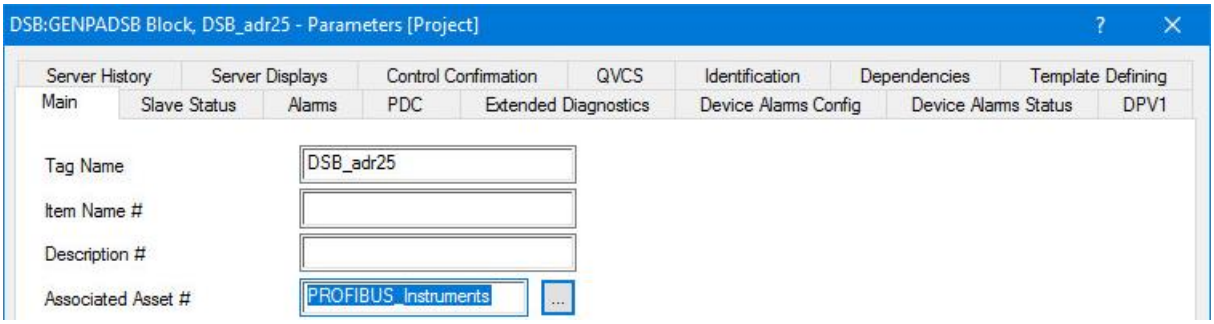
- Assign an Asset. Click on the icon "...":



- Then, select the Associated Asset “PROFIBUS_Instruments” for this example and click on the button “OK”:

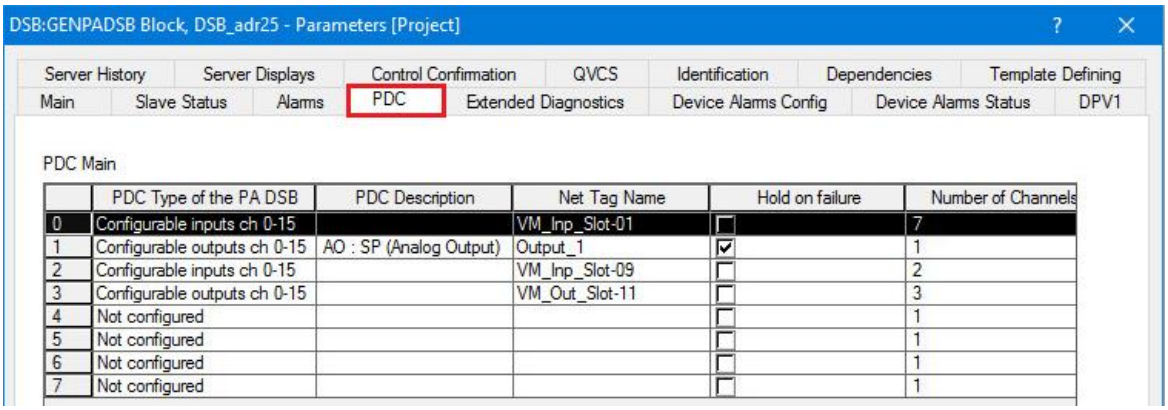


- Assigned Associated Asset:

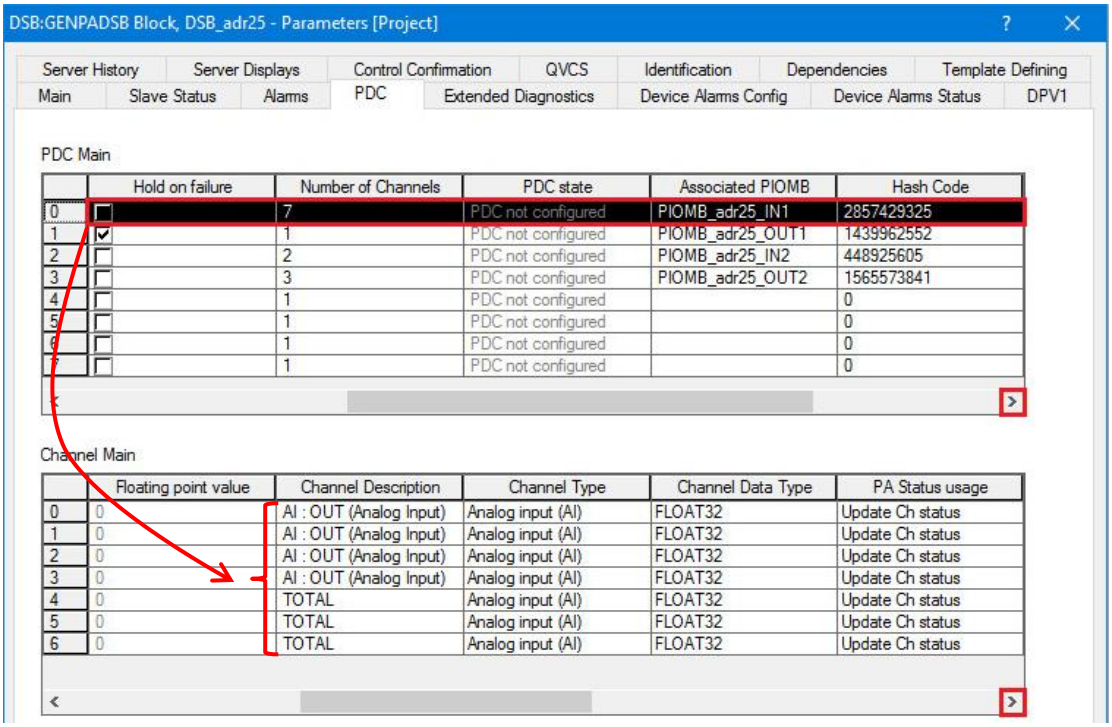


Process Data Collection (PDC)

- Click on the tab “PDC”. This displays all four configured Virtual Modules:



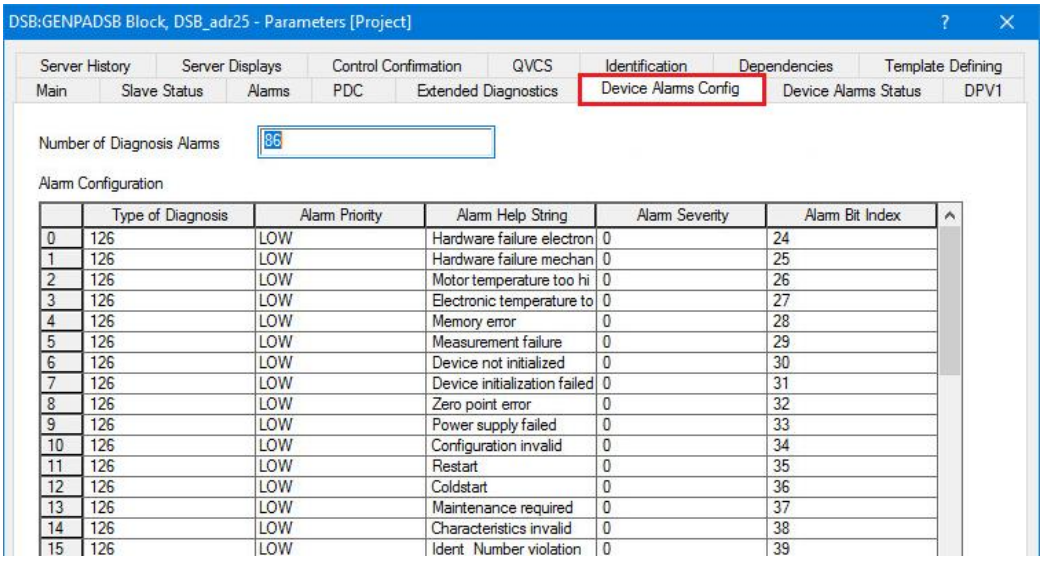
- In this example, the input “VM_Inp_Slot-01” is selected in the “PDC Main“ table. This displays the corresponding IO channels in the “Channel main” table. By scrolling to the right, more details are available for identifying the associated PIOMB and channels:



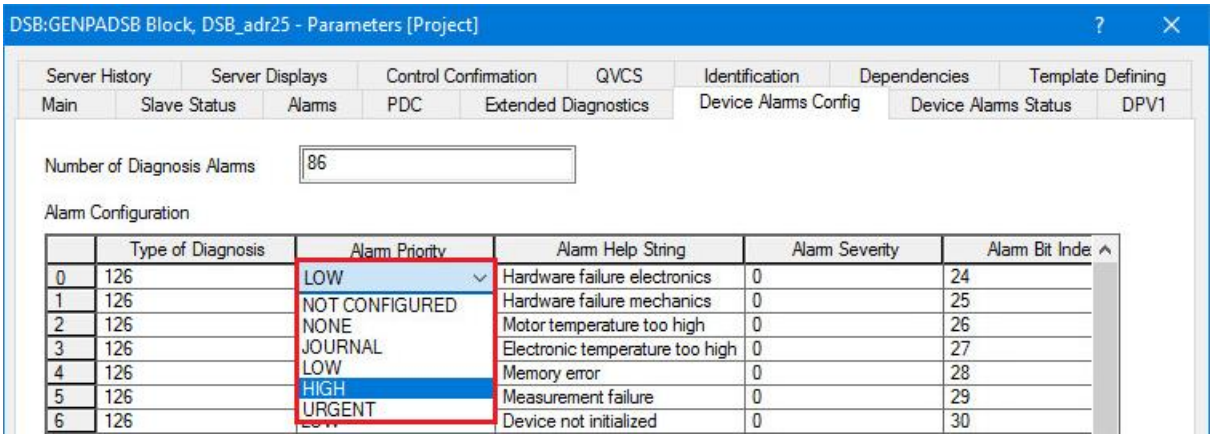
Device Alarm Config

This menu allows the user to configure device specific alarms.

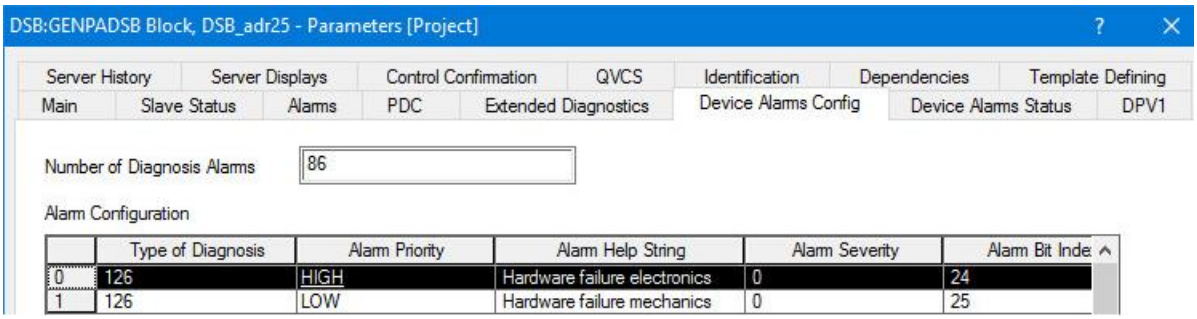
- Click on the tab to display the Prowirl200 “Device Alarms Config”:



- A priority can be set for each available alarm:



- In this example, the alarm “Hardware failure electronics” is set to priority “HIGH”:



3.3.4 PGM Configuration Download

- Download the configuration of the C300 and PGM modules.
  Refer to part 0 to proceed.

3.4 Mapping of Process Values and Status to Control Strategy

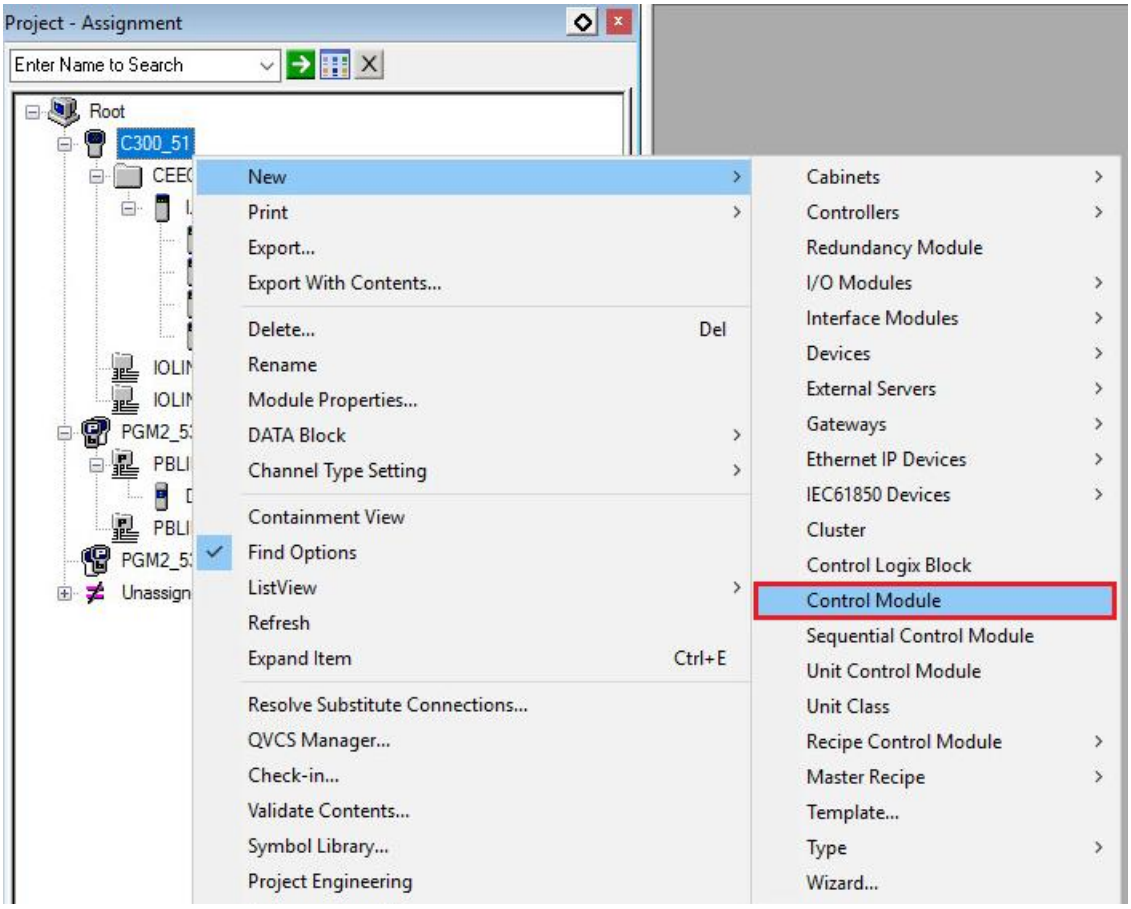
This chapter explains how assign IO modules function blocks.

3.4.1 PGM Library

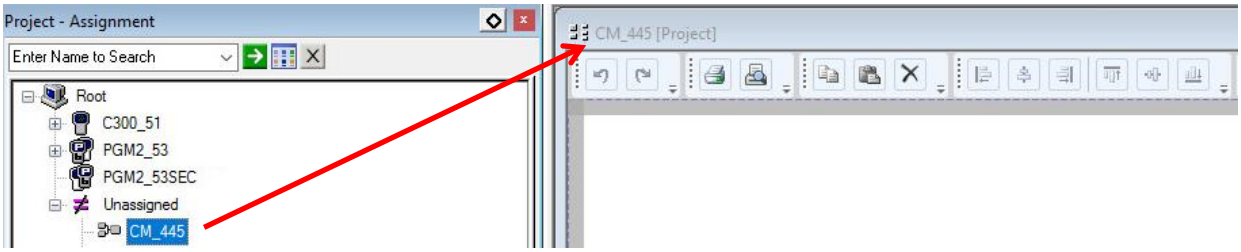
- The PGM Library contains function blocks used for assigning PROFIBUS signals.

3.4.2 New Control Module

- Right-click on the field “Root” and select the option “New→Control Module”:

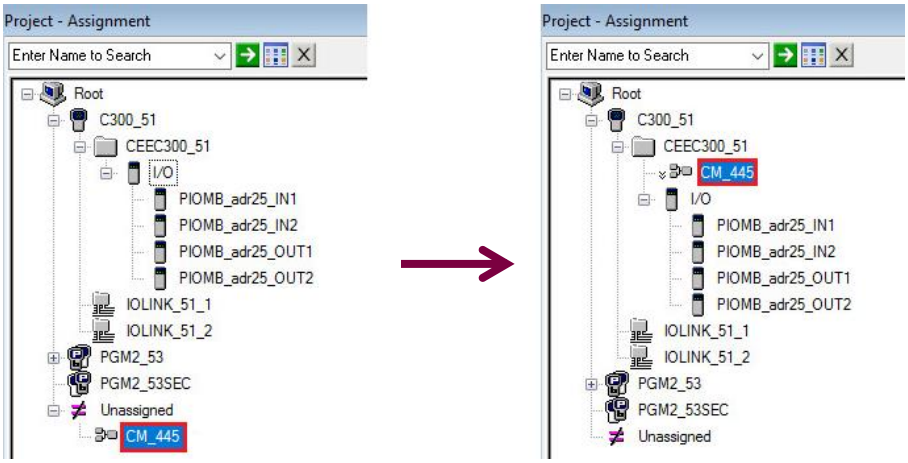


- The created Control Module is opened automatically and saved under “Unassigned”:



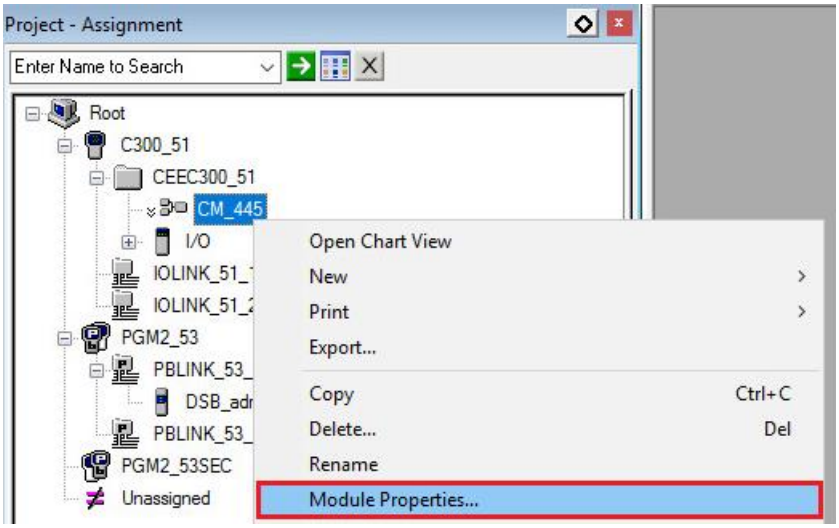
- Close the Control Module window “CM_445”.

- Move the Control Module “CM_445” from the folder “Unassigned” to the “CEE300_51”:

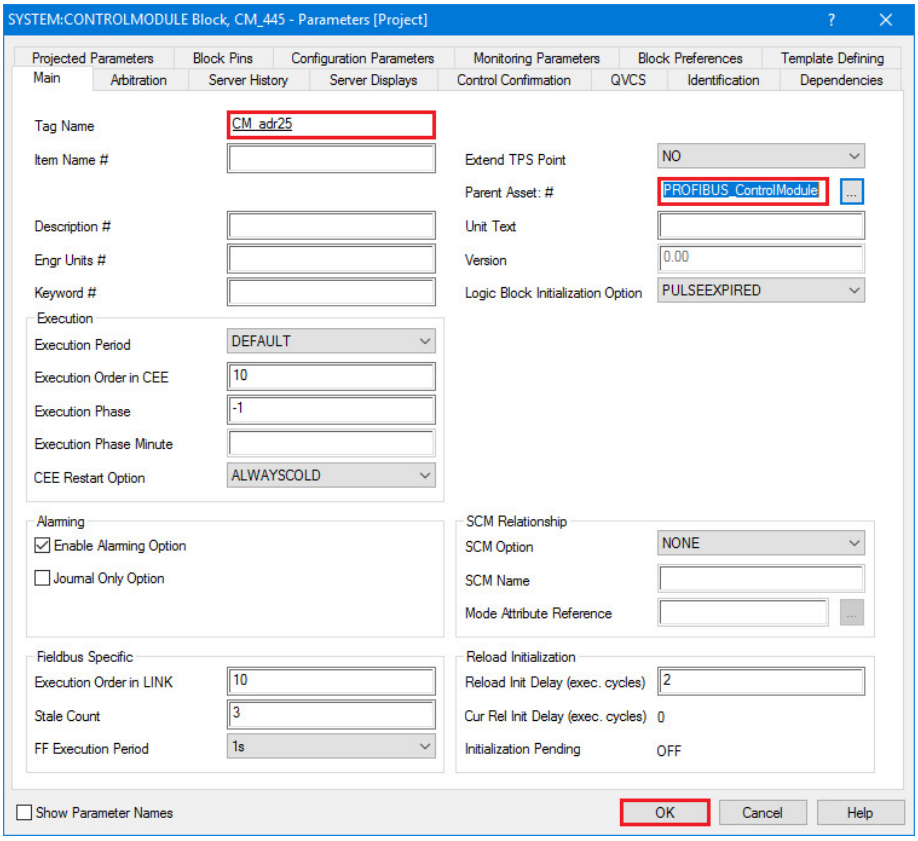


This step is important, otherwise no PROFIBUS IO modules (PIOMB) can be assigned to the function blocks as these one are registered under “CEE300_51”.

- Right-click on the Control Module “CM_445” and select the option “Module Properties…”:

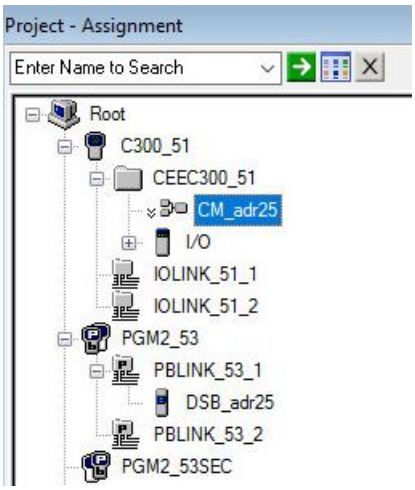


- Enter a new Tag Name and indicate the “Parent Asset #”.
  In this example, the new Control Module name is “CM_adr25” and the Parent Asset is “PROFIBUS_ControlModule”:



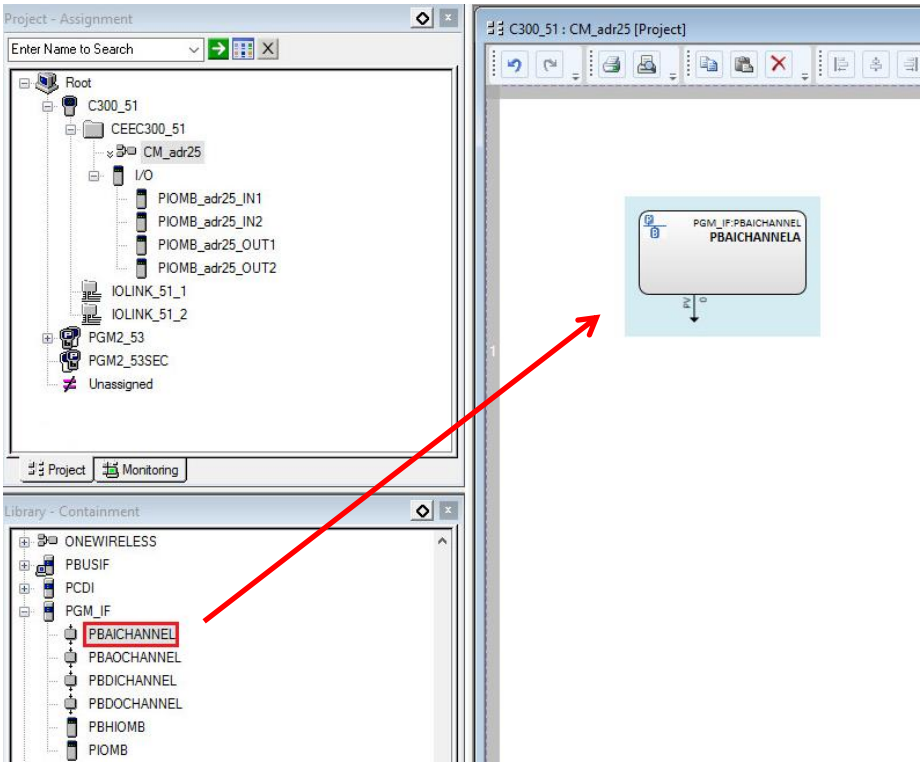
  Click on the button “OK” to close the window.

- This updates the Control Module name:

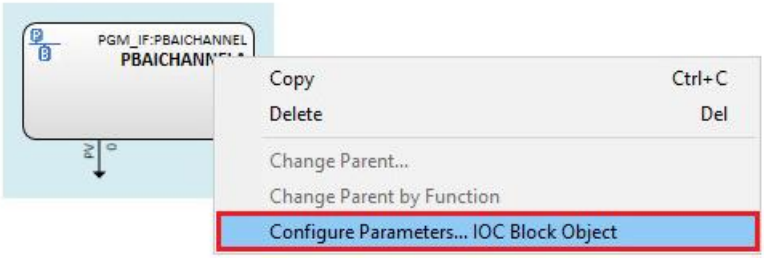


3.4.3 Analog Input Function Block Configuration

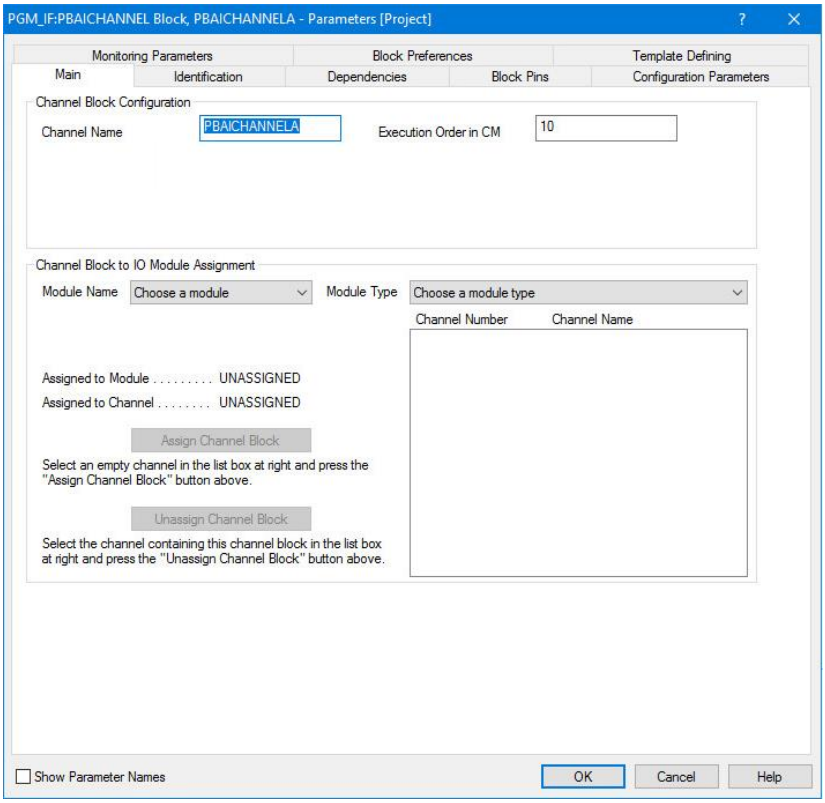
- Open the “CM_adr25” , then drag and drop an analog input function block:



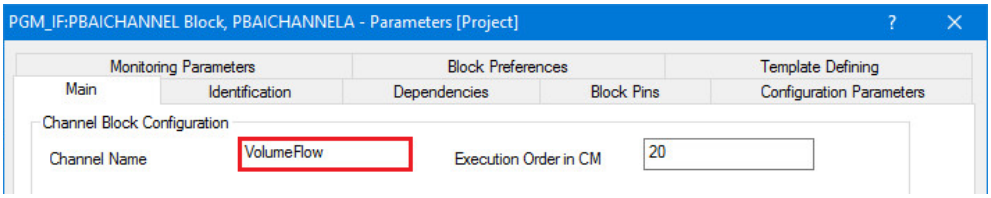
- Right-click on the function block and select the option “Configure Parameters... IOC Block Object” :



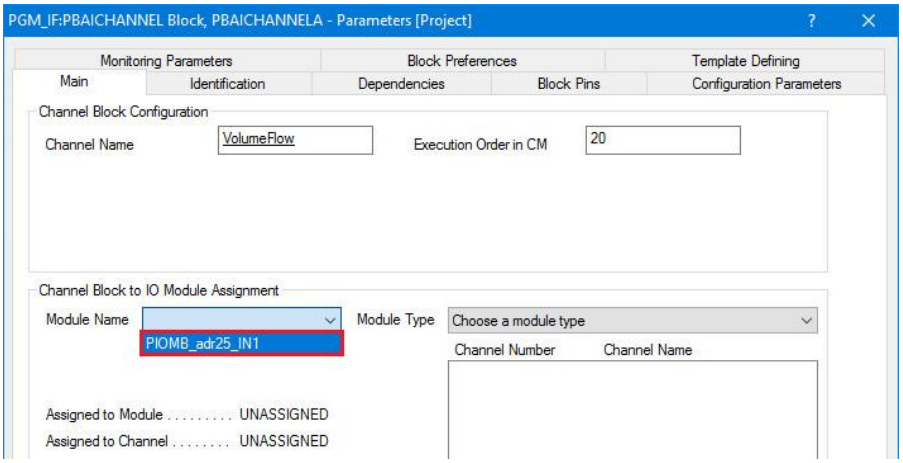
- This opens following configuration window:



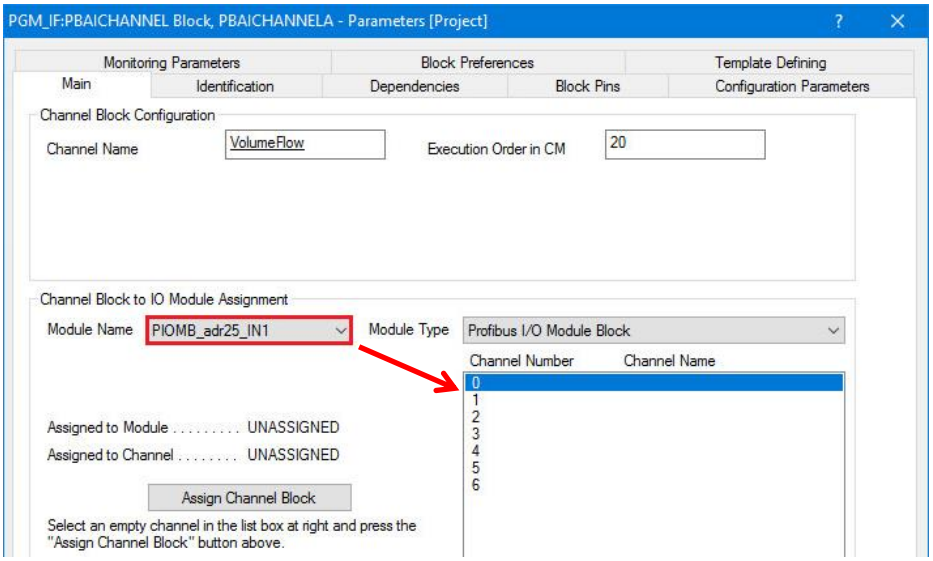
- Enter the corresponding channel name, for example “VolumeFlow”:



- Select the correct PIOMB on which the analog input must be connected. This menu only displays modules which can be connected to the function block. In this example, the created module “PIOMB_adr25_IN1” contains all float values:

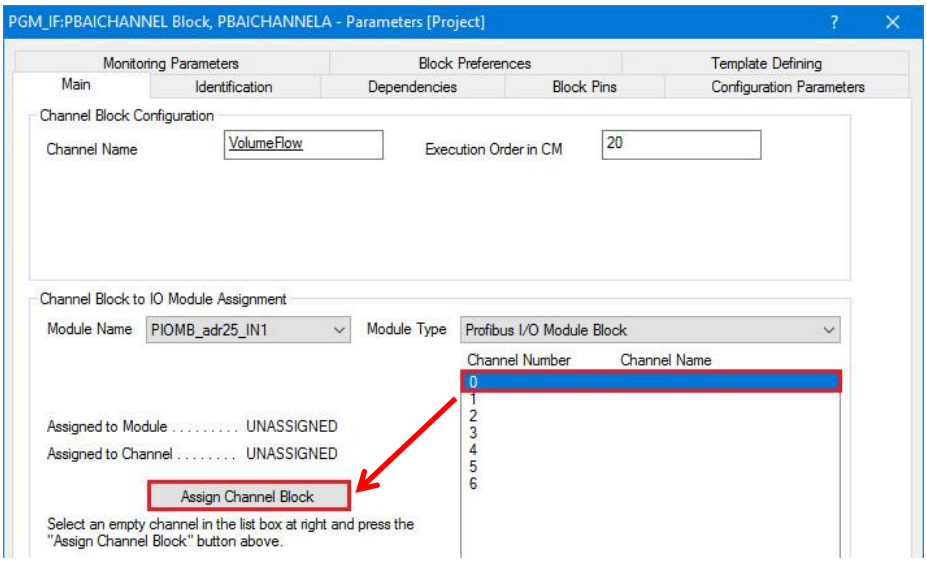


- Selecting the "PIOMB_adr25_IN1" module displays automatically all configurable channels:



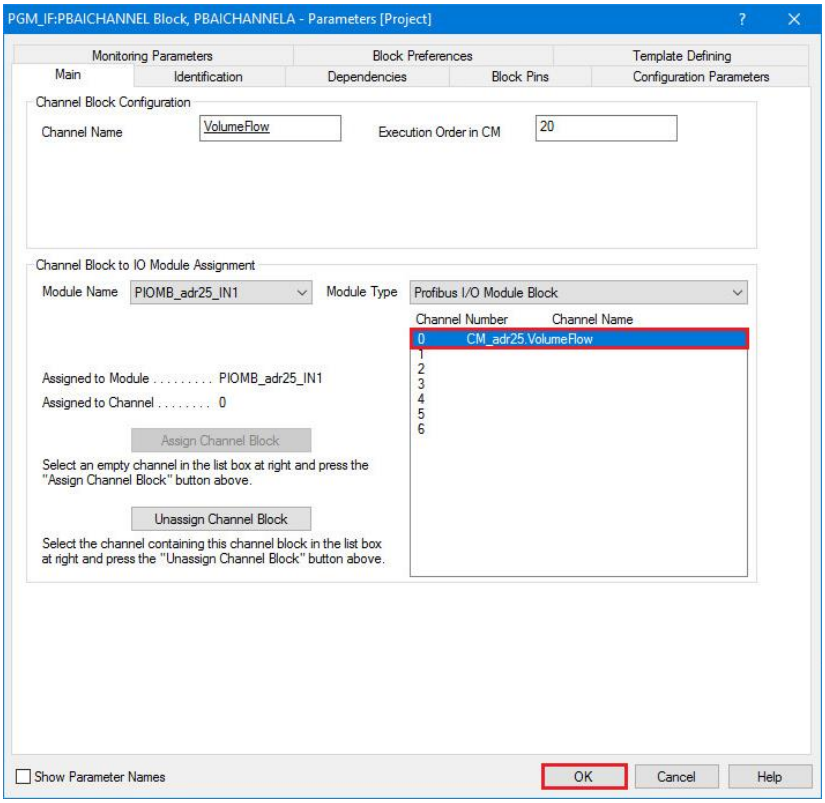
In this example, there are seven channels (four analog input values and three totalizer values). This corresponds to the grouping done in SYCON.net in chapter 3.3.3.5.

- Select the Channel Number on which the analog input function block must be assigned and click on the button "Assign Channel Block":



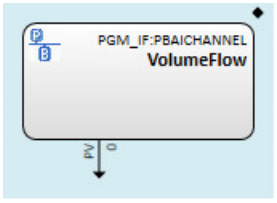
In this example, "Channel Number 0" is selected.

- Configured Channel Number:



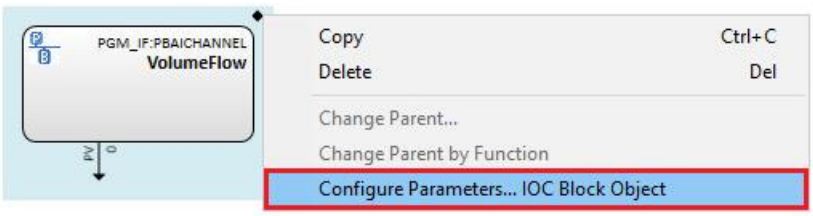
Click on the button “OK” to save and close the window.

- The analog input function block is now assigned to PIOMB channel 0.

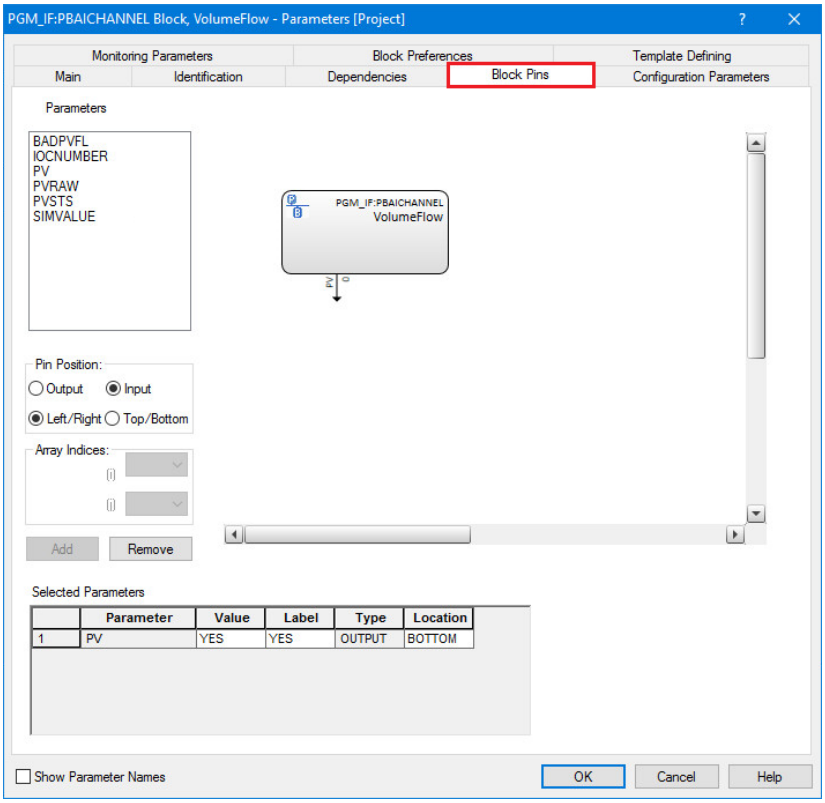


Remarks

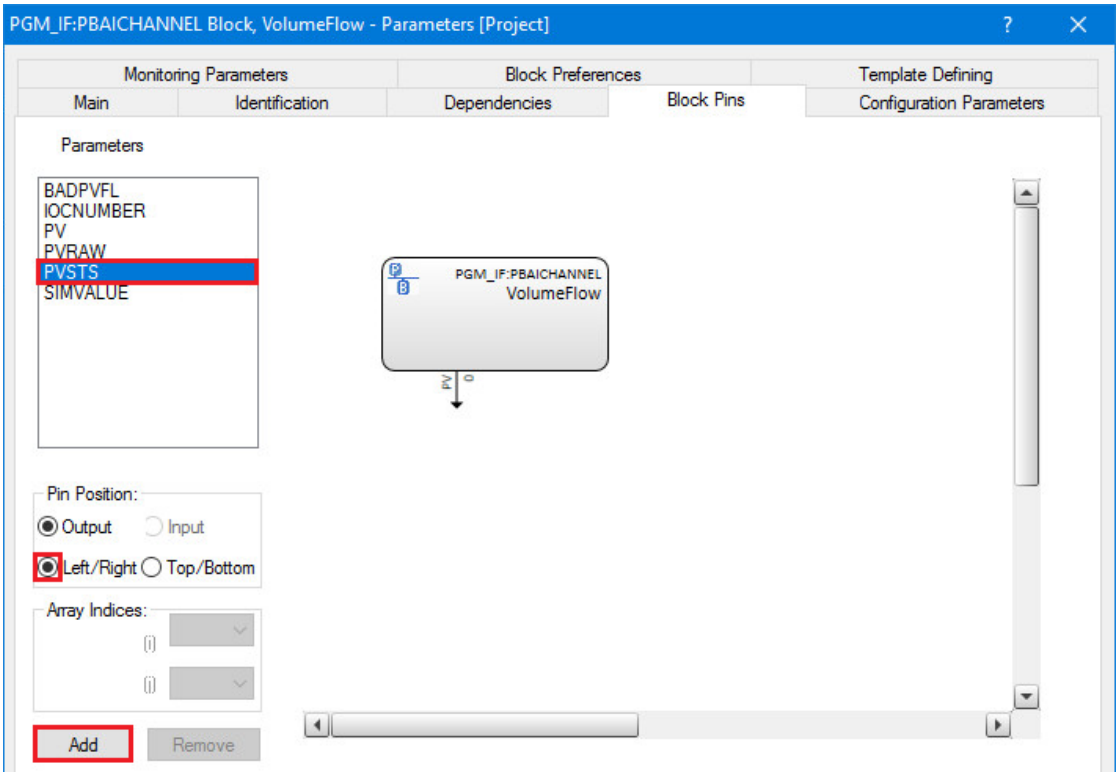
- This Function block can be optimized by adding some additional information as the status. Right-click on the function block and select the option “Configure Parameters… IOC Block Object” :



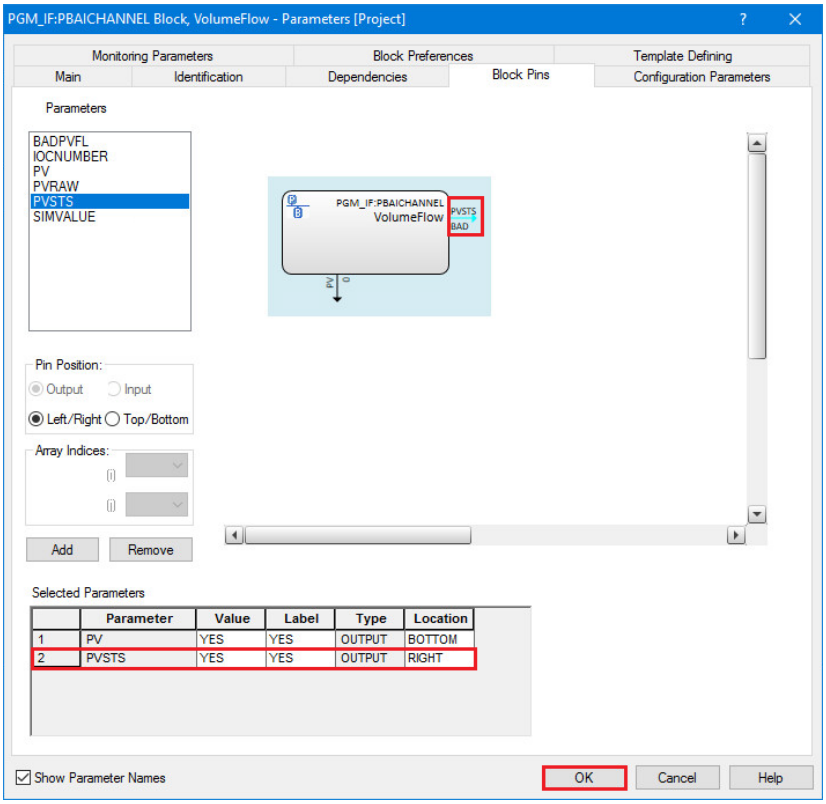
- Select the tab “Block Pins”:



- Select for example the Parameter “PVSTS” which is the status of the PROFIBUS value, then select the Pin Position and click on the button “Add”:

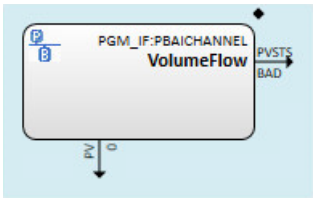


- Status parameter is successfully added on the function block:



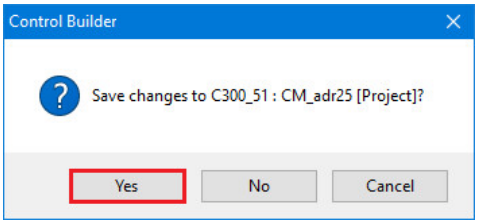
Click on the button “OK” to save and close the window.

- Configured analog input module with status:



For normal use cases it is not required to configure the PVSTS value and use it in the application, because the status values is automatically riding on the back of the used PV value.

- Close the Control Module. This opens following message box:



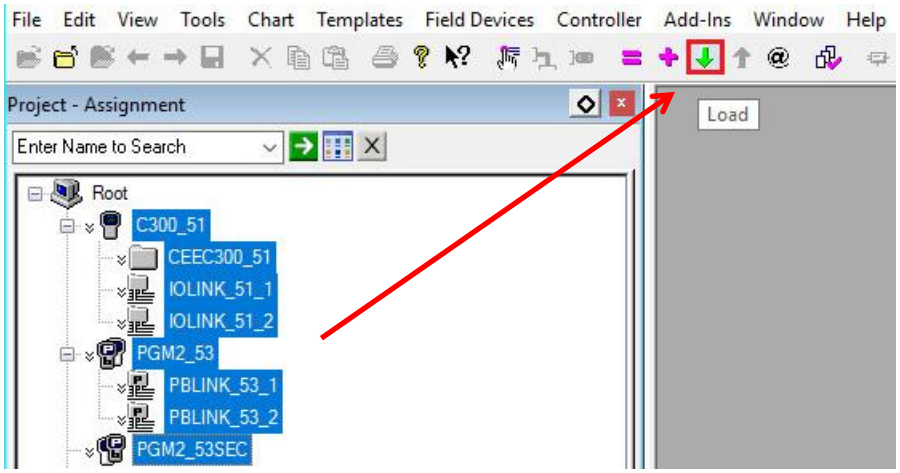
Click on the button “Yes”.

3.5 Commissioning of the Control Project

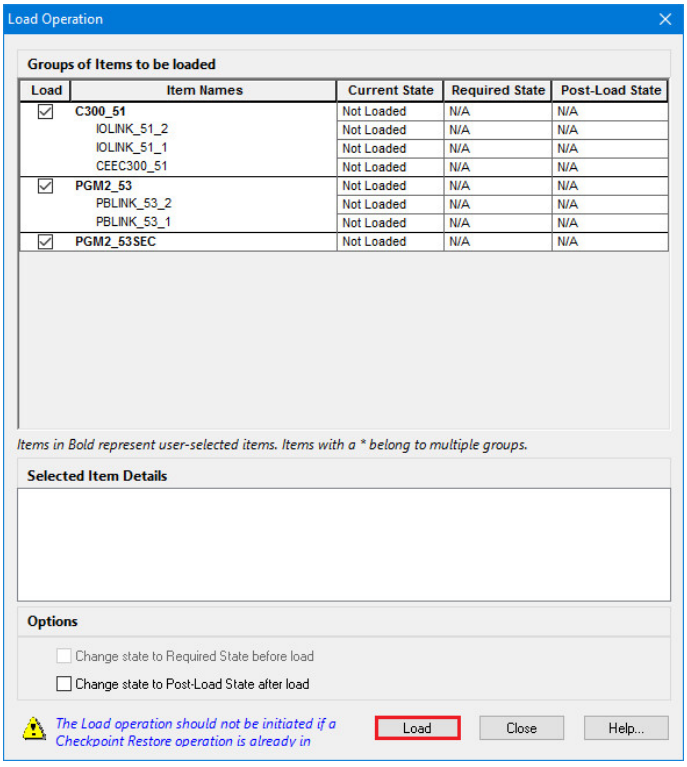
3.5.1 First Download

This part concerns the hardware configuration download of the C300 and the PGM modules.

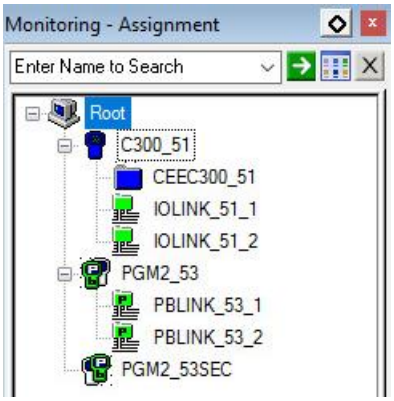
- In the project assignment view, select the C300_51 and PGM_53 module, then click on the shortcut button “Load” in the tool bar menu:



- This opens the “Load Operation” window. Click on the button “Load”:

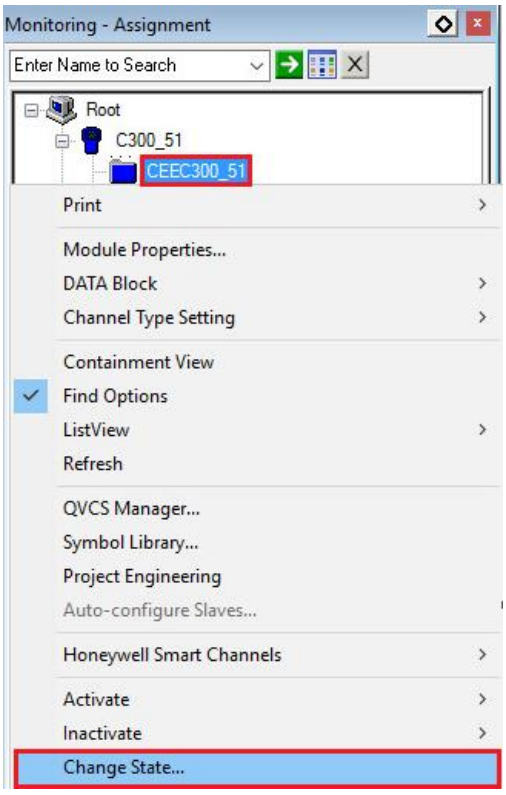


- Download is successful:

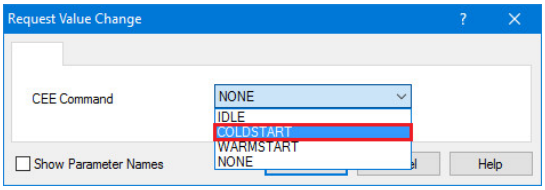


PGM automatically activates itself. C300 needs to be activated.

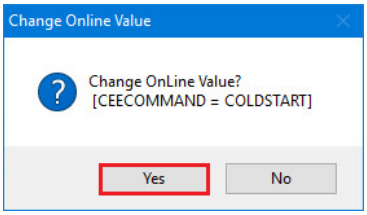
- Right-click on the CEEC300_51 field and select the menu Change State:



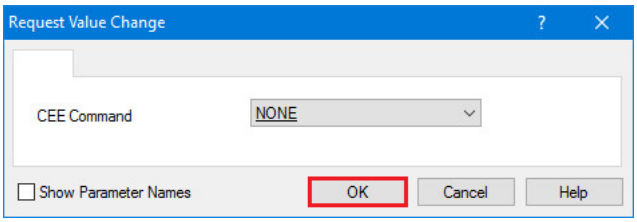
- Select the option “COLD START”:



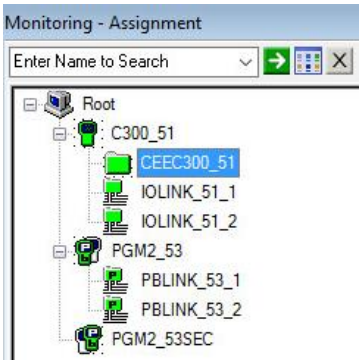
- Click on the button “Yes”:



- Click on the button “OK” to close the window:



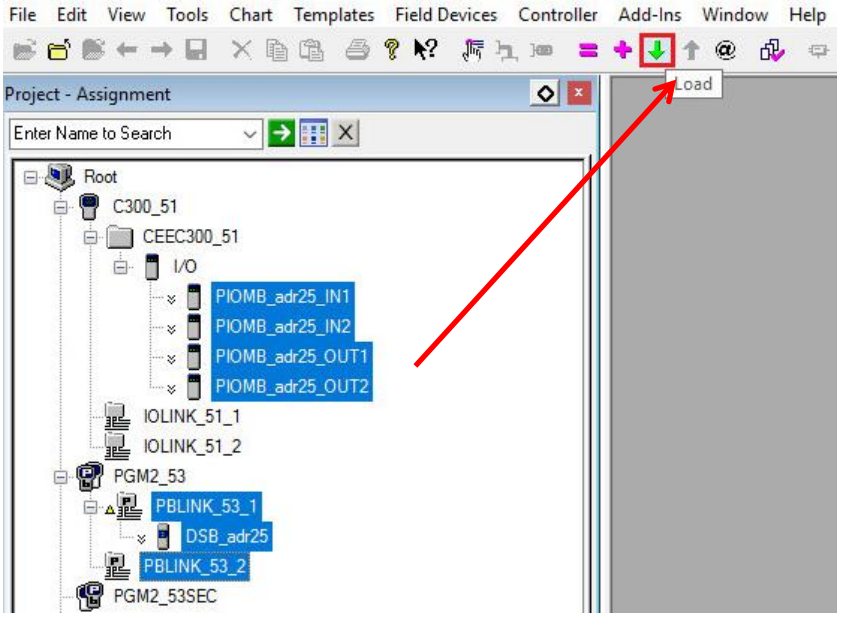
- C300 Controller is now activated:



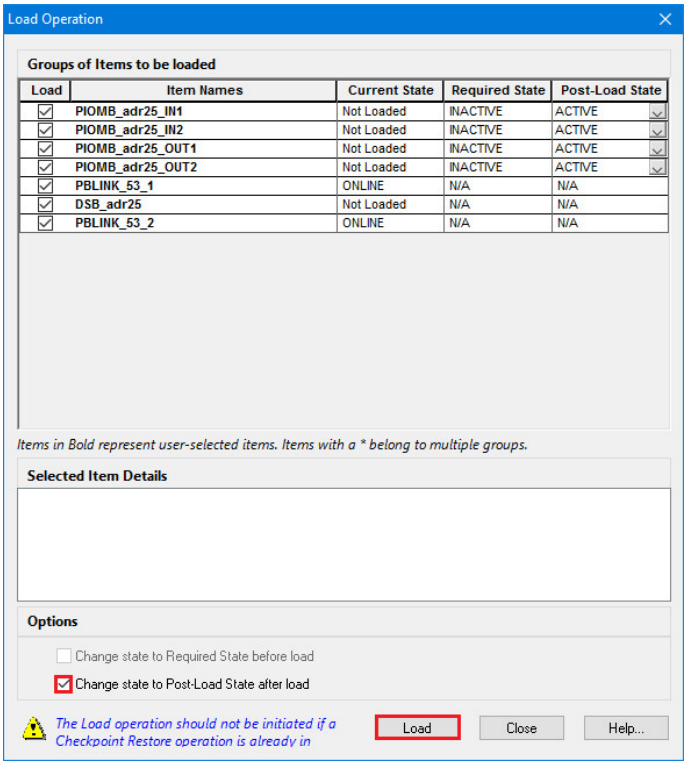
3.5.2 PGM and Device Configuration Download

This part concerns the download of the PIOMB modules and the PGM configuration.

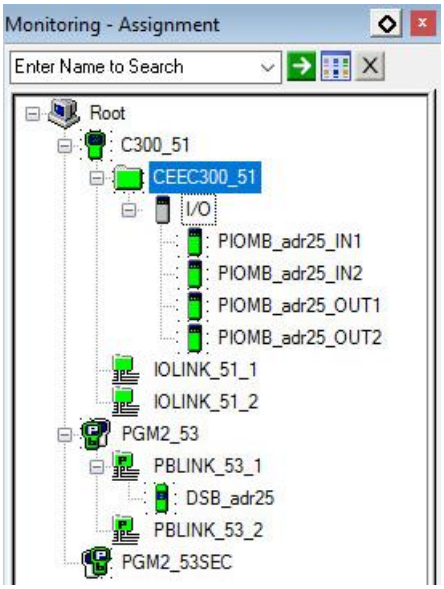
- In the project assignment view, select the PIOMBs, configured PBLINK and the DSB module, then click on the shortcut button “Load” in the tool bar menu:



- This opens the “Load Operation” window. Select the option “Change state to Post-Load State after Load” and click on the button “Load”:

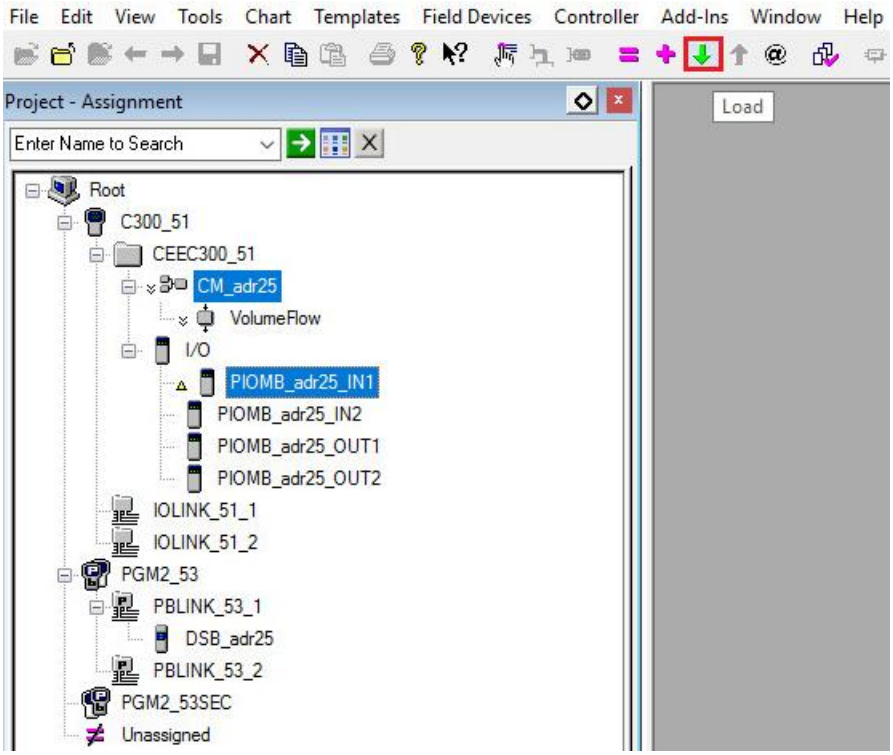


- Download is successful:

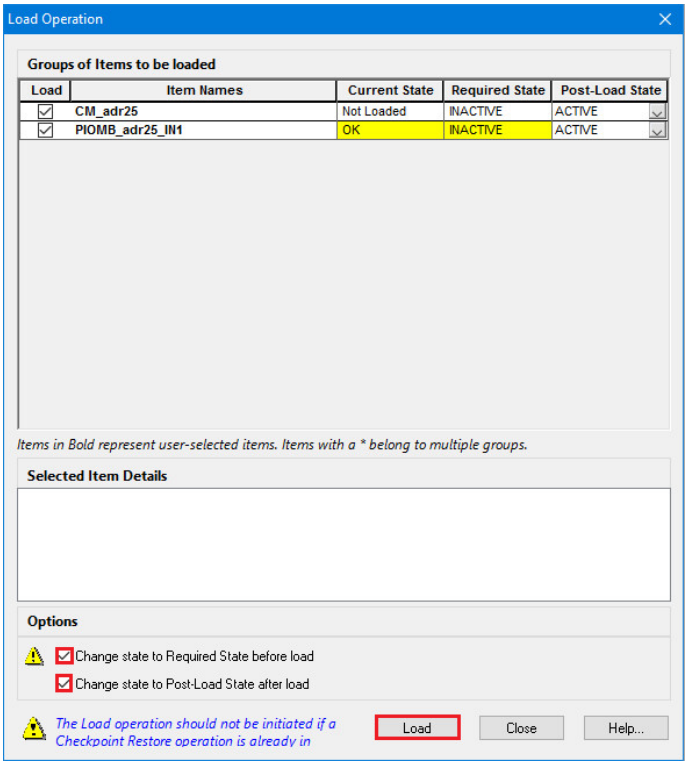


3.5.3 Control Module Download

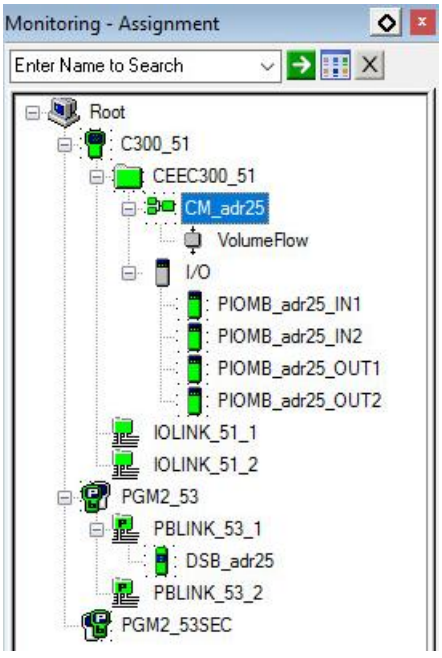
- In the project assignment view, select the Control Module as well as the PIOMB module and click the shortcut button “Load” in the tool bar menu:
  In this example, the Control Module “CM_adr25” is downloaded with the PIOMB “PIOMB_adr_IN1”:



- This opens the “Load Operation” window. Select the option “Change state to Post-Load State before Load”, “Change state to Post-Load State after Load” and click on the button “Load”:



- Download is successful:

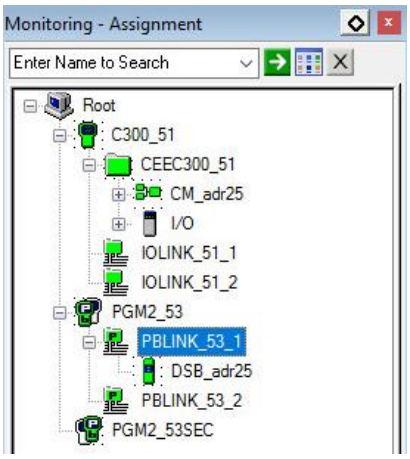


If an error or a warning occurs during download operation, none of the items in the actual download is automatically activated. In such cases even successfully downloaded items must be activated manually.

3.6 Monitoring of Process Values and Status Information

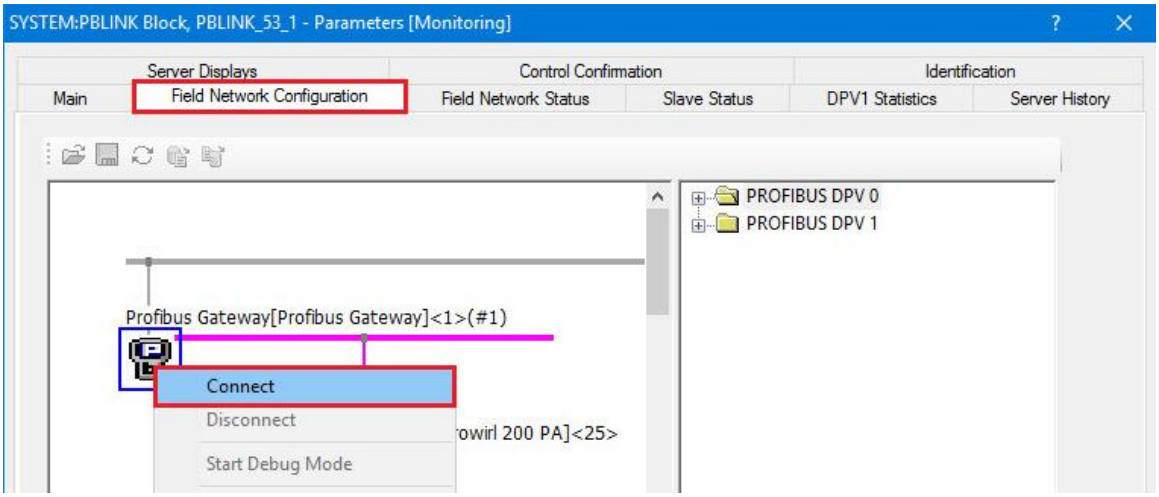
3.6.1 PBLINK Status

- Double-click on “PBLINK_53_1”:

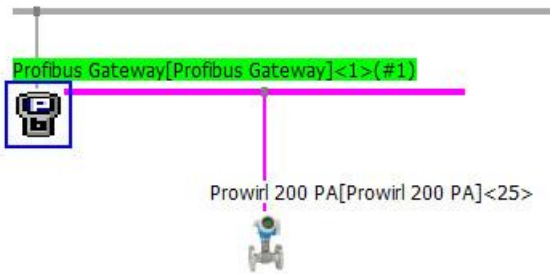


3.6.1.1 Profibus Gateway Status

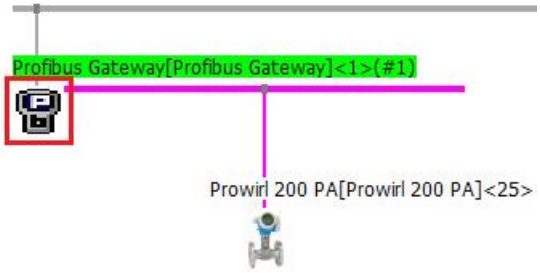
- Select the tab “Field Network Configuration”, right-click on the “Profibus Gateway” and select the menu “Connect”:



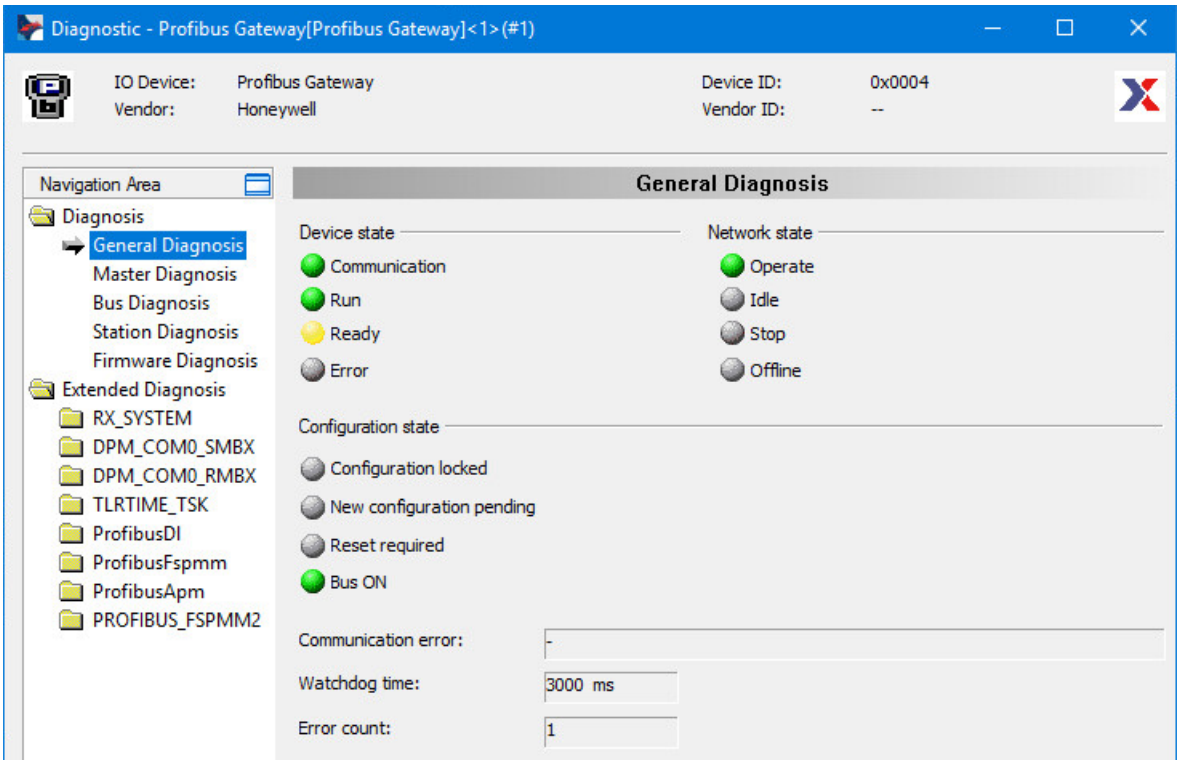
- This connects the Profibus Gateway:



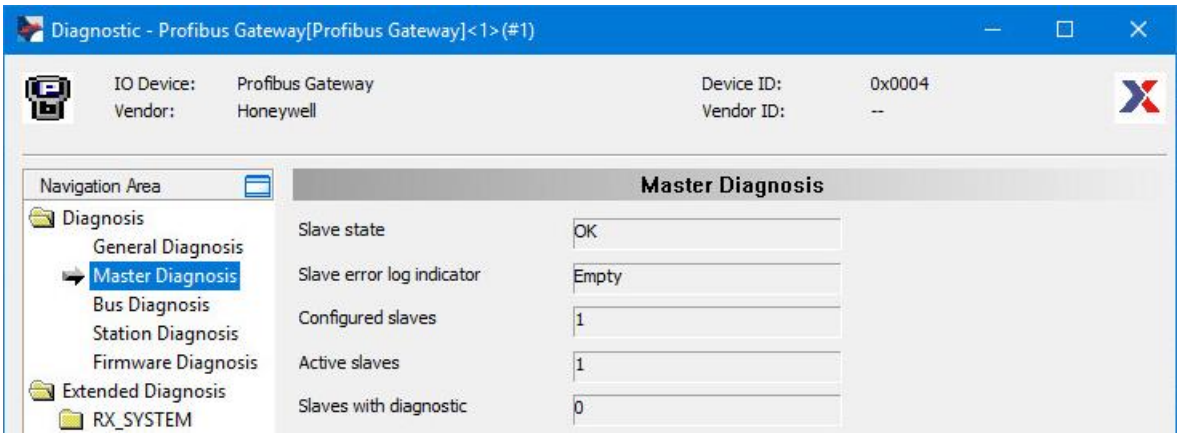
- Double-click on the Profibus Gateway for displaying the Diagnostic data:



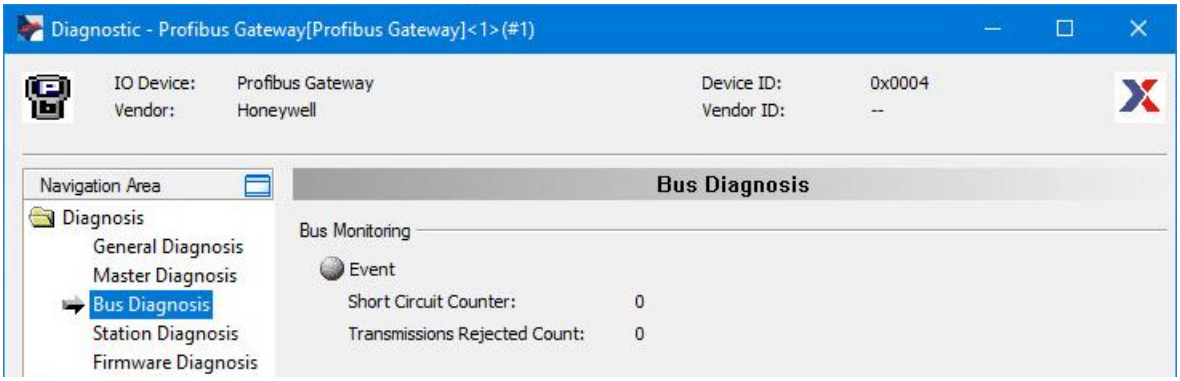
- This displays Diagnosis Data of the “General Diagnosis”:



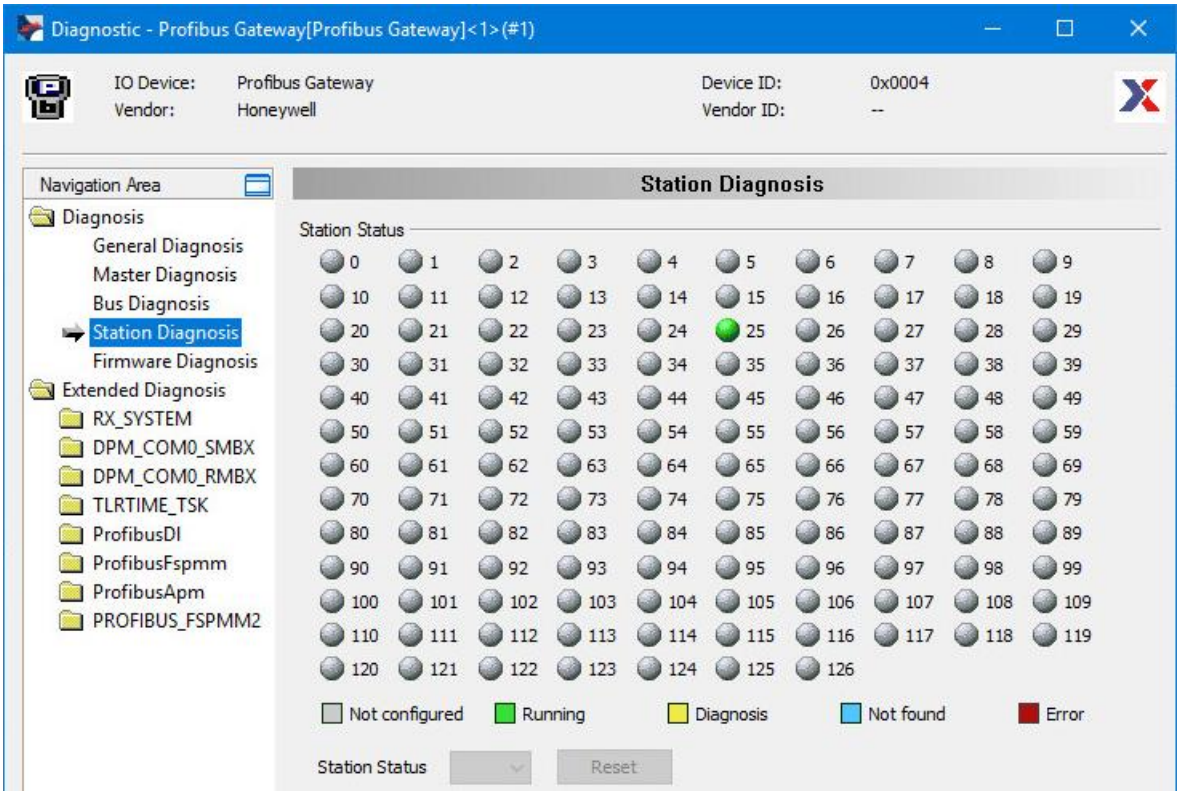
- Click on the menu “Master Diagnosis” for information related to Slaves:



- Click on the menu “Bus Diagnosis” for displaying event counter, as “Short Circuit” or “Transmissions Rejected”:



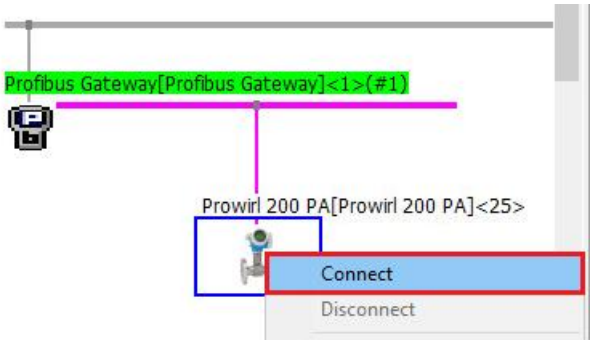
- Click on the menu “Station Diagnosis” for displaying Slaves Status:



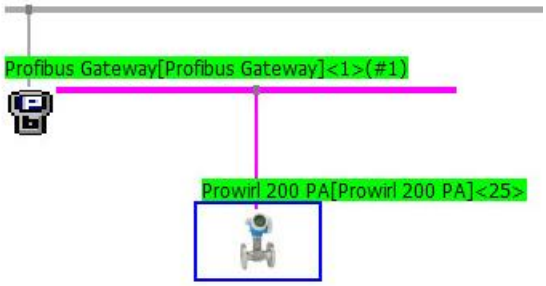
In this example, the Prowirl200 with address 25 is in data exchange mode.

3.6.1.2 Device Status

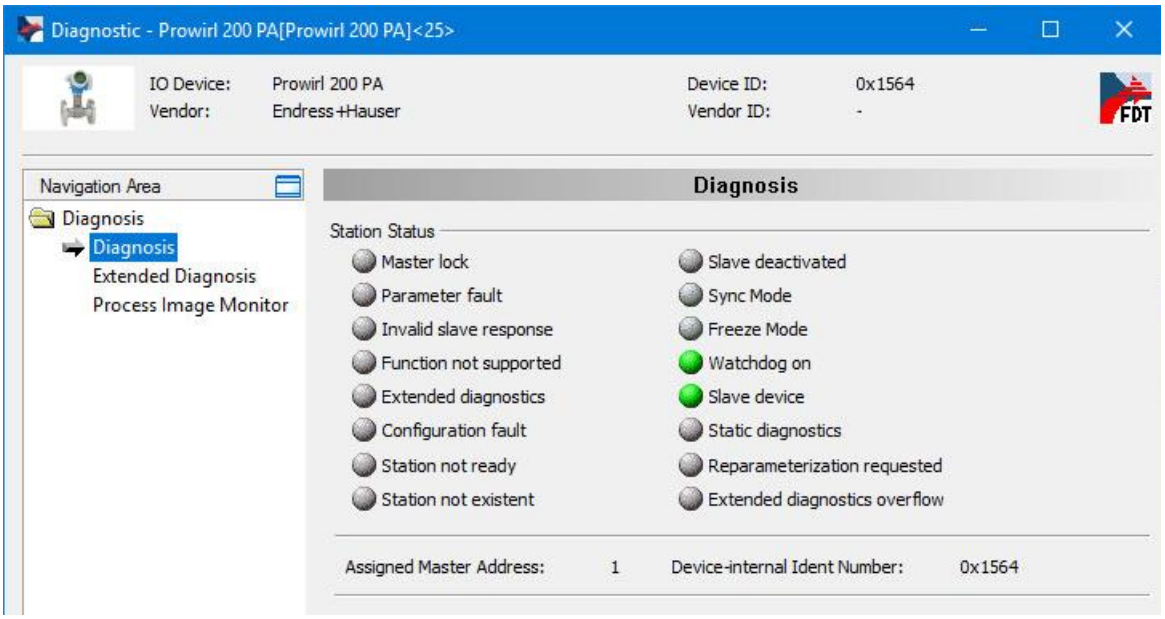
- Right-click on the Prowirl200 and select the option “Connect”:



- This connects the Prowirl200:

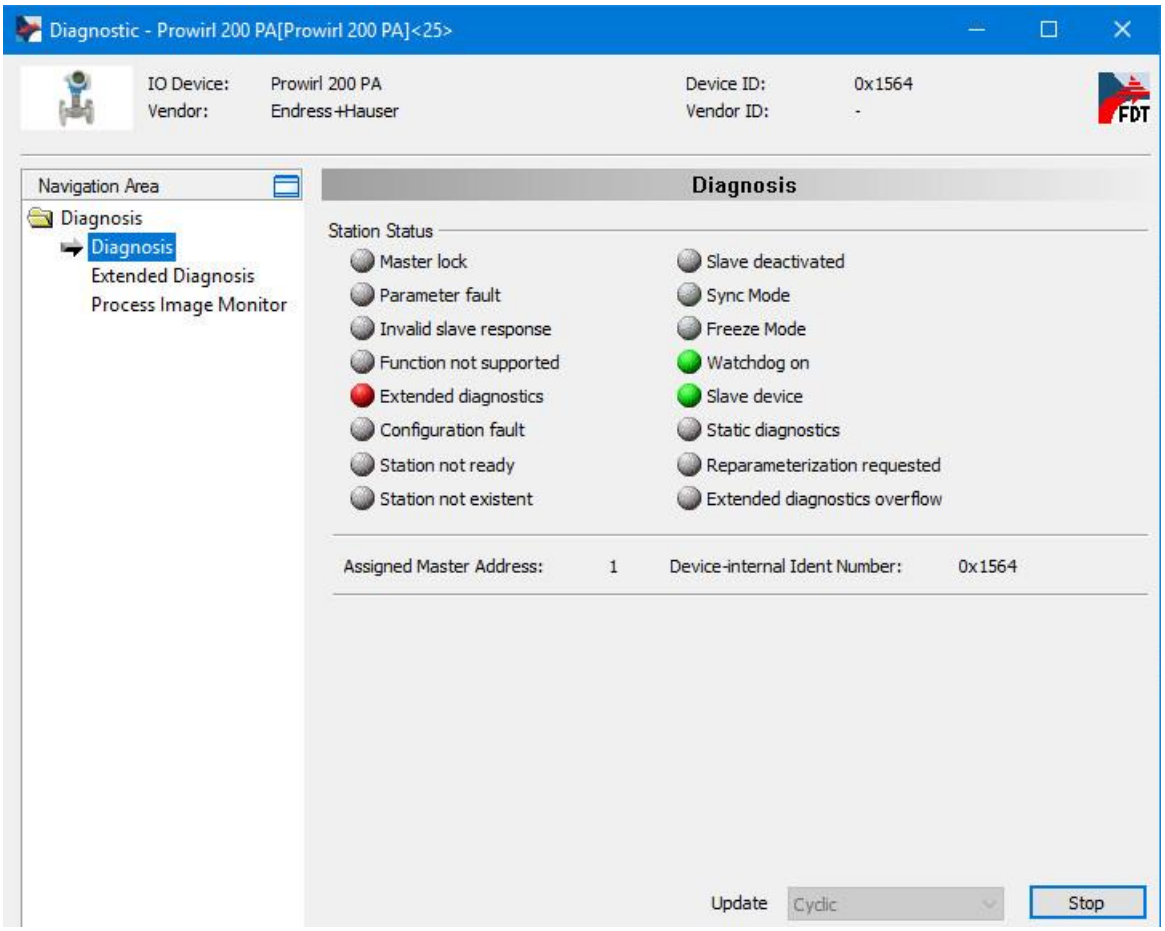


- Double-click on the device for displaying the Diagnostic data:
  Main diagnostics are displayed on window the menu “Diagnosis”:



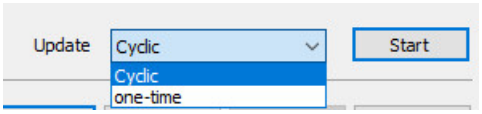
- However, the reading of diagnostics is a one-shot reading during callup and for a cyclic update it must be triggered by clicking on the button “Start”:

- Read diagnostics:

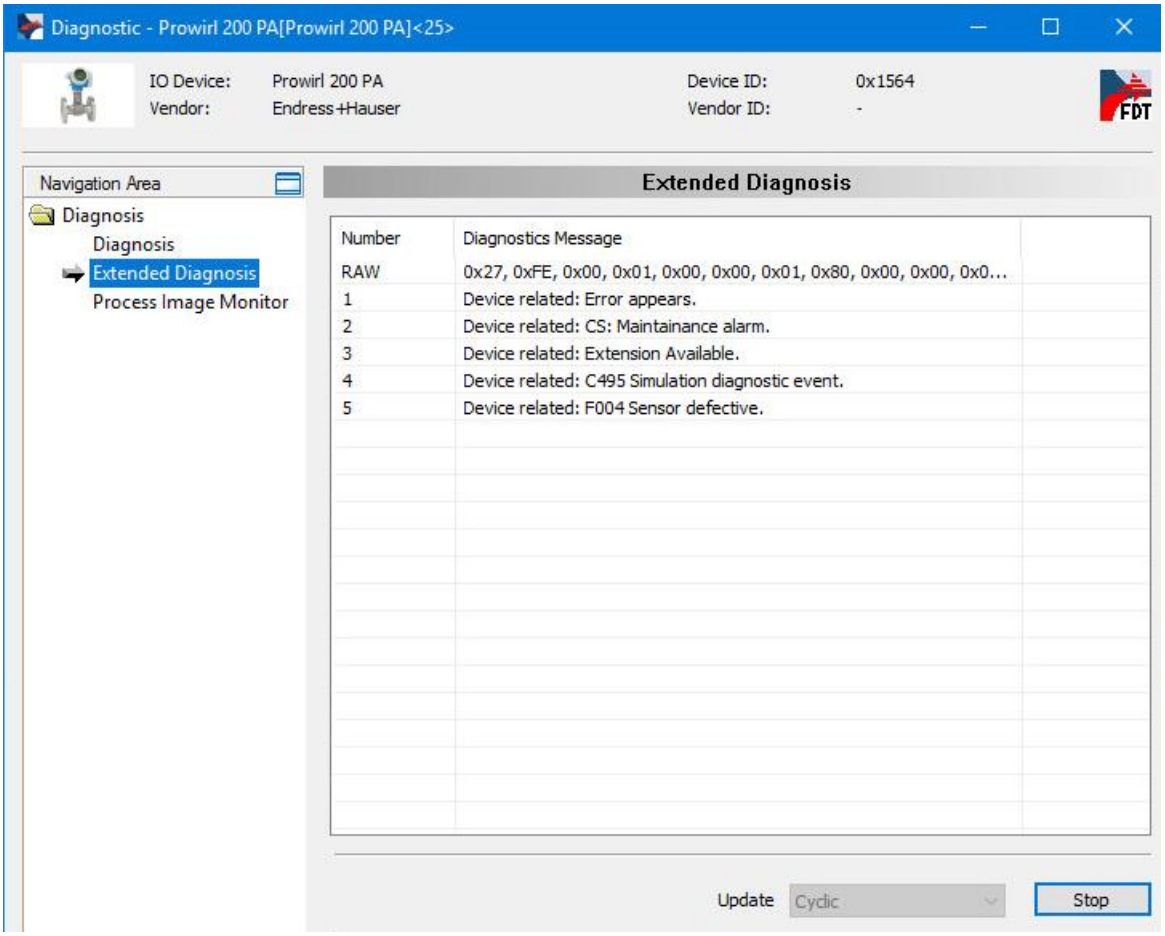


In this example, the diagnostics are read cyclically:

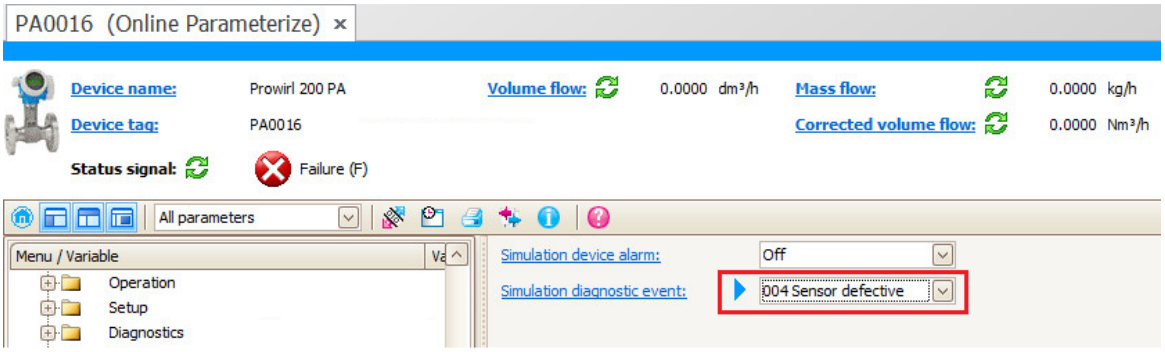
Another update option (“one-time”) is available for reading diagnostics only for one cycle:



- Click on the button “Extended Diagnosis” for displaying more details:
  As for the previous diagnosis menu, the button “Start” must be triggered:

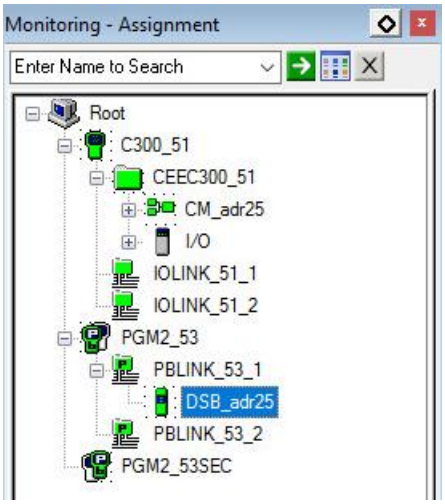


In this example, diagnostics messages are received because the event “004 Sensor defective” is simulated from the deviceDTM in FieldCare:

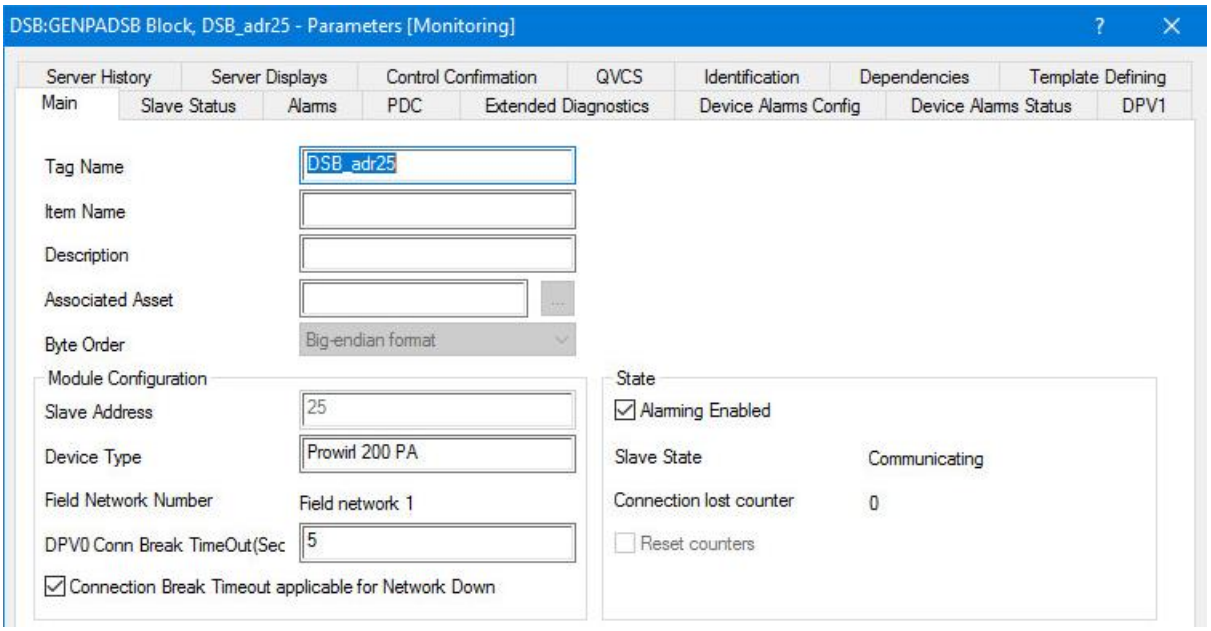


3.6.2 DSB Slave Monitoring

- Double-click on “DSB_adr25”:

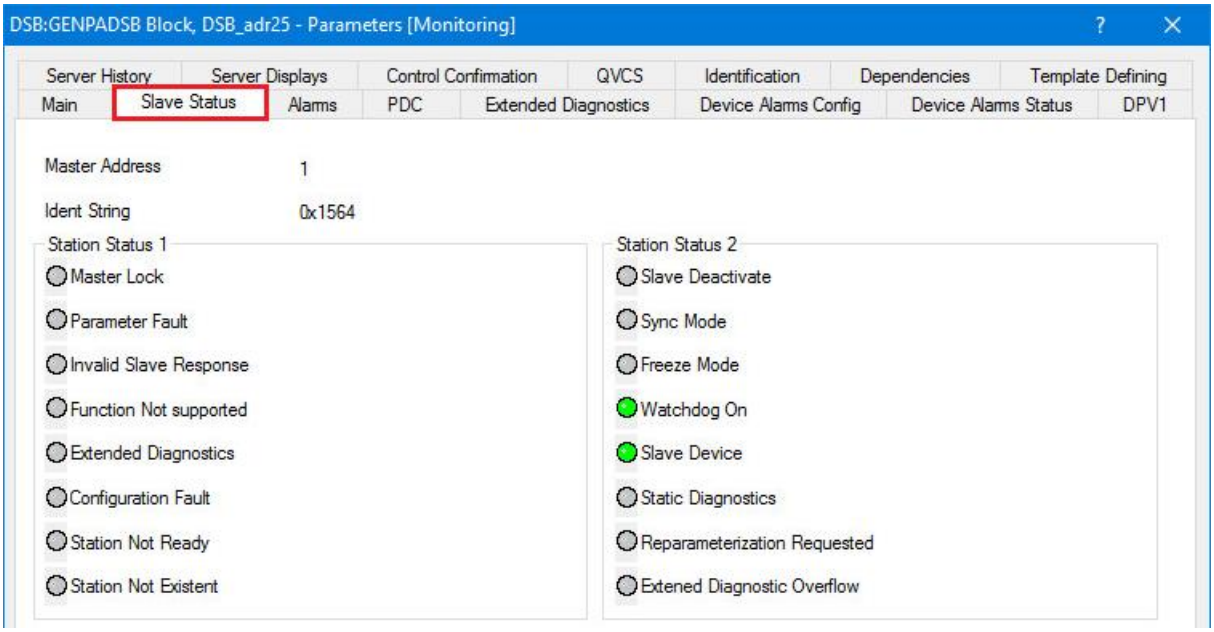


- This displays the DSB Online window view:



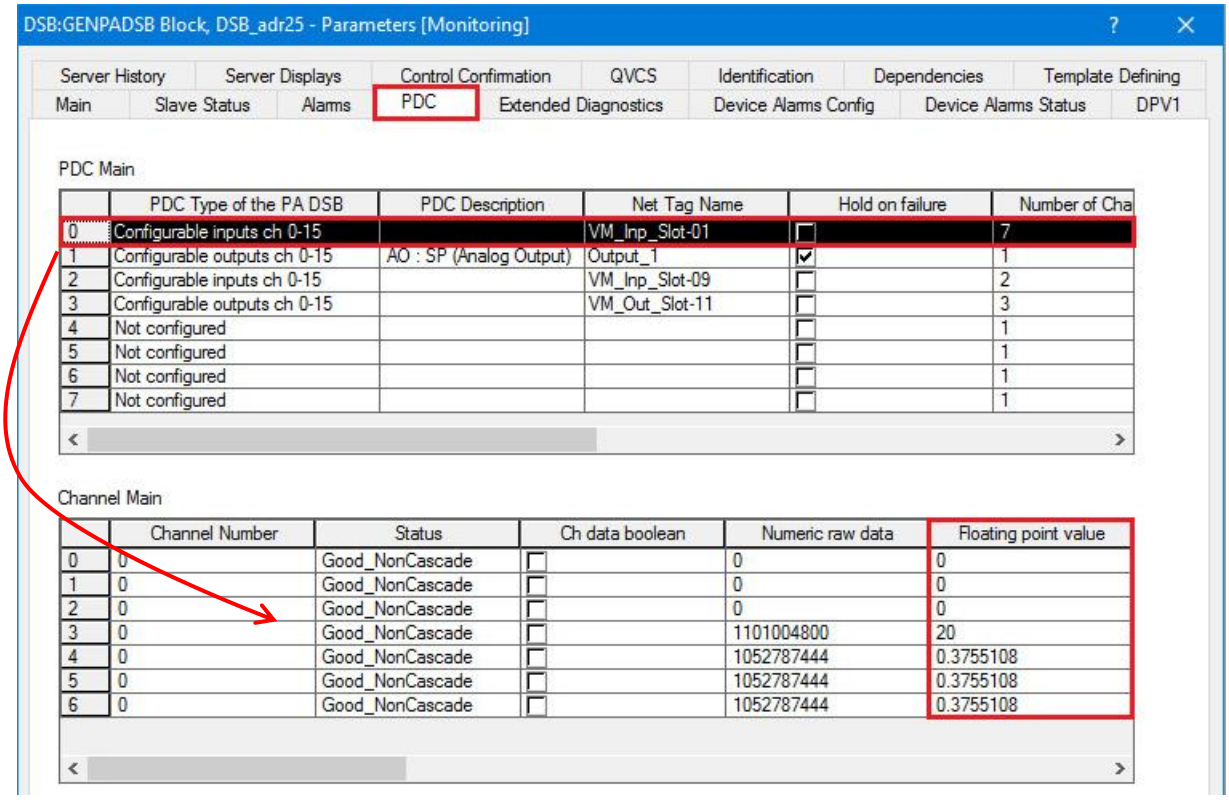
3.6.2.1 Slave Status

- Click on the tab "Slave Status" for displaying decoded Station status:



3.6.2.2 PDC

- Click on the tab "PDC" for displaying data:

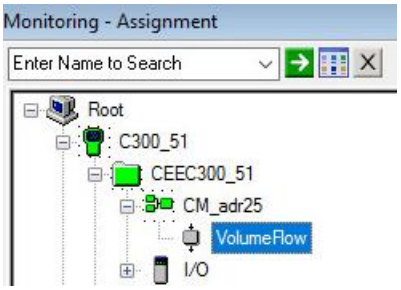


- In this example, the Virtual Module "VM_Inp_Slot-01" is selected. This displays all configured inputs of this Virtual Module (Four analog inputs and three totalizer values):
  - Received values
    AI1 = 0 dm^3/h (Volume flow)
    AI2 = 0 kg/h (Mass flow)
    AI3 = 0 Nm^3/h (Corrected volume flow)
    AI4 = 20 °C (Temperature)
    TOT1 = 0.375108 m^3
    TOT2 = 0.375108 m^3
    TOT3 = 0.375108 m^3

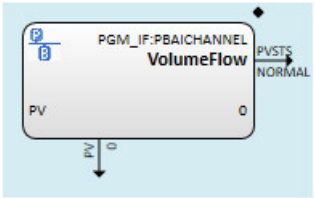
  These values are configured in the device and can be accessed via deviceDTM (refer to chapter 5.5.1)

3.6.3 Control Module

- Double-click on the Control module "CM_adr25":



- Process value and status are displayed:



4 Advanced Integration

This chapter describes the main workflow for integration of PROFIBUS devices into the Honeywell Field Device Manager by means of DTMs. As a result, field devices can be accessed for configuration and maintenance operations.

- Start the software FDM Client on the Flexstation:

- Click on the button “Login”:

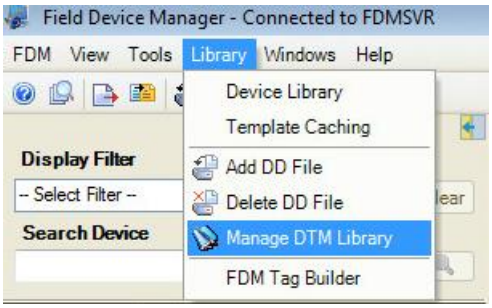
- Connection is in process:

- FDM Flexstation is connected to FDM Server:

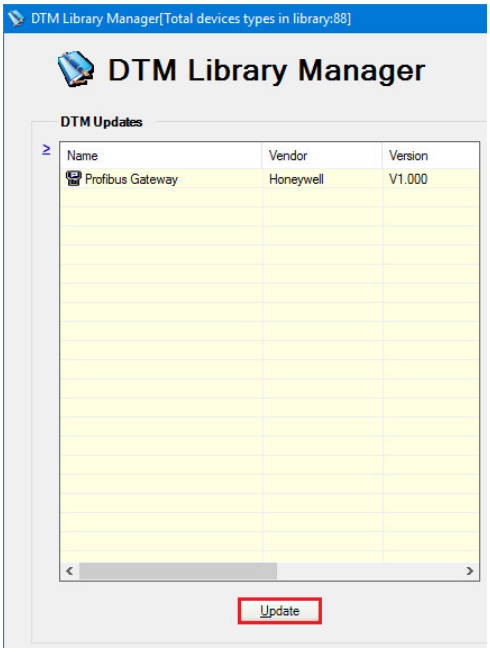
4.1 DTM Library Management

- Install all needed deviceDTMs on the Flexstation.

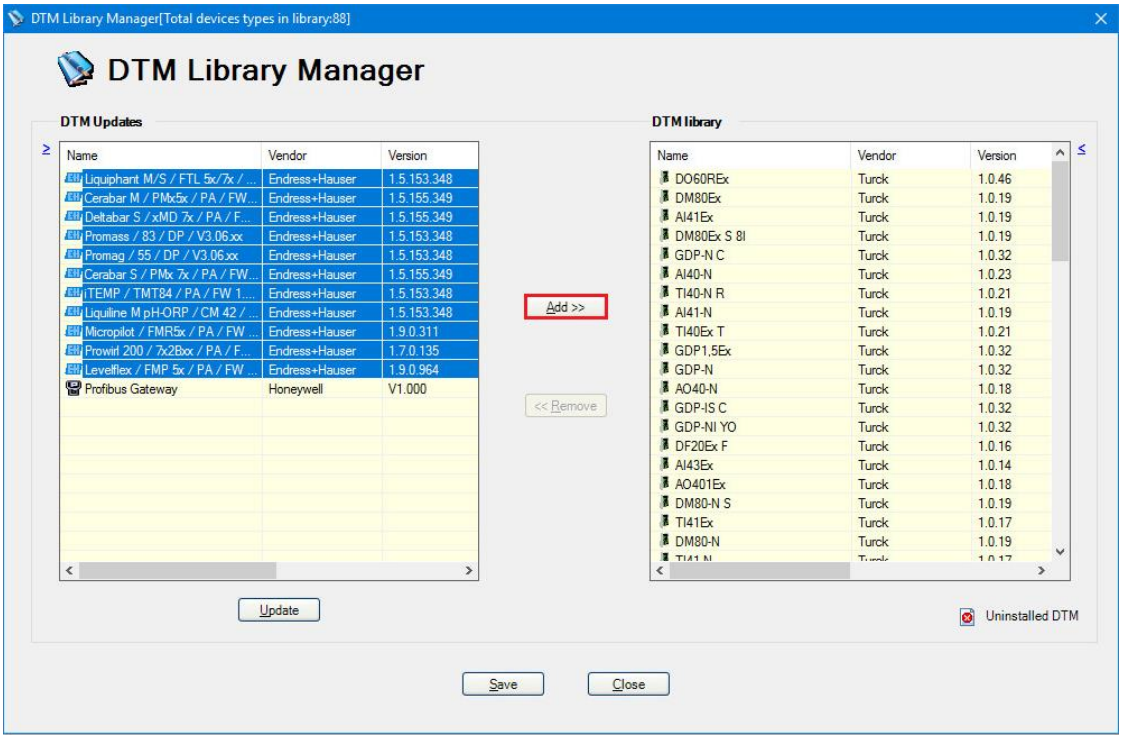
- Click on the menu “Library→Manage DTM Library”.



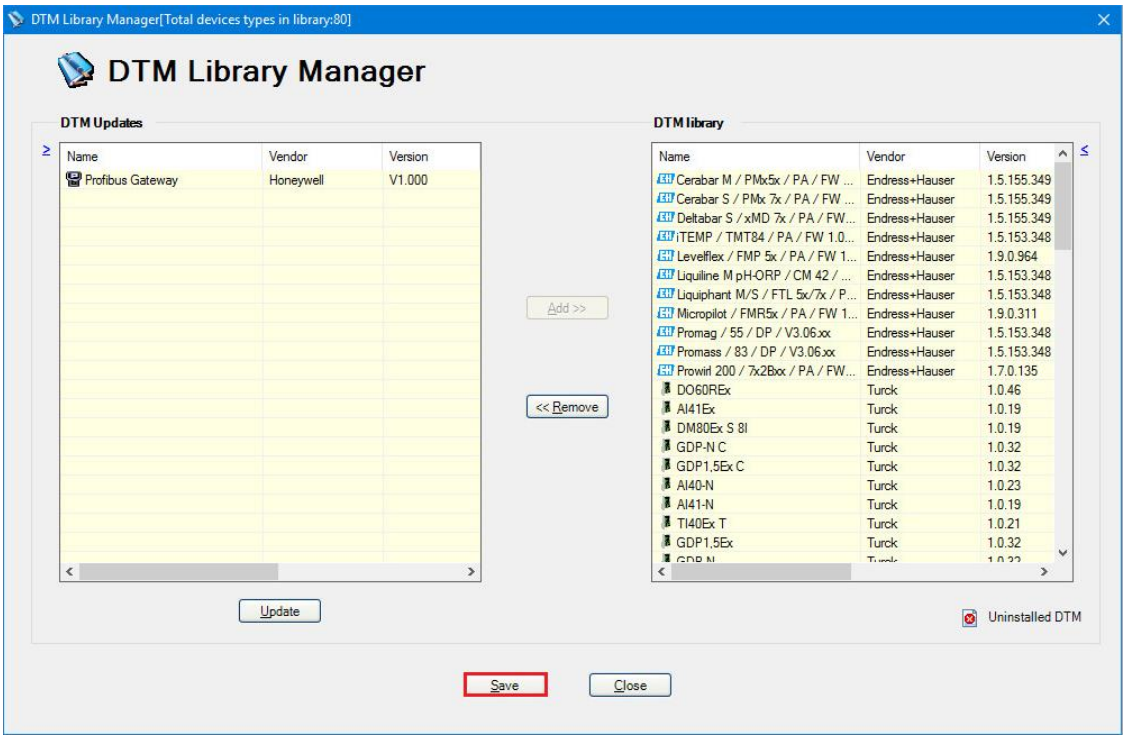
- Click on the button “Update” to update the DTM library:



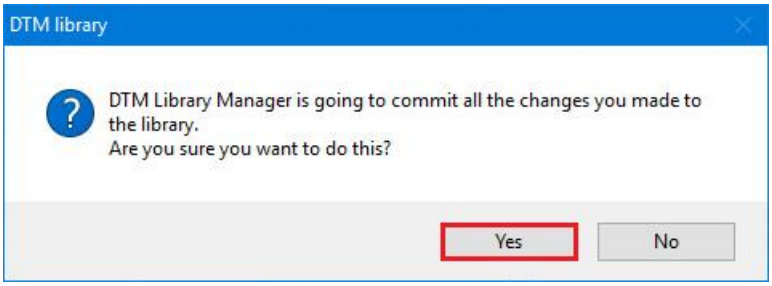
- Select all needed deviceDTMs and click on the button “Add”:



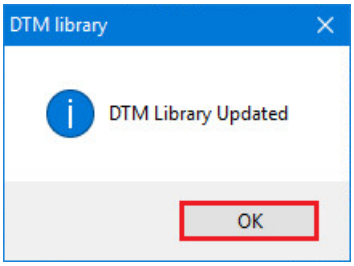
- Click on the button “Save”:



- Click on the button “Yes” to confirm the modifications:

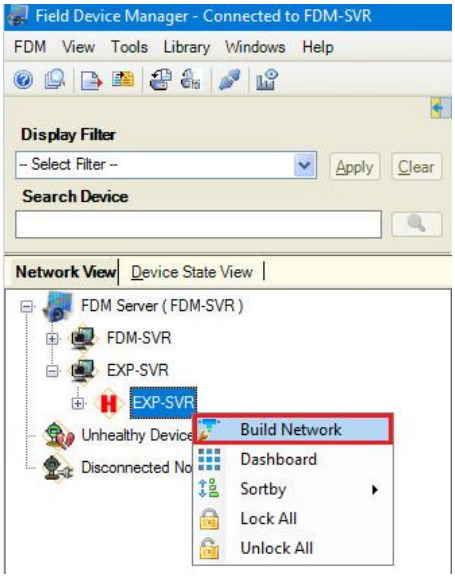


- Click on the button “OK”. This closes the window:

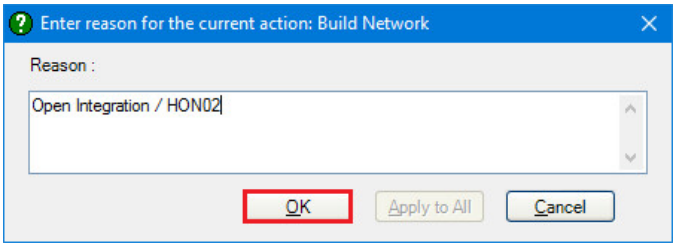


4.2 DeviceDTM Assignment

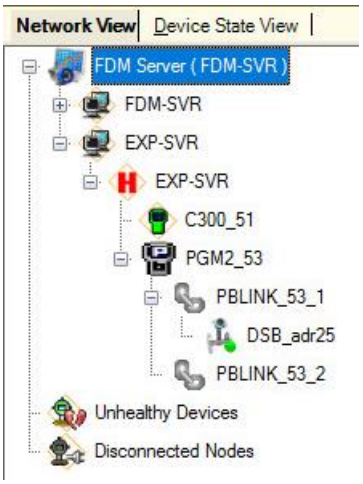
- Right-click on the field “430ESV1” and select the menu “Build Network”.



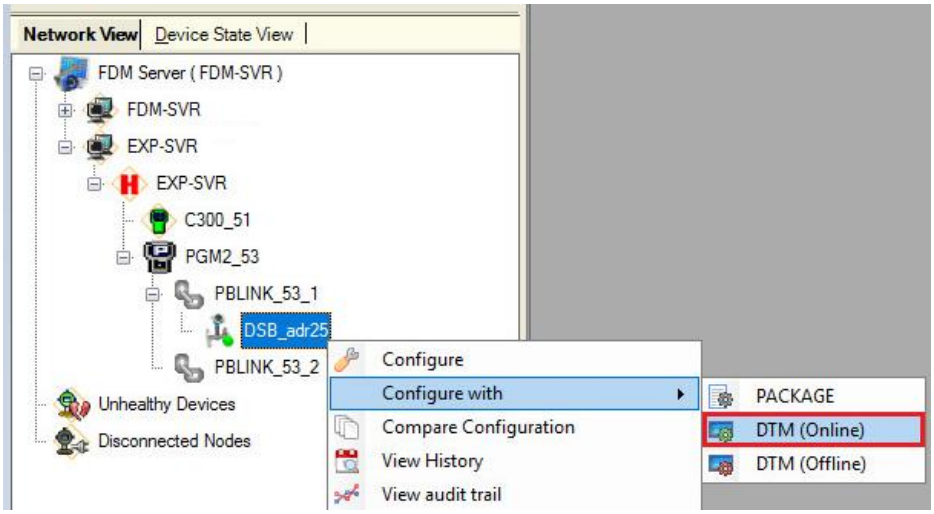
- Indicate a comment and click on the button “OK”:



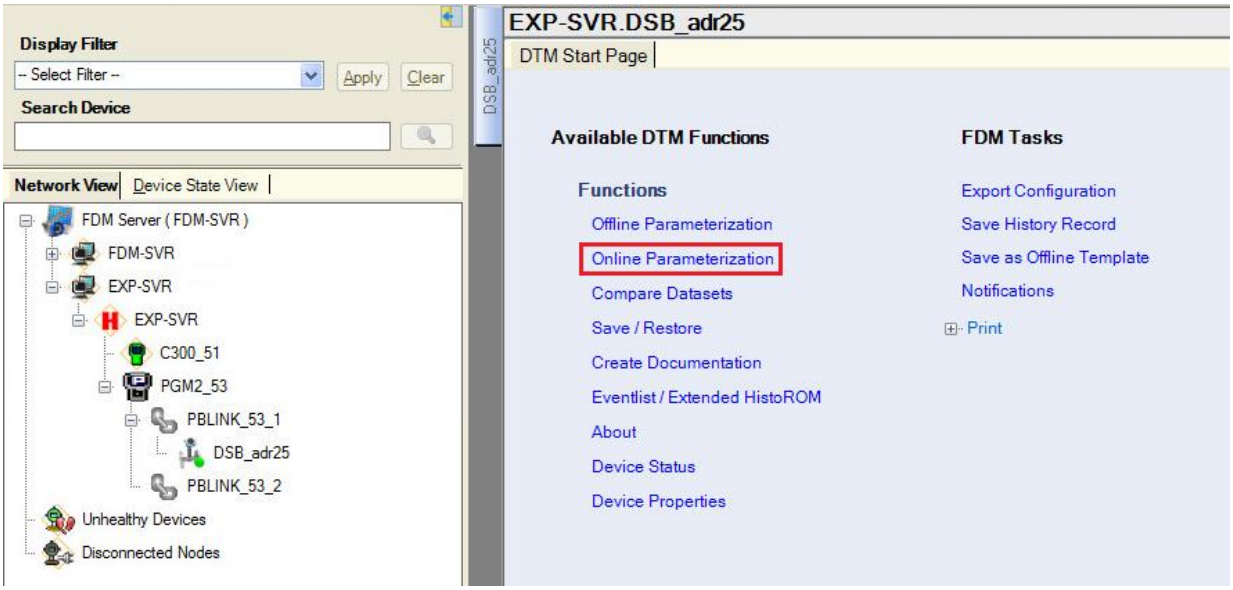
- This displays all connected devices:



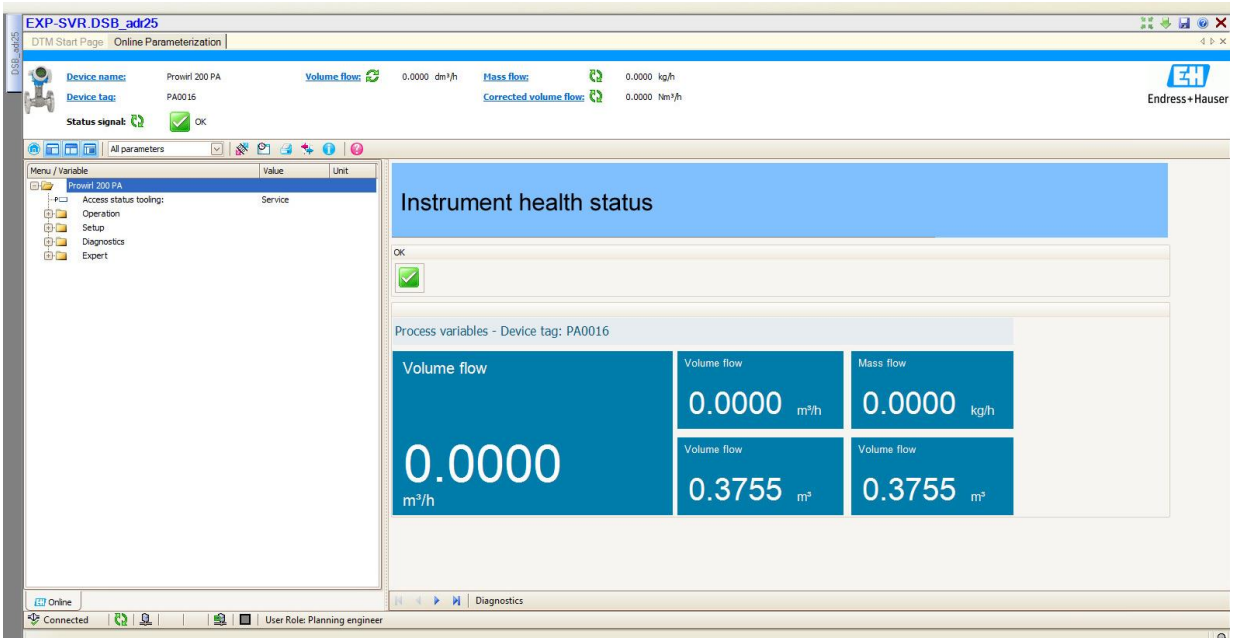
- Right-click on the Micropilot and select the option “Configure with→ DTM(Online)”.



- Click on the menu “Functions→Online Parameterization”:



- This opens the DeviceDTM Online Parameterization window:



5 Bypassed Tool Integration

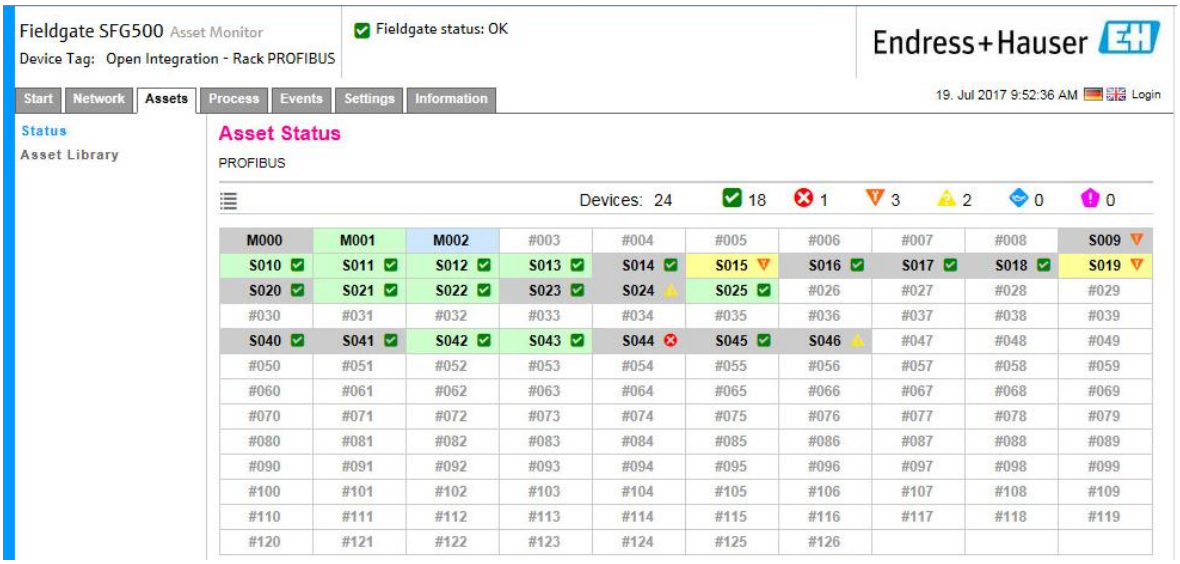
This chapter describes the alternative workflow for commissioning of the Endress+Hauser Plant Asset Management (PAM system) with independent access path via Fieldgate SFG500. As a result, the Endress+Hauser PAM system can access underlying PROFIBUS devices for device configuration and asset health monitoring.

5.1 Fieldgate SFG500 Browser

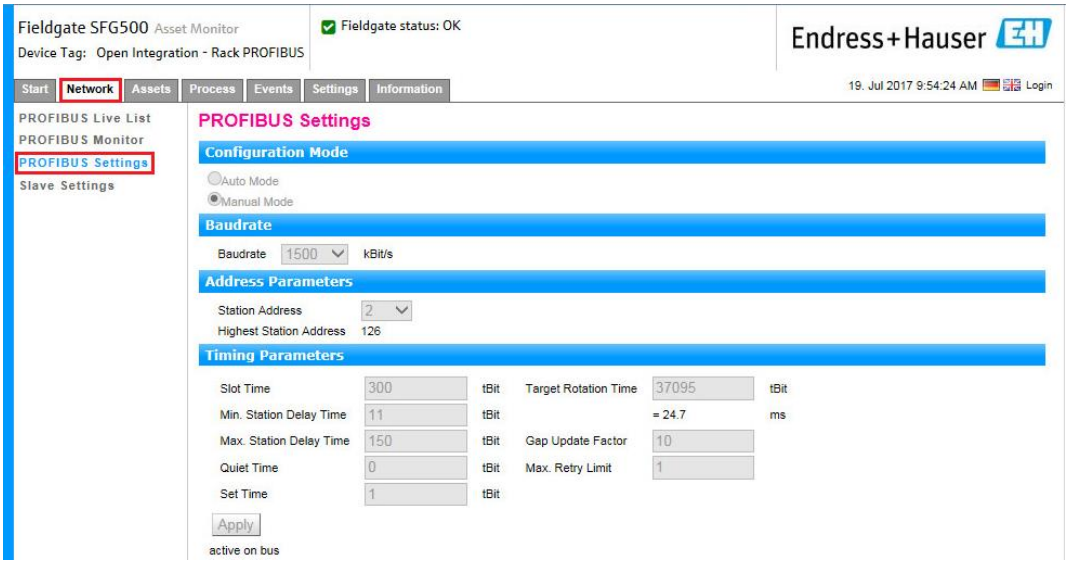
- Check that the SFG500 is connected to the engineering station network.

- Open the browser and enter the IP address of the SFG500, 10.126.104.253 (specific for this example):

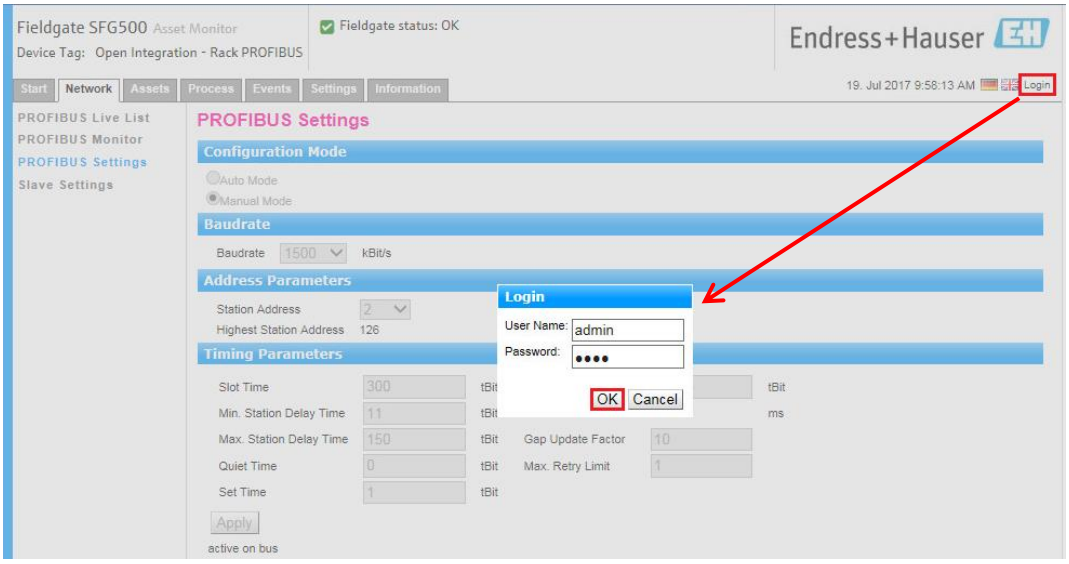
- The Fieldgate SFG500 main window is displayed. In this view are displayed all detected devices (Masters and slaves):



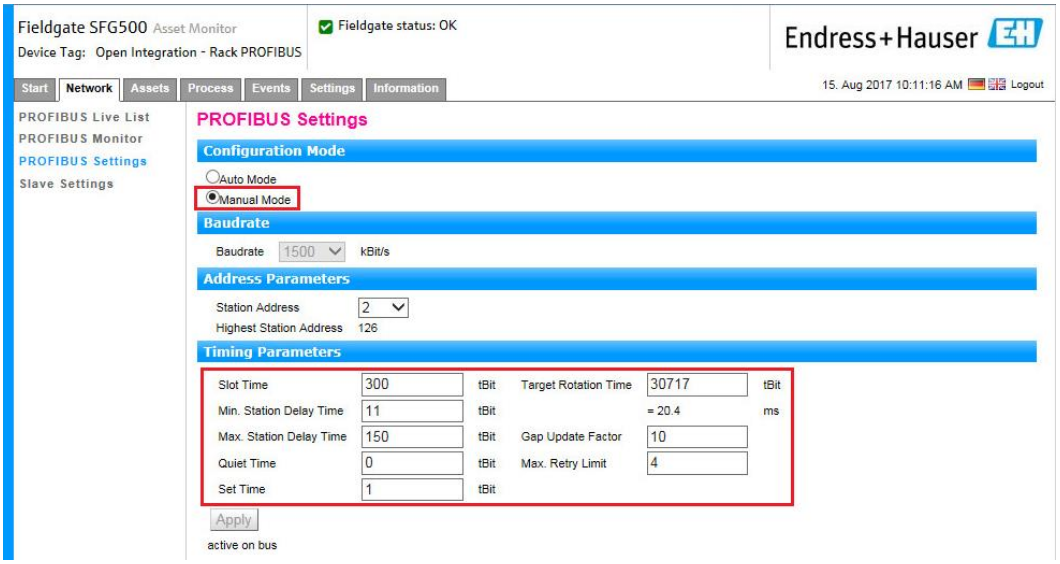
- Click on the tab “Network” and then on the field “PROFIBUS Settings” to check the PROFIBUS Settings, which have to correspond to these configured on the PROFIBUS master side:



- If some Timing parameters need to be changed, the advanced user login needs at first to be entered. Click on the button “Login” and enter the login parameters. Then click on the button “OK”:



- Select the “Manual Mode” in the “Configuration Mode” option and change the required Bus timing settings in the “Timing Parameters” option:

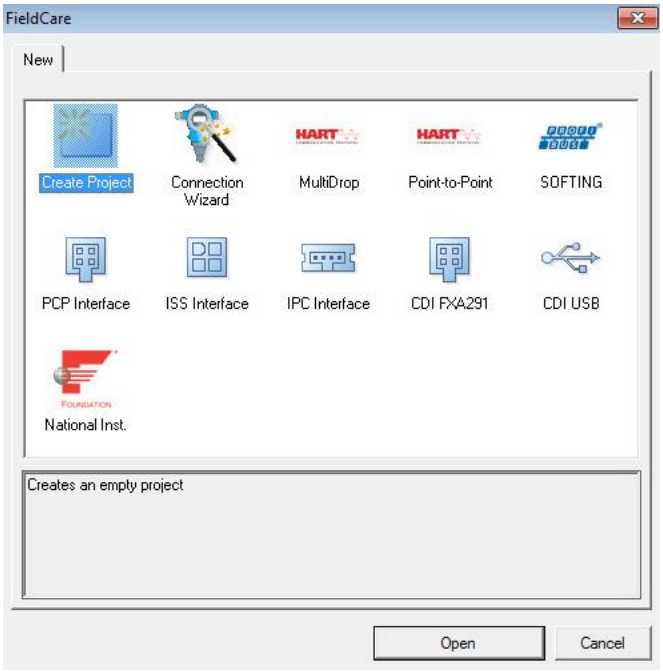


Changing any bus parameters will enable the button “Apply”. Click on the button “Apply” to save the new configuration.

5.2 Endress+Hauser “SFG500” DTM Configuration

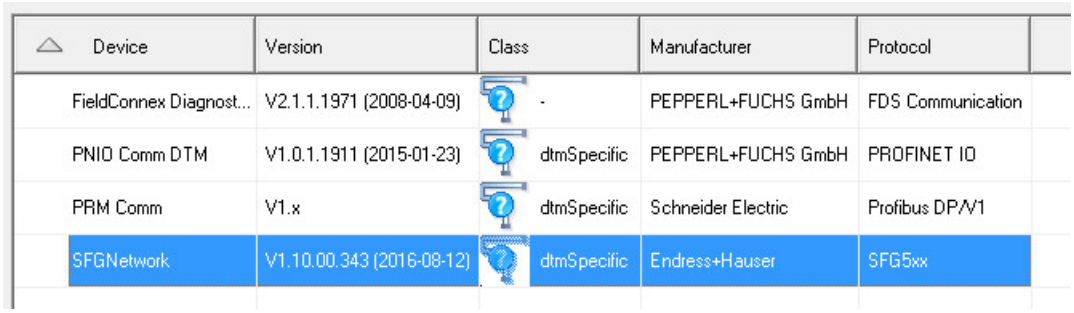
- Start the application FieldCare:

- Create a new project:

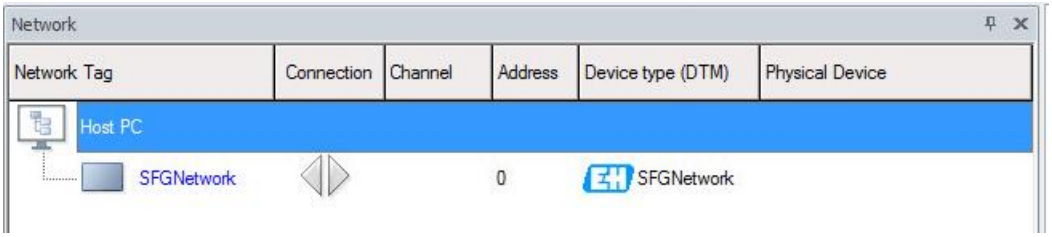


- Right-click on the Network Tag “Host PC” and select the menu ”Add Device”:

- Select the “SFGNetwork” CommDTM and click on the button “OK”:



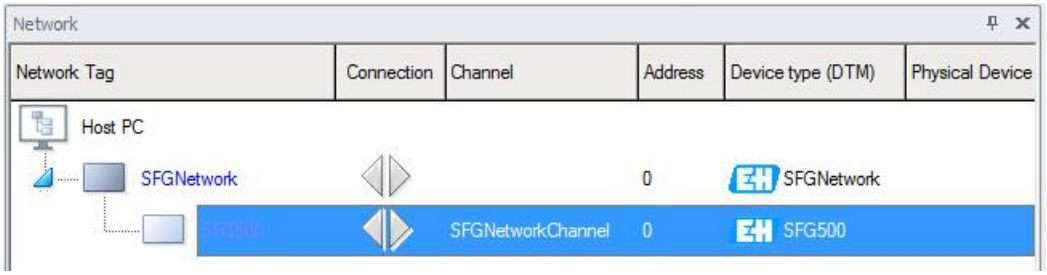
- “SFGNetwork” CommDTM is inserted in the project:



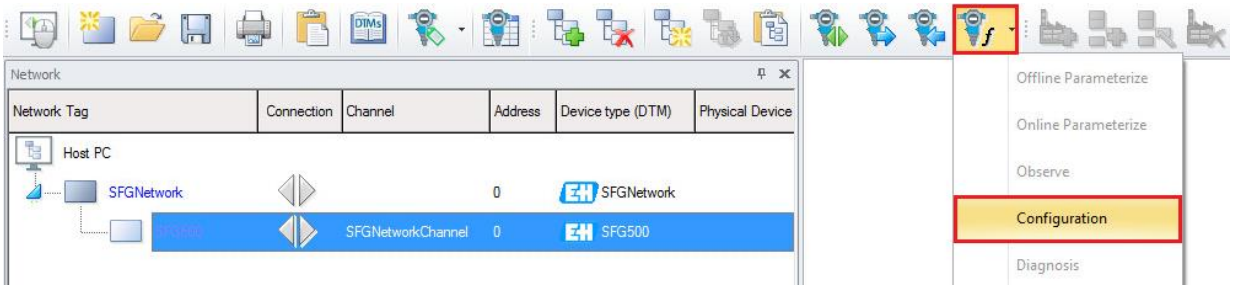
- Right-click on the “SFGNetwork” CommDTM and select the menu “Add Device...”:

- Select the “SFG500” CommDTM and click on the button “OK”:

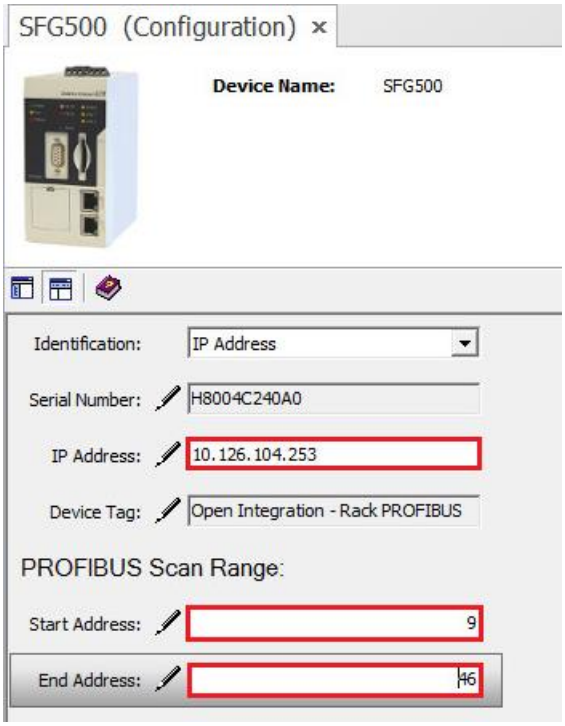
- “SFG500” CommDTM is inserted in the project:



- Select the “SFG500” CommDTM, then click on the shortcut button “Device Functions” and select the menu “Configuration”:



- Configure the IP address of the SFG500 as well as the scanning range. In this example, the SFG500 IP address is 10.126.104.253 and the scanning range is set between PROFIBUS address 10 and 46:



- Close the SFG500 configuration window.

5.3 Adding Devices in the Network

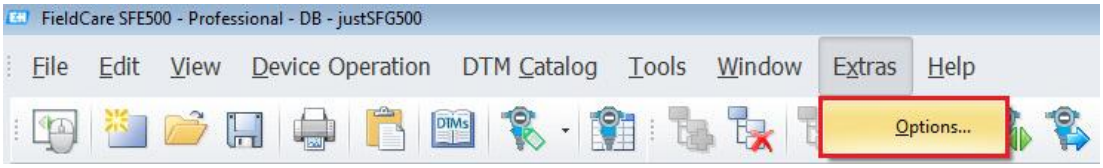
5.3.1 FieldCare Scanning Function Create Network

The function "Create Network" is used to scan the PROFIBUS network and to insert automatically the correct corresponding deviceDTMs in the project.

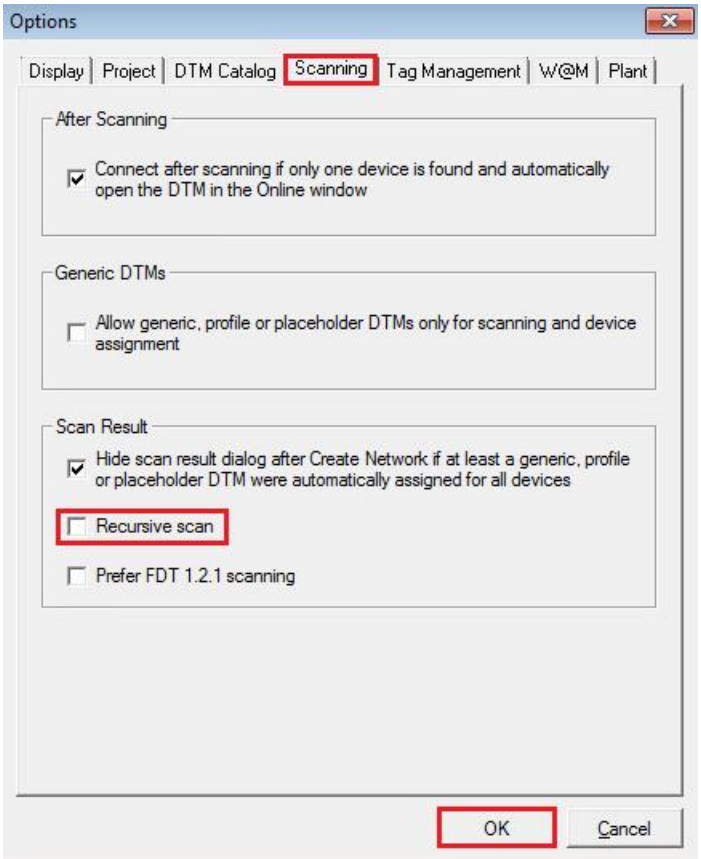
5.3.1.1 FieldCare Recursive Scan Option

The FieldCare Scanning option "Recursive scan" must be disabled in FieldCare 2.11 for successful scanning of the Pepperl+Fuchs CommDTM "HD2-GTR-4PA".

- Select the menu "Extras→Option":



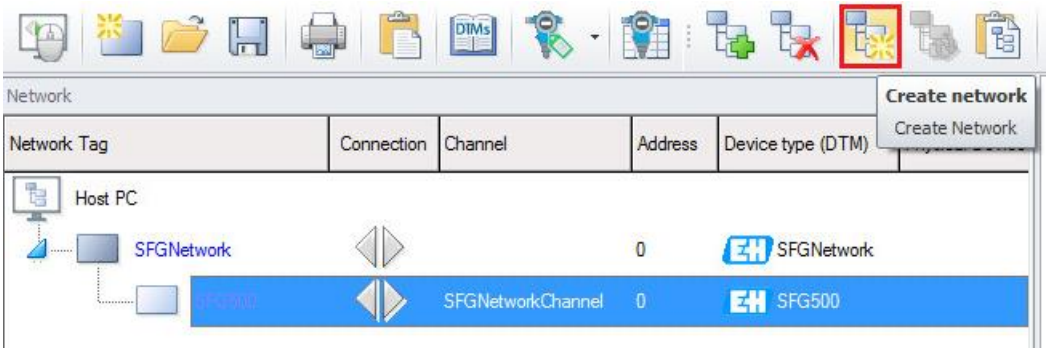
- Select the tab "Scanning" and disable the checkbox "Recursive scan":



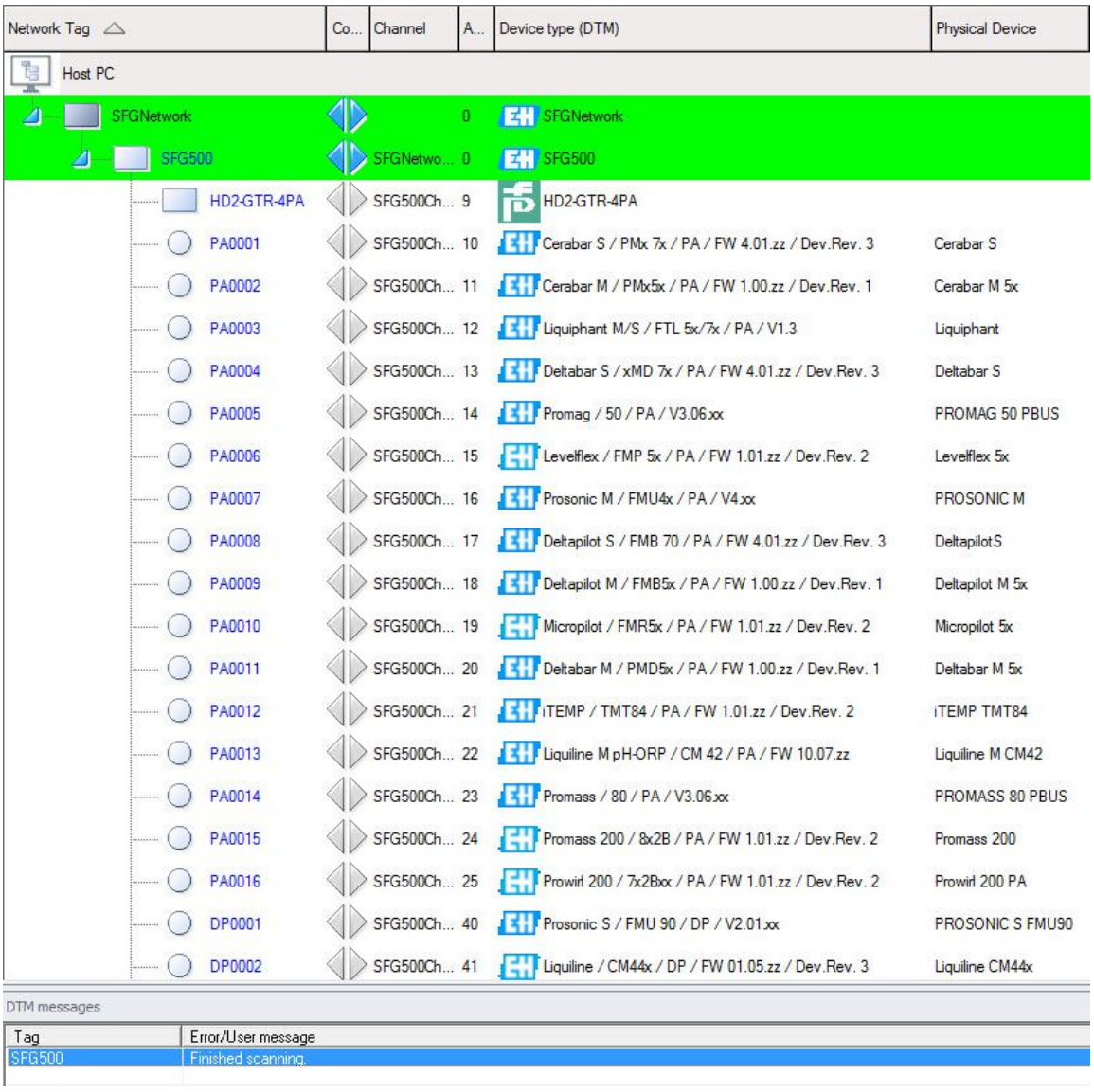
- Click on the button "OK" to close the window.

5.3.1.2 FieldCare Scanning Function Create Network

- Select the "SFG500" CommDTM and click on the shortcut button "Create Network":



- This example displays the scanning result of the Open Integration PROFIBUS rack, including the HON02 topology devices:



Remarks about the "Create Network" function

- Depending on the amount of connected devices on the PROFIBUS network, the function "Create Network" may not always be successfully performed and may lead to unexpected error messages. Please refer to chapter 5.3.1.3 for configuring the FieldCare scanning function in bigger PROFIBUS networks.

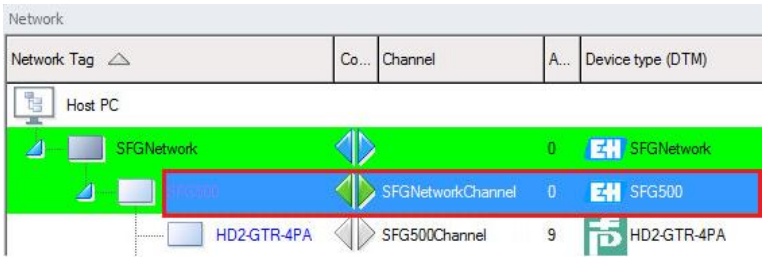
- After a successful network scanning, it is recommended to save the project and close FieldCare and then to re-open the project to prevent any memory overconsumption of the FieldCare FMPFrame.exe32 process. Errors may occur if the FMPFrame.exe*32 process exceeds the memory consumption of 1.2 GB.

- The Pepperl+Fuchs "H2-DMA" CommDTM is not scanned successfully. It must be added manually. Please refer to chapter 5.4.1.2.

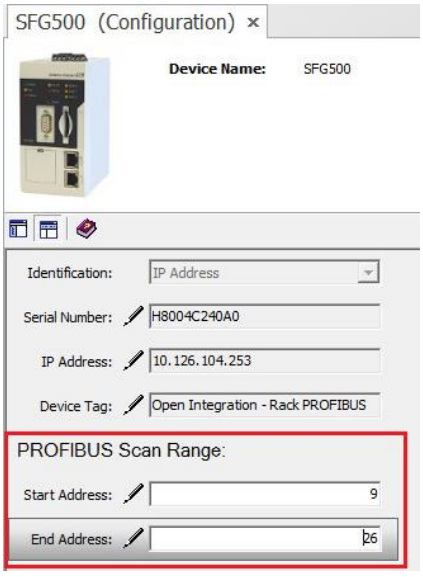
5.3.1.3 FieldCare Create Network Range Address

For scanning bigger PROFIBUS networks, it's recommended to split the SFG500 PROFIBUS Scan Range in parts in the SFG500 settings and to execute the FieldCare scanning function for each of this range.

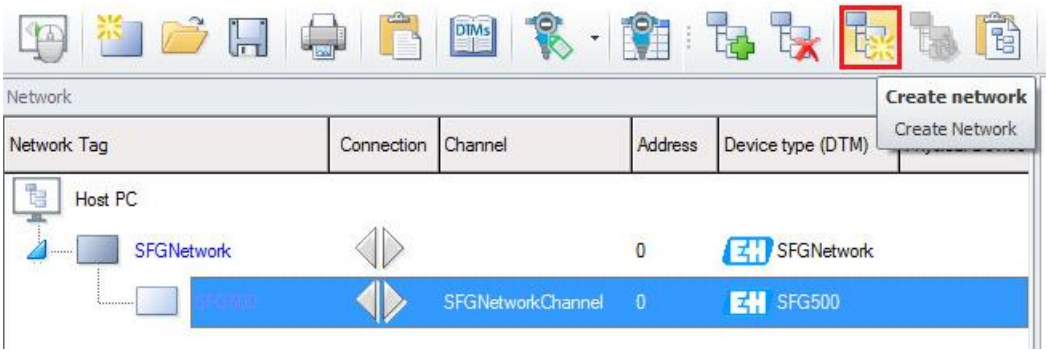
- Double-click on the SFG500:



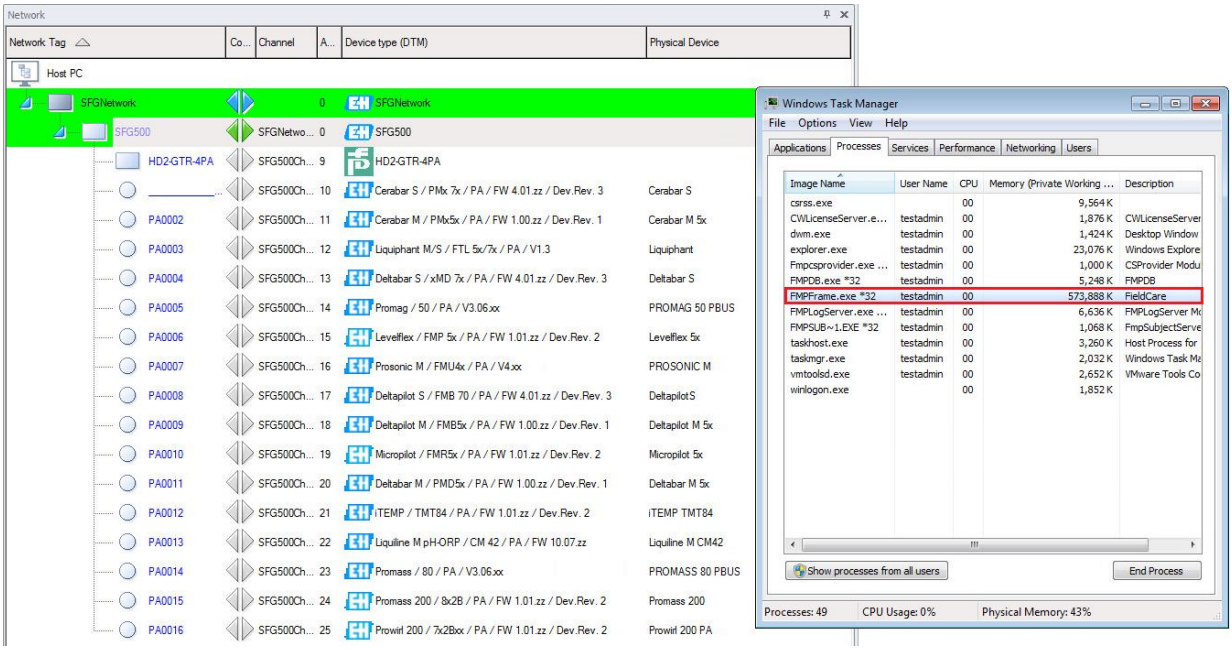
- Configure an adequate range, for example from address9 to 26:



- Execute the function “Create Network”:



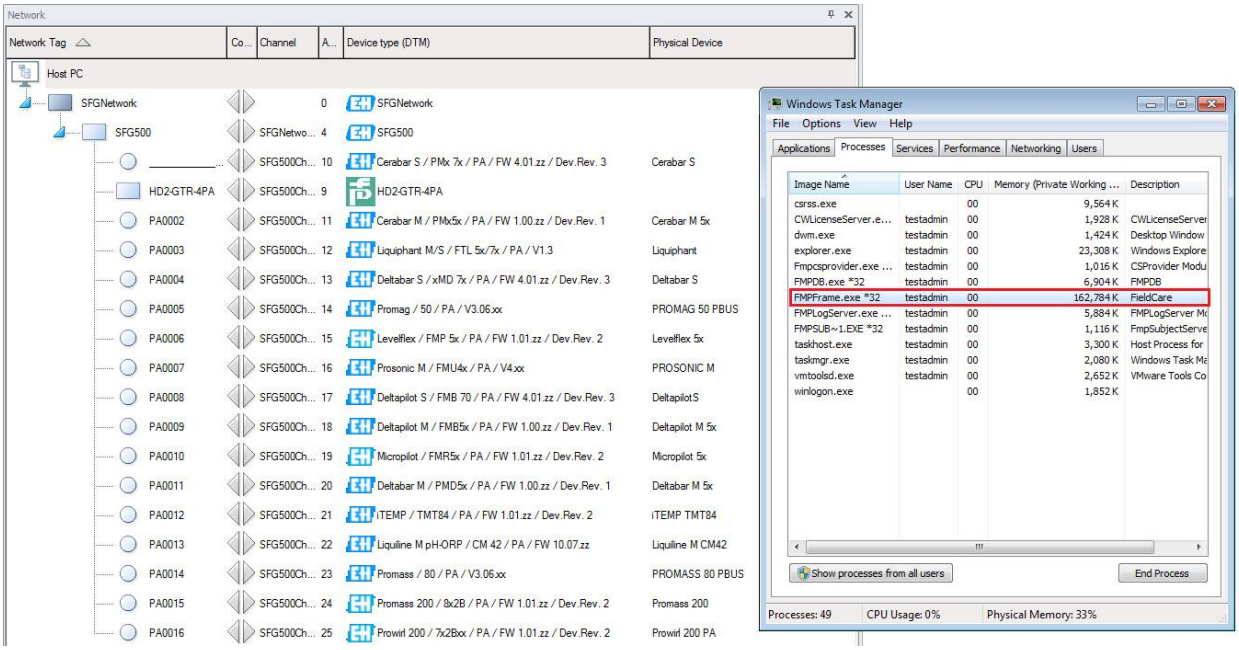
- Scanned devices and FMPFrame.exe*32 process memory consumption:



FMPFrame.exe*32 consumes 573.8 MB memory.

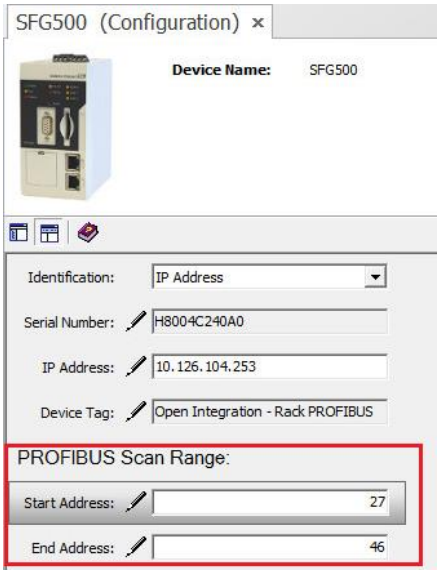
- Save the project and close FieldCare.

- Start FieldCare and open the current project:

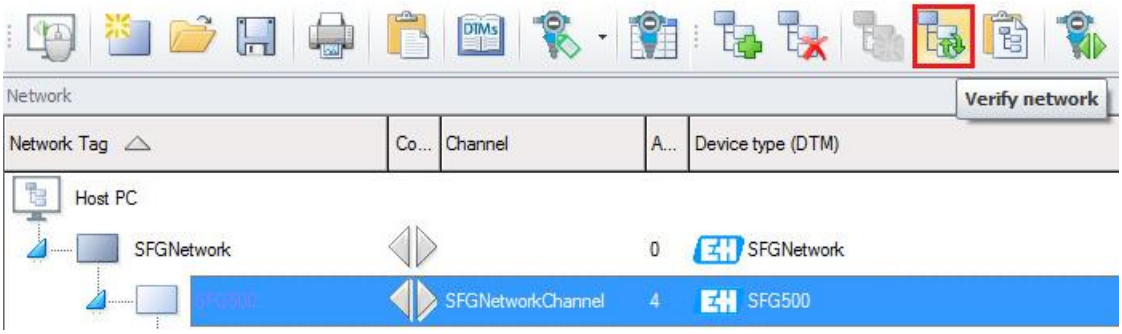


FMPFrame.exe*32 consumes 162.7 MB memory.

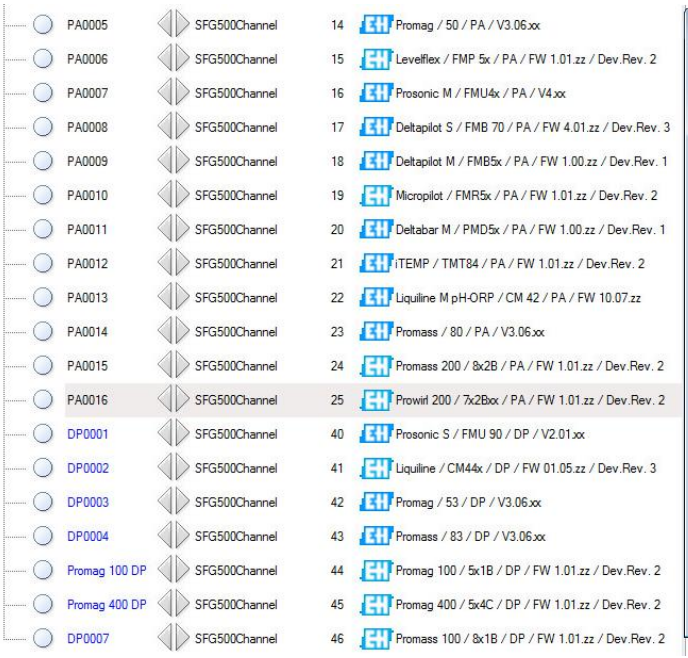
- Configure the next PROFIBUS Scan Range, for example from address 27 to 46:

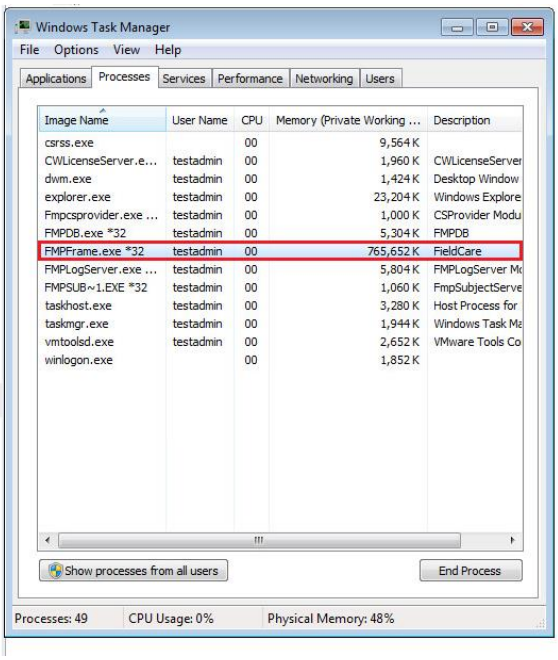


- Select the function “Verify Network” (The function “Create Network” is only executed the first time):



- Scanned devices and FMPFrame.exe*32 process memory consumption:

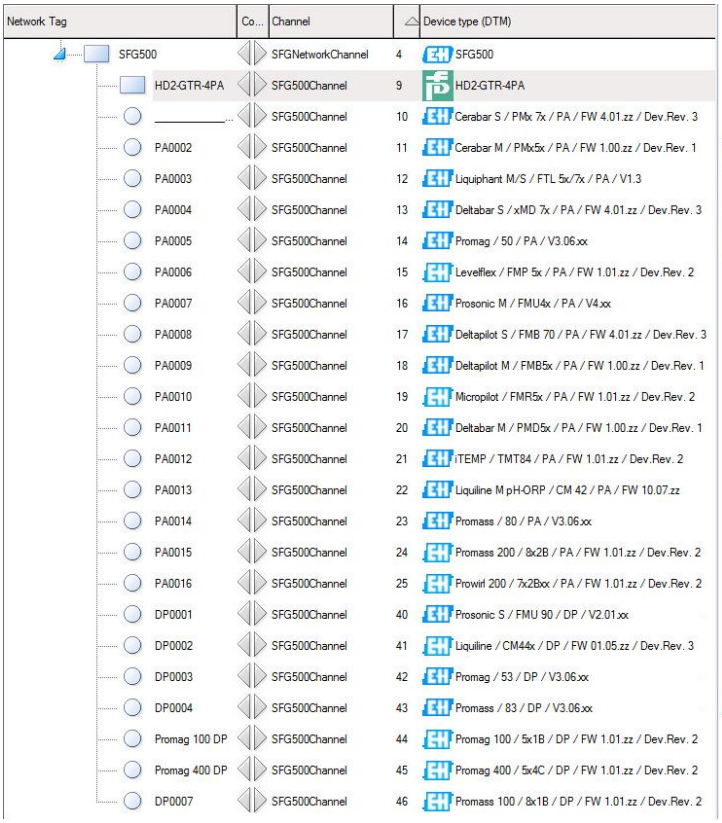


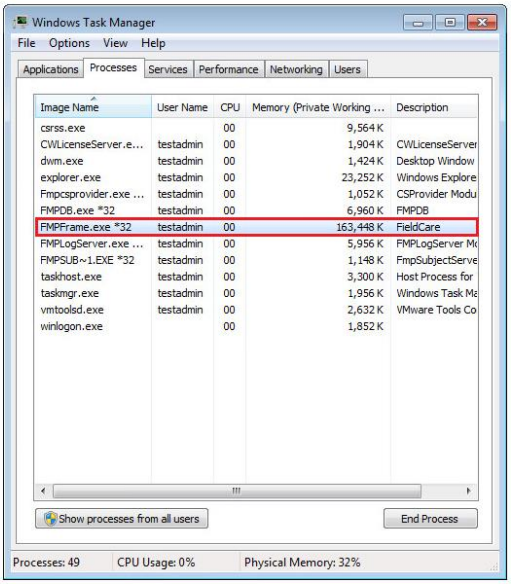


FMPFrame.exe*32 consumes 765.6 MB memory.

- Save the project and close FieldCare.

- Start FieldCare and open the current project:





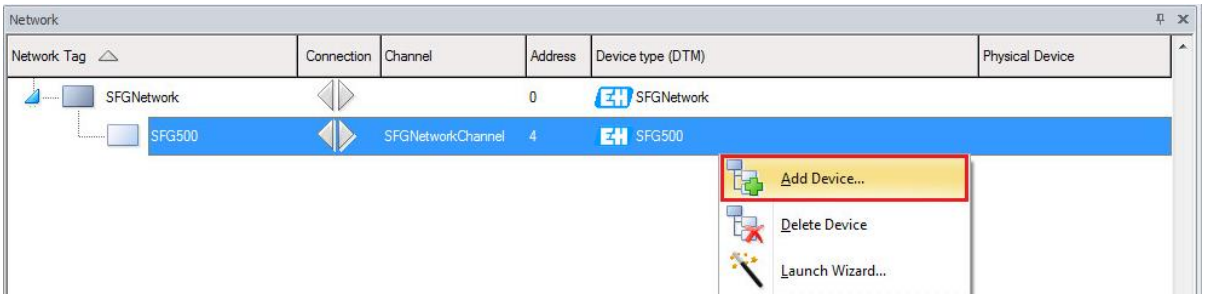
FMPFrame.exe*32 consumes 163.4 MB memory.

- The project is now ready for use.

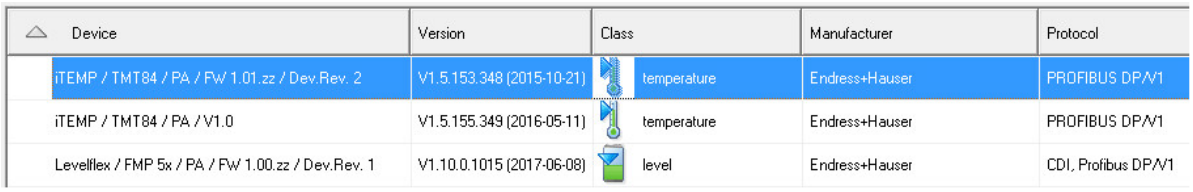
5.3.2 Adding Manually a Device

5.3.2.1 Adding a PROFIBUS Device

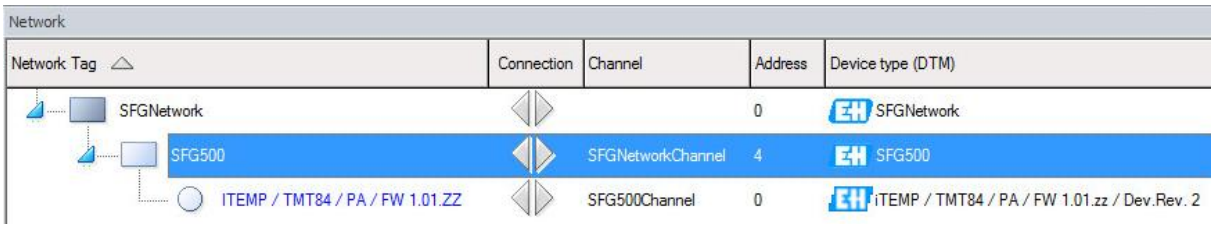
- Right-click on the “SFG500” CommDTM and select the menu “Add Device...”



- Select the required deviceDTM, for example the TMT84 and click on the button “OK”:

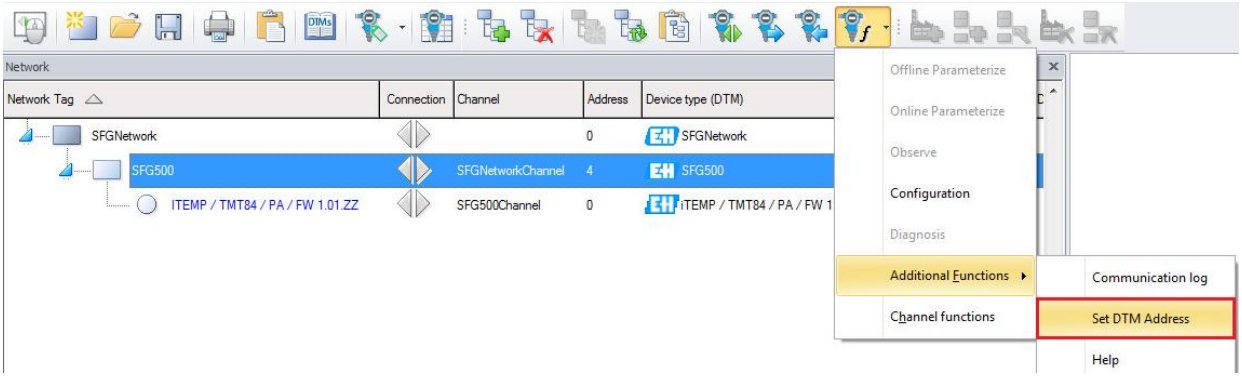


- This inserts the deviceDTM in the project:

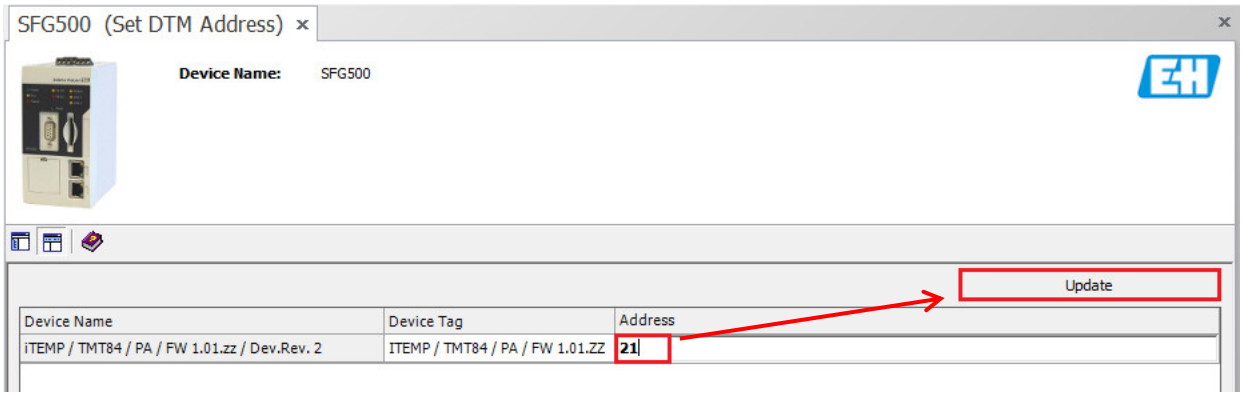


5.3.2.2 DeviceDTM PROFIBUS Address Configuration

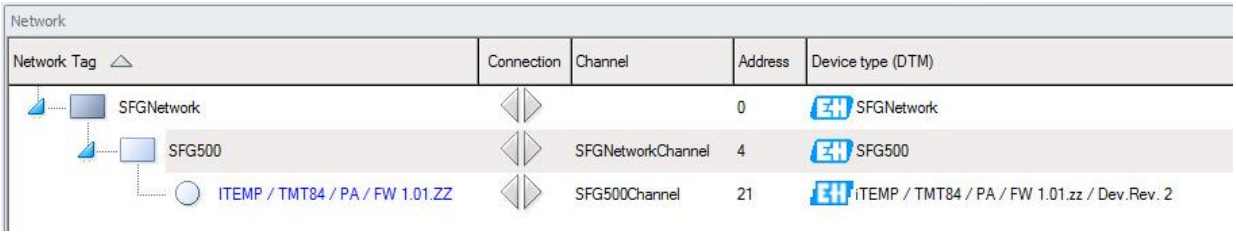
- Right-click on the “SFG500” CommDTM and click on the shortcut button “Device Functions” then on the menu “Additional Functions→Set DTM Address”:



- Update the PROFIBUS address and click on the button “Update”. In this example, the PROFIBUS address is set to “21”:



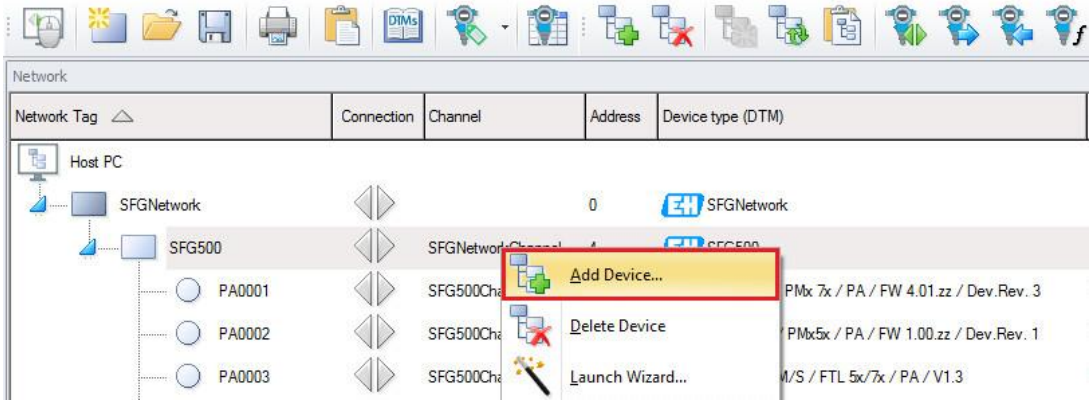
- This updates the PROFIBUS address in the project view:



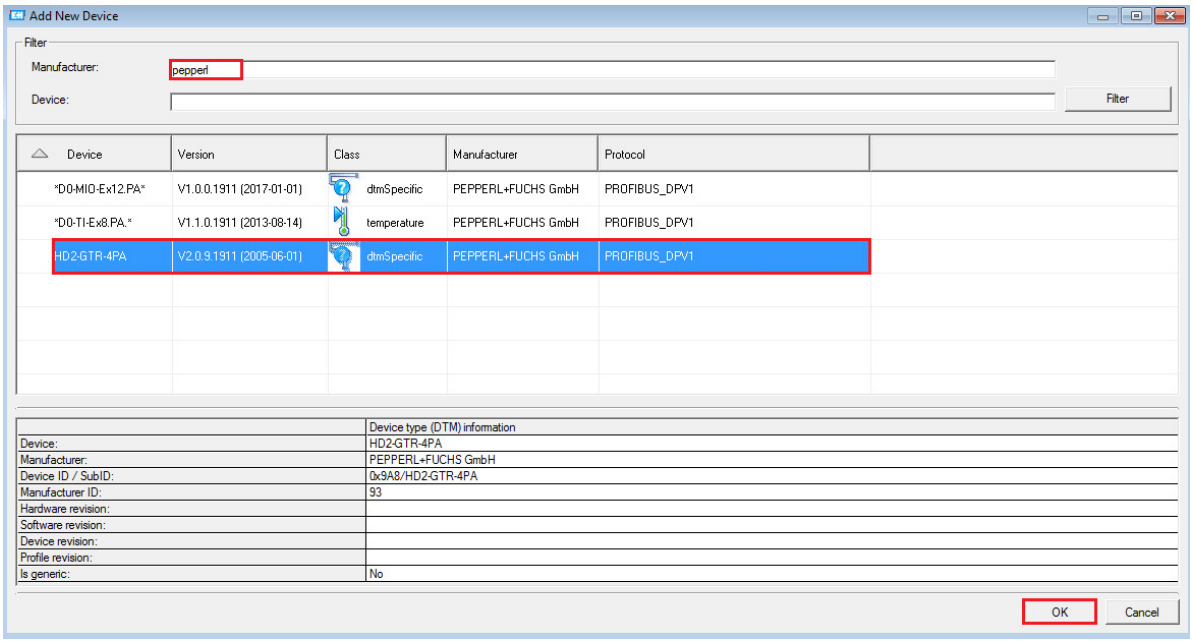
5.4 Pepperl+Fuchs Gateway Module

5.4.1.1 Adding the Pepperl+Fuchs CommDTM "HD2-GTR-4PA"

- Right-click on the "SFG500" CommDTM and select the menu "Add Device..."

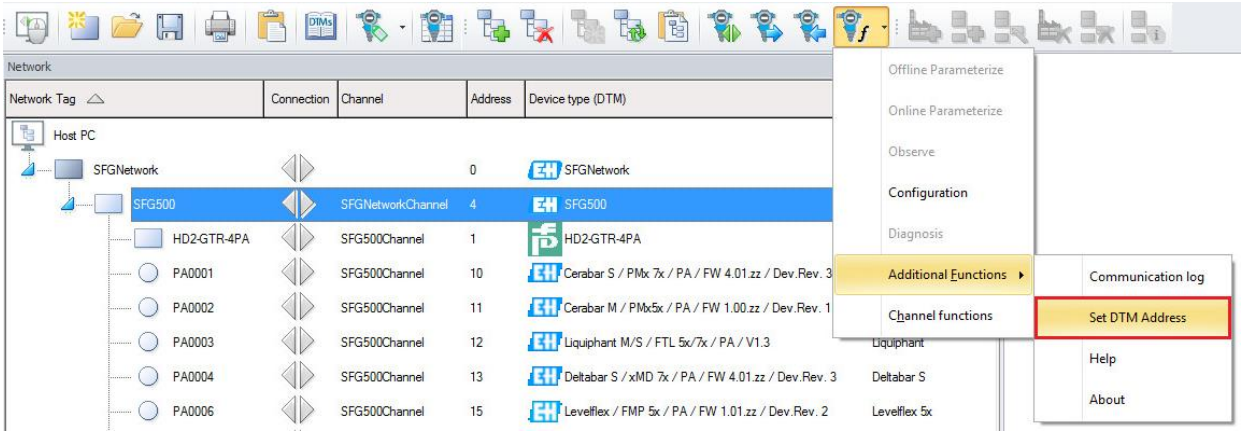


- Select the Pepperl+Fuchs "HD2-GTR-4PA" CommDTM and click on the button "ok".

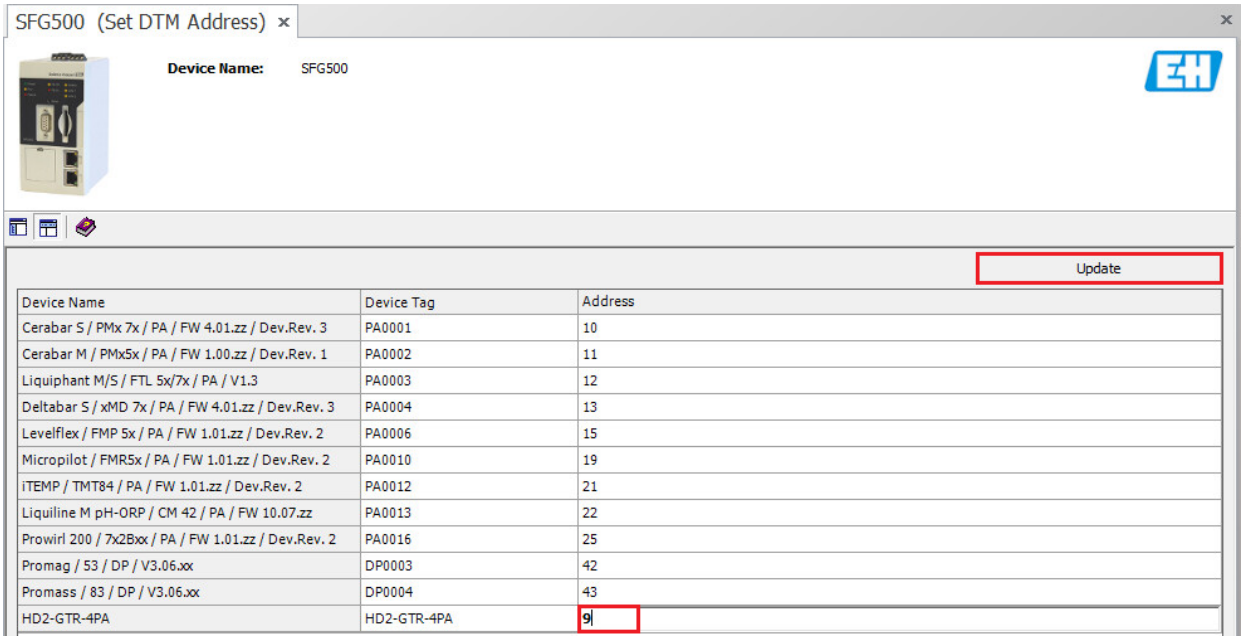


- This inserts the CommDTM in the project with Bus address 1:

- Right-click on the "SFG500" CommDTM and click on the shortcut button "Device Functions" then on the menu "Additional Functions→Set DTM Address":



- Update the PROFIBUS address and click on the button "Update". In this example, the PROFIBUS address is set to "9":

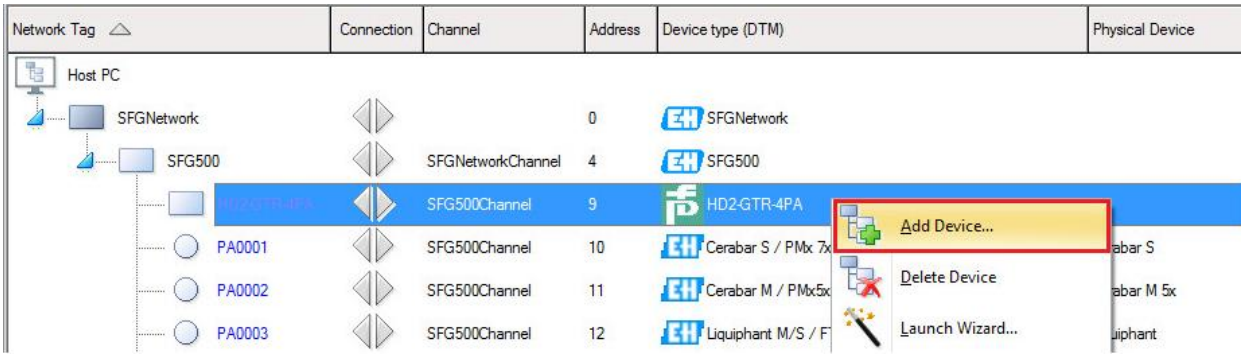


- The "HD2-GTR-4PA" address has to correspond to this one configured on the SK3 DIP switch, address 9 (0x1001) in this example:

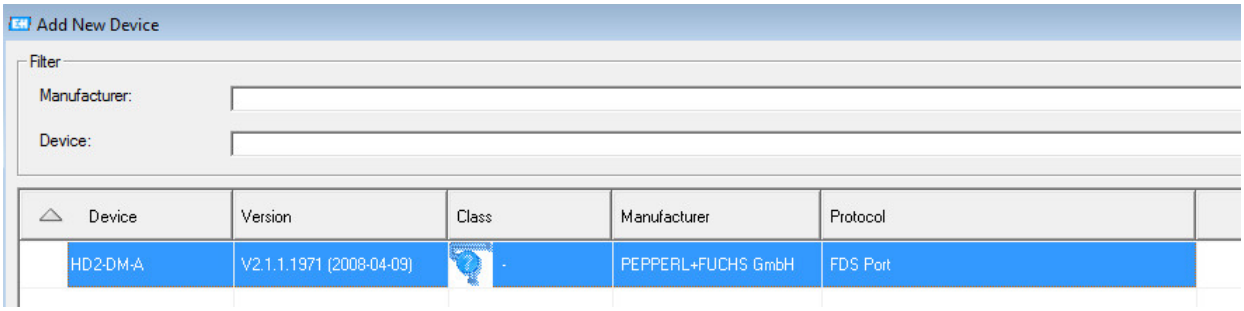
- Updated SK3 bus address:

5.4.1.2 Adding the Pepperl+Fuchs Advanced Diagnostic Module "HD2-DM-A"

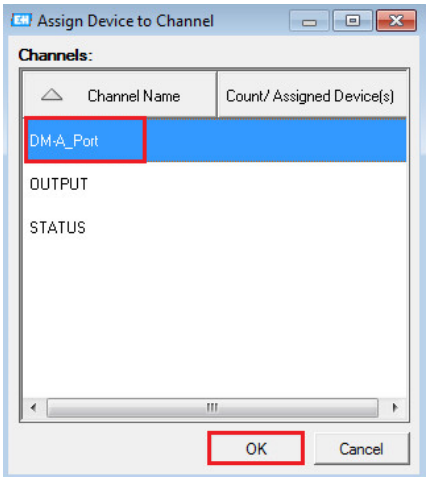
- Right-click on the Pepperl+Fuchs "HD2-GTR-4PA" CommDTM and select the menu "Add Device...":



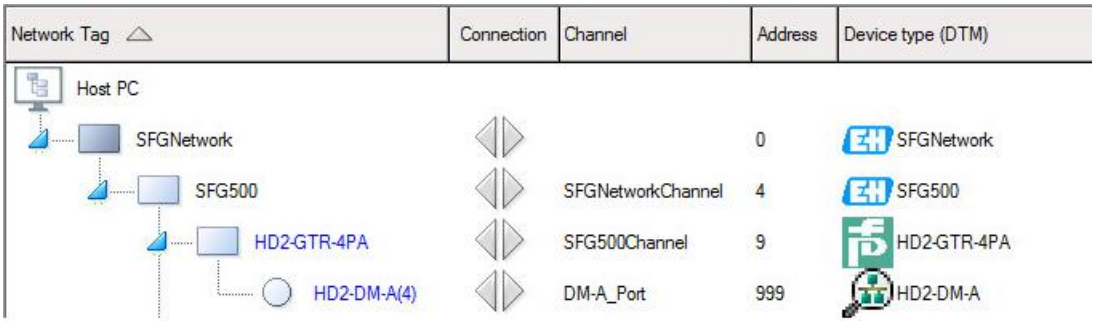
- Select the Pepperl+Fuchs Advanced Diagnostic Module"HD2-DM-A" CommDTM:



- Select the "DM-A_Port" option and click on the button "OK":



- "HD2-DM-A" CommDTM is successfully inserted:



Bus Address "999" is assigned automatically to the "HD2-DM-A" CommDTM. This address doesn't need to be configured.

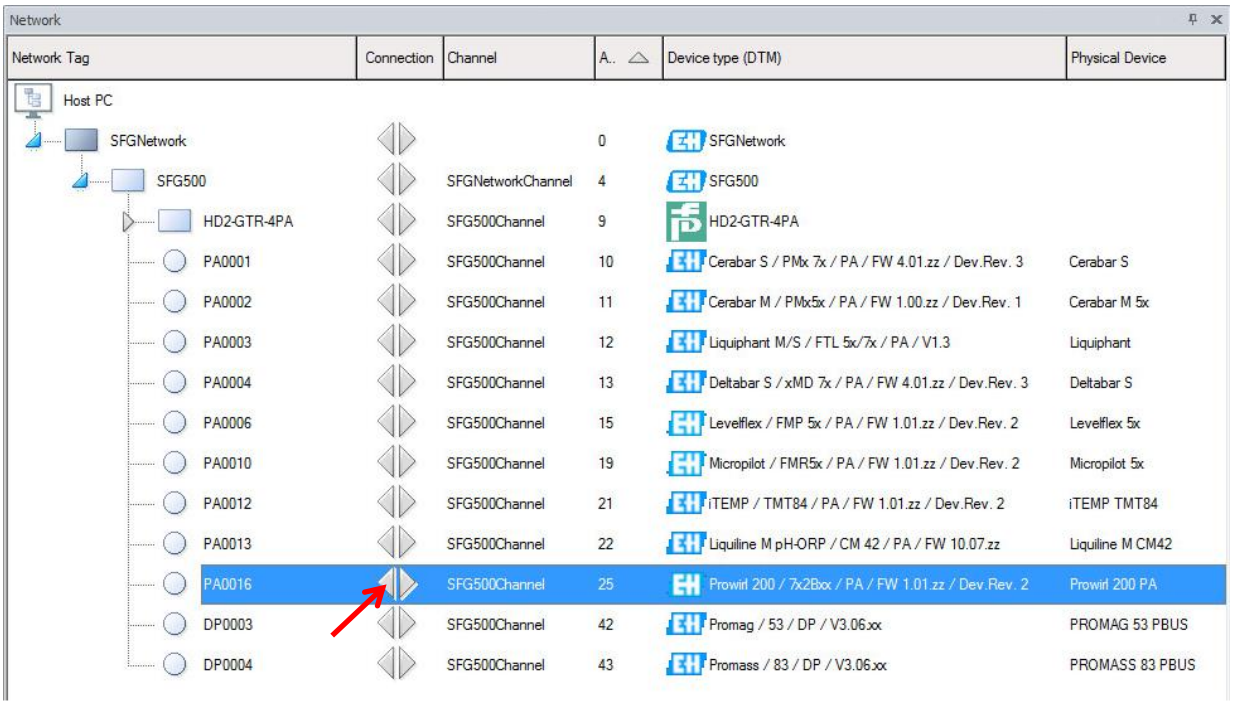
5.5 Online Device Connection

5.5.1 Endress+Hauser Prowirl200 PA

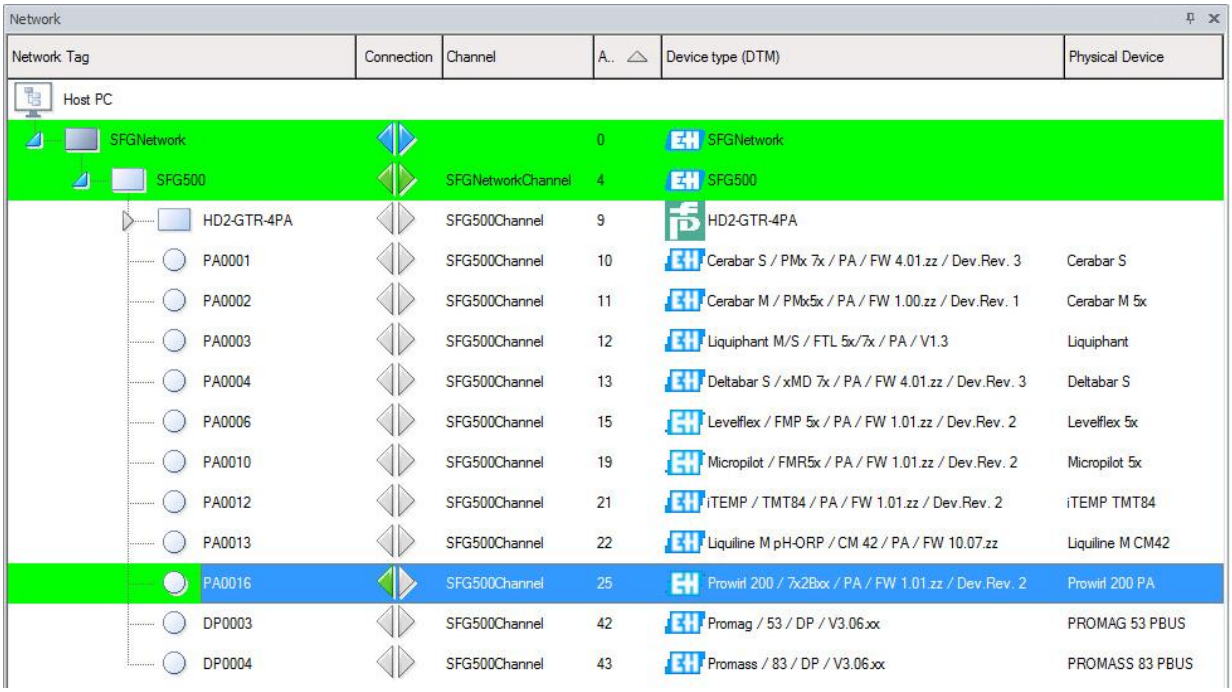
5.5.1.1 Device Connection

This example shows how to connect the Prowirl200 PA.

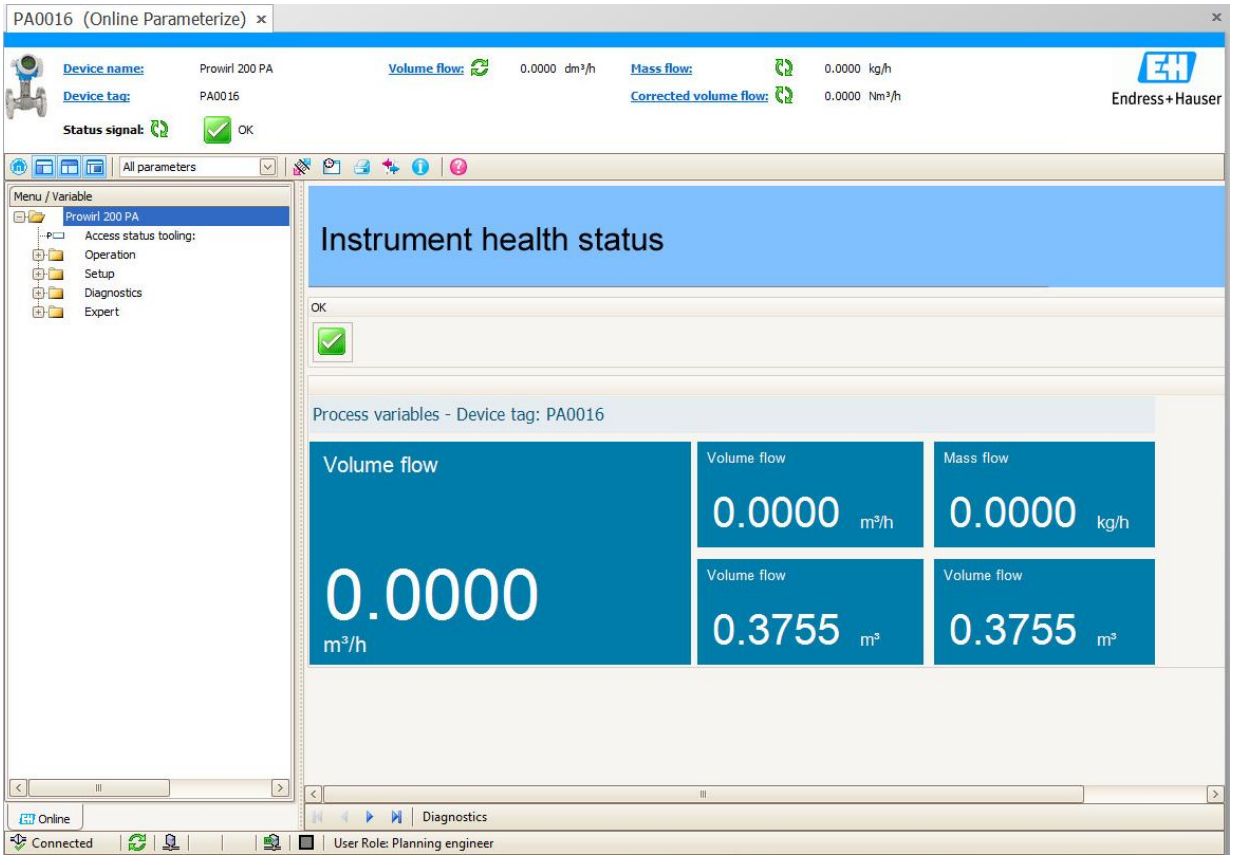
- Click on the left arrow of the Prowirl200:



- This connects the device:

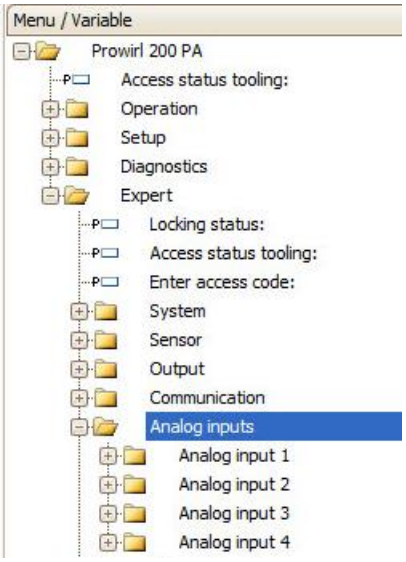


- Double-click on the TAG “PA0016” for opening the Online window:

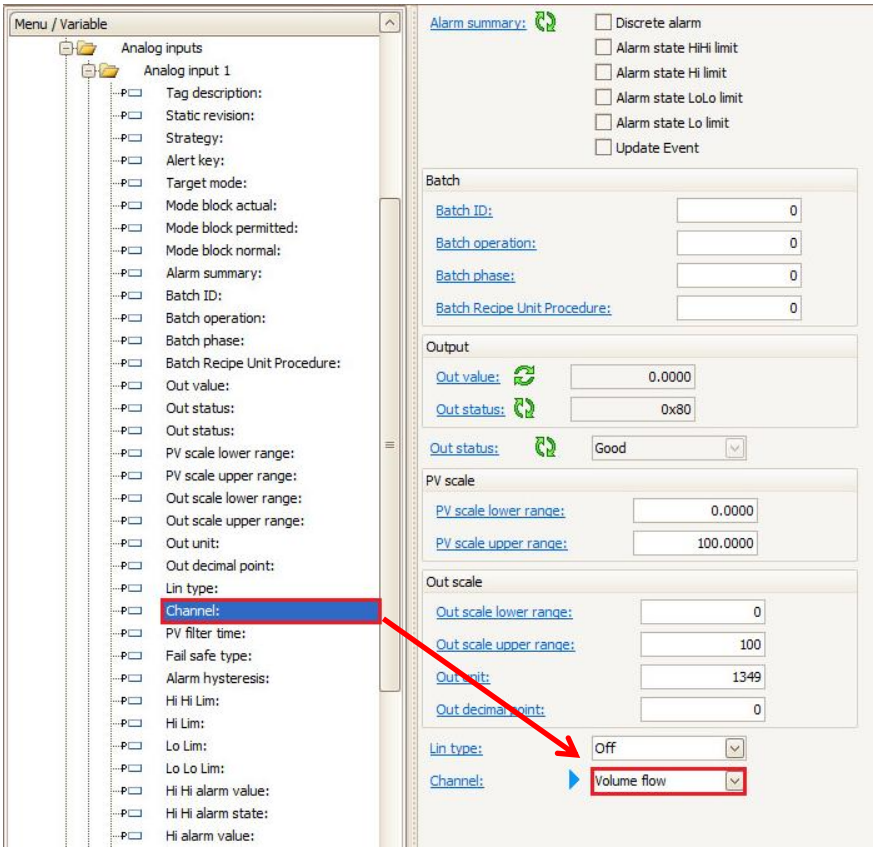


5.5.1.2 Analog Inputs Configuration

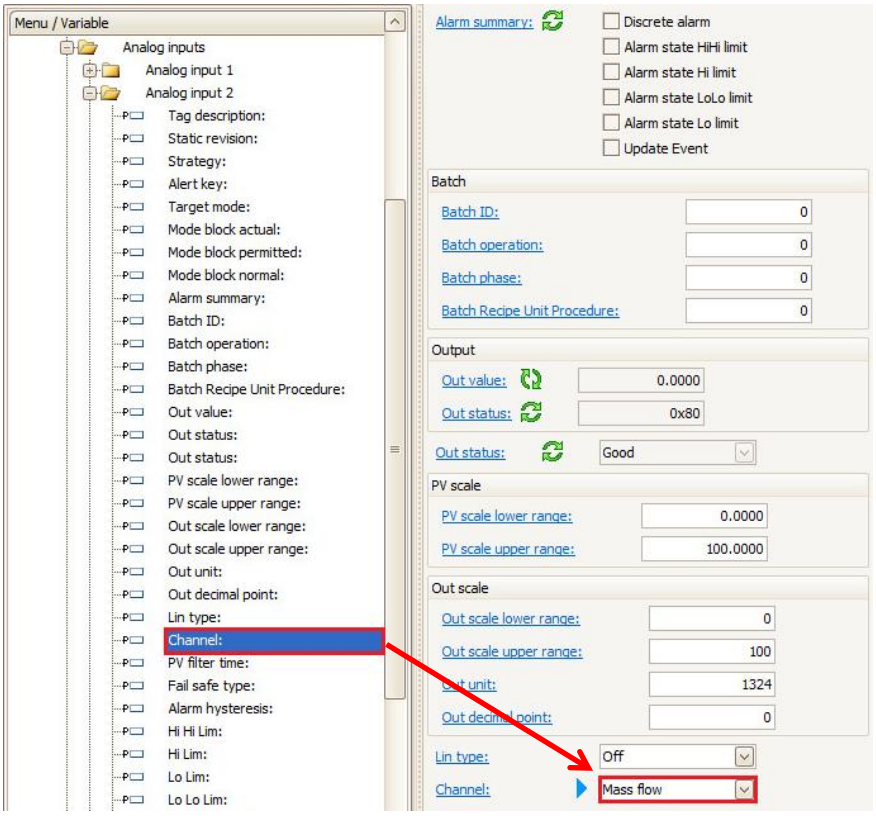
- In the menu “Expert→Analog inputs” are categorized all analog inputs:



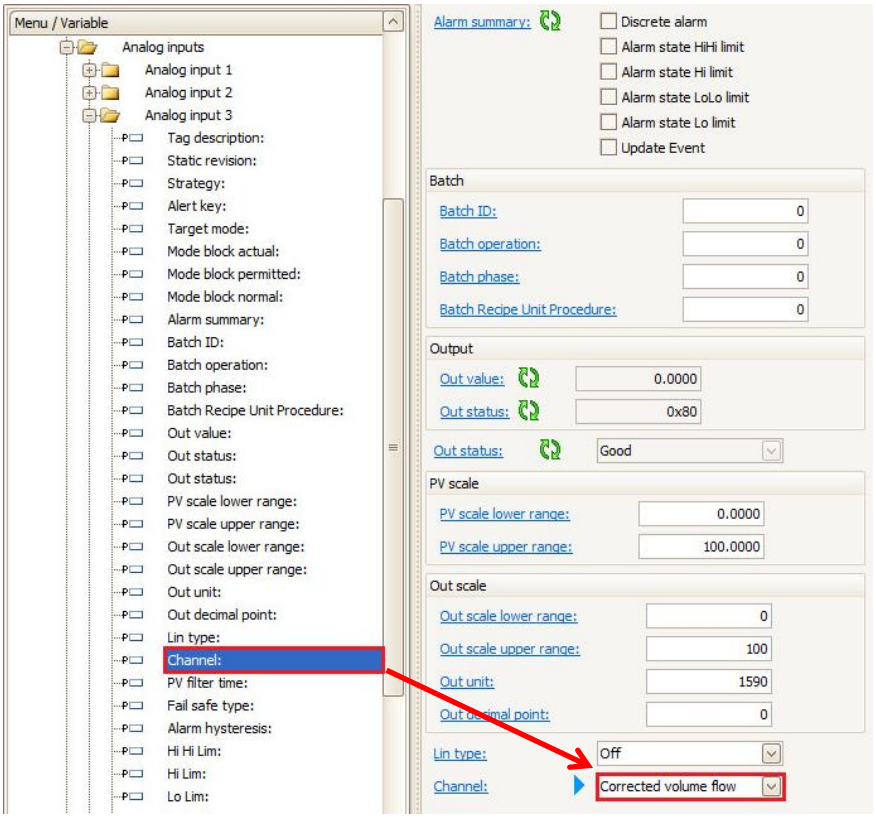
- Select the menu “Channel” to display the configured data on the channel. The Volume flow is configured on Analog Input 1:



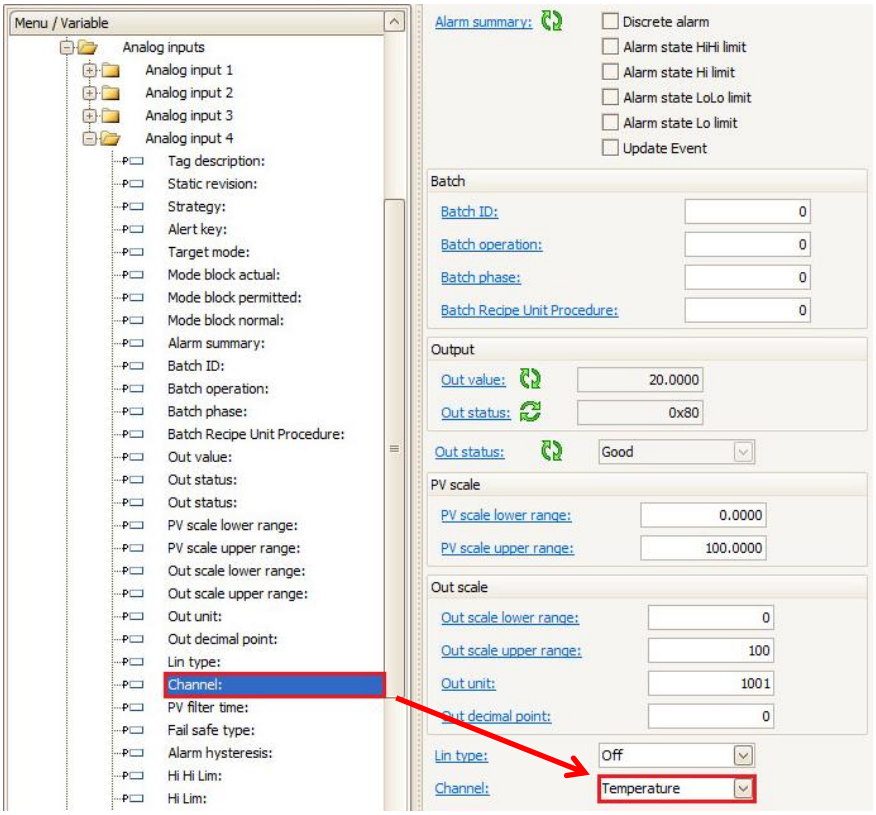
- The Mass flow is configured on Analog Input 2:



- The Corrected volume flow is configured on Analog Input 3:

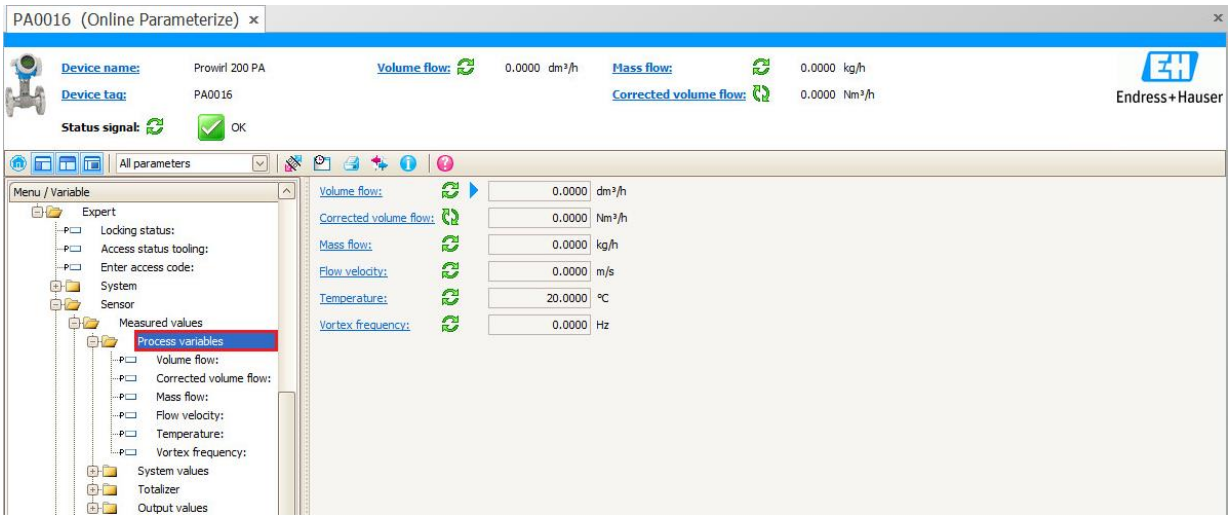


- The Temperature is configured on Analog Input 4:

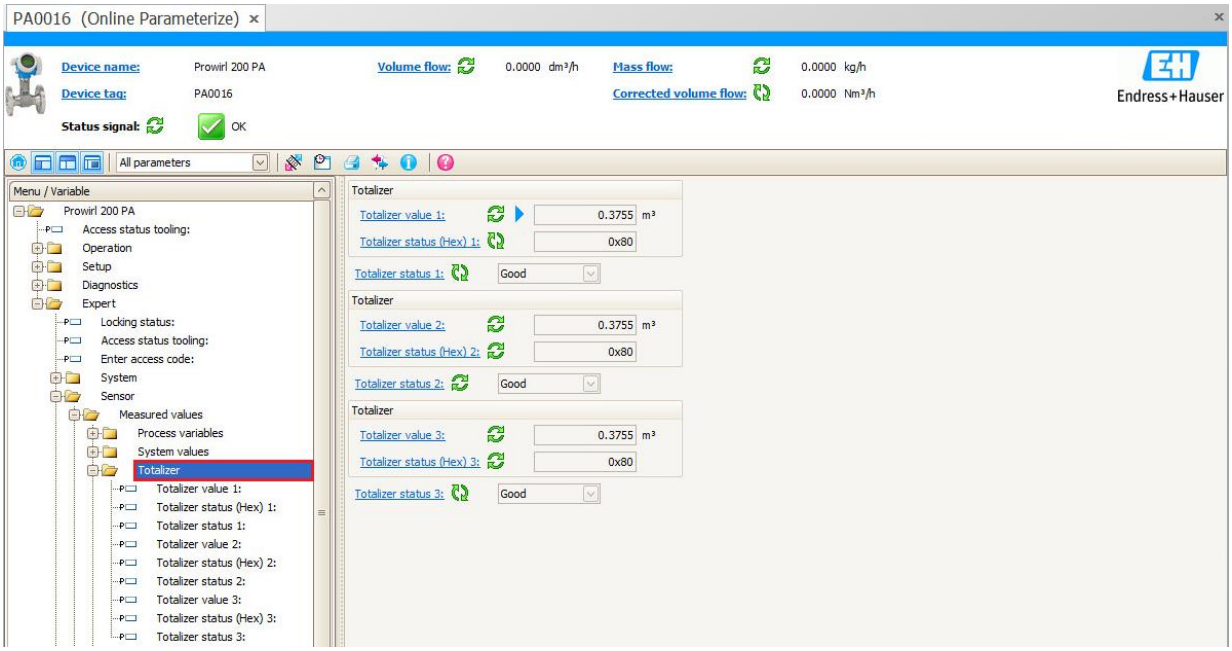


5.5.1.3 Online Values

- Click on the menu "Expert→Sensor→Measured values→Process variables" for displaying all analog inputs measurement values:



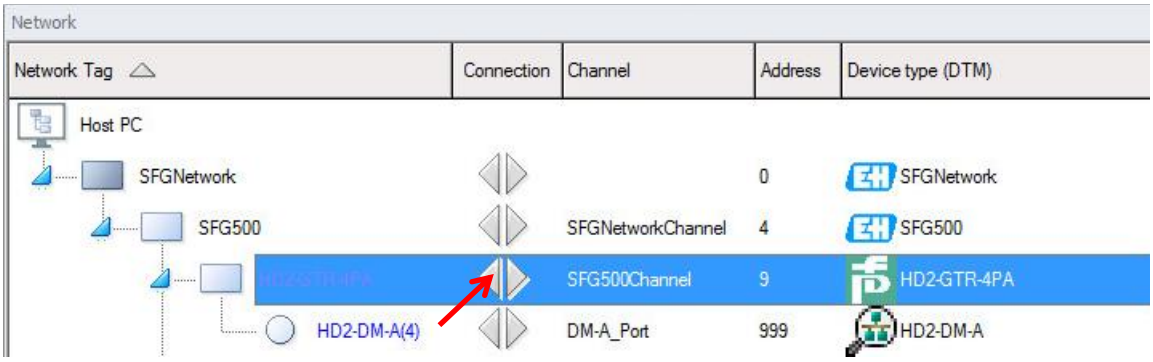
- Click on the menu “Expert→Sensor→Measured values→Totalizer” for displaying all totalizer values:



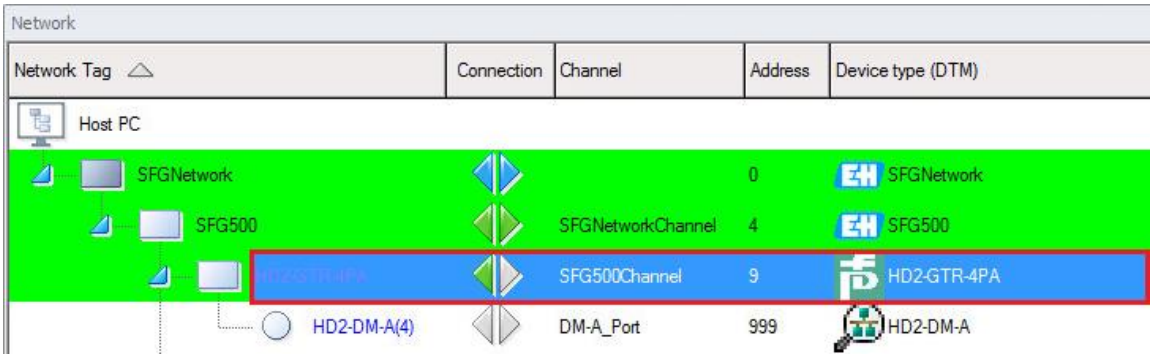
5.5.2 Pepperl+Fuchs Gateway Module “HD2-GTR-4PA”

This example shows how to connect the “HD2-GTR-4PA” Gateway module.

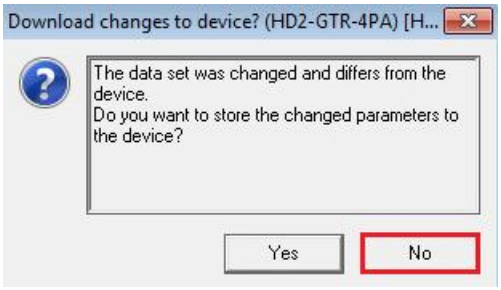
- Click on the left arrow of the “HD2-GTR-4PA” CommDTM:



- Then double-click on the “HD2-GTR-4PA” CommDTM to open the Online Parameterize window:

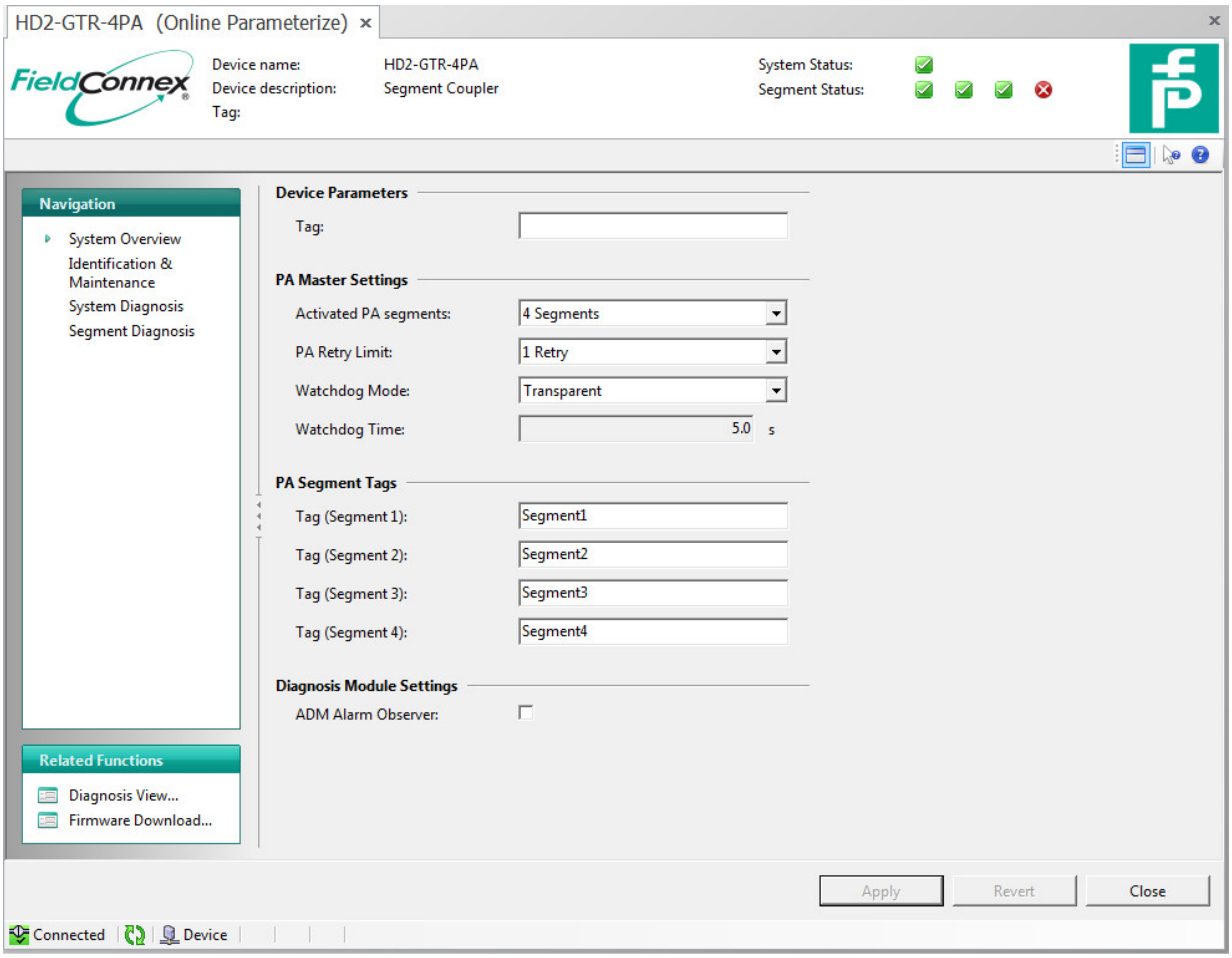


- Following window is displayed:



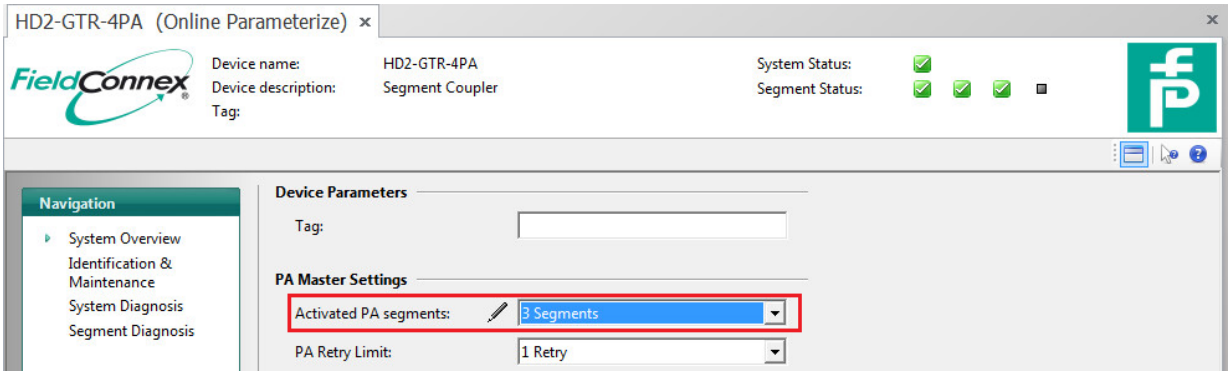
In this example, click on the button “No”.

- “System Overview” window is displayed:



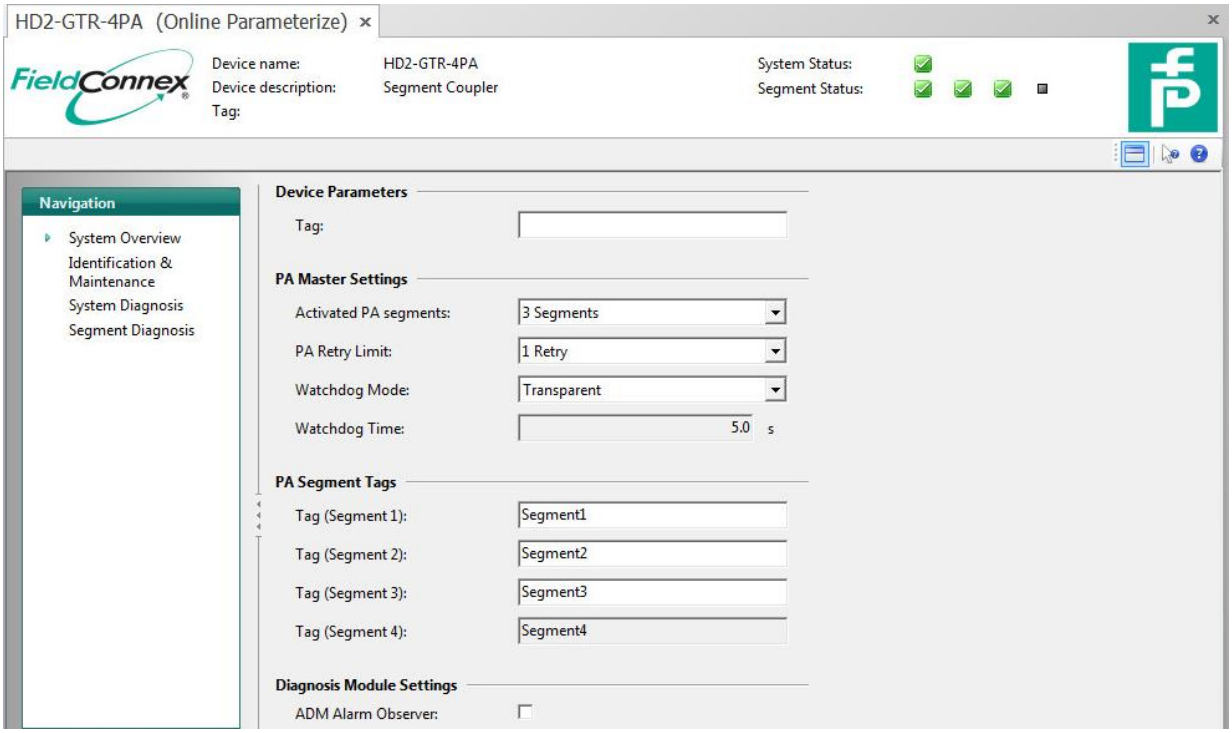
The PA segments statuses are displayed in the header part of the “System Overview” window. In this example, three PA segments are marked in green and one in red. This is normal because only three segments are connected.

- The Segment 4 can be disabled by configuring the number of segments in the PA Master Settings. Select the option “3 Segments“ in this example:

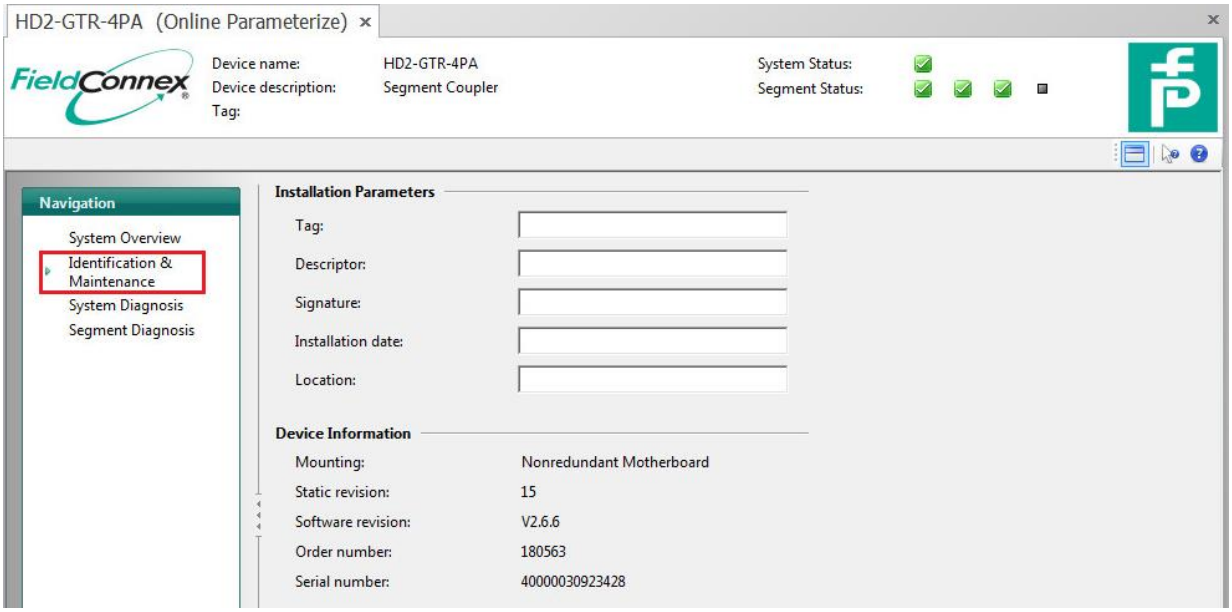


- Then click on the button “Apply”

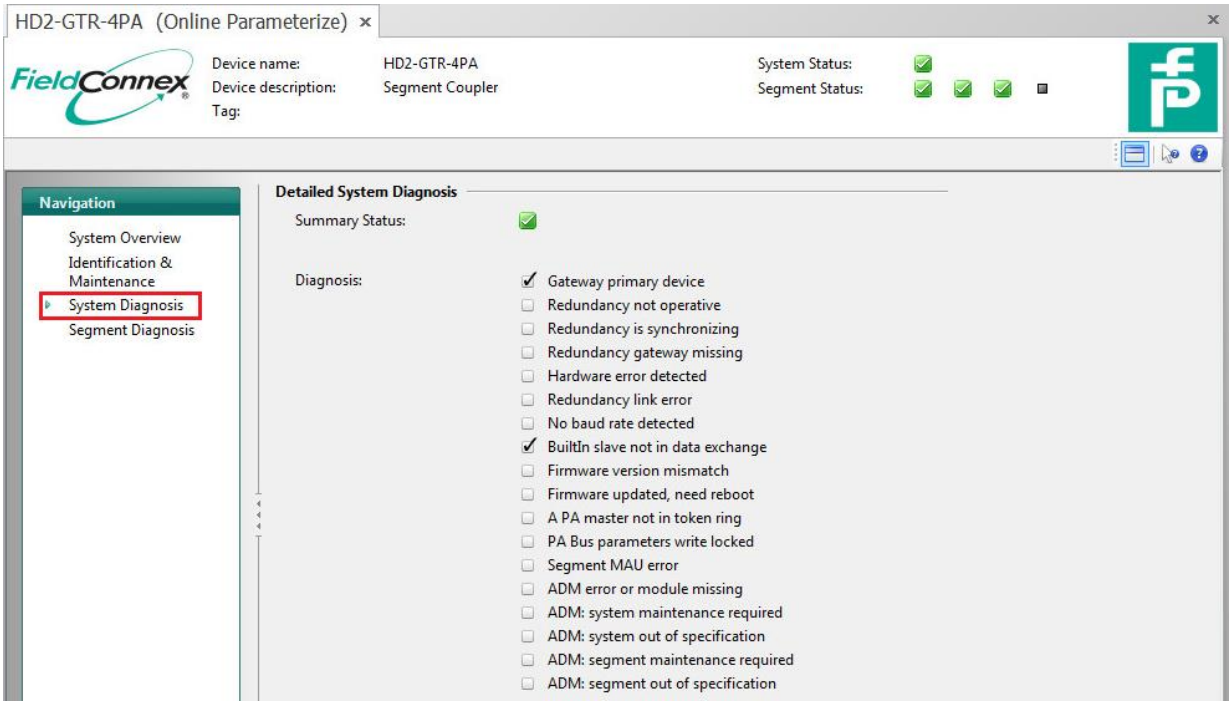
- This disables the last segment:



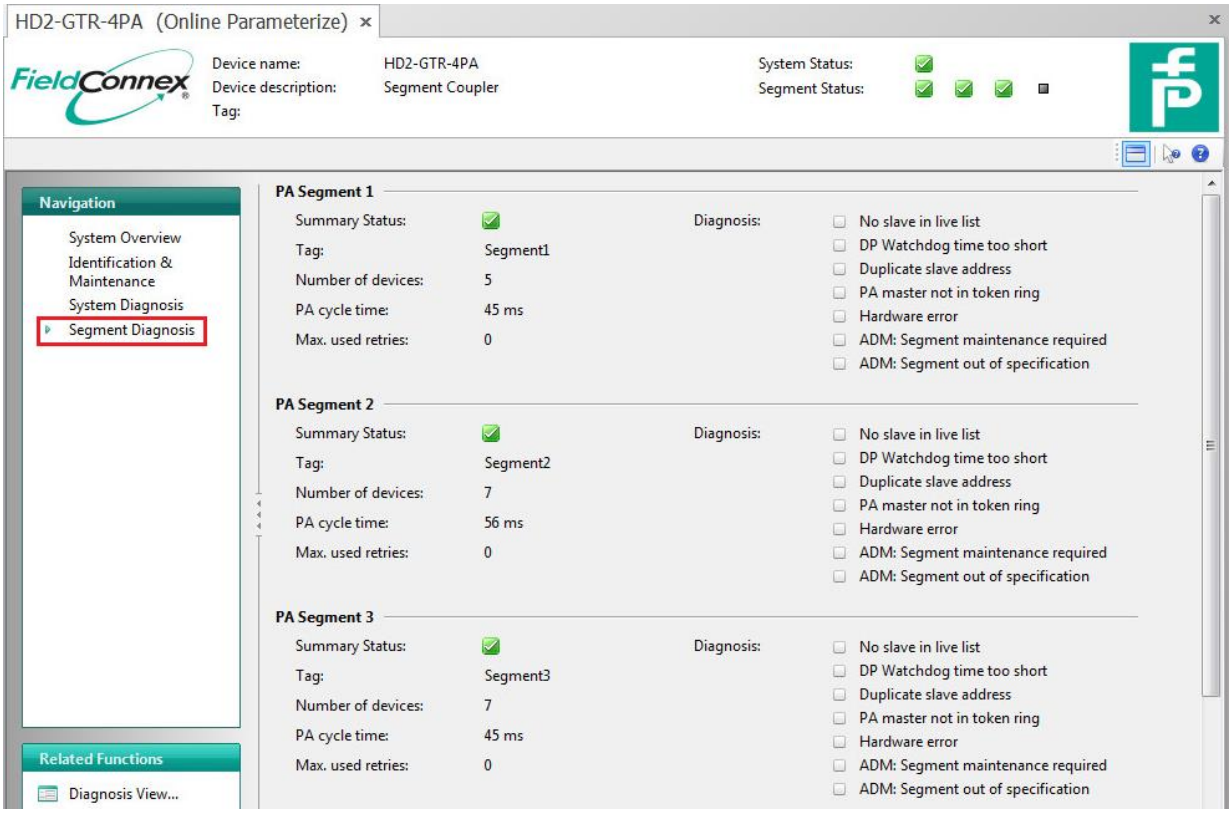
- Click on the menu “Identification & Maintenance” for displaying device information as Software revision, Order number or Serial number. Additional Installation Parameters can be edited:



- Click on the menu “System Diagnosis” for displaying advanced diagnosis message of the Gateway:

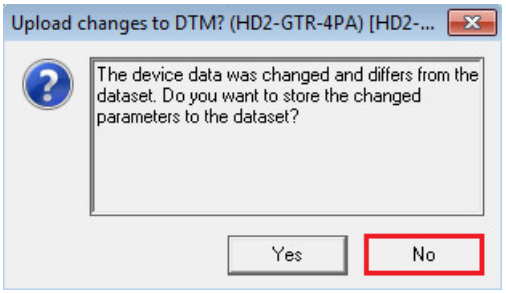


- Click on the menu “Segment Diagnosis” for displaying PA Segments diagnosis:



- Click on the button “Close” to close the window:

- This opens following window:



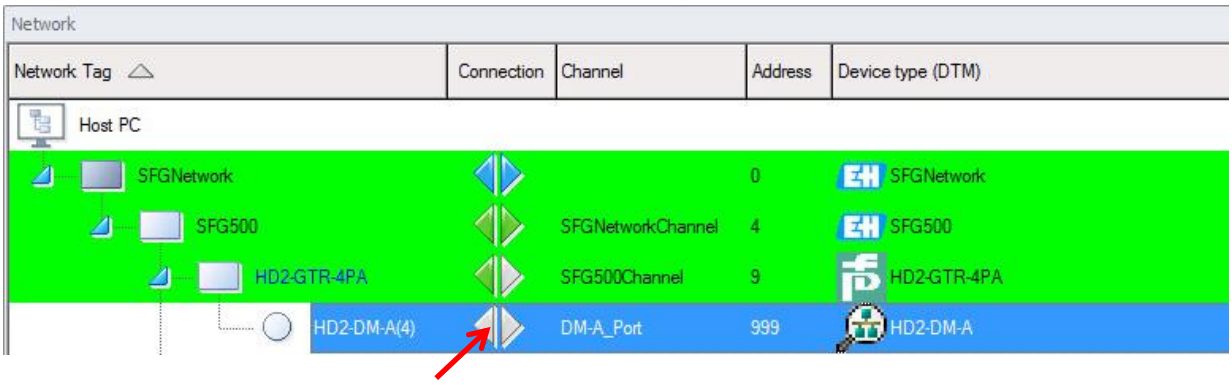
In this example, click on the button “No” to keep the changes.

Please refer to the Pepperl+Fuchs POWERHUB Segment Coupler Manual for further details.

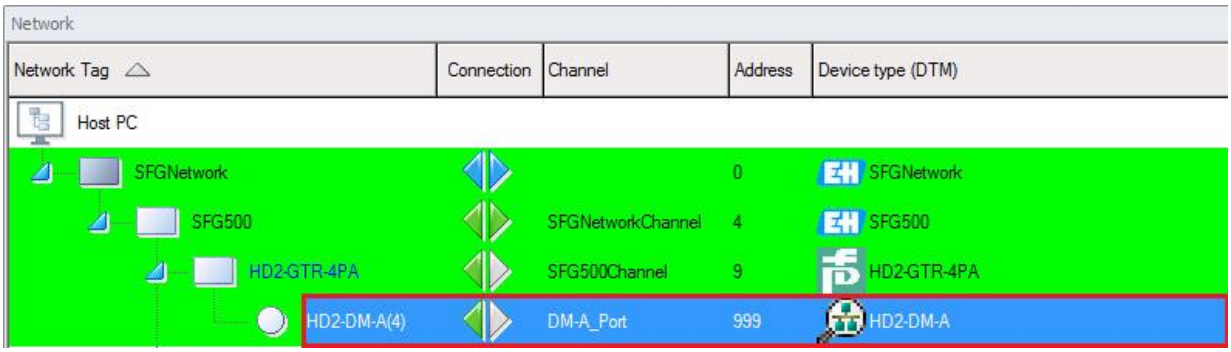
5.5.3 Pepperl+Fuchs Advances Diagnostic Module “HD2-DM-A”

This example shows how to connect the “HD2-DM-A” Advanced Diagnostic Module.

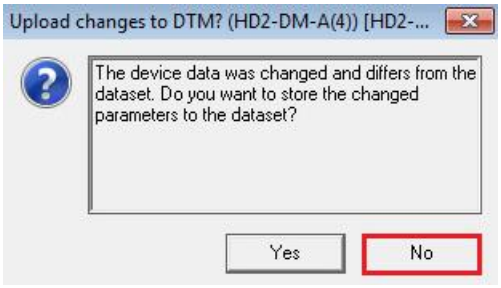
- Click on the left arrow of the “HD2-DM-A” CommDTM:



- Then double-click on the “HD2-DM-A” CommDTM to open the Online Parameterize window:

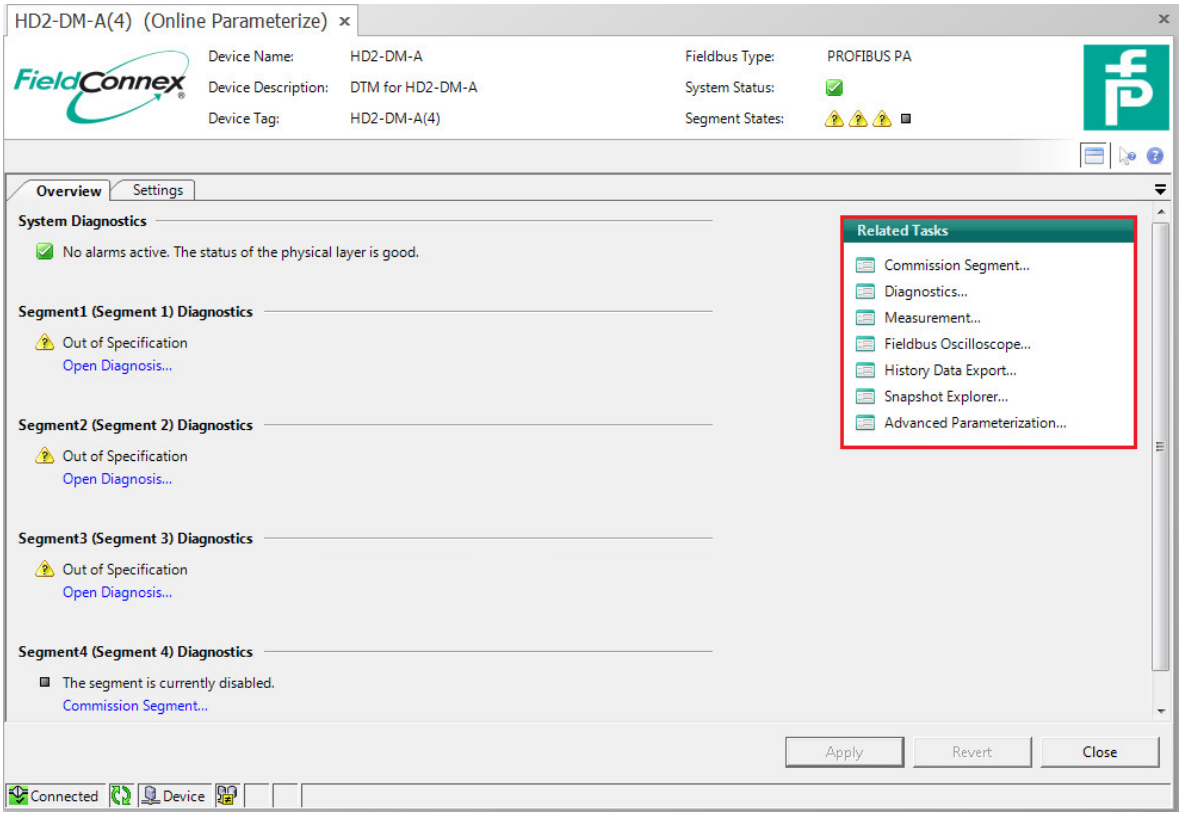


- This opens following window:



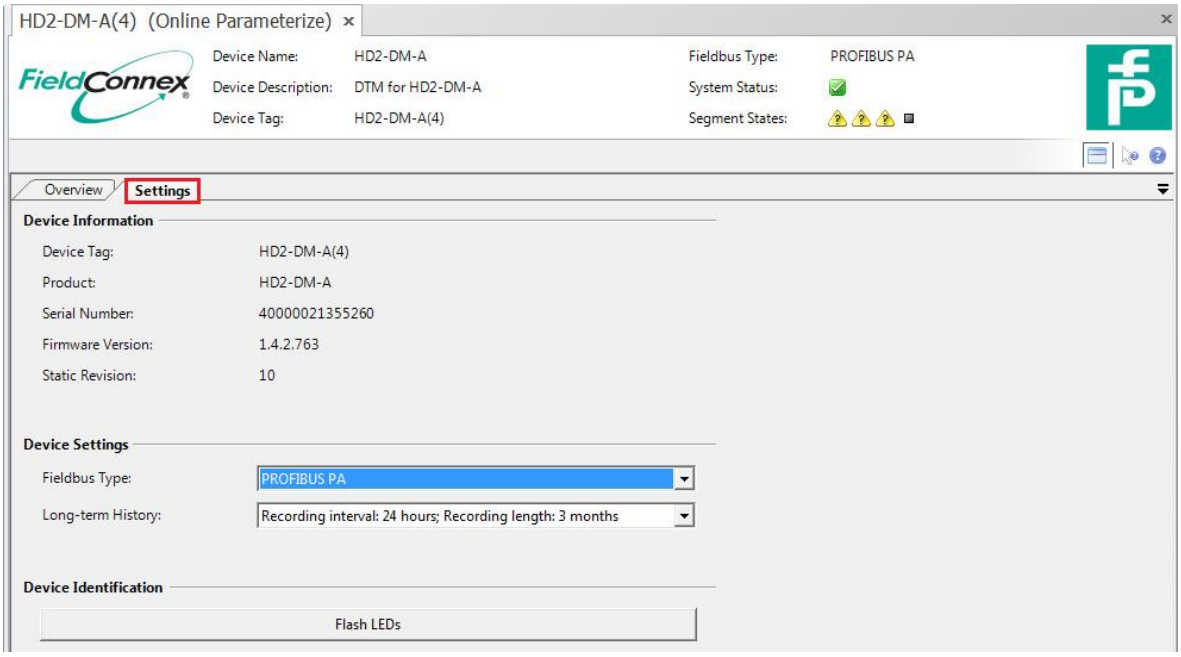
In this example, click on the button “No”.

- HD2-DM-A main window is displayed:



Menus are available on the right part of the main window but require a Pepperl+Fuchs DTM license.

- Click on the tab "Settings" for displaying device information as Tag, Serial Number, Firmware Version and for configuring the Fieldbus Type:



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