Honeywell

ADVANCED CONTROLLERS

Niagara

Panel Bus Driver Guide

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SYSTEM REQUIREMENTS

NIAGARA VERSION:
Niagara 4.10u5 and higher

Products and OS Numbers

For detailed information on the applicable controllers including their OS Numbers and licenses, please download the corresponding, product data, software release bulletin and/or the compatibility matrix.

PRODUCT DATA
Refer IO_Modules_Datasheet - 31-00588

Licenses and Point Handling

When a license allows only a limited number of points and you are deleting points, the free number of points are only available after some time. Please restart the station to make the free number of points available again.

Alternate Usage of Different Supervisor Versions on Same PC

Suppose you have different Supervisor versions installed on your PC and want to use them alternately before starting the Supervisor software. Install its dedicated platform daemon.

This is necessary to ensure that all necessary services are properly running when using the software.

NOTE:
For Supervisor 4.10.xx, which will be installed via setup, the dedicated platform daemon is automatically installed, and the corresponding services are running, as long as you do not start another Supervisor version.

Example:

You worked with Supervisor 4.10.u5, and want to use the previous Supervisor 4.10.X version. Before the software start, click the **Install Platform Daemon** entry in Supervisor 4.10.X program group.

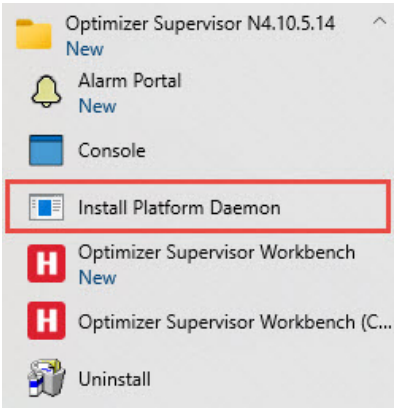


Figure 1. Start Menu

INSTALLATION

The Panel Bus driver will be installed with the Niagara setup by default.
Refer I/O Module Installation Instruction – 31-00589-01.

Products and OS Numbers detailed information on the applicable controllers, including their OS Numbers and licenses. Please download the corresponding product data, software release bulletin, and the compatibility matrix at:

Link: Drop 1 Final Release

CREATE PANEL BUS NETWORK

The following procedure describes the commissioning of the Panel Bus network on a commissioned Advanced Controller, which contains all required Panel Bus modules.

Creating a new station with the Niagara supervisor is recommended to ensure that the controller includes all necessary Panel Bus modules. This station should then be transferred to the controller using the Commissioning Wizard. The commissioning wizard ensures that all the modules required to operate a station are also transferred to the controller.

If a Panel Bus network has to expand an existing station in a controller, the following modules must be manually added to the controller using the SoftwareManager.

- clPanelBus rt
- clPanelBus wb
- platPanelBus rt

NOTE:
The Panel Bus driver cannot be operated with a PC (Optimizer Suite) because the necessary RS485 interface is only supported by Niagara-based controllers in terms of license. However, a Panel Bus network can be pre-defined on a PC by adding Panel Bus devices from the Panel Bus range. This way of working is called offline mode.

Refer the Installation Instruction & Commissioning Guide – Document number 31-00584-01 for connecting the controller to workbench, Setting up Platform and Station, and commissioning the controller procedure.

Procedure

1. In the Nav tree, expand the Station folder, and then click on **Drivers**.

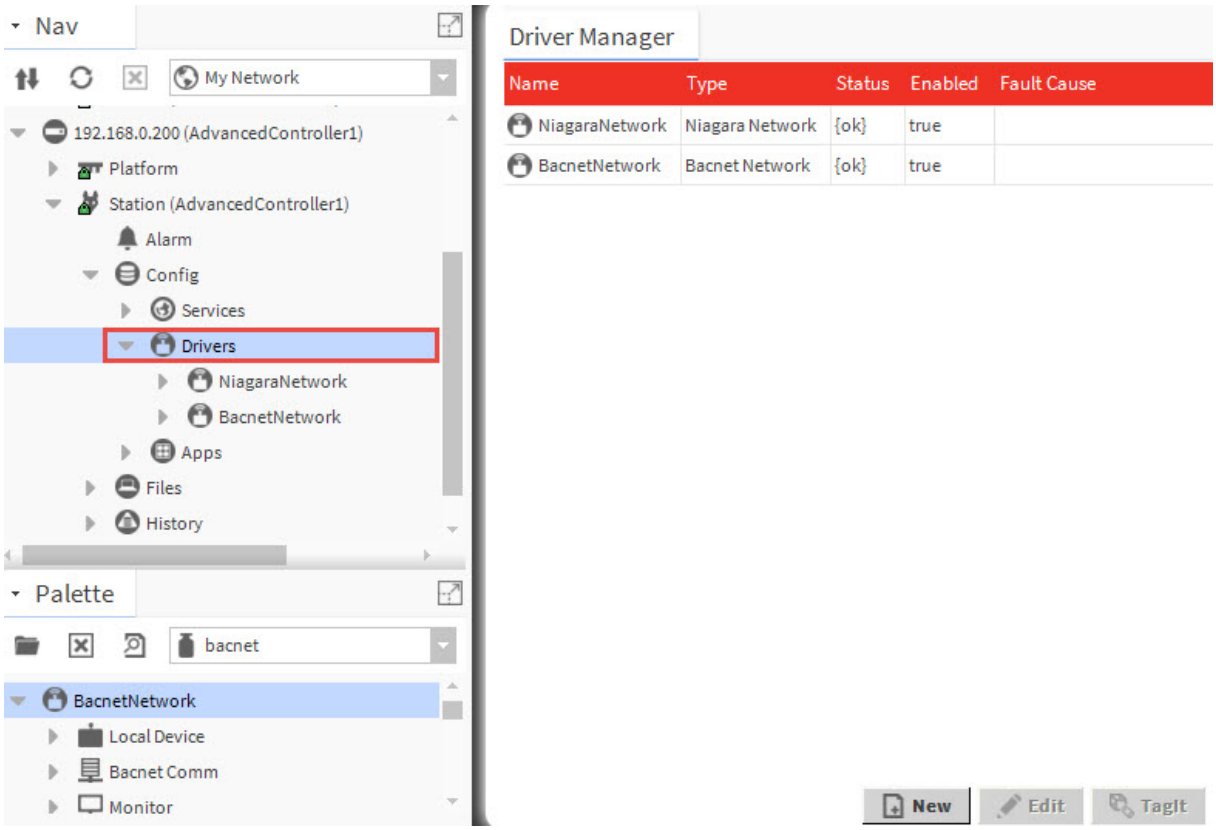


Figure 2. Property Sheet view

2. On the right pane, click **New**. The New dialogue box displays.

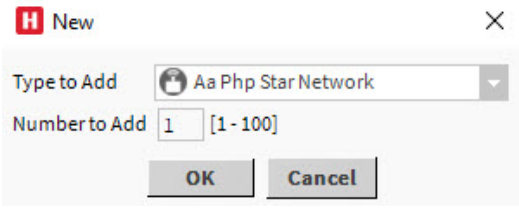


Figure 3. New Dialogue Box

3. In **Type to Add**, select ´PanelbusNetwork`.

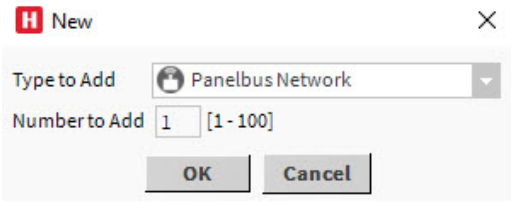


Figure 4. New Dialogue Box

4. Click **OK**. The **New** dialogue box is displayed.

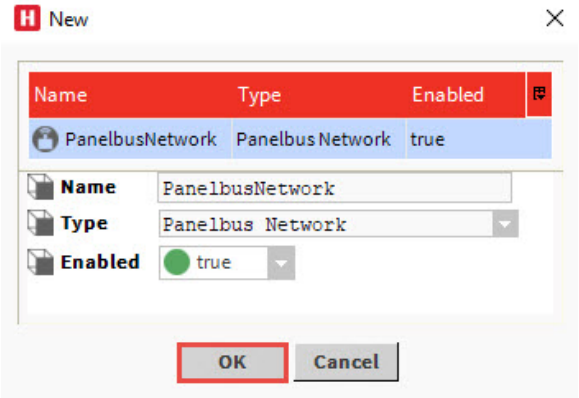


Figure 5. New Dialogue Box

5. In Name, change the name of the network if desired, and then click **OK**. The **PanelbusNetwork** is created and added to the Driver Manager.

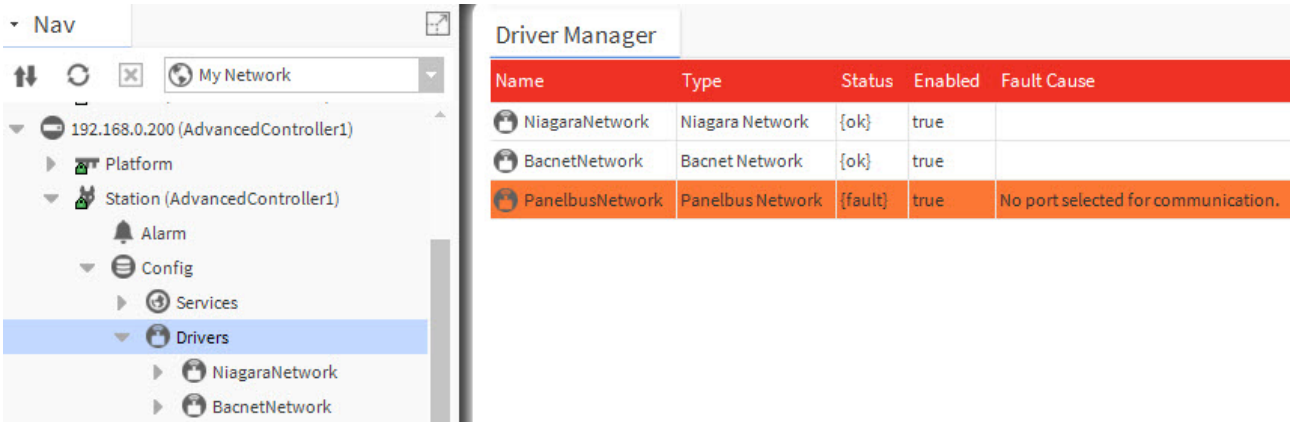


Figure 6. Property Sheet view

6. Display the property sheet for the PanelbusNetwork by right-clicking **PanelbusNetwork** in the Nav tree, selecting **Views**, and then selecting **Property Sheet** in the context menu.

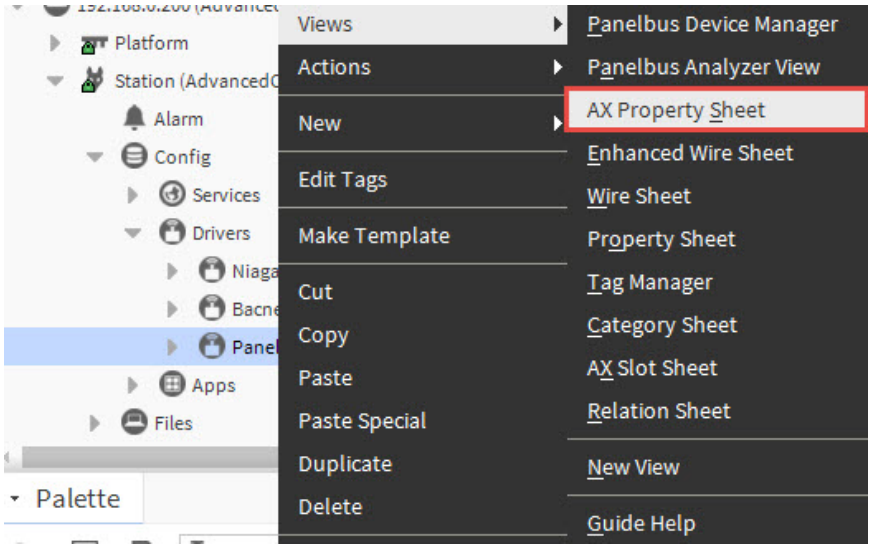


Figure 7. PanelbusNetwork Property Sheet View

The PanelbusNetwork properties are displayed on the right pane.

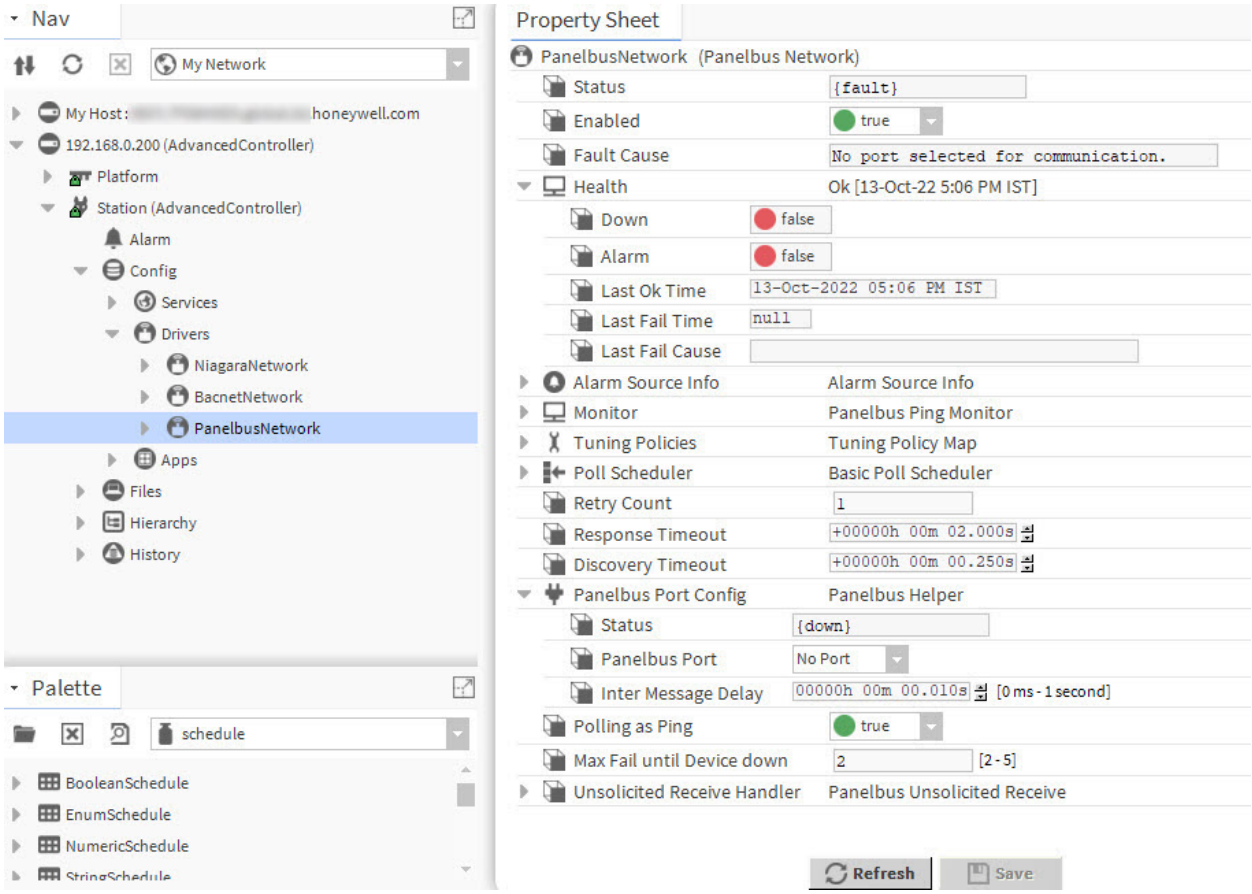


Figure 8. PanelbusNetwork Property Sheet View

7. Under **Panelbus Port Config**, select the port (RS485 port out of 5 ports) from the **Panelbus Port** drop-down listbox.

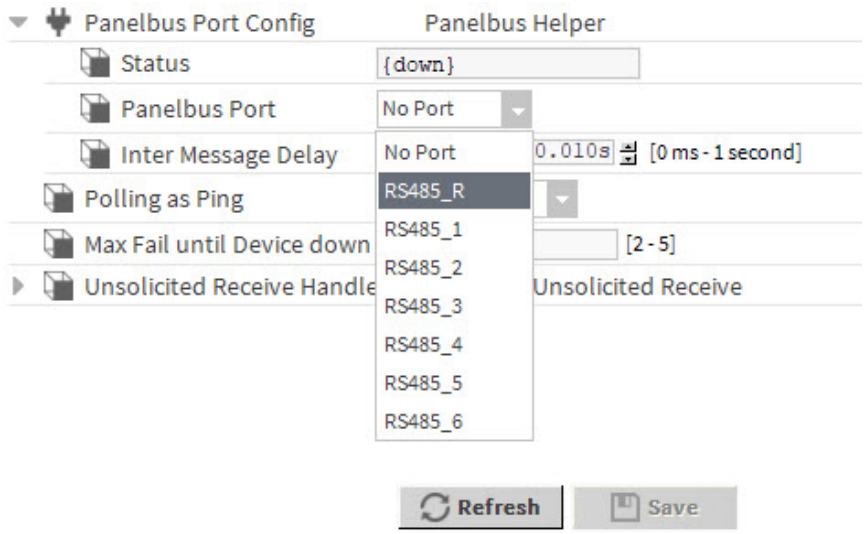


Figure 9. PanelbusNetwork Property Sheet View

NOTE:
This naming is different from all other RS485-based drivers within Niagara Supervisor. In this case, the Panel Bus Ports must match the labeling on the Advanced Controller.
Select the RS485_R port, if the Advanced Controller is connected with Touch Flakes.

8. Click **Save** button.
The PanelbusNetwork properties are updated. The **Status** fields show **ok** indicating that the network is properly working.

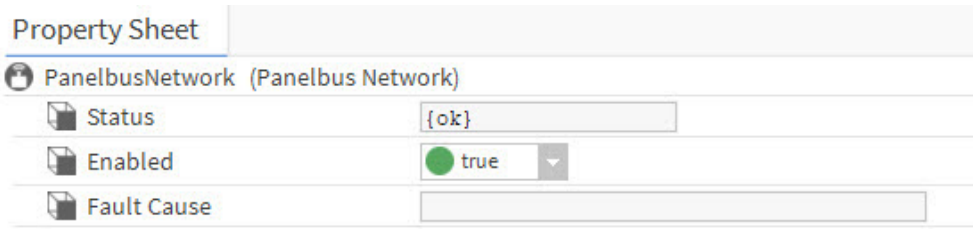


Figure 10. PanelbusNetwork Property Sheet View

DISCOVER PANEL BUS MODULES AND ADD THEM TO STATION

To discover the Panel Bus modules that resides on the Panel Bus network.

1. In the **Nav** tree on the left, expand the Station, Drivers folders, and click on PanelbusNetwork.

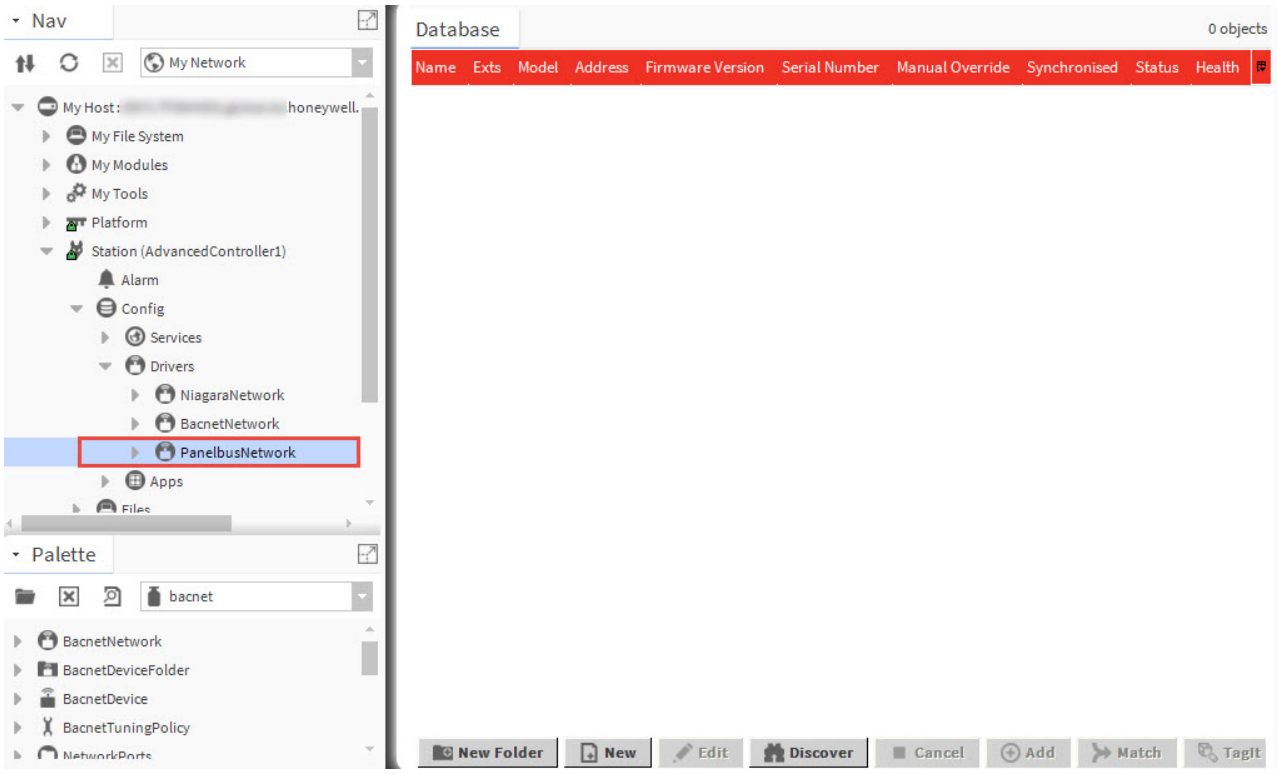


Figure 11. PanelbusNetwork Database View

2. Select **Panelbus Device Manager** from top right corner drop down list.

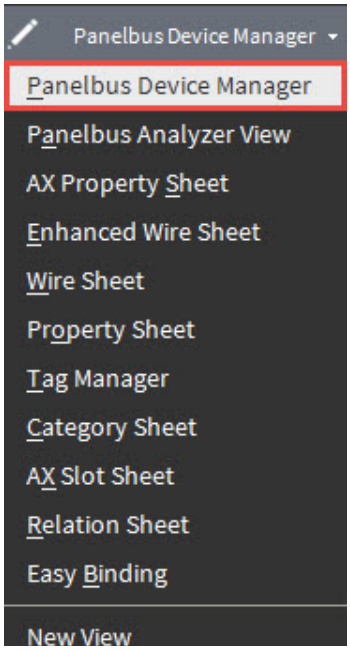


Figure 12. Panelbus Device Manager

3. Click the **Discover** button on the right.

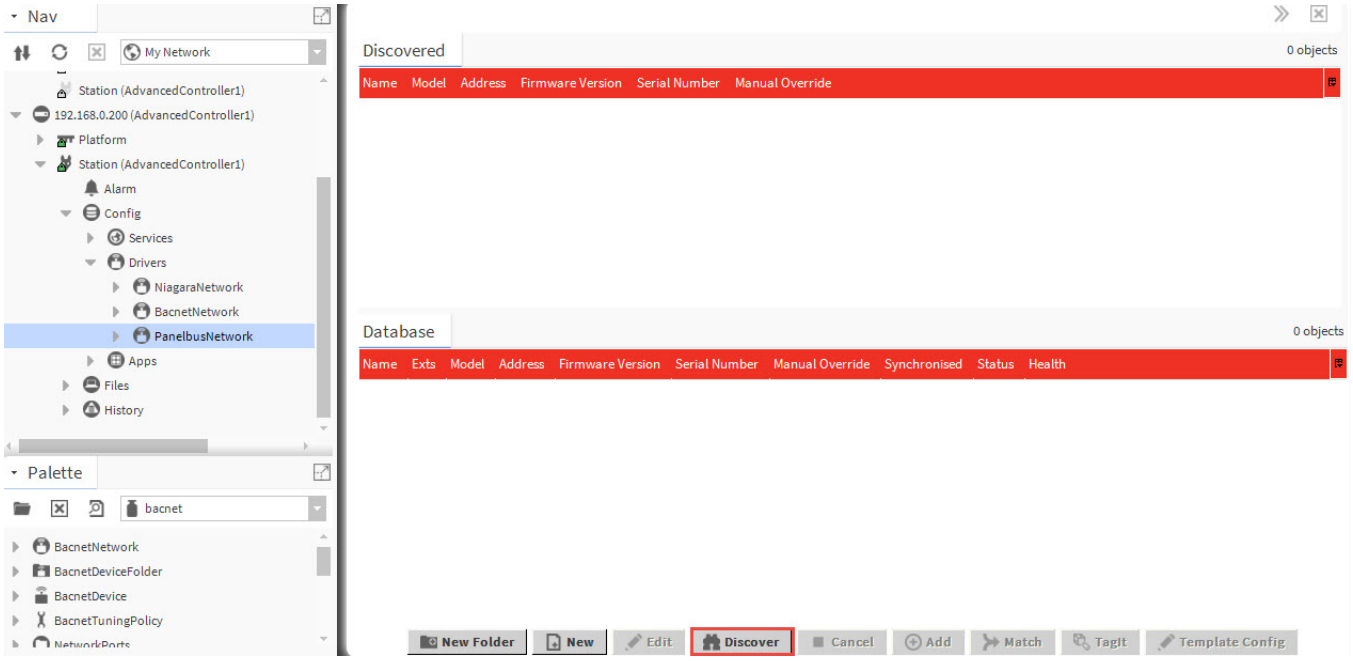


Figure 13. Panelbus Device Manager View

4. Panel Bus discovered success message will appear at bottom right corner and all available Panel Bus modules will be listed in the upper Discovered pane.
   Select the Panel Bus modules you want to add to the Database of station and click **Add** button on the bottom of the pane or Drag and Drop the selected Panel Bus modules into the Database pane.

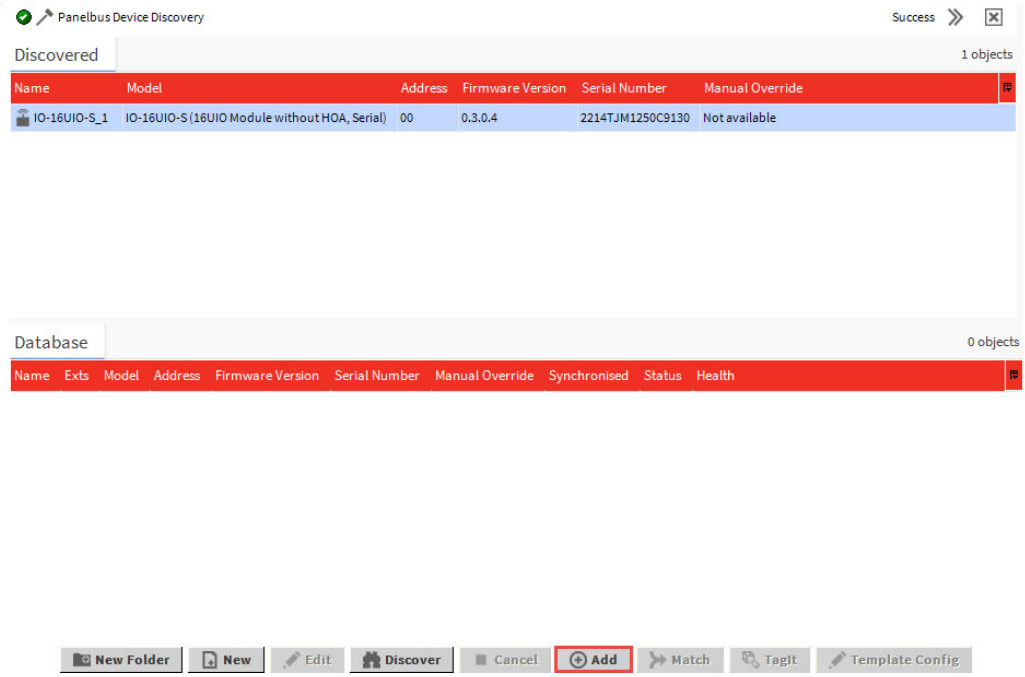


Figure 14. Panelbus Device Manager View

NOTE:
Multi-selection using the SHIFT of STRG key is possible.

5. The Add dialog box displays a list of selected Panel Bus modules.This dialog allows you to customize the module name.Changing the model or the address makes clear if the actual module and the address switch are later adjusted.It is possible to deactivate the module so that error messages can be avoided when not existing/replacing a module.
   Click **OK**.

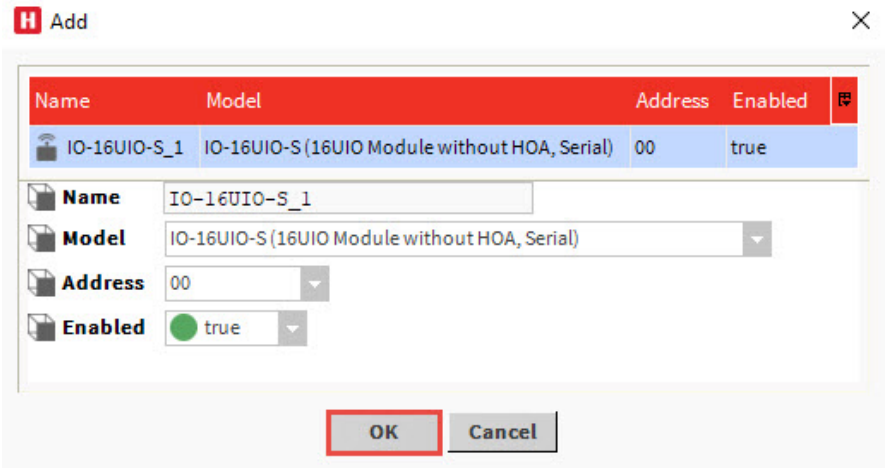


Figure 15. Add Dialogue Box

6. The selected Panel Bus modules are added to the station. They are displayed twice, in the lower Database pane and in the Drivers Folder in the Nav tree.

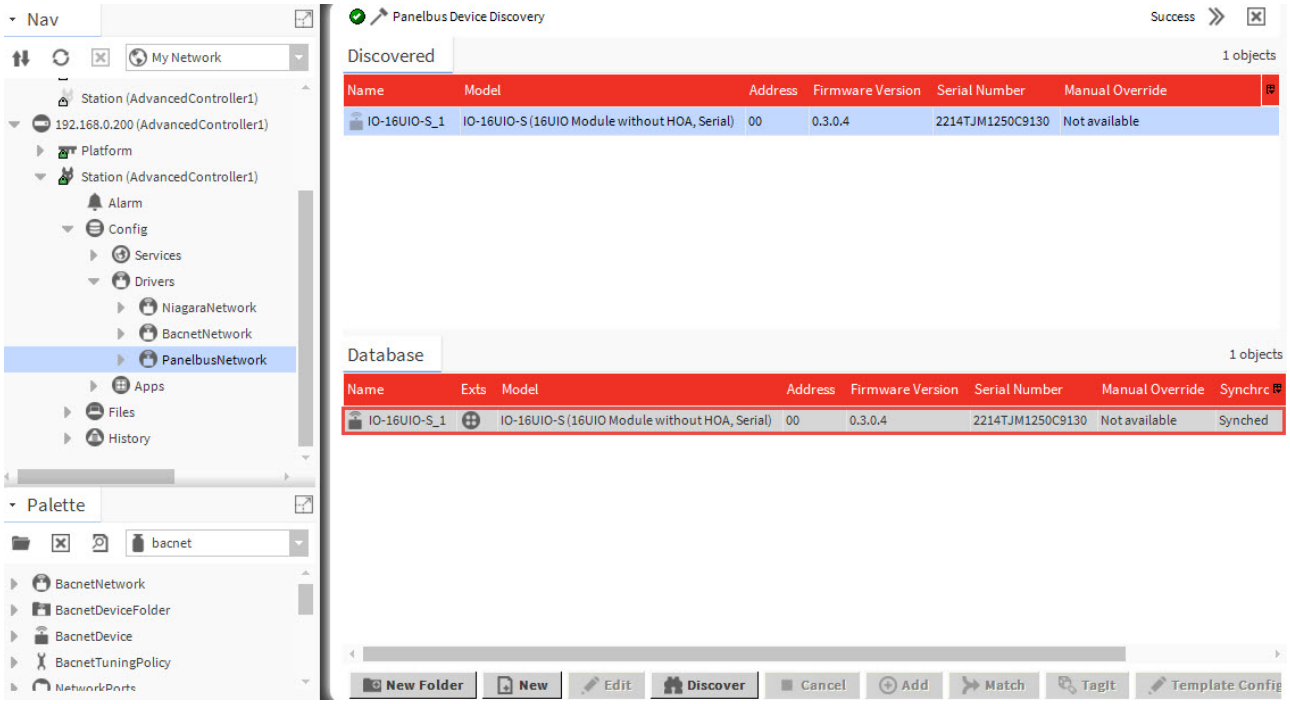


Figure 16. Panelbus Device Manager View

VIEW / MODIFY PANEL BUS MODULE PROPERTIES

The properties of the Panel Bus modules vary dependent on the module type. The module types are available in Supervisor:

- IO-16UIO
- IOD-16UIO
- IO-16UI
- IO-16DI
- IO-8DOR
- IOD-8DOR

For detailed descriptions of the module properties, please refer to the Panel Bus modules product data, form no. EN0B0701-GE51.

The following procedure gives a short and general introduction on how to view and modify the properties of a module. The following properties can be edited:

- Name
- Technical address
- Status

PROCEDURE

1. To view/edit the properties, double-click the **PanelbusNetwork** folder of the Nav tree.
   On the Database pane, the Panel Bus modules are displayed.

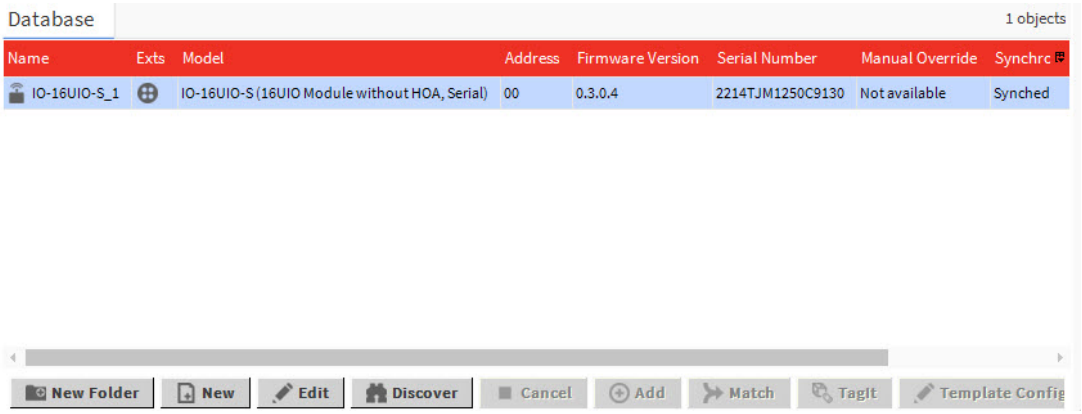


Figure 17. PanelbusNetwork View

2. Select the module you want to change, and then click the **Edit** button at the bottom.

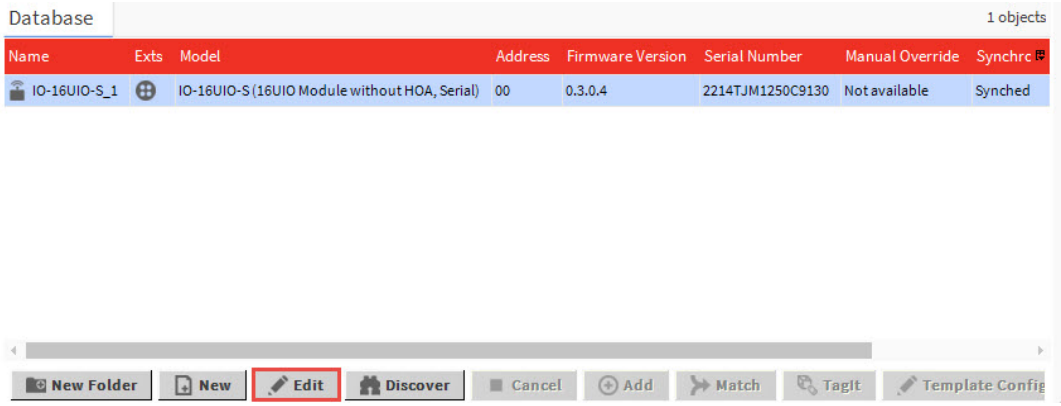


Figure 18. PanelbusNetwork View

3. The **Edit** dialogue box is displayed.

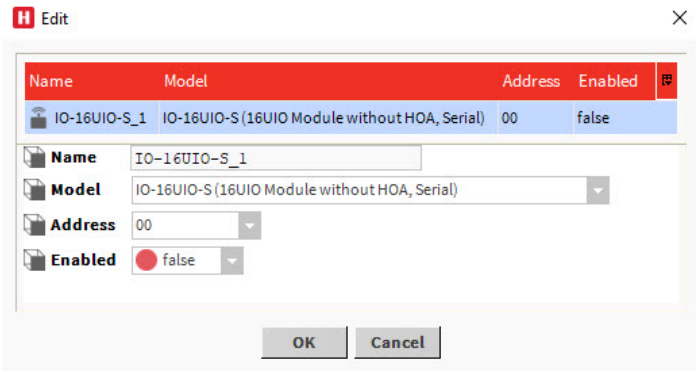
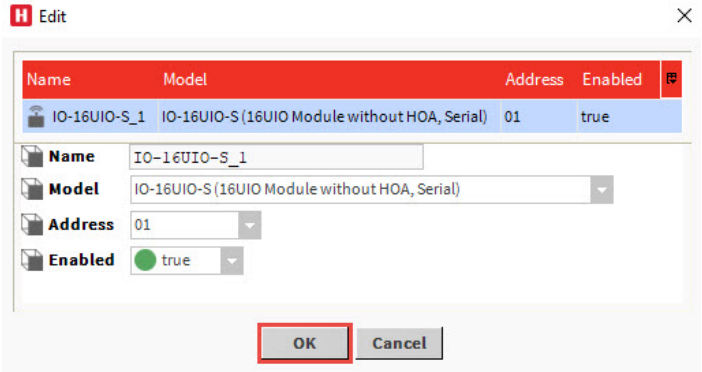


Figure 19. Edit Dialogue Box

4. Change the properties (Name, Address, Model and Enabled) as desired.



5. Click **OK**.
The IO module updated properties will show in the Database pane.

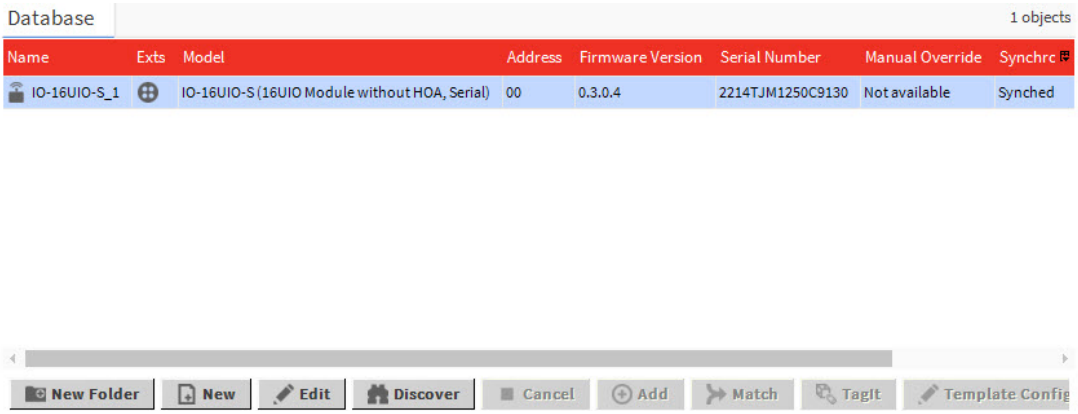


Figure 20. PanelbusNetwork View

NOTE:
If the address of a Panel Bus module is changed as described and no panel bus module is available for the newly selected address, the status of the Panel Bus module will change from Ok to Down. The Panel Bus module is displayed with an orange background in the Panel Bus device manager.

VIEW / MODIFY POINT PROPERTIES OF MODULE

To discover points and modify point properties.

PROCEDURE

1. In the Nav tree on the left, expand the PanelbusNetwork folder, followed by expanding one of the Panelbus Device folders. Double-click on Points. Select Panelbus Point Manger view from the top right corner.

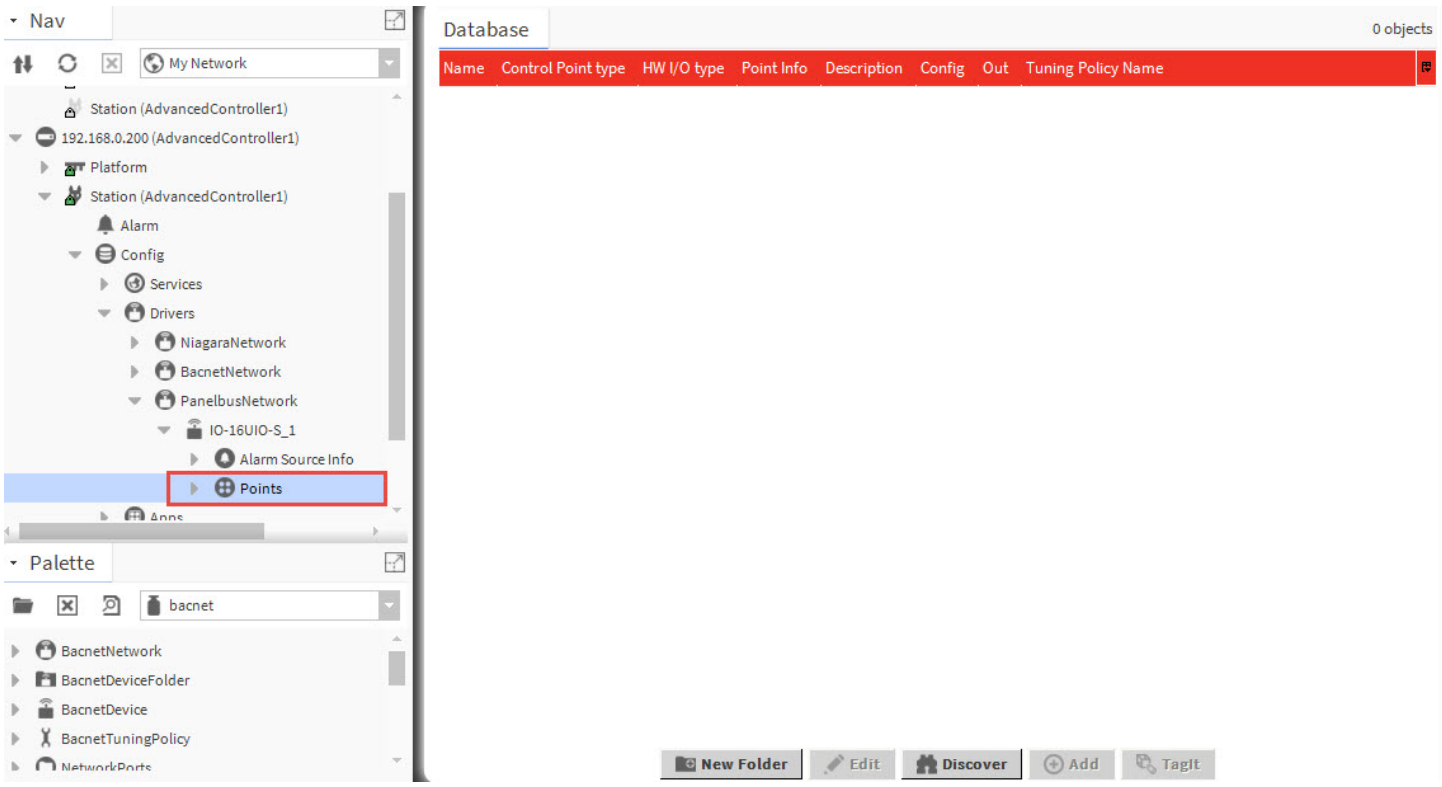


Figure 21. PanelbusNetwork View

2. Click the **Discover** button.
   All points will be listed in the upper **Discovered** pane.

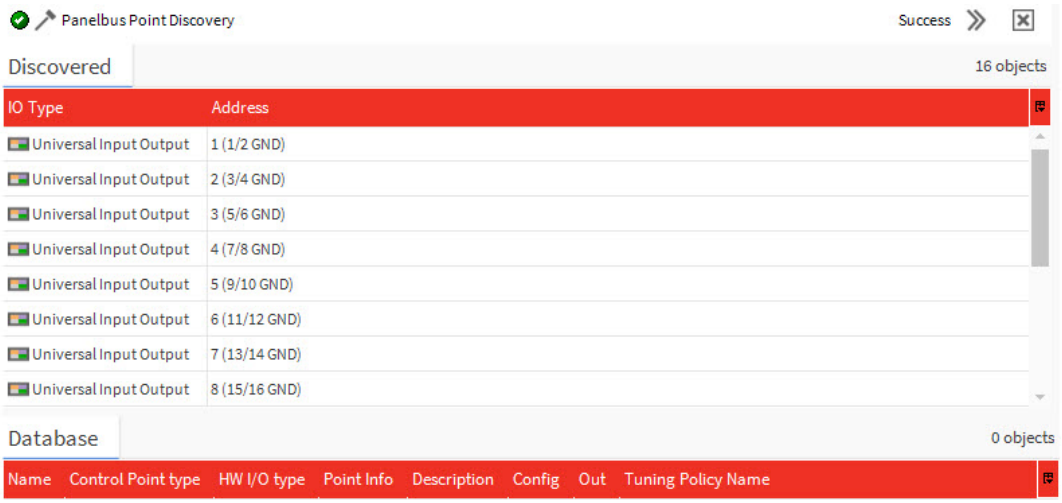


Figure 22. PanelbusNetwork View

3. Select the points you want to add to the Database of the station. Multi-selection using the SHIFT and STRG keys is possible.

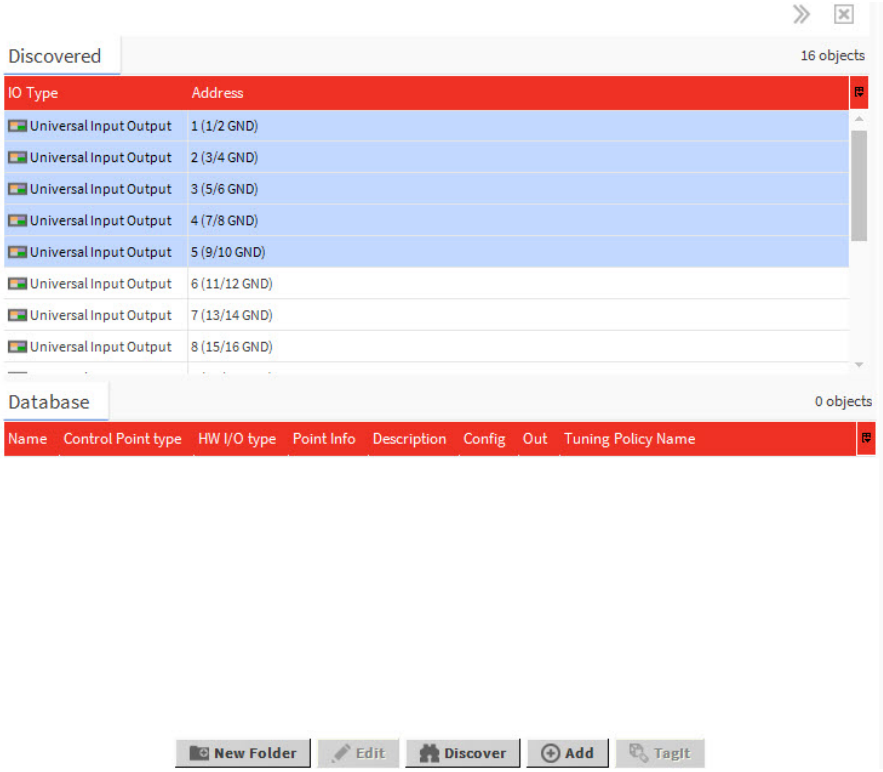


Figure 23. PanelbusNetwork View

4. Click **Add** button on the bottom of the pane. The Add dialogue box displays.

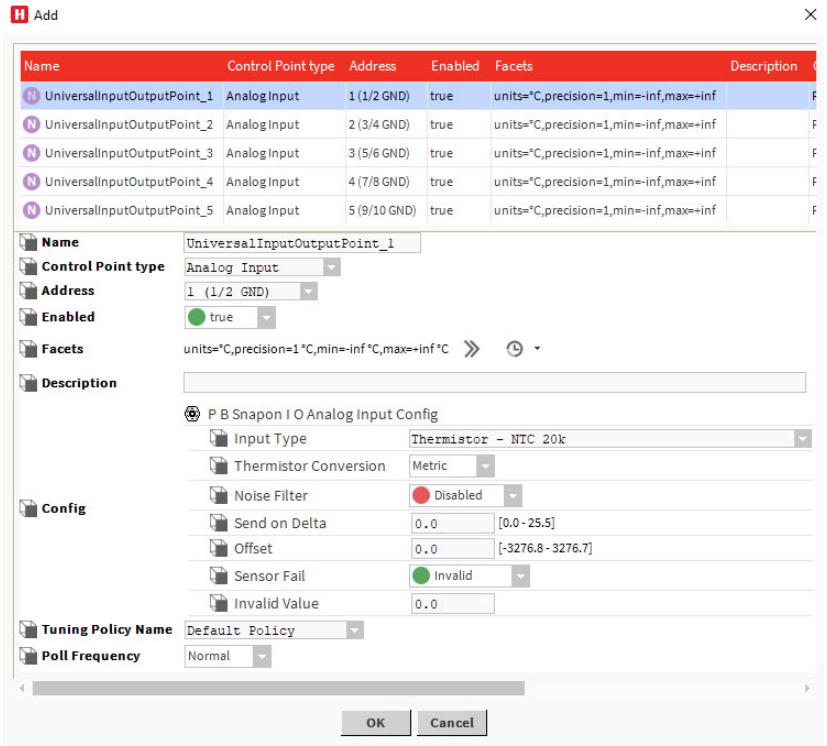


Figure 24. Add Dialogue Box

5. In this dialogue, you can modify point properties before adding the points to the database. You can apply these changes to one or multiple points. To make settings for several points at the same time, the user should mark the points in the "Add dialog." The marked points are highlighted in blue. White colored fields are enabled and can be modified. Beige colored fields are display only.

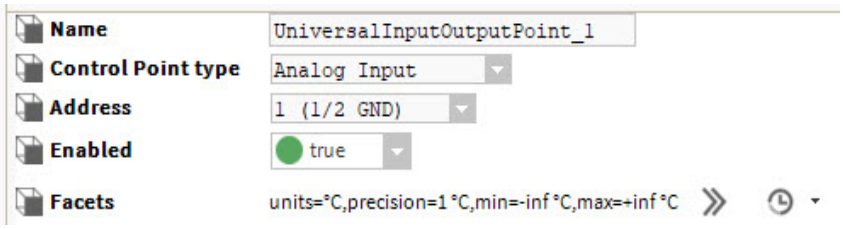


Figure 25. Add Dialogue Box

NOTE:

When changing the **Control Point Type** property of the point, its corresponding **Config** settings displayed below are updated accordingly. The control point type property cannot be reverted after the point has been added to database.
To be able to change the control point type, the data point must be deleted from the database and then added back to the database.

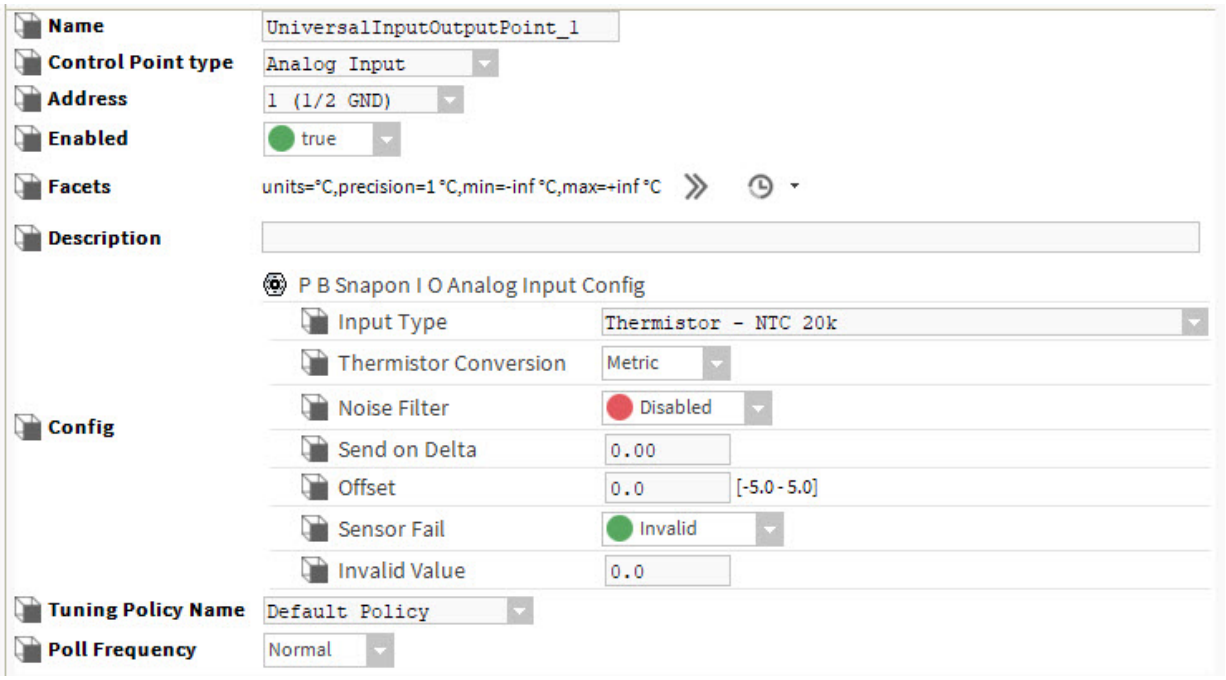


Figure 26. Add Dialogue Box

All other properties can be changed after the addition using the Edit function (see the following steps)

NOTE:

Regarding the license feature, only points added to the Database are counted. When the point limit of the license is exceeded, a point will go offline (fault state) and be marked in orange.

6. Select the points in the table of which settings you want to change.

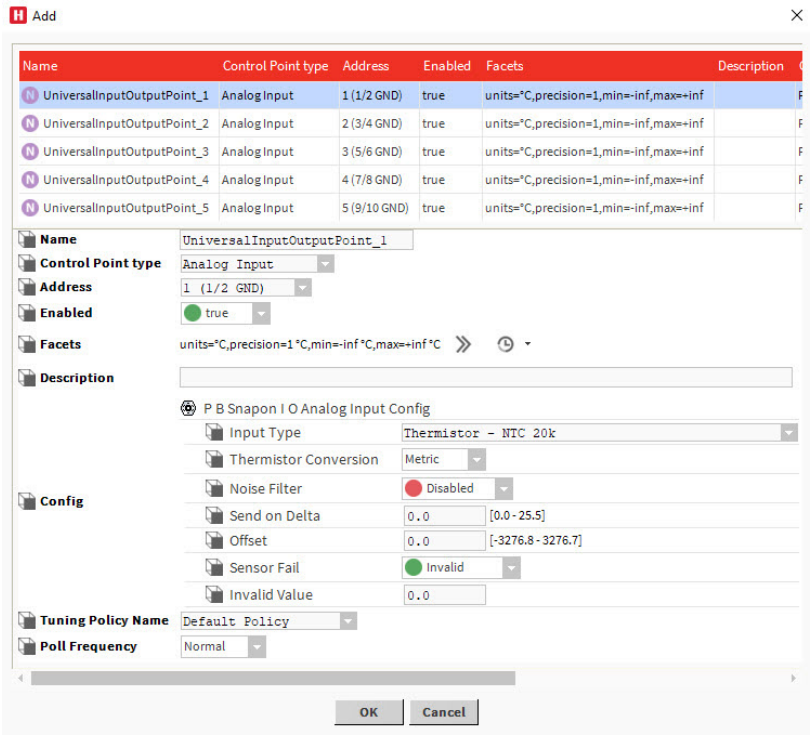


Figure 27. Add Dialogue Box

7. In **Control Point Type**, select the control point type.
According to their control point type, the datapoints are indicated by different colors in the table (example. green for digital control point type, violet for analog control point type).

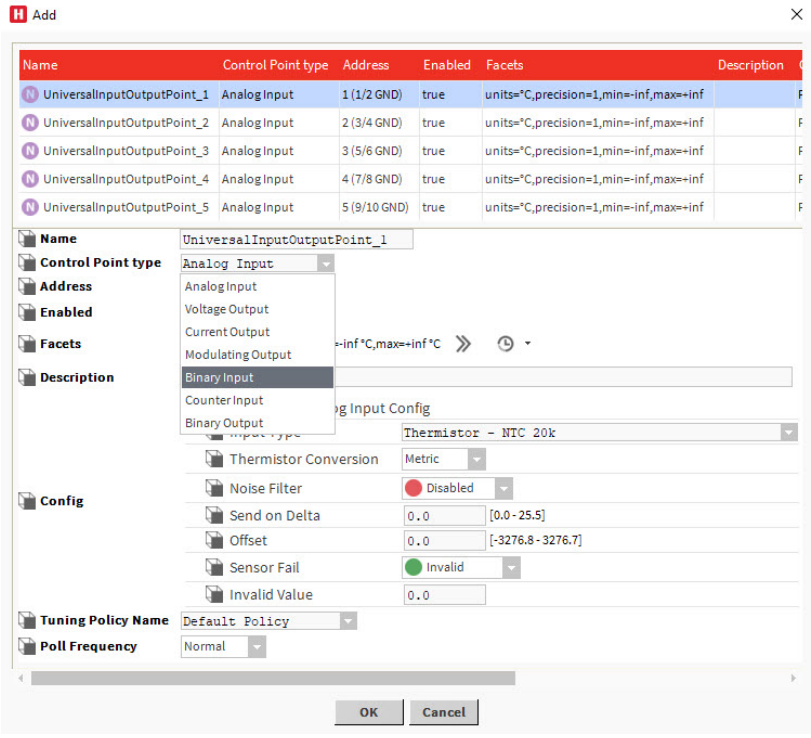


Figure 28. Add Dialogue Box

8. Click **OK**.
   The selected datapoints are added to the station.

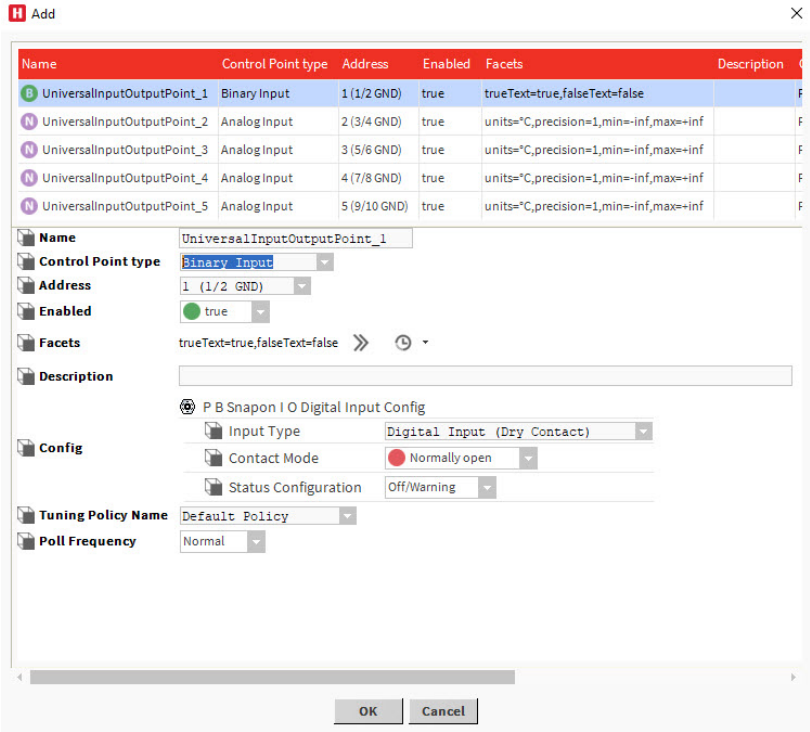


Figure 29. Add Dialogue Box

9. To modify point properties, select the datapoint(s) in the Database pane. Multi-selection using the SHIFT and STRG keys is possible.
   Click **OK**. The Edit dialogue box displays.

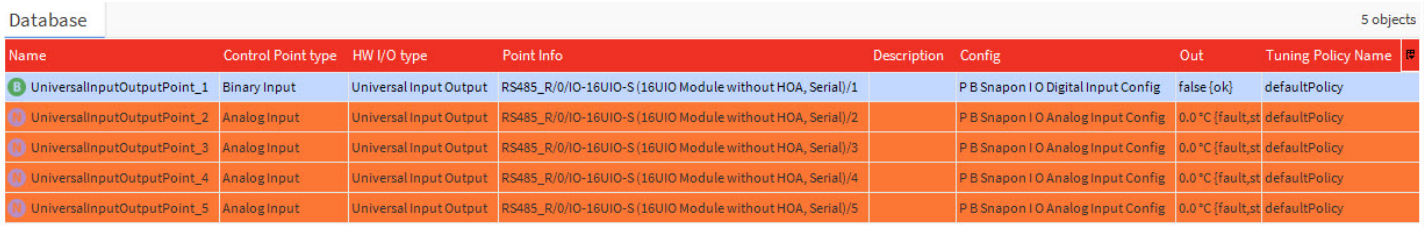


Figure 30. Edit Dialogue Box

10. To edit Control Point, Select Control Point Type and click **Edit**.

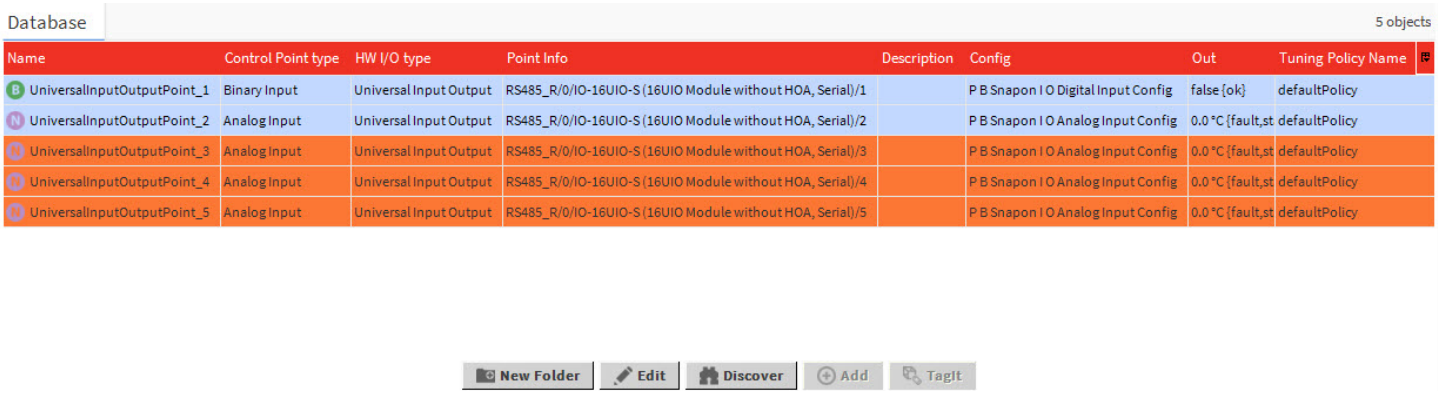


Figure 31. Edit Dialogue Box

11. Edit Dialogue box will be displayed. To change a datapoint property, enter the new value in the field.

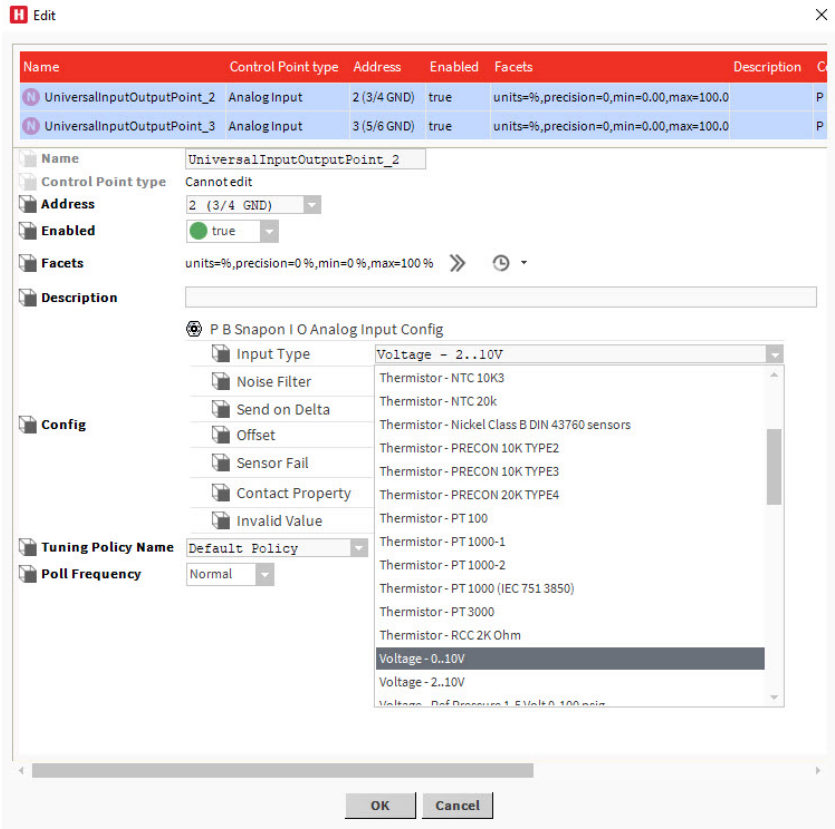


Figure 32. Edit Dialogue Box

or

Follow alternate step to select the Input type.

Select an option from the drop-down listbox. The field indicator is highlighted in red.

NOTE:
See *"Recommended workflow to change the datapoint Config property" on page 21.* for changing properties of datapoints without any error.

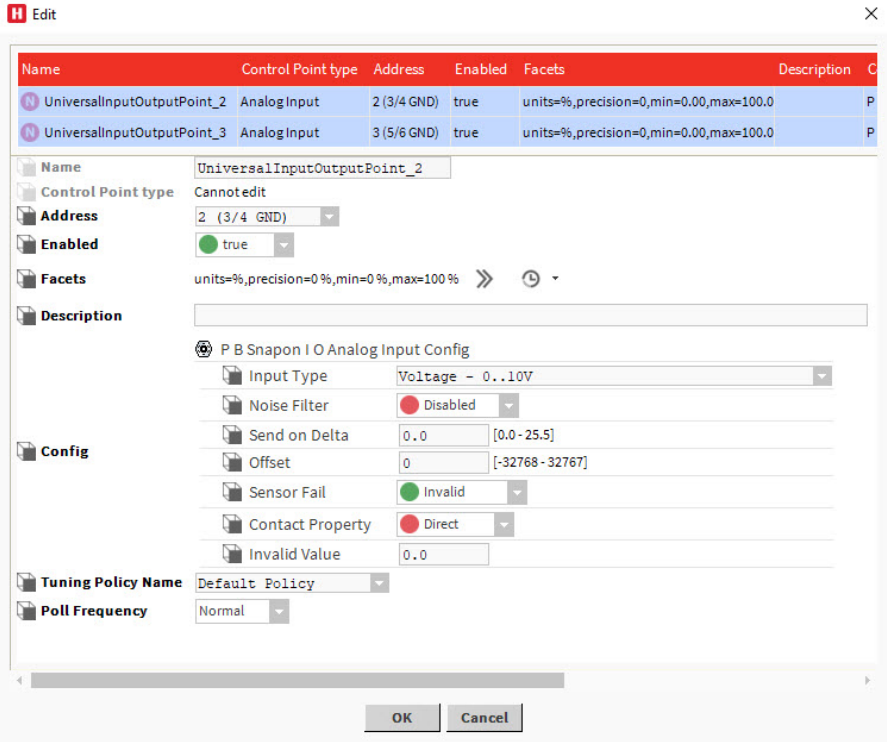


Figure 33. Edit Dialogue Box

12. To save the settings, click **OK**.
For detailed descriptions of the properties, please refer to the Panel Bus modules product data, form no. EN0B0701-GE51.

Recommended workflow to change the datapoint Config property

Follow the below workflow to change the properties of datapoints to avoid errors while saving the changes.

1. Select the Input Type in config property.

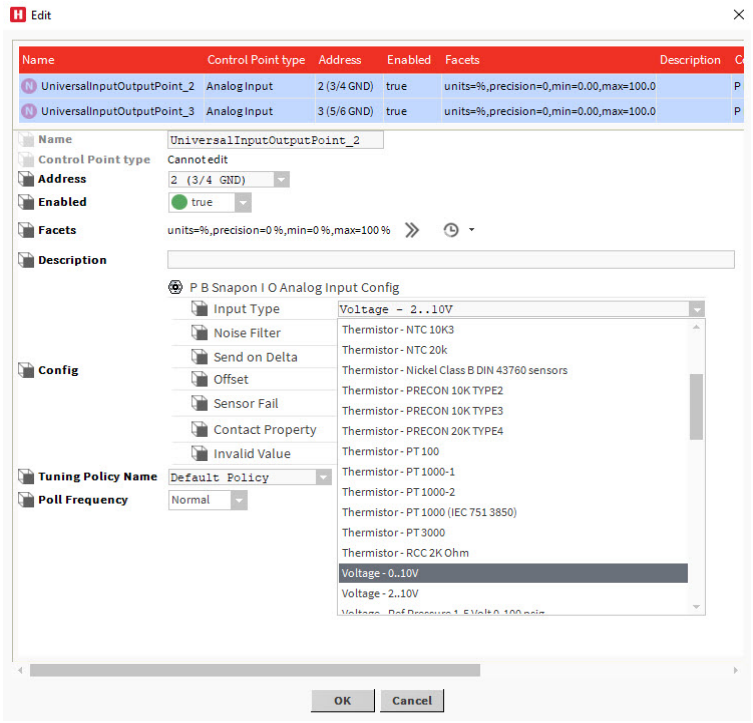


Figure 34. Edit Dialogue Box

2. Change the properties Send on Delta, Offset, Invalid Value, and click **OK**.

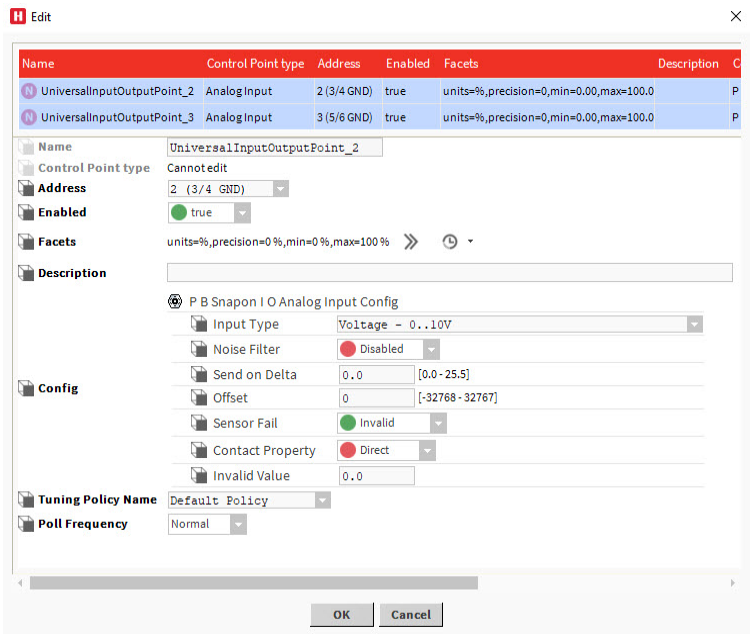
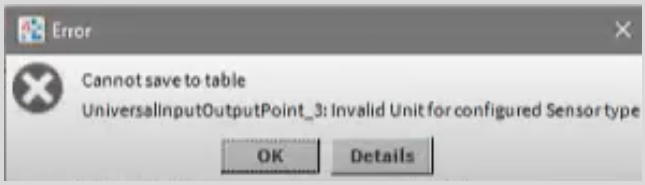


Figure 35. Edit Dialogue Box

NOTE:

If the config properties like Send on Delta, Offset, and Invalid Value are changed before selecting the Input Type then Input type specific unit will not get updated.
Now if user try to save the Config property, the user will get error message as shown below and user should set the correct unit in the facets specific manually or follow the recommended workflow give above. The below error message will display after clicking OK.



Thermistor Conversion, Noise Filter, and Sensor Fail config properties can be changed before or after selecting the Input Type in the config property.

AI and AO Point Configuration Parameter Descriptions

The following describes important individual configuration parameters points. Individual configuration parameters of the AI point are as follows:

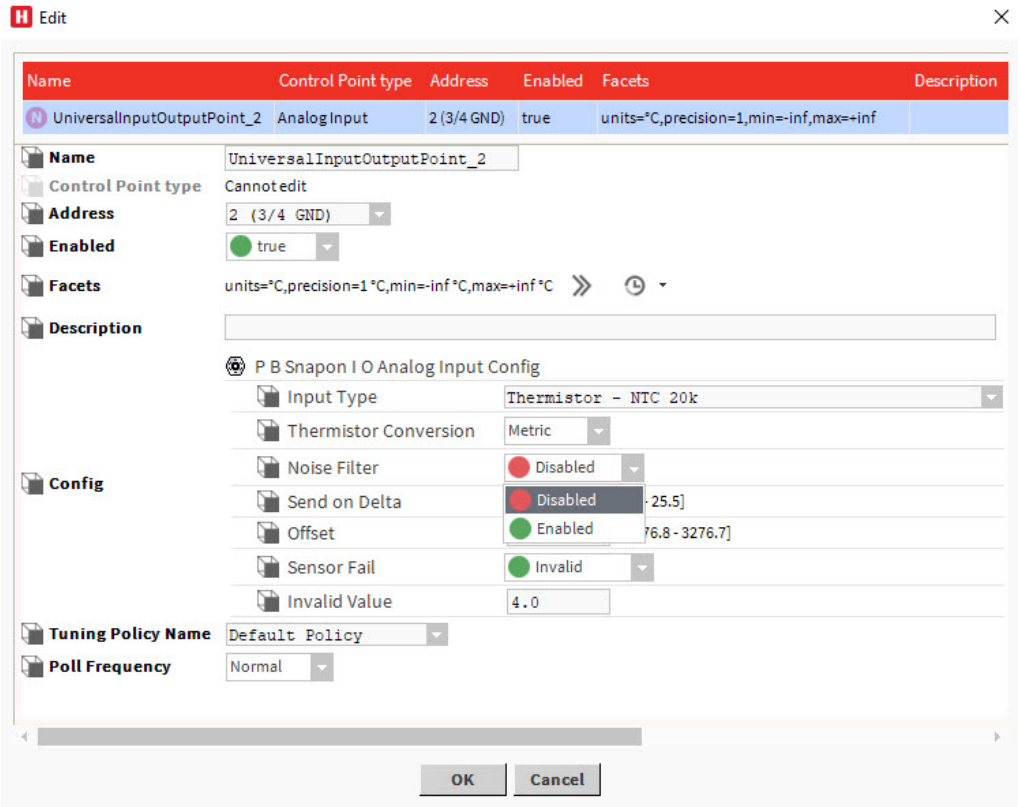


Figure 36. Edit Dialogue Box

Noise Filter:

If enabled, the analog input is less noisy, that means, the LSB bit toggling of the AD-converter is suppressed.

Disadvantage: slowly changing values are reported with a few seconds delay. However, significant value changes are reported immediately. The noise filter is recommended for temperature sensors and must not be used for pressure control.

Select Modulating output from the Control Point type. The Individual parameter are as follows:

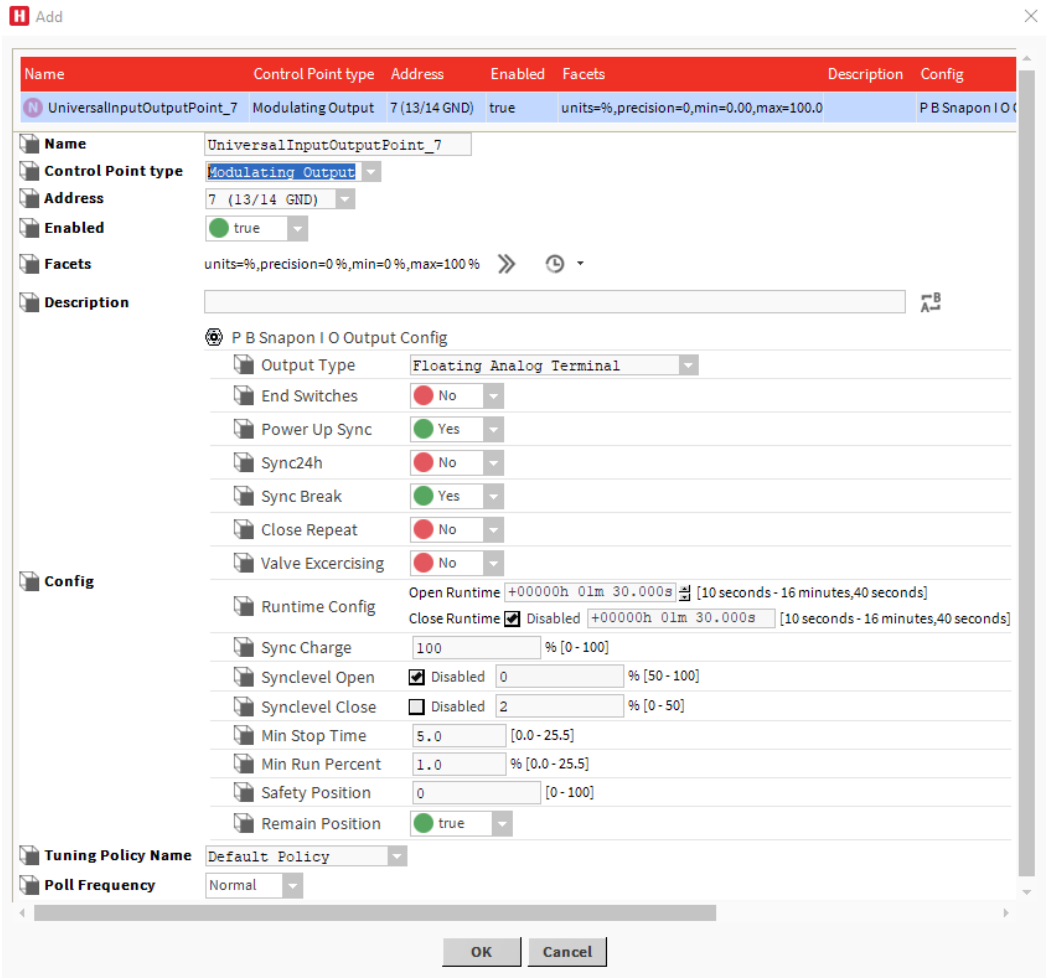


Figure 37. Control Point Parameters

Table 1. Configuration parameters

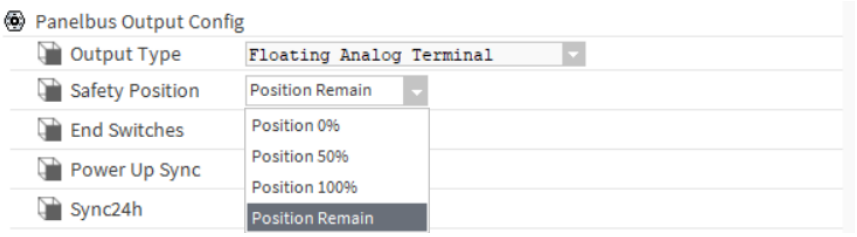
Parameter Name	Description
Safety Position	If set to below dropdown list, The I/O module revert to safety position in case of communication loss between the controller and the I/O module.  **Note:** • Position 0%, 50 and 100%: The I/O module will go to 0%, 50% or 100% as per the input selected in case of communication loss. • Position Remain: The I/O module will remain in the same position as it is, in case of communication loss.

Table 1. Configuration parameters

Parameter Name	Description
End Switches	Should only be set to “yes” if the controlled motor has end switches (and will stop at the end positions). The open or close relays will not be switched off at the end positions.
Power Up Sync	If set to “yes”, the motor is synchronized after power-up towards close position (0%).
Sync 24h	If set to “yes”, the motor is synchronized every 24h. Time is counted from startup.
Sync Break	If set to “yes”, a synclevel synchronization is broken off in case the setpoint returns to a value higher than Synclevel Close or lower than Synclevel Open.
	If set to “no”, the synchronization is completed first before the new setpoint is considered.
Close Repeat	If set to “yes” and the setpoint is 0% (which means close), then the motor will run again after a while for a short time. This is used to compensate a sagging rubber seal.
Valve Exercising	If set to “yes”, the motor is moved once a week to approx. 50% and back to Close position. This is useful if a valve is not used during whole summer period.
Sync Charge	A percentage level related to the Open/Close runtime which takes place at a synchronization. If e.g. the Close runtime is 100 sec and the Synch Charge is 50%, then the motor will run additional 50 sec after reaching the closed position.
Synclevel Open	If not disabled, the motor will synchronize towards Open position in case the setpoint is >= the Synclevel Open. After synchronization, the motor remains at 100%.
Synclevel Close	If not disabled, the motor will synchronize towards Close position in case the setpoint is <= the Synclevel Close. After synchronization, the motor remains at 0%.
Min Stop Time	If the motor runs towards open or close position and a new setpoint forces a change of the running direction, then the motor will first stop for the Min Stop Time before moving in the opposite direction.
Min Run Time	If the setpoint changes only small amounts, then the motor will at least run with the Min Run Time, even this will overrun setpoint.
Synchronization Behavior of AO module configured as Floating output	To regularly update the real actuator position with the calculated position and ensure that the actuator reaches its end position, a synchronization process si performed by the I/O module. During synchronization, the I/O module will continue running for the configured runtime once it reaches the calculated end position.

UIO and UI Point Configuration Parameter Descriptions

The following describes important individual configuration parameters of UIO and UI points. Individual configuration parameters of the AI point are as follows:

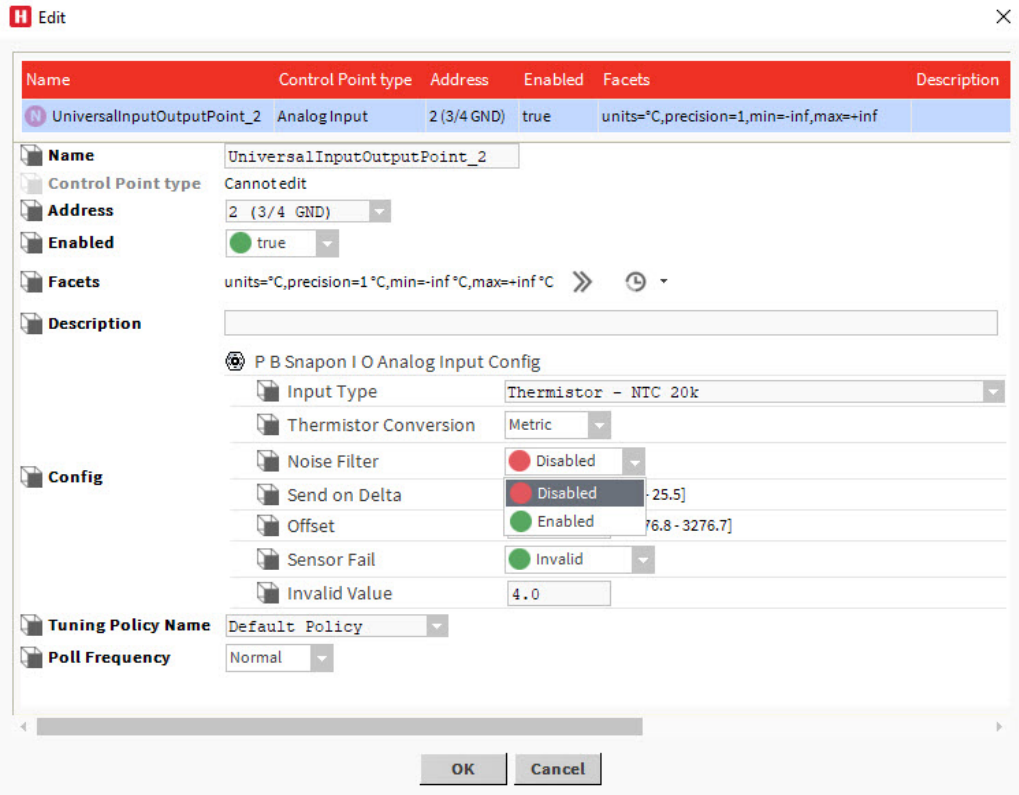


Figure 38. Edit Dialogue Box

Table 2. Configuration parameters

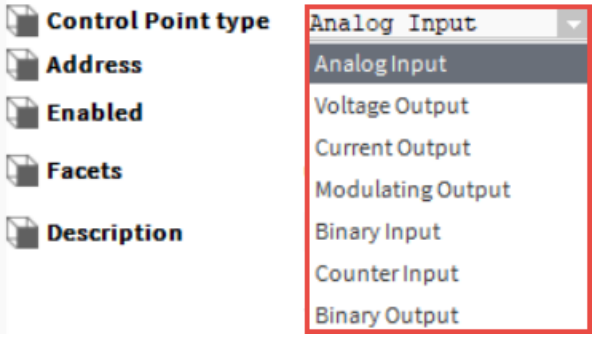
Parameter Name	Description
Name	Name of the I/O module.
Control Point type	Choose one of the control point type from the drop down list as per the requirements. The Config parameters will change based on the selected control point type. 

Table 2. Configuration parameters

Parameter Name	Description
Noise Filter	If enabled, the analog input is less noisy, that means, the LSB bit toggling of the AD-converter is suppressed. Disadvantage: slowly changing values are reported with a few seconds delay. However, significant value changes are reported immediately. The noise filter is recommended for temperature sensors and must not be used for pressure control.

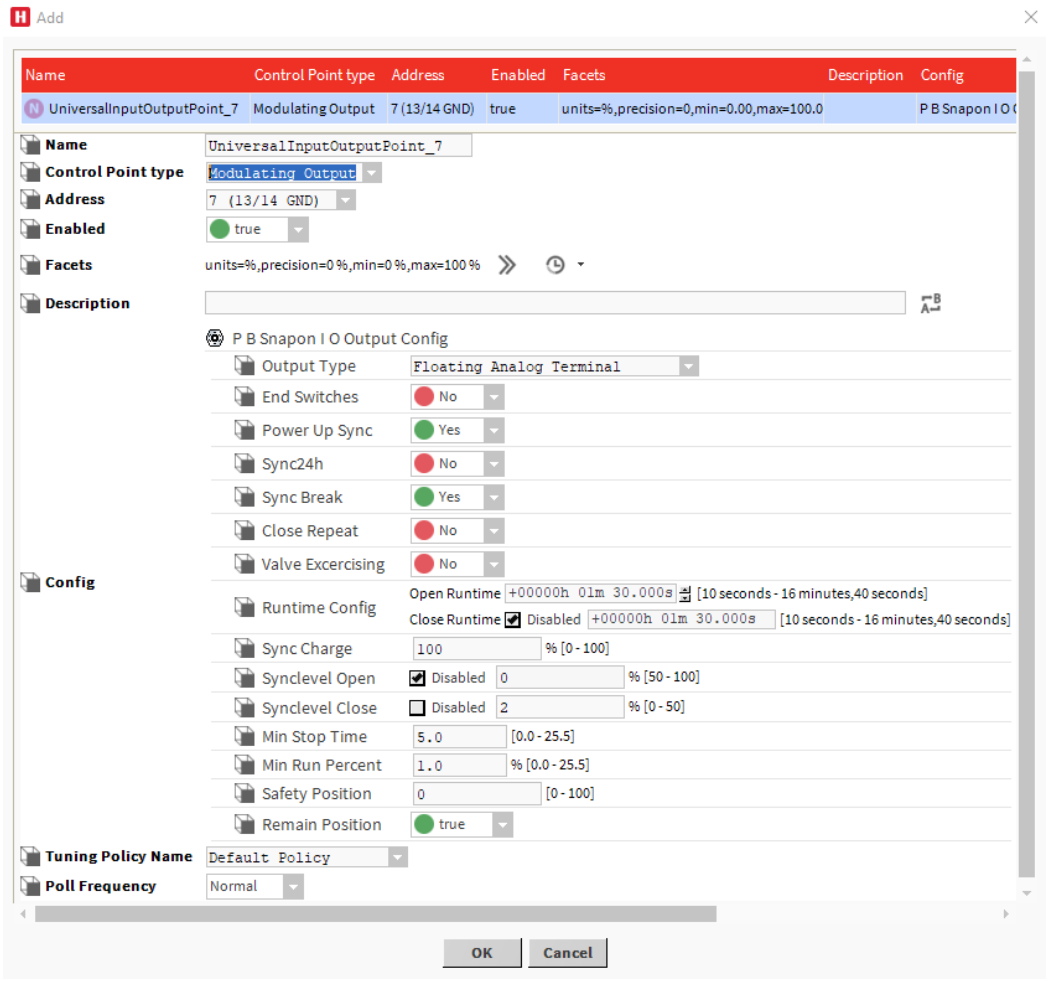


Figure 39. Control Point Parameters

Select Modulating output from the Control Point type. The Individual parameter are as follows:

Table 3. Configuration parameters

Parameter Name	Description
Safety Position	The I/O module revert to safety position in case of communication loss between the controller and the I/O module. Range: 0-100%
Remain Position	The I/O module will remain in the same position as it is, in case of communication loss. Set “true” to remain in same position or Set “False” to go back to set safety position.

Table 3. Configuration parameters

Parameter Name	Description
End Switches	Should only be set to “yes” if the controlled motor has end switches (and will stop at the end positions). The open or close relays will not be switched off at the end positions.
Power Up Sync	If set to “yes”, the motor is synchronized after power-up towards close position (0%).
Sync 24h	If set to “yes”, the motor is synchronized every 24h. Time is counted from startup.
Sync Break	If set to “yes”, a synclevel synchronization is broken off in case the setpoint returns to a value higher than Synclevel Close or lower than Synclevel Open.
	If set to “no”, the synchronization is completed first before the new setpoint is considered.
Close Repeat	If set to “yes” and the setpoint is 0% (which means close), then the motor will run again after a while for a short time. This is used to compensate a sagging rubber seal.
Valve Exercising	If set to “yes”, the motor is moved once a week to approx. 50% and back to Close position. This is useful if a valve is not used during whole summer period.
Sync Charge	A percentage level related to the Open/Close runtime which takes place at a synchronization. If e.g. the Close runtime is 100 sec and the Synch Charge is 50%, then the motor will run additional 50 sec after reaching the closed position.
Synclevel Open	If not disabled, the motor will synchronize towards Open position in case the setpoint is >= the Synclevel Open. After synchronization, the motor remains at 100%.
Synclevel Close	If not disabled, the motor will synchronize towards Close position in case the setpoint is <= the Synclevel Close. After synchronization, the motor remains at 0%.
Min Stop Time	If the motor runs towards open or close position and a new setpoint forces a change of the running direction, then the motor will first stop for the Min Stop Time before moving in the opposite direction.
Min Run Time	If the setpoint changes only small amounts, then the motor will at least run with the Min Run Time, even this will overrun setpoint.
Synchronization Behavior of UIO module configured as Floating output	To regularly update the real actuator position with the calculated position and ensure that the actuator reaches its end position, a synchronization process si performed by the UIO I/O module. During synchronization, the UIO I/O module will continue running for the configured runtime once it reaches the calculated end position.

Configuring the UIO and UI IO Input Type parameter

When the IO module device is configured with Input type parameter, the alarm will trigger before the sensor reaches its voltage and current limits.

Example: If the UIO or UI Input type is set to Voltage - 2 ..10V and configured the IO module, the fault alarm goes off at voltage 1.5 V which is before the set limit.

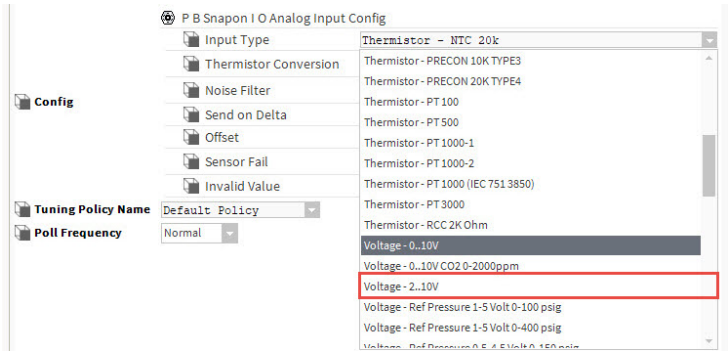


Figure 40. Edit Dialogue Box

NOTE:
For Voltage and Current sensor limits, refer below Voltage Sensor and Current Sensor tables.

FOR VOLTAGE SENSOR

Table 4. Voltage Sensors limits

Characteristic	SensorID	Low Limit	High Limit	Out Range Alarm
0..10 V	1		10 V	Open loop
2..10 V	2	1.5 V	10 V	Open loop
Ref Pressure 1-5 Volt_0-100 psig	32	0.5 V	6 V	Open loop
Ref Pressure 1-5 Volt_0-400 psig	33	0.5 V	6 V	Open loop
Ref Pressure 1-5 Volt_0-400 psig	34	0.2 V	6 V	Open loop
Ref Pressure 0.5-4.5 Volt_0-300 psig	35	0.2 V	6 V	Open loop
Ref Pressure 0.5-4.5 Volt_0-500 psig	36	0.2 V	6 V	Open loop
0-10 V MLH Pressure 2.5 INWC	57		10 V	Open loop
0-10 V MLH Pressure 0.25 INWC	58		10 V	Open loop
0-10 V CO2 0-2000 ppm	59		10 V	Open loop

FOR CURRENT SENSOR

Table 5. Current Sensors limits

Characteristic	SensorID	Low Limit	High Limit	Out Range Alarm
0-10 mA	23		12 mA	Open loop
4-20 mA	24	2 mA	24 mA	Open loop
0-20 mA	25		24 mA	Open loop
4-10 mA	26	2 mA	12 mA	Open loop

Table 5. Current Sensors limits

Characteristic	SensorID	Low Limit	High Limit	Out Range Alarm
ALS300_19.25-4.25 mA_0-300 fc	37	2 mA	24 mA	Open loop
ALS1.5K_19.25-4.25 mA_0-1500 fc	38	2 mA	24 mA	Open loop
LLO_4-20 mA_0-1000 lux	3E	2 mA	24 mA	Open loop
LLO_4-20 mA_0-2000 lux	3F	2 mA	24 mA	Open loop
LLO_4-20 mA_0-4000 lux	40	2 mA	24 mA	Open loop
LLO_4-20 mA_0-8000 lux	41	2 mA	24 mA	Open loop
LLO_4-20 mA_0-20000 lux	42	2 mA	24 mA	Open loop
LLS_4-20 mA_0-1000 lux	43	2 mA	24 mA	Open loop
LLS_4-20 mA_0-2000 lux	44	2 mA	24 mA	Open loop
LLS_4-20 mA_0-4000 lux	45	2 mA	24 mA	Open loop
LLS_4-20 mA_0-8000 lux	46	2 mA	24 mA	Open loop
LLS_4-20 mA_0-20000 lux	47	2 mA	24 mA	Open loop
4-20 mA MLH Pressure Sensors 0-50 psig	50	2 mA	24 mA	Open loop
4-20 mA MLH Pressure Sensors 0-150 psig	51	2 mA	24 mA	Open loop
4-20 mA MLH Pressure Sensors 0-300 psig	52	2 mA	24 mA	Open loop
4-20 mA MLH Pressure Sensors 0-500 psig	53	2 mA	24 mA	Open loop
4-20 mA MLH Pressure Sensors 0-1000 psig	54	2 mA	24 mA	Open loop

SETTING DATAPOINT

Setting Datapoint into Manual Mode (Manual Override)

Sets the datapoint into Manual operating mode and overwrites the present value with a defined value entered manually.

This function is specific for Panel Bus input points. Niagara input points cannot be overridden. This feature allows, for example, overriding an input point in case of sensor failure. The function does not write to any priority array.

1. In the Database pane, right-click the datapoint, click **Actions** and then click **Override** in the context menu.

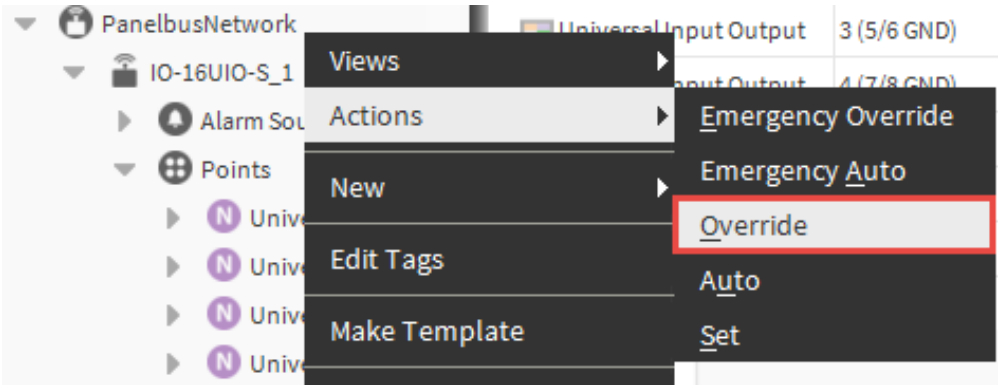


Figure 41. Points Options

2. The Override dialogue box displays.
   Modulating Output control point override is shown as an example.

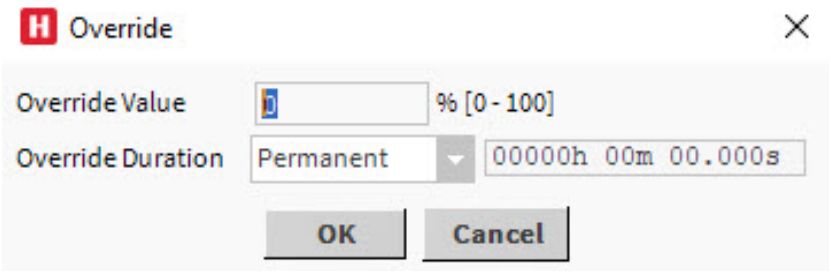


Figure 42. Override Dialogue Box

NOTE:
The Override dialogue box will change based on the Control point type selection and Input type parameter selection.

3. Enter the value in Override Value and select the Override Duration from drop down list.

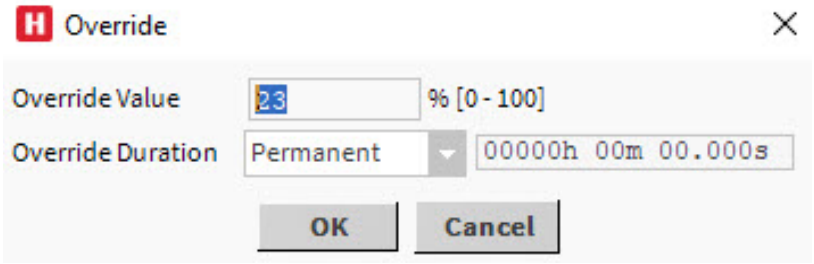


Figure 43. Override Dialogue Box

4. Click **OK**.
   On the Database pane, the changed value is updated in the Out column:

Figure 44. Database Pane

Setting Datapoint from Override Mode into Auto Mode

Sets a datapoint that is in override (manual) mode into Automatic mode.

1. In the Database pane, right-click the datapoint, click **Actions** and then click **Auto** in the context menu.

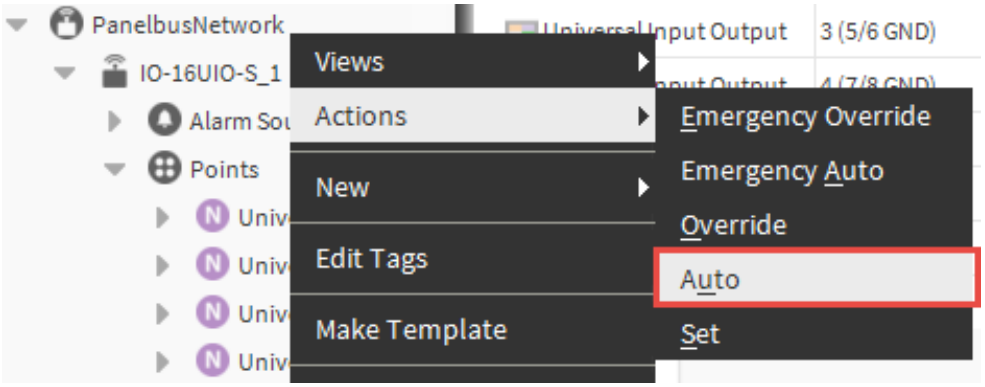


Figure 45. Points Options

2. On the Database pane, the changed value is updated in the Out column:

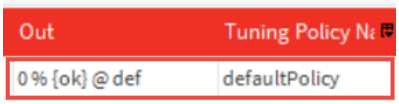


Figure 46. Database Pane

NOTE:
During Auto override the Out value will change to Set value.
To see/set the Set value:
In the Database pane, right-click the datapoint, click **Actions** and then click **Set** in the context menu.

IO MODULE HOA OVERRIDE

The Hand/Off/Auto (HOA) modules make it possible to override the plant when the controller/strategy is not achieving the required results. The modules can also be used to override the plant to test if it is working correctly.

"Auto" and "Hand" indicate the overwritten data point on the IO device. Thus, The point which is manually overwritten on the device can be recognized in the software.

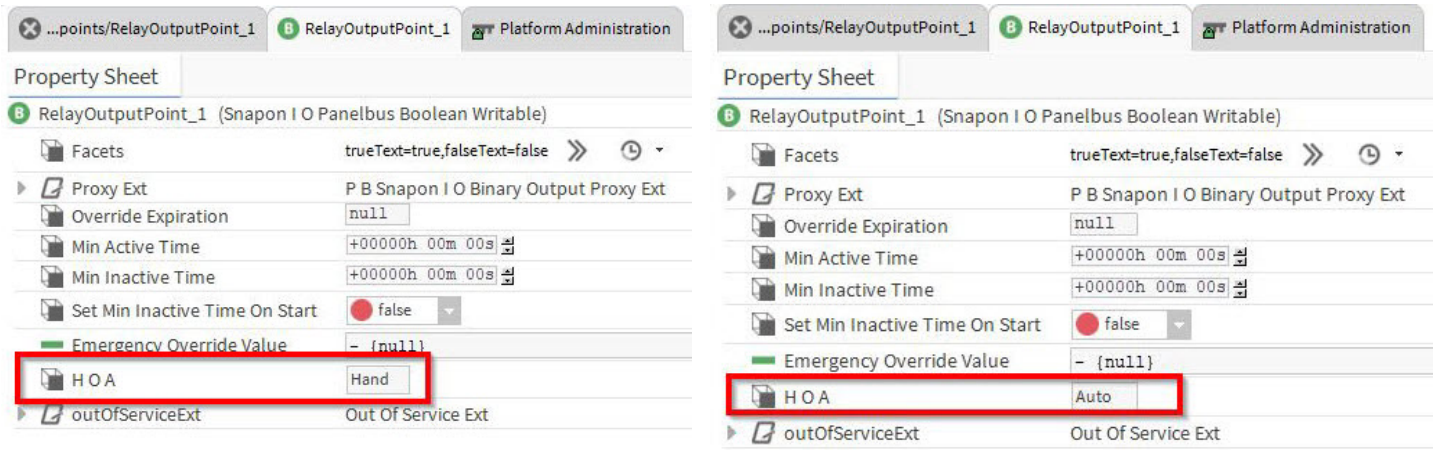


Figure 47. Point Property Sheet

The Emergency Override Value parameter shows the value to be expected if an auto switch resets the manual override on the IO module.

⚠ CAUTION

If the auto button on the 8 DO module is pressed, this only affects the manual override on the 8 DO module. A security risk as the user cannot see that the input is set to active again since none of the 16 slots are signaling that there could be a true.

The emergency override action will have a delay when executing compare to normal override. Ensure the emergency override is performed, must reflect in the software and device before performing any activity.

The Panel Bus Data points can be overridden with the Niagara workbench or manual override (HOA) at the IO module.

- **From device:** The device have a Rotary dial for Hand mode and Auto button for Auto mode.
- **From Software:** The user can Emergency override value by navigating to device point, **Right click** on **Point**, Select **Action** > refer below figure for emergency options.

Figure 48. Point Options

Override from Software

The User can override the device points from the software (Niagara). There are three options to Active, Inactive and Auto.

HOA over Emergency override action

The Rotary dial can be used to overwrite an output data point on the IO device.

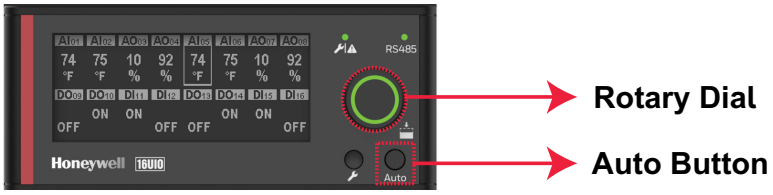


Figure 49. IO Module

If this HOA function is activated, it influences the In1 slot of the respective data point. The In1 sets the output of the data point to the specified manual value.

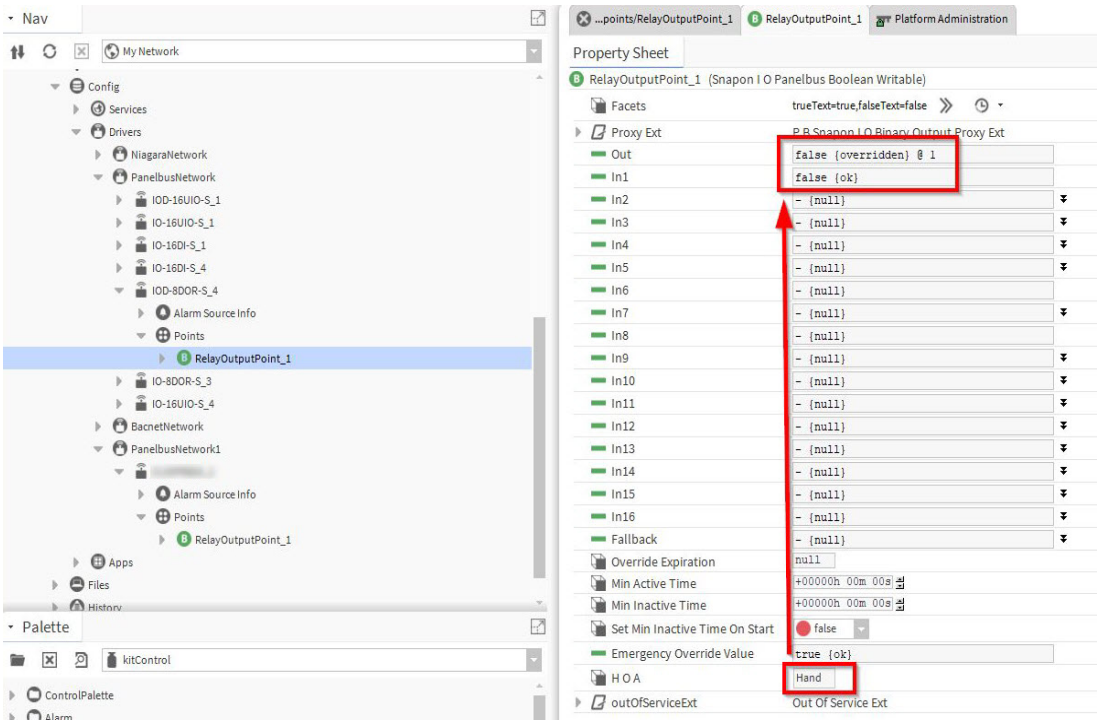


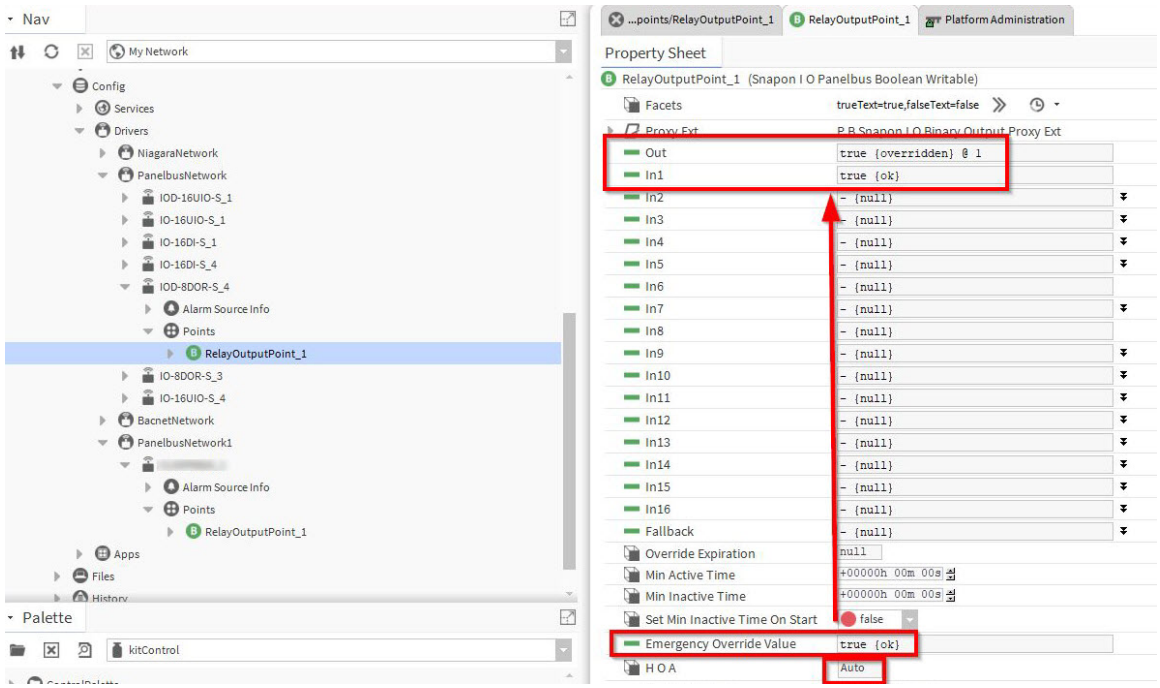
Figure 50. Point Property sheet

At the same time, the slot "HOA" of the datapoint is set to manual. This happens so that a user can recognize in the software that the manual mode was activated at the IO module.

The In 1 slot can also be overwritten by the emergency actions in the software. If both functions, HOA at the IO module and emergency action, are activated at the same time, the In 1 slot will take over the value from the HOA of the IO module. The background is the HOA at the IO module has the higher priority.

Figure 51. Point Options

For safety reasons, when using the HOA at the IO module and the Emergency Action at the same time, it can be recognized in the parameter "Emergency Override Value," which states the Emergency Action will output as soon as the HOA at the IO module is reset.



NOTE:

The " Auto " reset button on a IO module only resets the HOA specification carried out on the IO module. If a value was written to In 1 via the Emergency Action, this value remains unchanged by activating the Auto button on the IO module.

CONFIGURATION AND USE OF ENHANCED DATAPOINT CREATION MODULE

The following sections describe the configuration and use of the enhanced data point creation module. It can be used in offline and online mode.

It is recommended to do the engineering using Niagara workbench in offline mode. This means that the station is running on the PC.

Then in online mode, the station should be copied to the Advanced controller using the Commissioning Wizard. When following this procedure, the necessary files are copied automatically to the Advanced controller

The enhanced data point creation module provides the following functions:

- I/O creation configuration
- Datapoint creation via context menu in the Nav tree
- Datapoint creation via Drag&Drop of datapoints from palette or Nav tree
- Copy Datapoints

I/O Creation Configuration

1. In the menu, click Tools and then click I/O Creation Configuration Tool.

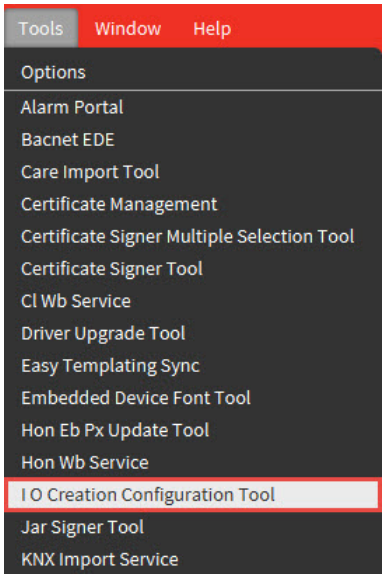


Figure 52. Tools menu

2. The I/O Creation Configuration dialogue box displays.
   Specify the default settings for analog outputs and binary inputs and outputs by selecting desired options from the drop-down lists, and then click **OK**.

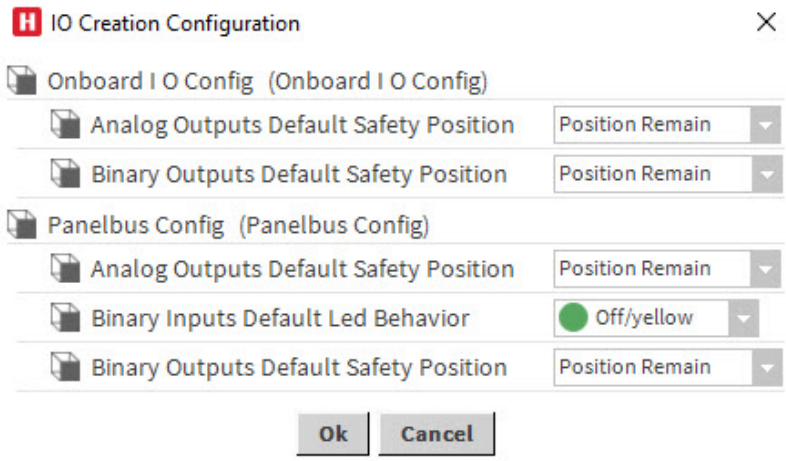


Figure 53. I/O Creation Configuration Dialogue Box

Create Datapoint via Context Menu

Datapoints can be created in:

- Individual folders
- the points folder
- points objects

1. Create an individual folder, e.g. for your control logic (Right click on Driver > select new > select Folder option > Type desired name and click OK).
2. Right-click on the individual folder, e.g. **CtrlLogic**, and then click in the **Views** menu.
   Or, click on the points folder or points object.

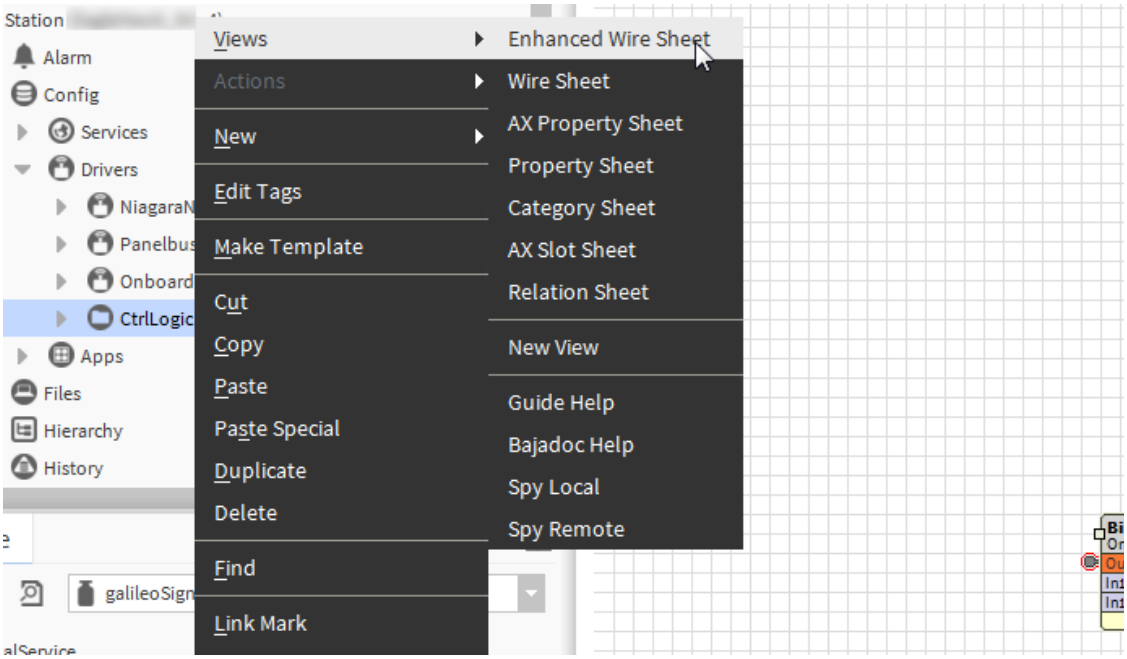


Figure 54. CtrlLogic Options view

3. Right-click in the Enhanced Wire Sheet view, then click the network driver (Panel Bus 1 or Panel Bus 2), and then click the datapoint type (Binary output, Analog output, Binary Input, or Universal Input, Relay output, Digital Input, Analog Input or Floating Output for Panel Bus driver).

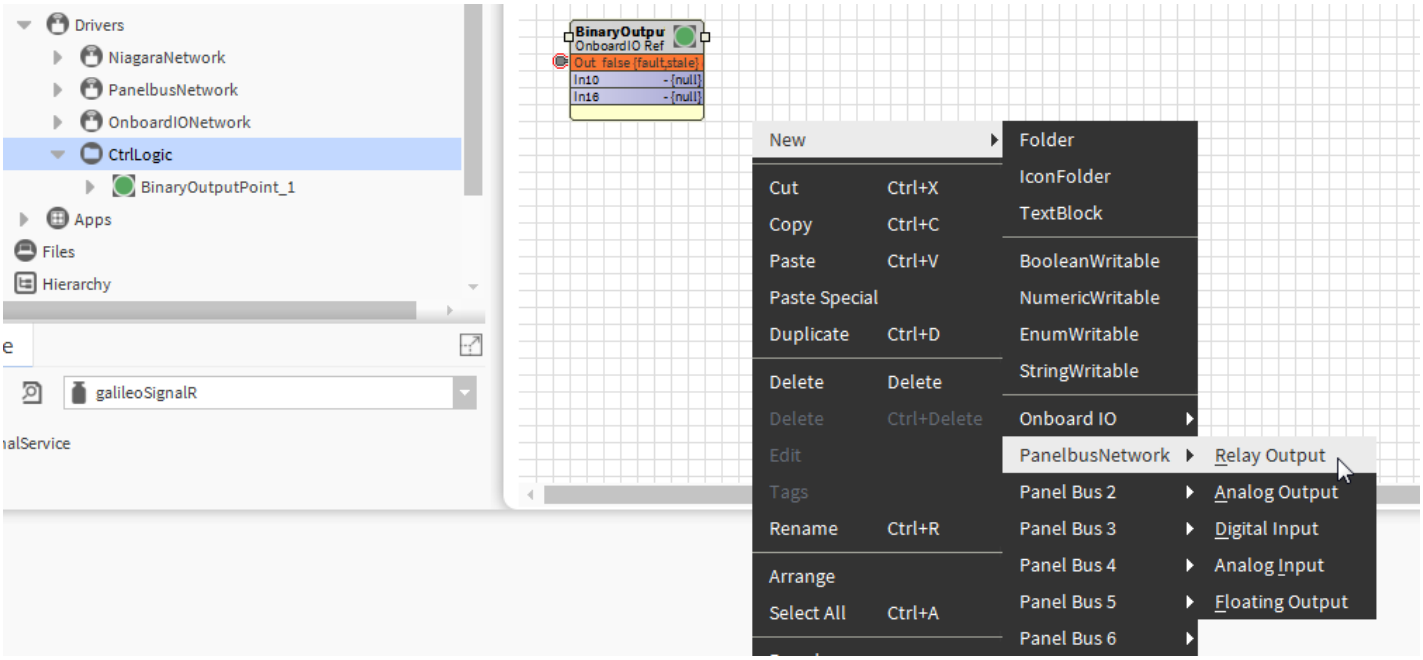


Figure 55. Wire Sheet view

4. The **Add** dialogue box of the Panel Bus driver displays.
If desired, modify the point properties before the point will be created, and then click **OK**.

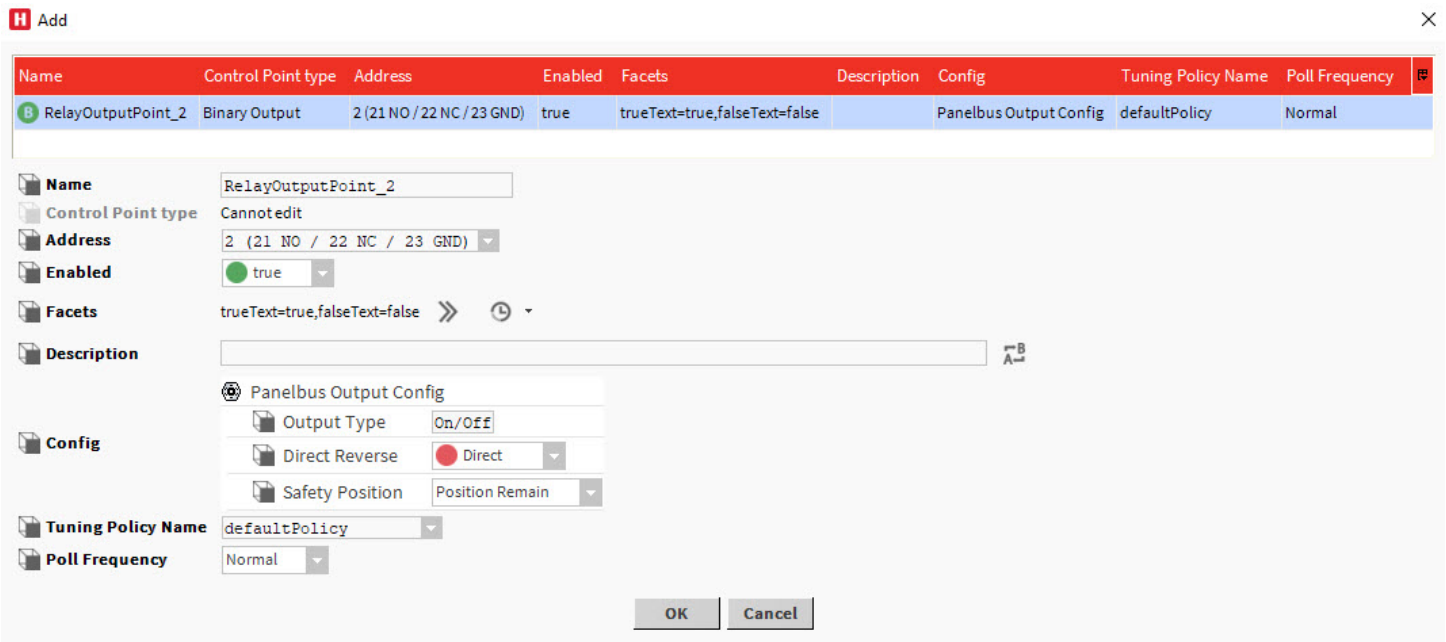


Figure 56. Add Dialogue Box

5. By default, the created datapoint will be assigned to the next bus specific device (Panel Bus) with a free suitable terminal according to the datapoint type. If there is no appropriate device available, a new device will be created.

   If in the Nav tree, an object is selected other than a points folder or a points object, in addition to the creation of the native datapoint, a reference datapoint will be created. A reference datapoint is indicated by ´Ref` in the point icon.

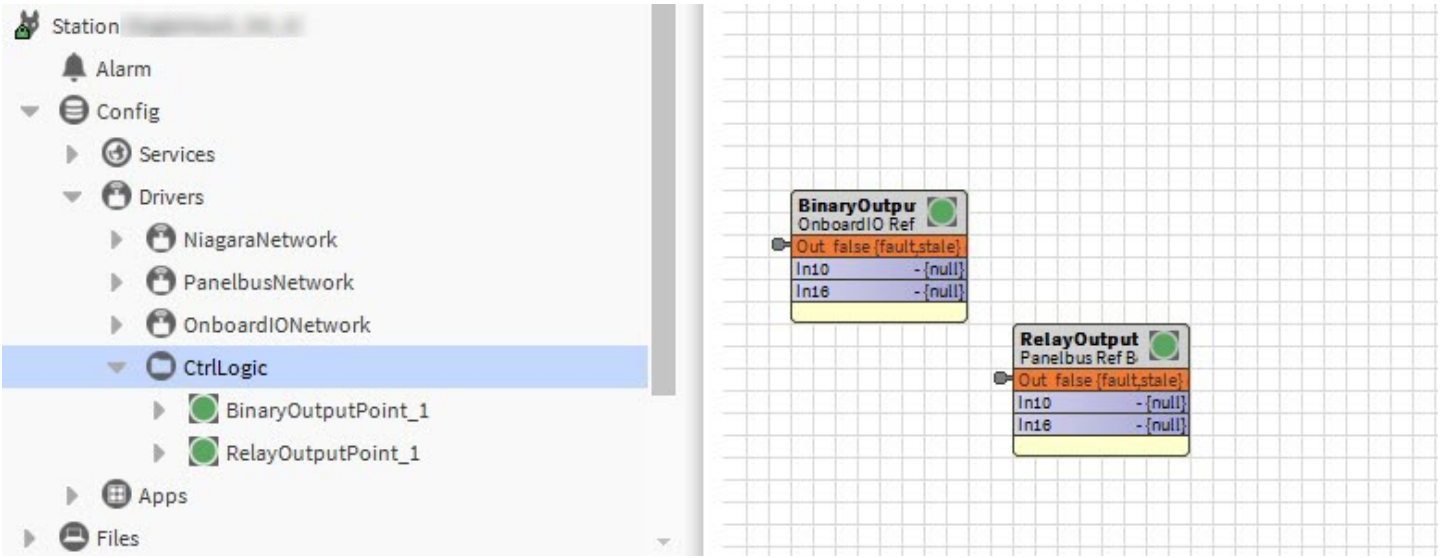


Figure 57. Wire Sheet view

As native datapoints, reference datapoints provide the same actions via right-clickable context menu.

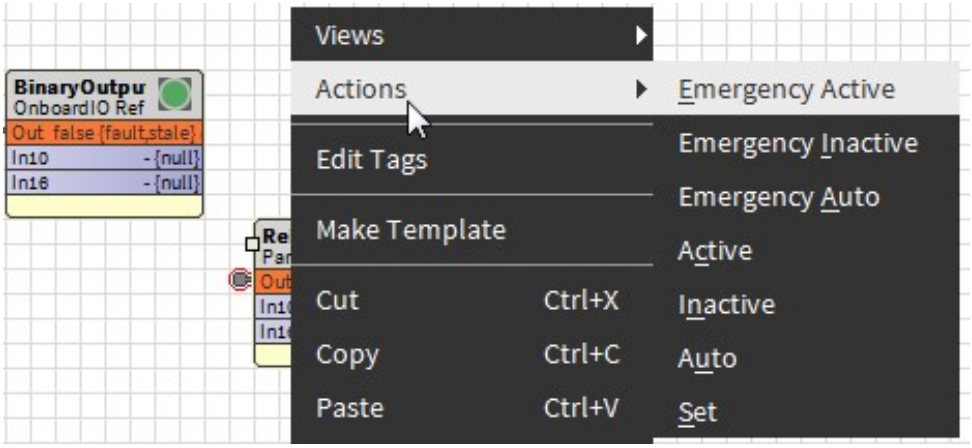


Figure 58. Wire Sheet Options

Reference datapoints and native datapoints can be deleted. When deleting a reference point on the enhance wire sheet, you will be asked if you want to delete the native point too.

The below figure shows datapoints created when the Points object was selected. In this case, no reference datapoints (as shown in the figure above) have been created.

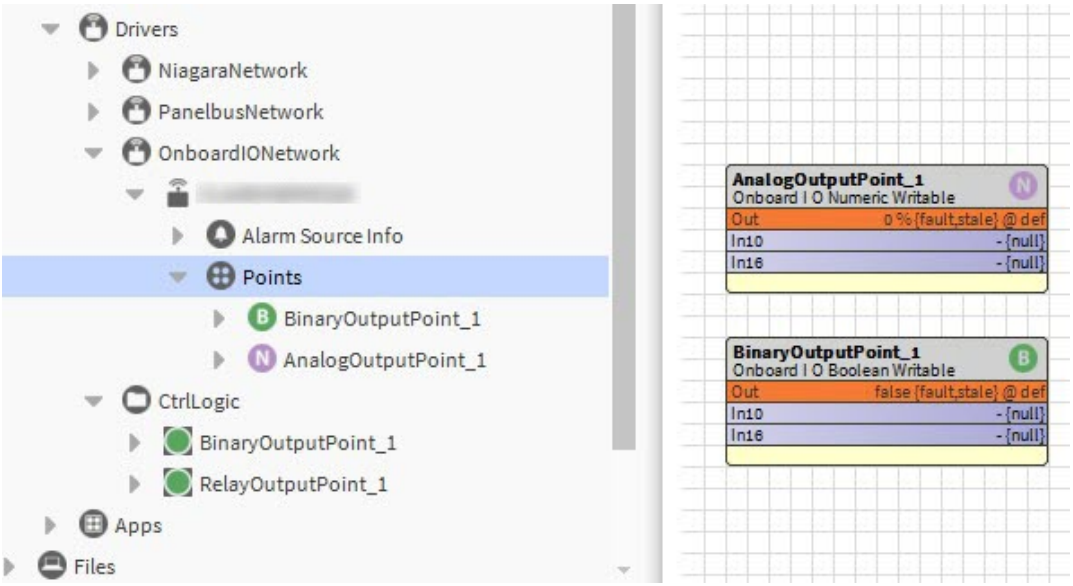


Figure 59. Wire Sheet view

NOTE:

Creating datapoints directly in controller will take much longer than creating datapoints in a station running on a PC. Best practice is to do the datapoint engineering offline (running the station on a PC) before copying station to the controller.

Drag&Drop Datapoint from Palette or Nav Tree

Datapoints can be created in:

- Individual folders
- The points folder
- Points objects

On the palettes of each supported driver, you will find the EnhancedWireSheetPoints folder including the datapoint types.

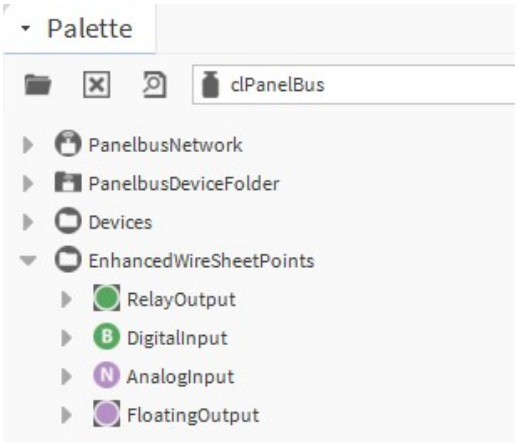


Figure 60. Palette

1. Drag&Drop the desired point type onto the Enhanced Wire Sheet.
   The **Add** dialogue box of the Panel Bus Driver displays.

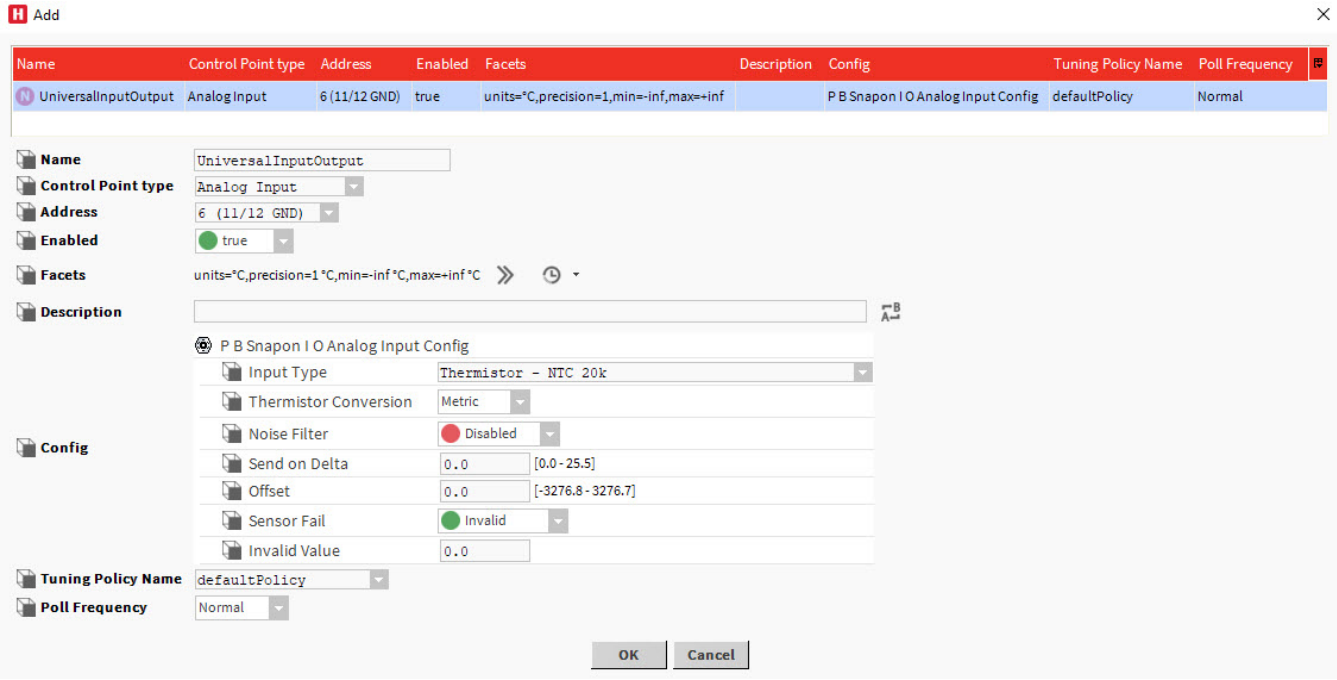


Figure 61. Add Dialogue Box

2. If desired, modify the datapoint properties before the datapoint will be created, and then click **OK**.

   By default, the created datapoint will be assigned to the next specific device (Panel Bus) with a free suitable terminal according to the datapoint type. If there is no appropriate device available, a new device will be created.

   For a Panel Bus datapoint, the Panel Bus network can be selected if two Panel Bus networks exist.

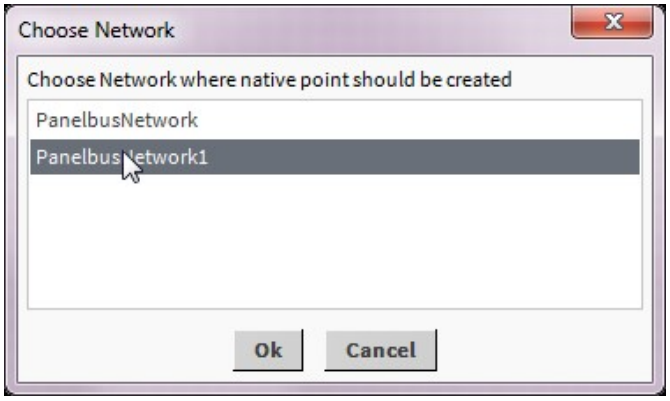


Figure 62. Choose Network Dialogue Box

3. If desired, modify the datapoint properties before the datapoint will be created, and then click **OK**.

   As native datapoints, reference datapoints provide the same actions via right-clickable context menu.

   Reference datapoints and native datapoints can be deleted. When deleting a reference point on the enhance wire sheet, you will be asked if you want to delete the native point too.

   The below figure shows datapoints created when the Points object was selected. In this case, no reference datapoints have been created.

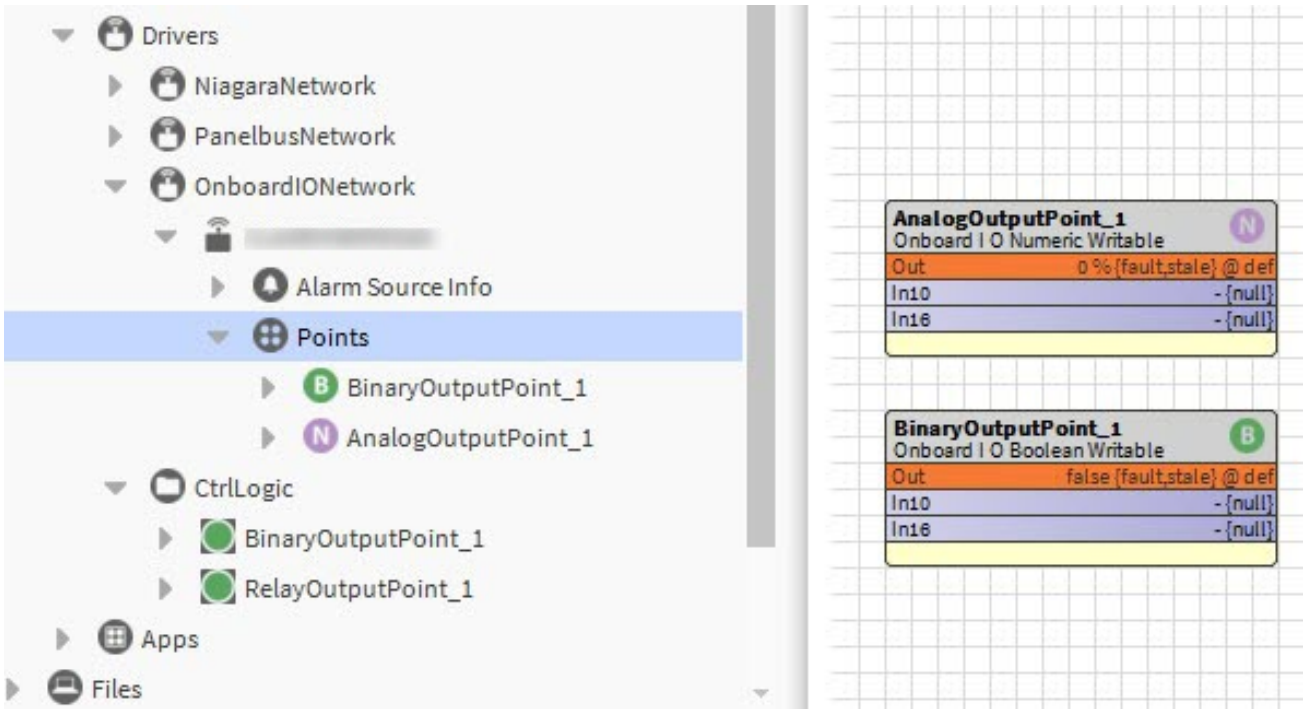


Figure 63. Enhanced Wire Sheet view

Copy Datapoints

The Enhanced Wire Sheet provides all the features of the standard Wire Sheet as well.

Example: You can copy native datapoints and reference datapoints by using Copy and Paste/Paste Special. Using Paste Special it is possible to create multiple copies. When copying a reference datapoint, the linked native datapoint will be copied too.

1. In the Enhanced Wire Sheet, select the datapoints you want to copy.

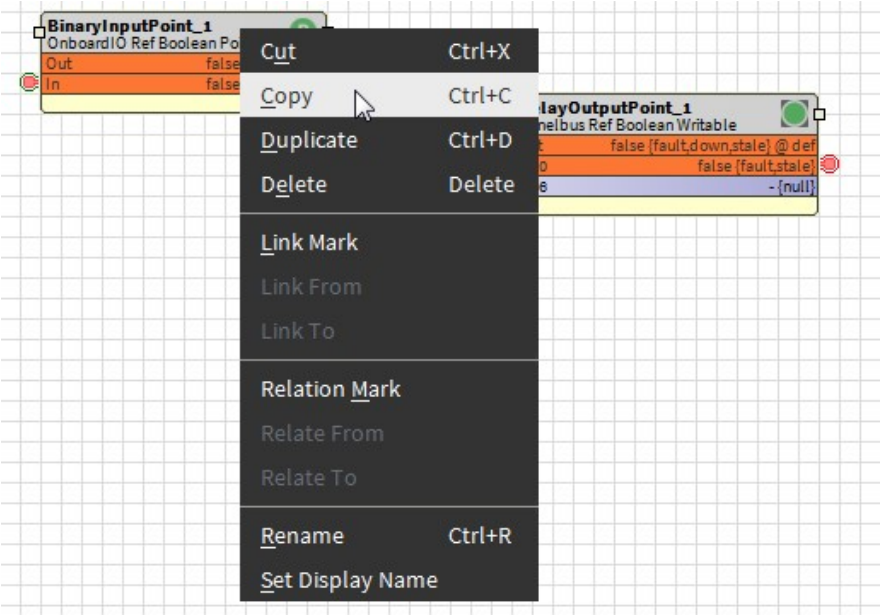


Figure 64. Enhanced Wire Sheet View

2. Right-click in the Enhanced Wire Sheet, and then select **Copy** in the context menu.
3. Right-click in the Enhanced Wire Sheet, and then select **Paste Special** in the context menu. The **Paste Special** dialogue box displays.

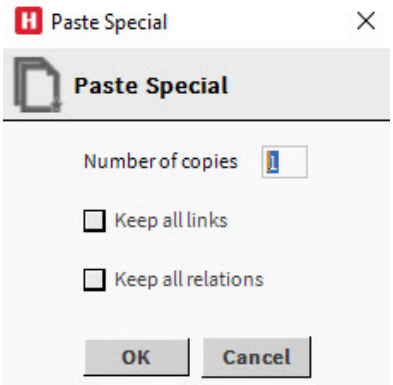


Figure 65. Paste Special Dialogue Box

4. In the Paste Special dialogue box, enter the number of copies. Check if the links and/or relations should be kept. Uncheck these options if they should not be kept. Then click **OK**.

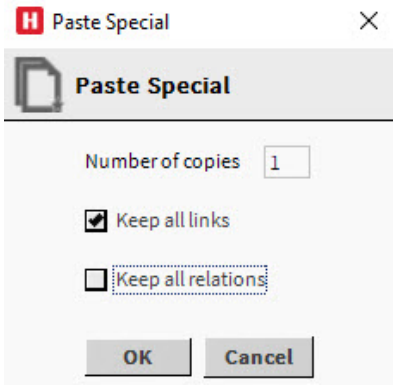


Figure 66. Paste Special Dialogue Box

5. The **Edit** dialogue box displays.

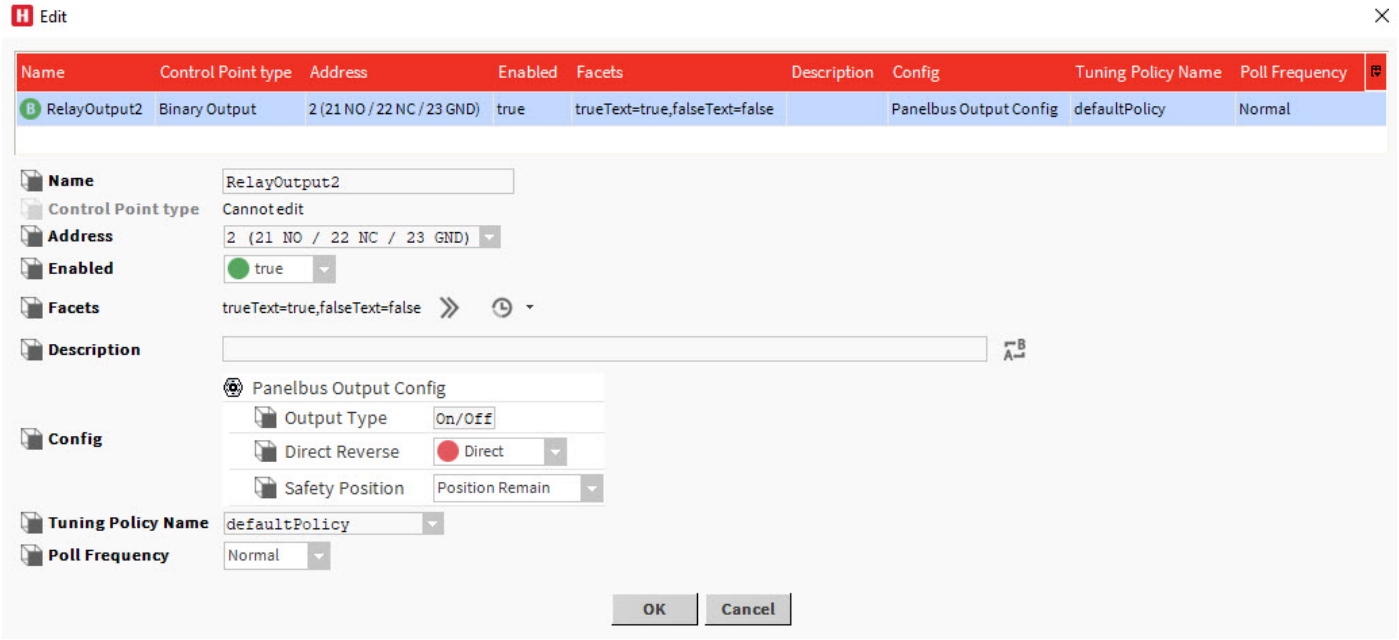


Figure 67. Edit Dialogue Box

6. Modify the datapoint properties if desired, and then click **OK**.

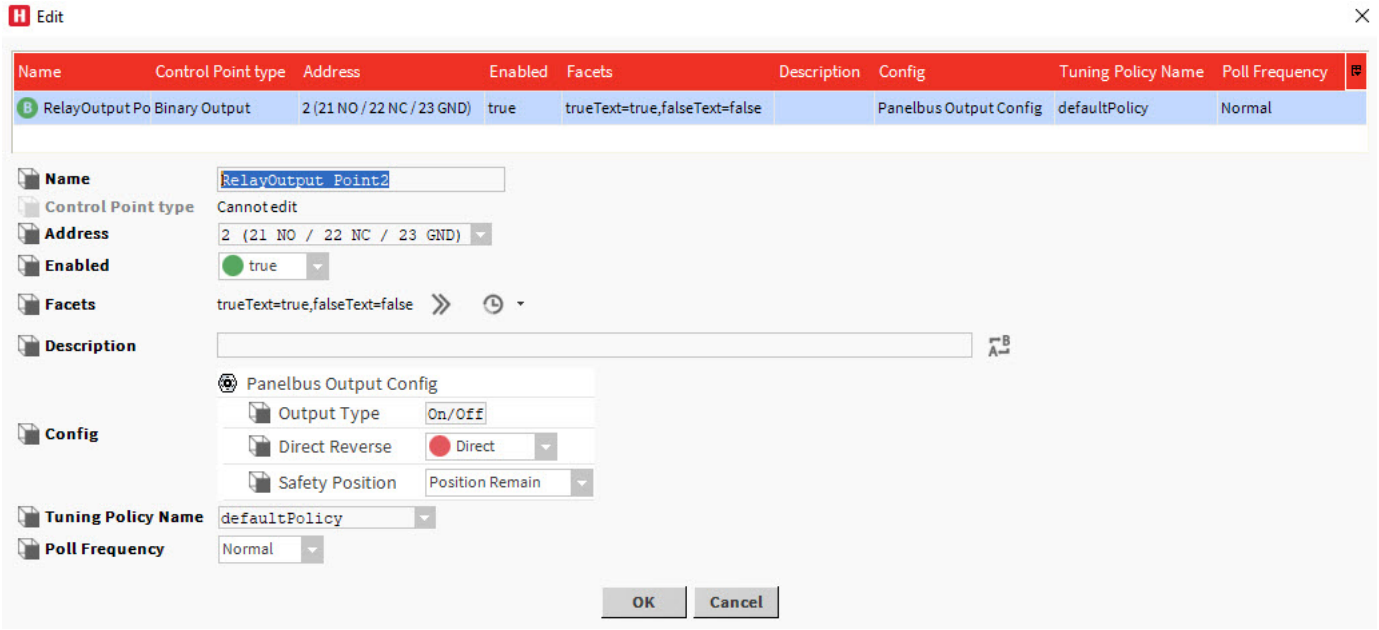


Figure 68. Edit Dialogue Box

The selected datapoints will be copied.

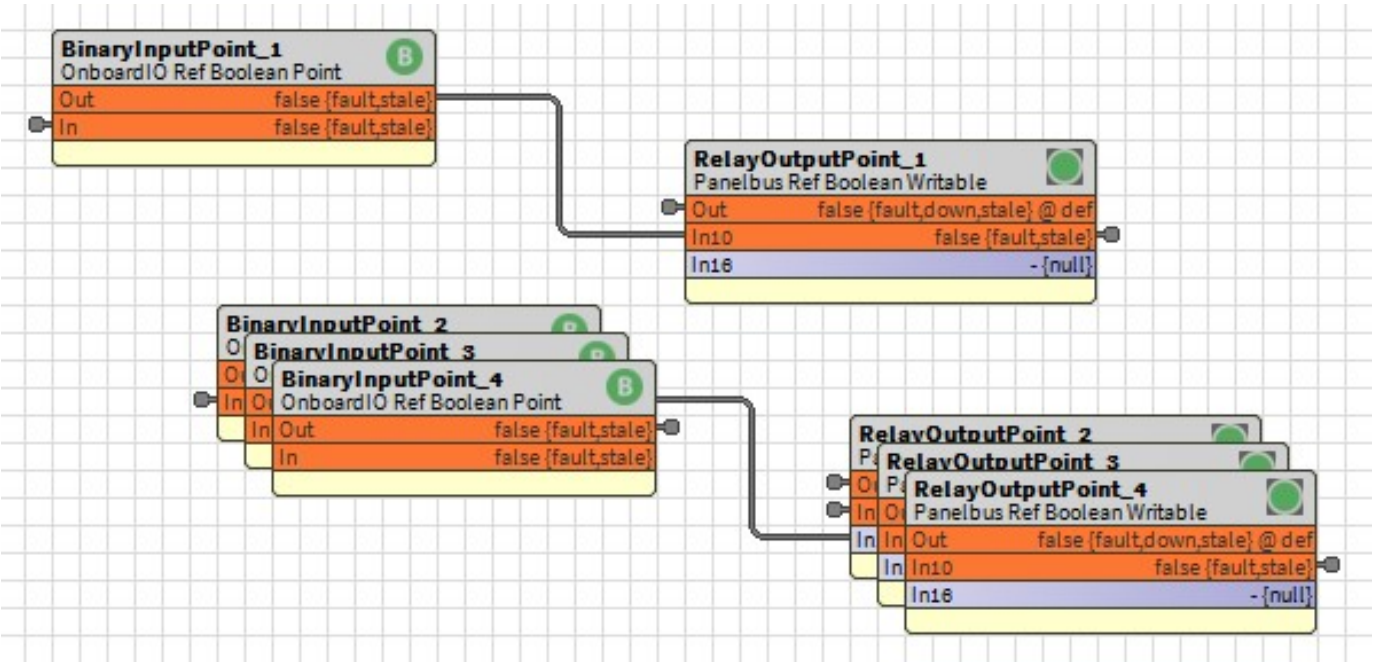


Figure 69. Enhanced Wire Sheet view

ALARM HANDLING

The Advanced controller Panel Bus Driver features alarm handling. Specifically, the Panel Bus Driver will automatically issue a sensor alarm when the sensor value passes certain predefined limit values (which depend upon the configuration of the given input). In the case of an input configured as an NTC sensor, for example, the Panel Bus Driver will automatically issue a sensor alarm if the sensor value drops below -50 °C or rises above +150 °C. On the other hand, the sensor value displayed in the datapoint depends upon the configuration of the parameter "Communication failure," and will be either "Last Valid Value" or "Safety Value." Such alarms belong to the Default Alarm Class, and indicate that a short circuit has taken place or that a sensor is broken.

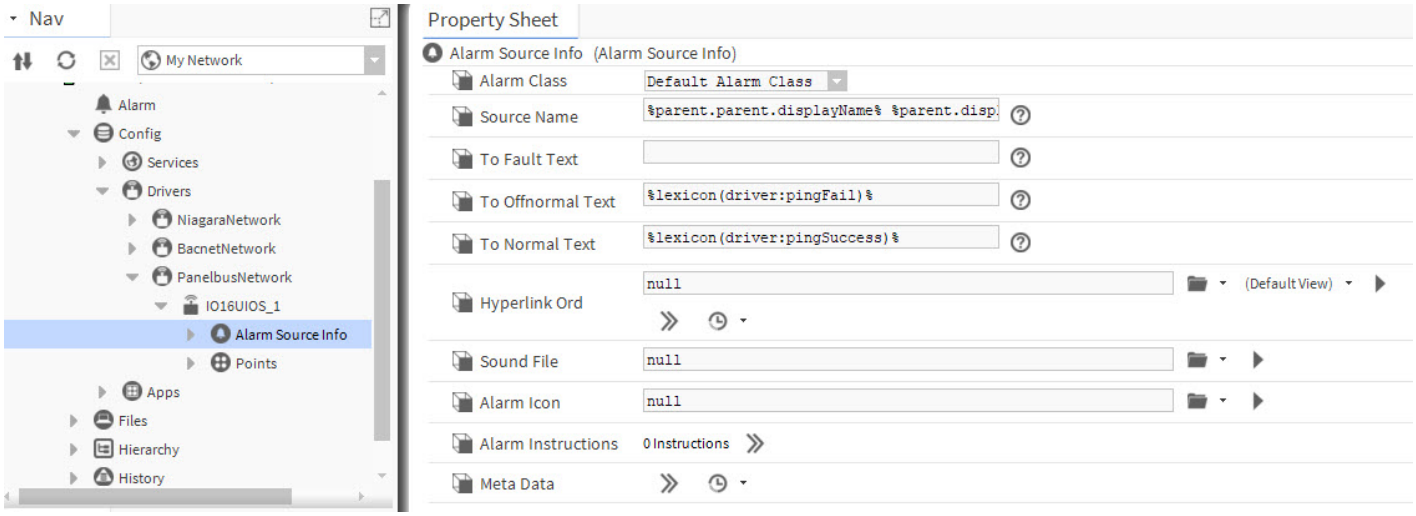


Figure 70. Alarm Property Sheet

If you require off-normal alarms, you must define standard alarm extensions to the given datapoint.

NOTE:
For fault alarm, please See *"Configuring the UIO and UI IO Input Type parameter" on page 29.*

PANELBUS ANALYZER VIEW

The Advanced controller Panel Bus Driver features a Panel Bus Analyzer. Using the Panel Bus Analyzer, you can observe exactly when specific datapoint telegrams are written or read. Right click on **PanelbusNetwork** and navigate to **Panelbus Analyzer View** as shown in below figure.

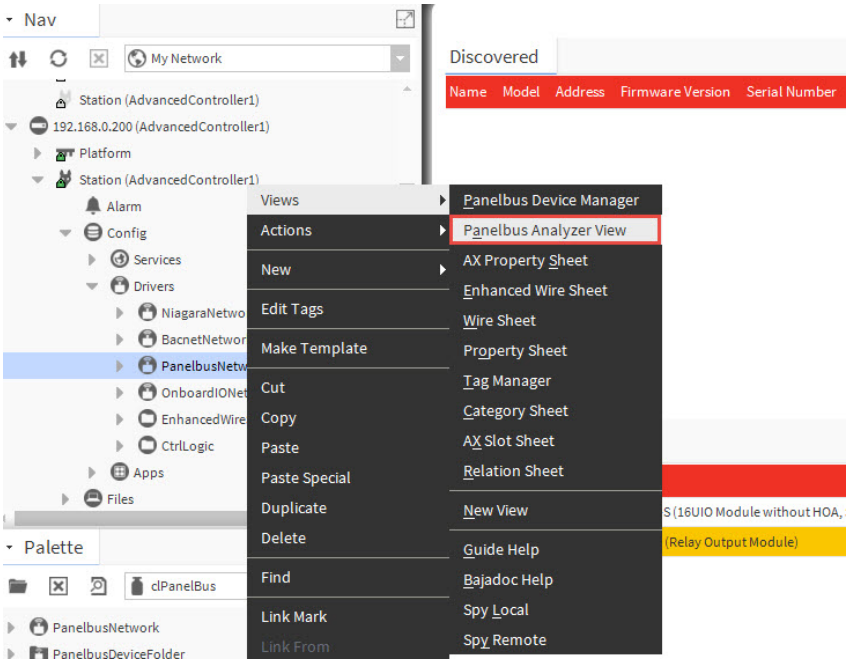


Figure 71. PanelbusNetwork Options

The Panelbus Driver Analyzer view will be display.

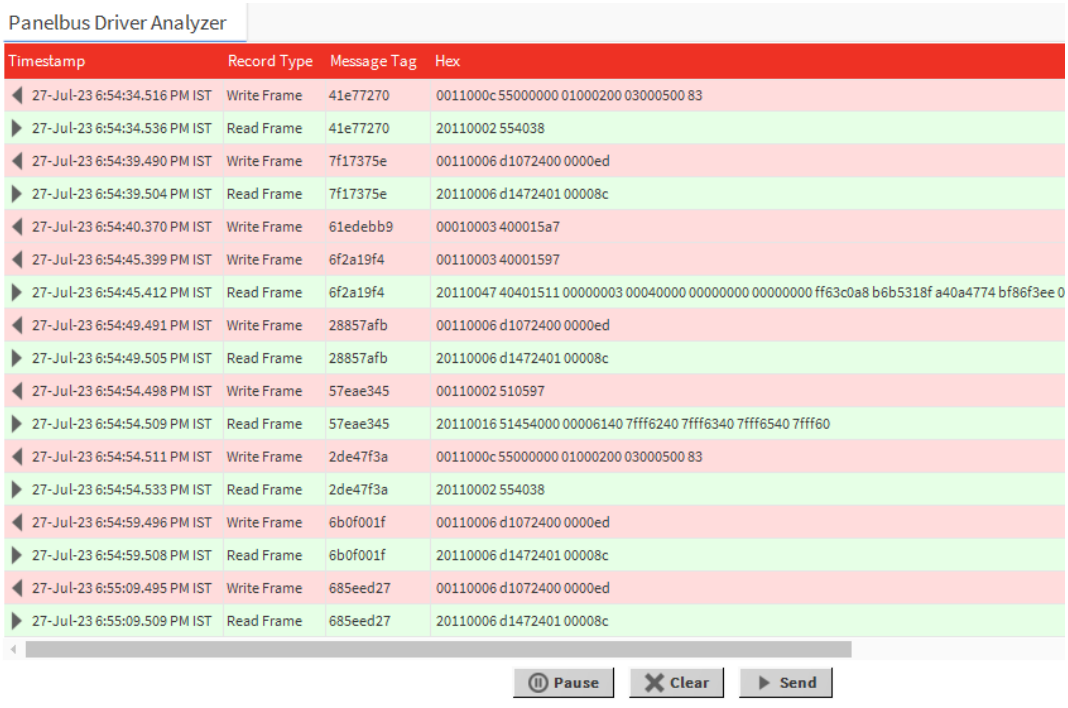


Figure 72. Panebus Driver Analyzer view

FIRMWARE UPDATE

The Advanced Controller will automatically detect and update the I/O module firmware when a lower firmware version module is added to the bus.

⚠ CAUTION

Advanced controller can only upgrade I/O modules.
Not Recommended: Upgrading the existing (legacy) I/O modules with the Advanced Controller. If upgraded, the existing (Legacy) Panel Bus modules firmware upgrade will fail and modules will go to Unreachable state.

NOTE:

I/O module firmware update will take approx 10 minutes; during this time, the modules will be placed into a disabled status. For each device firmware update, there is a provisioning time.

Provisioning Time
Once the IO module is upgraded successfully to any higher firmware version, wait for 30 min for the next upgrade.

For multiple device connection
While connecting the multiple IO module to Advanced Controller follow below points to avoid error in the firmware update/download:
1. Connect all the IO module device to the Advanced Controller at a time do not connect the IO device one by one.
2. If you want to connect the IO module devices one by one, connect the devices one and wait until the firmware update/download to complete and than connect another IO module.

CREATE POINT LABELS

The Niagara Workbench provides the option to print out I/O Terminal Labels.
The printed labels include:

- Model number of the I/O module
- Panel Bus port number
- Controller name
- I/O module address
- Point name

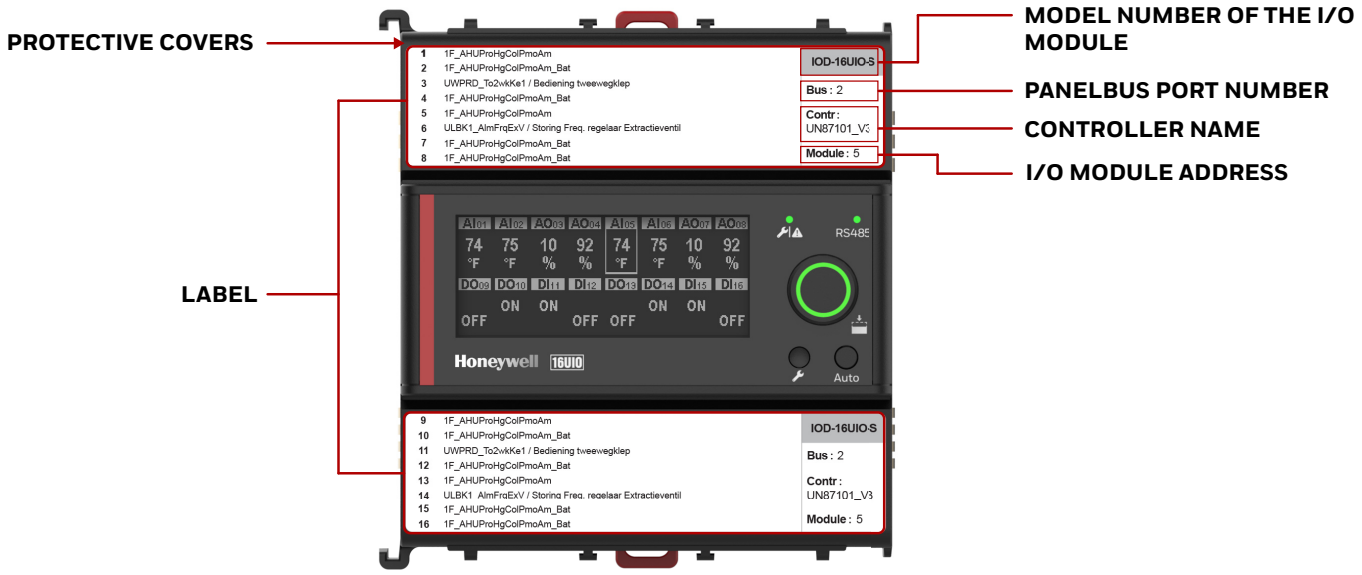


Figure 73. I/O Module Labels Description

Labels are created from the Niagara workbench and can be applied on the I/O module terminal covers for identification. To create the labels from the Niagara workbench, follow the below procedure.

Prerequisites:

1. Create Panel Bus network
2. Discover Panel Bus modules and add them to the station
3. Configure the I/O module

NOTE:
Use **Arial** font for label.

Print Standard for Label:

- Template Number: Avery label Presta® 94202
- Paper Size: 1”x4” Blank Rectangle Labels.
- Material: Removable Matte White Paper.

PROCEDURE TO CREATE A LABEL:

1. Navigate to the **Nav** tree and open a **platform**. Refer Installation Instruction and Commissioning Guide - 31-00584-01 for Open a new or existing Platform.
2. Log in to a station. Refer Installation Instruction and Commissioning Guide - 31-00584-01 for Open a Station.

3. Go to Config, expand > Drivers > Right-click on PanelbusNetwork Navigate to Actions and click Create Point Labels.

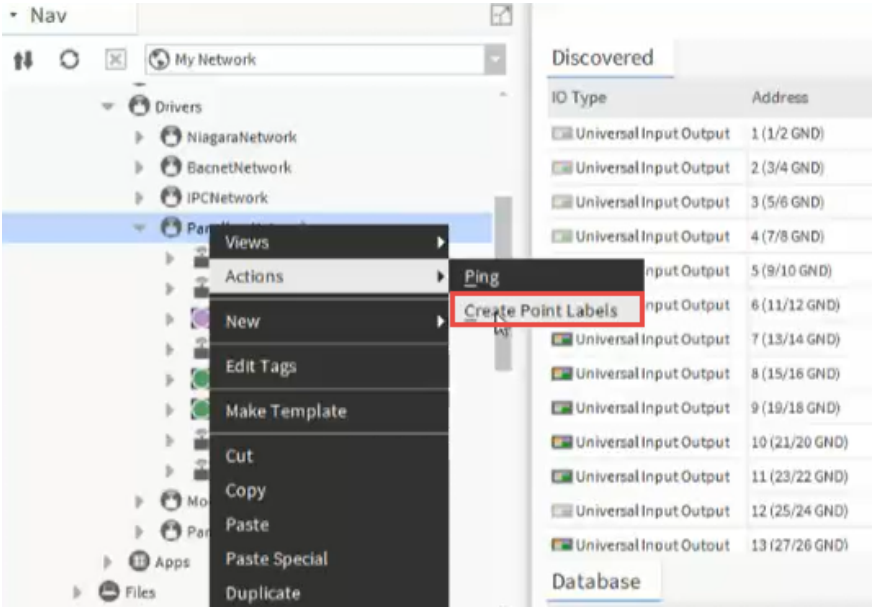


Figure 74. PanelbusNetwork Options

4. **Directory Chooser** dialogue box will display. Navigate to the location folder, choose a folder, and click **Choose**

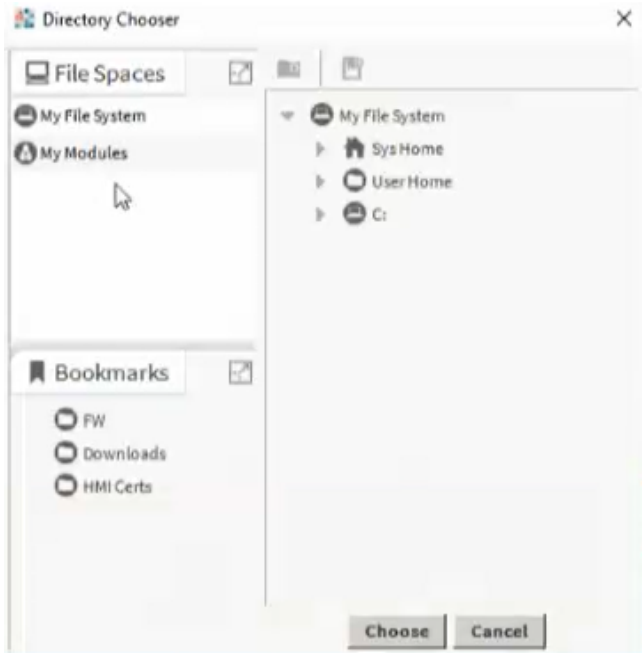


Figure 75. Directory Chooser Dialogue Box

5. The label will be saved in the chosen folder as PDF.

NOTE:
The generated PDF name will be **105mmIO**.pdf.

6. Print the PDF as per the Print standards.

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