Belimo MP-Bus Niagara4 AddOns

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Preface

This help document gives you a brief description about using the SysMik Scalibur (SCA) or ILC 2050 BI devices and managing connected Belimo MP-Bus network within WorkplaceN4.

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Document Change Log

V4.3.0.0.4 - 180803

- Release candidate 4 of module sysmikScaMp-rt|wb for usage within sysmikScaIo-rt|wb driver to configure connected MP-Bus networks.

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Compatibility and Installation

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NiagaraN4 Platform Compatibility

The **sysmikScaMp** module will work on all Niagara4 releases 4.3 and newer on Windows or Linux operating systems.

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License requirements

There are ***no license*** requirements for this module. The module sysmikScaMp is provided by SysMik GmbH Dresden without any charge.

Note:

> The MP-bus network is a subnet underneath a MP-Bus terminal within a sysmikScaIo network.
>
> You must have a valid license for using the sysmikScaIo driver module!

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Software requirements

The module sysmikScaMp is part of the SysMik Niagara AddOns installation.

Note:

> The components can be used with Scalibur controllers (SCA-340) or ILC 2050BI Operating System version 1.0.1.14 and higher. It can only be used within the sysmikScaIo driver. Please see help module docSysmikScaIo for more information about the driver.

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Hardware requirements

The sysmikScaMp module can be used with all SysMik Scalibur (SCA) devices or with the Phoenix Contact ILC 2050 BI device.

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MP-Bus Configuration

The MP-Bus configuration is the first step in the usage scenario with connected MP-Bus devices.
In this step you can add MP-Devices via Discover function and read additional information and configuration properties.

Note 1:

> This component module cannot configure all properties like the Belimo PC Tool can do.
>
> Please use this tool first to pre-configure all the needed additional values. It's not the intention of this module to replace the Belimo PC Tool!

Note 2:

> You must set the Enabled property within the component sysmikScaMp-ScaMpNetwork to false to be able to use the configuration managers and views!
>
> This can be done by performing the MP Network action “Set Config Mode” or by setting the following MP network properties to **false**:
>
> - Enabled
> - Poll Scheduler -> Poll enabled
> - Poll Scheduler -> Invoke Enabled

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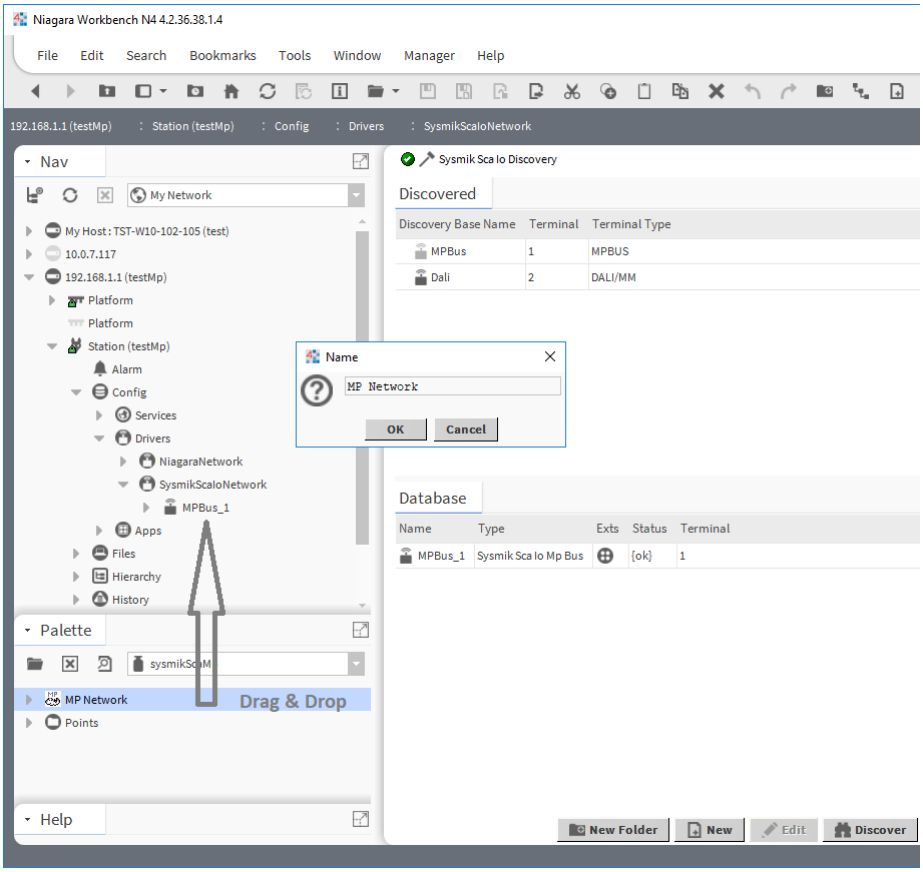
Add Network Component

To use the MP-Bus network of an MP-Bus terminal you must add the MP Network component from the module palette first. The MP Network is the child of an MP-Bus terminal.
(see Add SysmikScaIo devices for details about adding terminals to a Sysmik Sca Io Network.)

Figure - Adding the MP Network component



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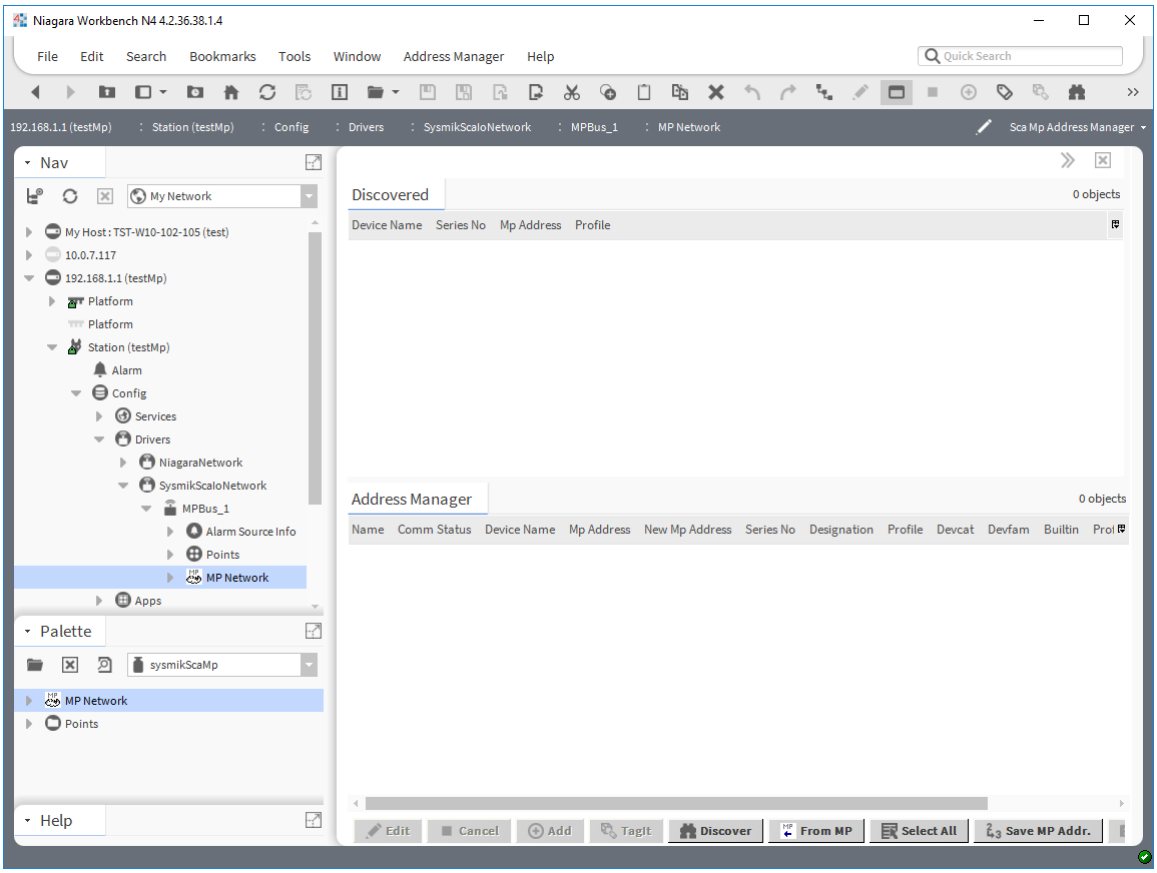
MP Address Manager

The default manager view of the MP Network component is the MP Address Manager.

Note:

> You must set the Enabled property within the MP Network component sysmikScaMp-ScaMpNetwork to false to be able to use this manager!
>
> This can be done by performing the MP Network action “Set Config Mode” or by setting the following MP network properties to **false**:
>
> - Enabled
> - Poll Scheduler -> Poll enabled
> - Poll Scheduler -> Invoke Enabled

Figure - MP Address Manager



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Discover devices

The Discover button in Mp Address Manager can be used to search for ALL MP-Bus devices connected to the selected terminal. This function tries to find all MP-Bus devices with a valid MP address.

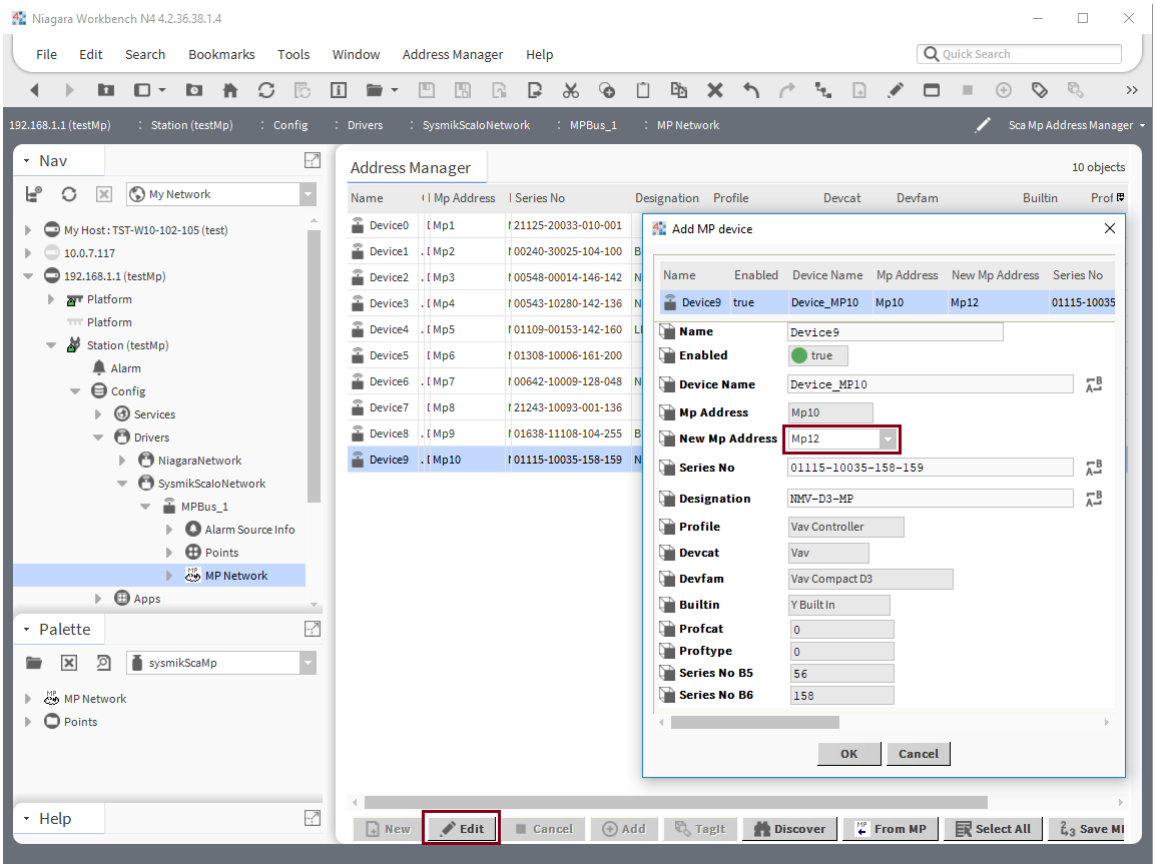
Important:

> The discover function needs a valid configured MP-Bus network for a proper work.
>
> Please use the MP-Bus configuration web sites to do the job first or see the following steps for adding devices manually.

If you have a not addressed MB-Bus network do the following steps to add devices manually by using the series number.

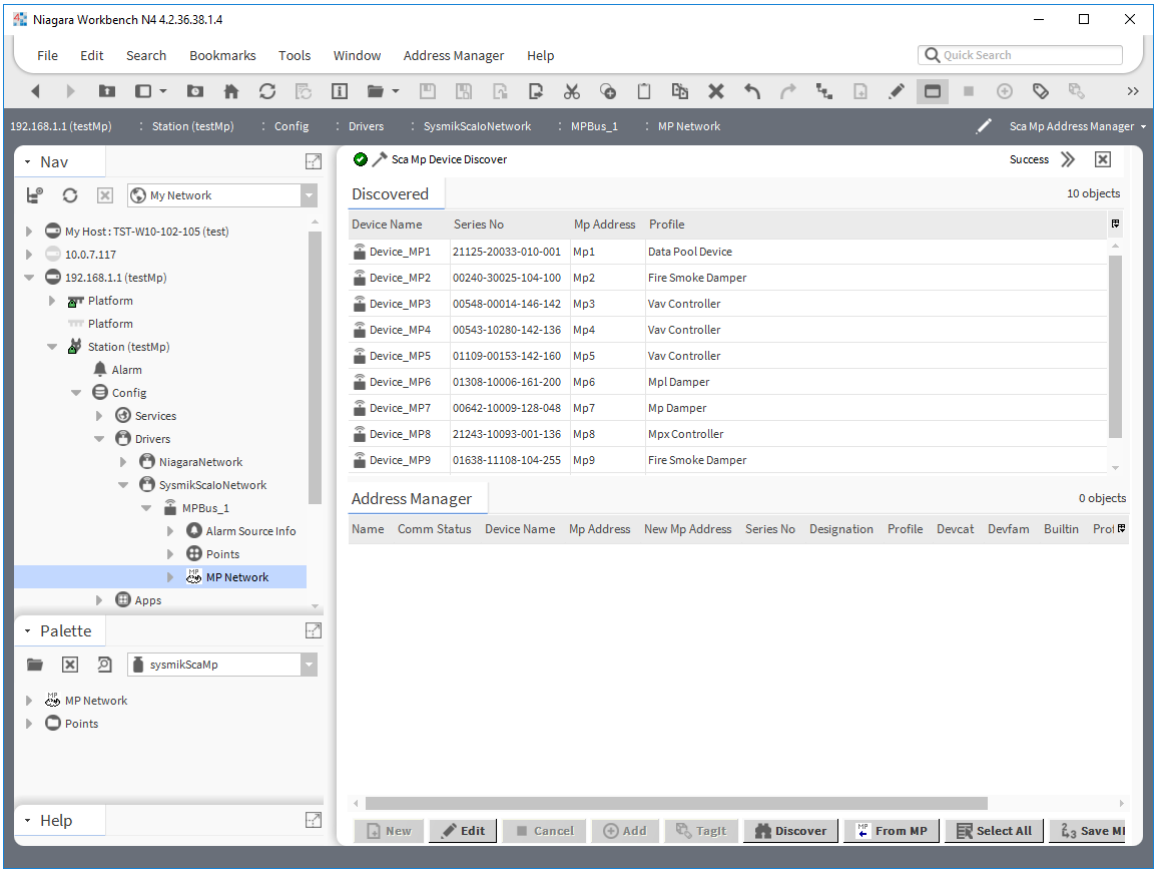
- Use the New button to add one new device.
- In the Add Mp device dialog enter the Series No, set the needed New MP Address and assign a unique slot Name and set the Device Name. Finally use Ok to add the new device.

Figure - Add MP-Bus device manually



- Repeat the previous step until all needed devices have been added.
- If all devices have been added use the Save MP Addr. button to apply the values.
- If all devices have been successfully set to the MP address use Select All and remove the devices from the station database again.
- Now you can use the Discover button to add all devices like described below.

Figure - Discover MP-Bus devices

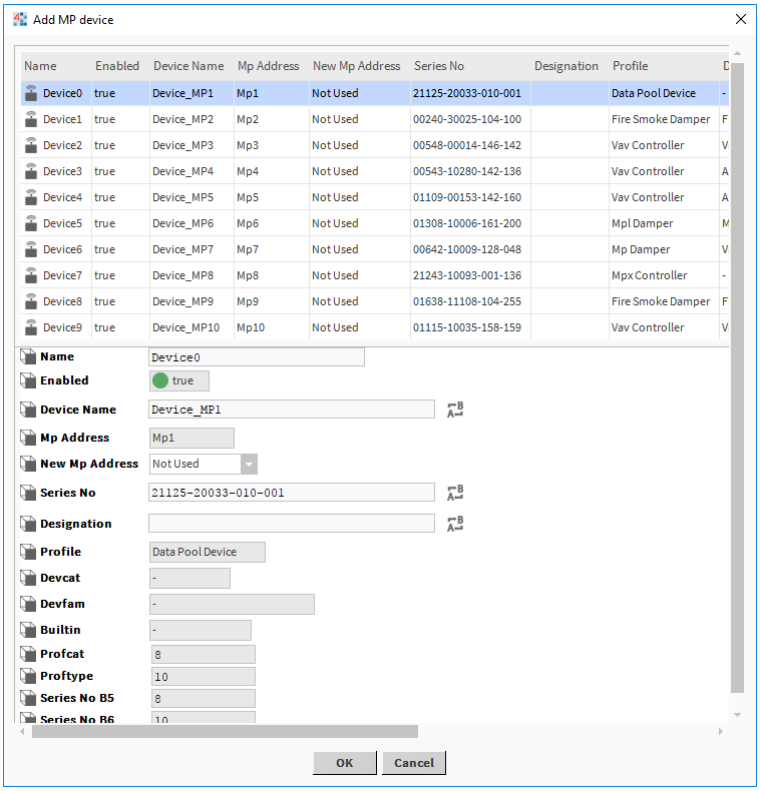


After having all found devices in the Discover (learn) table, you can add them to the station database by using the Add button.

Tip:

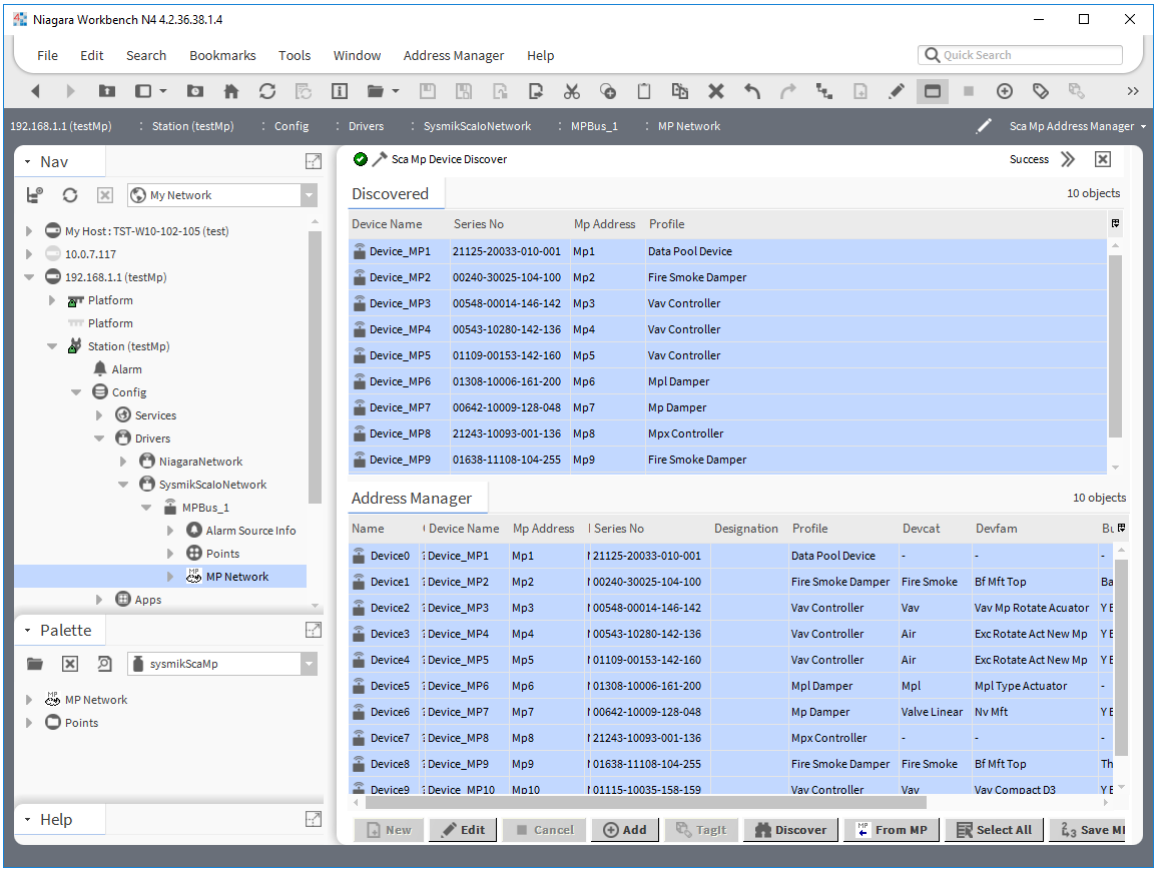
> The new added components are named automatically using the MP address.
>
> See the following picture for details.

Figure - Add MP-Bus devices



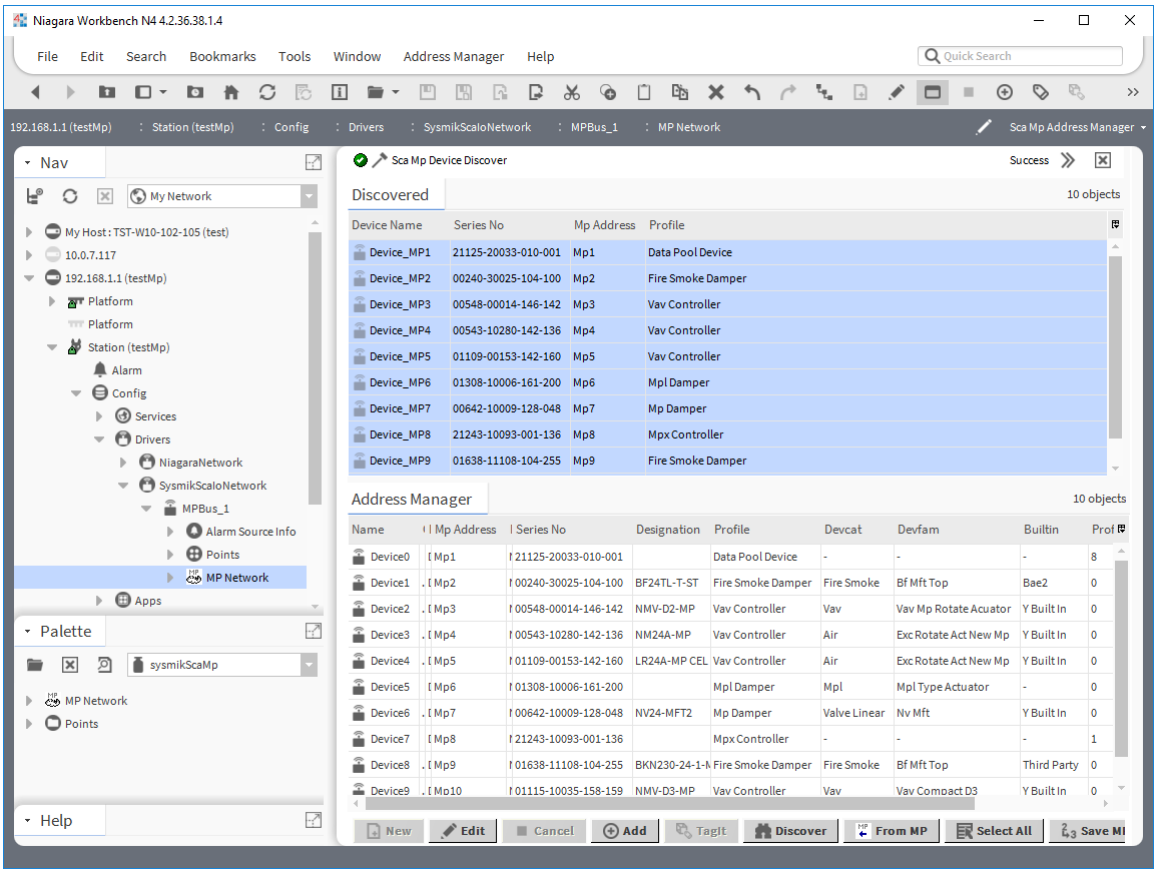
This will result in a view like shown in the next picture.

Figure - Added MP-Bus devices



Now hide the learn table, then use the Select All button followed by From MP button to read some more MP-Bus properties (like designation) from MP-Bus network.
The following picture shows an user interface example after a From MP job.

Figure - From MP



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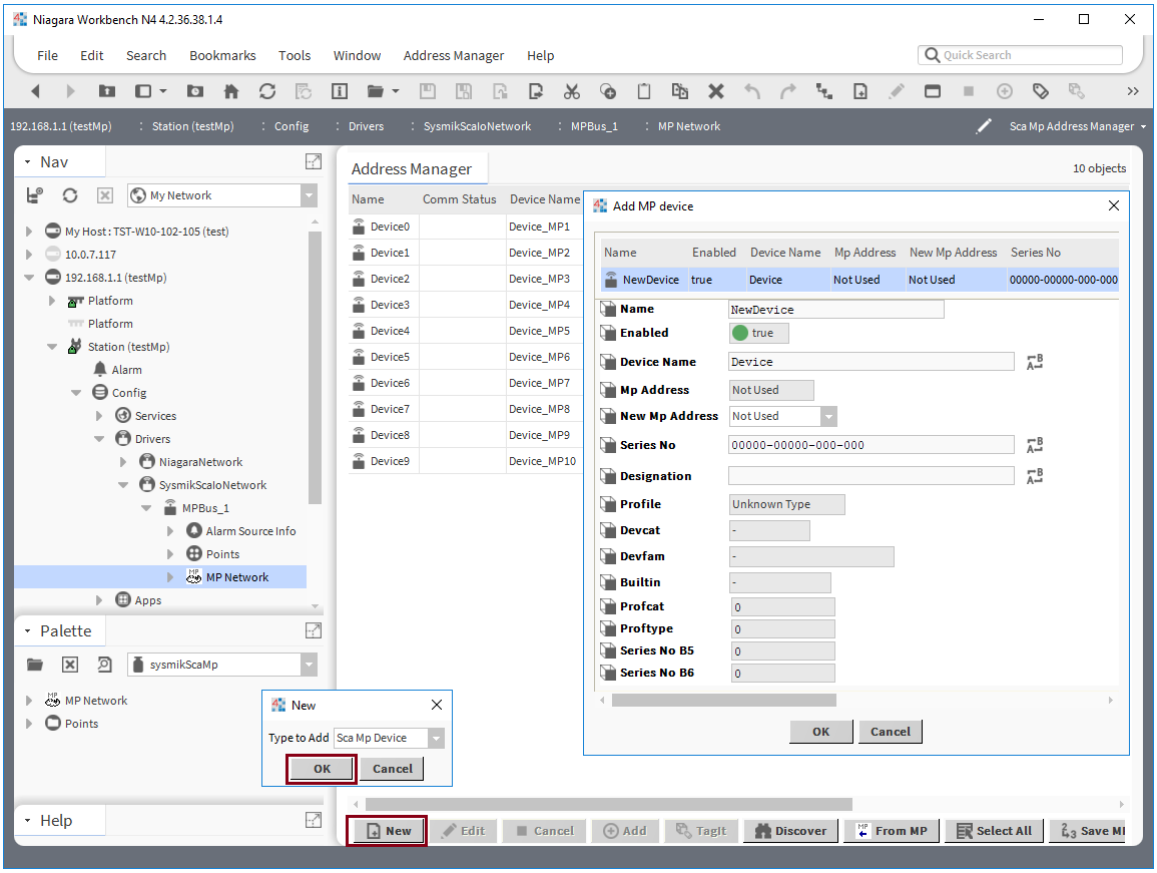
Change Addresses

Use the Edit button in Mp Address Manager to change the MP Address.

Figure - Edit New Mp Address

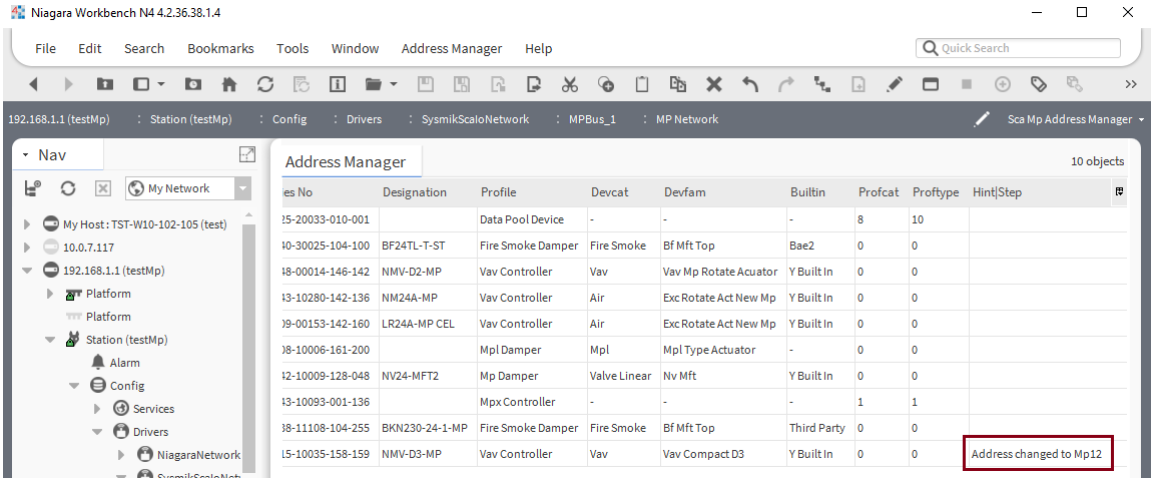


If all new MP addresses have been assigned use Save MP Addr. button to write the new settings into the devices.

Note:

> The manager checks first whether or not the MP addresses are unique!

Figure - Check success or fail



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Replace Devices

If you have to replace a defect device by another one (with the same Profile) use the Action Replace Device.

Important:

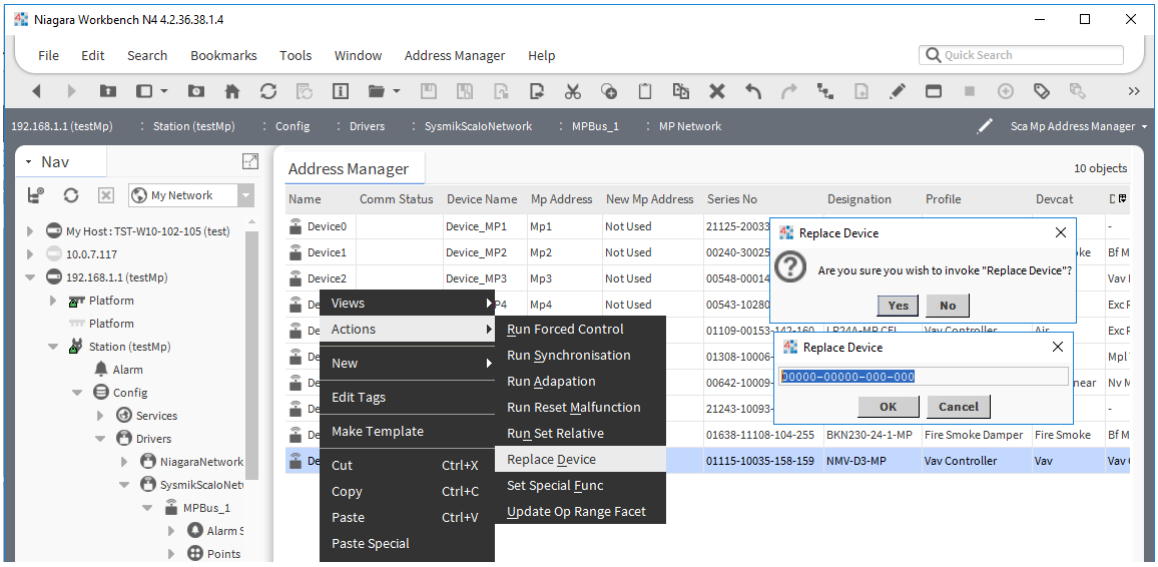
> Do not change the series number via Edit button!

The following figure shows the steps for a device replacement.
The action must be confirmed first before you can enter the series number.

Note:

> The entered series number is checked against basic syntax rules!

Figure - Replace device



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MP Information View

Another manager view of the MP Network component is the MP Info View.

Note 1:

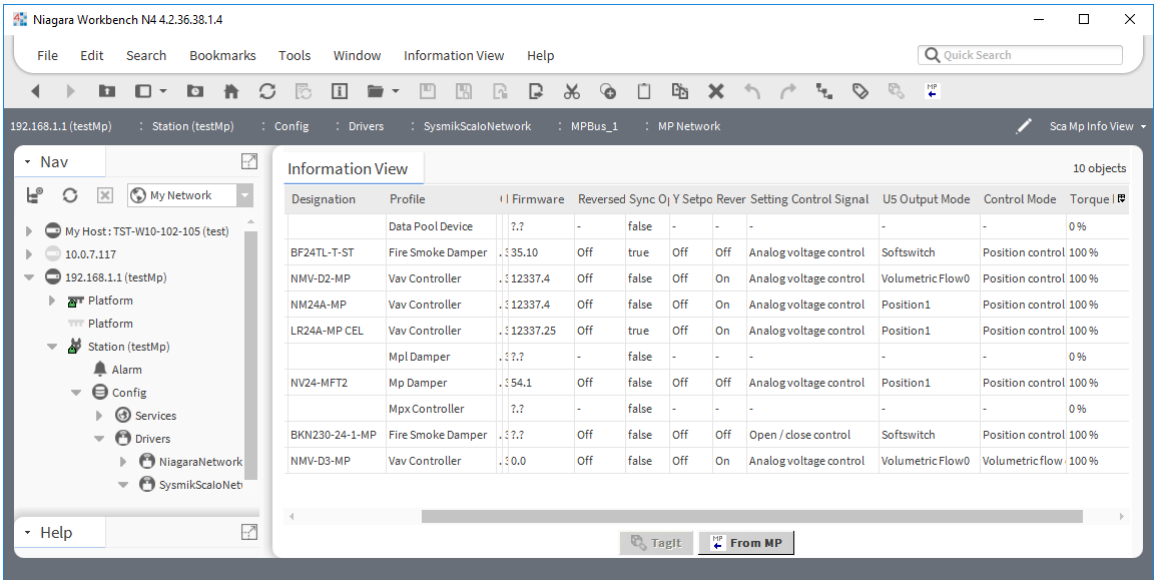
> You must set the Enabled property within the MP Network component sysmikScaMp-ScaMpNetwork to false to be able to use this manager!

> This can be done by performing the MP Network action “Set Config Mode” or by setting the following MP network properties to **false**:
>
> - Enabled
> - Poll Scheduler -> Poll enabled
> - Poll Scheduler -> Invoke Enabled

Note 2:

> Only the InfoFirmware property slot is saved in the station. All other information is set to transient and not part of the station database!

Figure - MP Info View



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MP Configuration View

Another manager view of the MP Network component is the MP Config View.

Note 1:

> This manager view cannot configure all properties like the Belimo PC Tool can do.
>
> Please use this tool first to pre-configure all the needed additional values. It's not the intension of this manager view to replace the Belimo PC Tool!

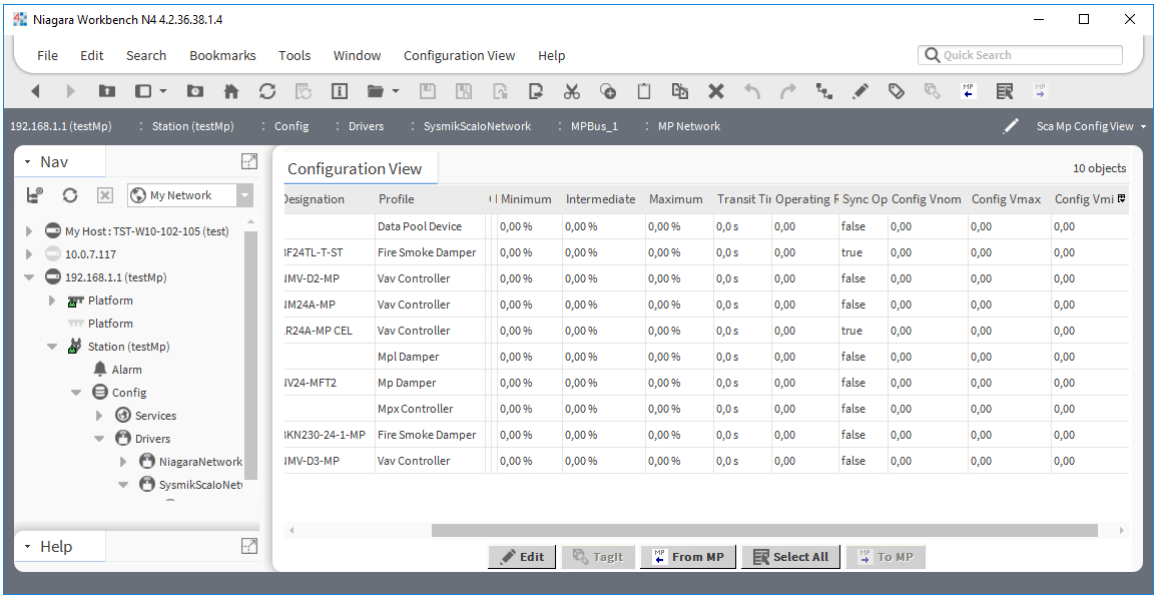
Note 2:

> You must set the Enabled property within the MP Network component sysmikScaMp-ScaMpNetwork to false to be able to use this manager!
> This can be done by performing the MP Network action “Set Config Mode” or by setting the following MP network properties to **false**:
> - Enabled
> - Poll Scheduler -> Poll enabled
> - Poll Scheduler -> Invoke Enabled

Note 3:

> All properties shown in the view are saved in the station database.

Figure - MP Config View



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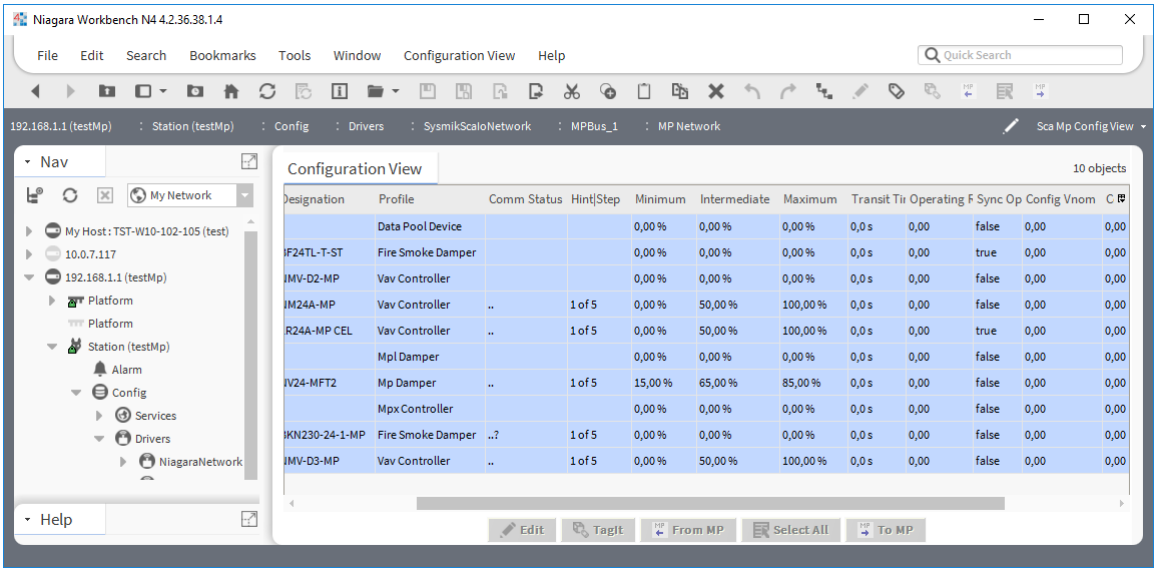
Read Configuration

Use the button From MP to read all configuration properties in the MP Config View.

Note:

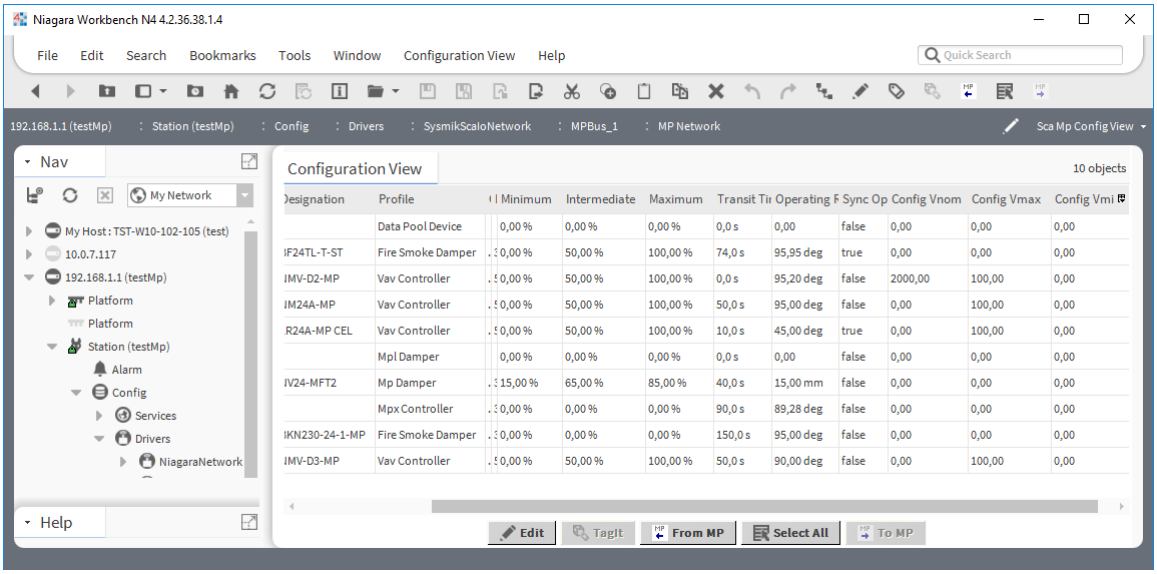
> It maybe be that not all devices provide all information!
> So, it does not have to be an error if you see question marks in Comm Status.

Figure - From Mp started



If all values have been read the available values are shown in the table depending on the profile type.

Figure - From Mp finished



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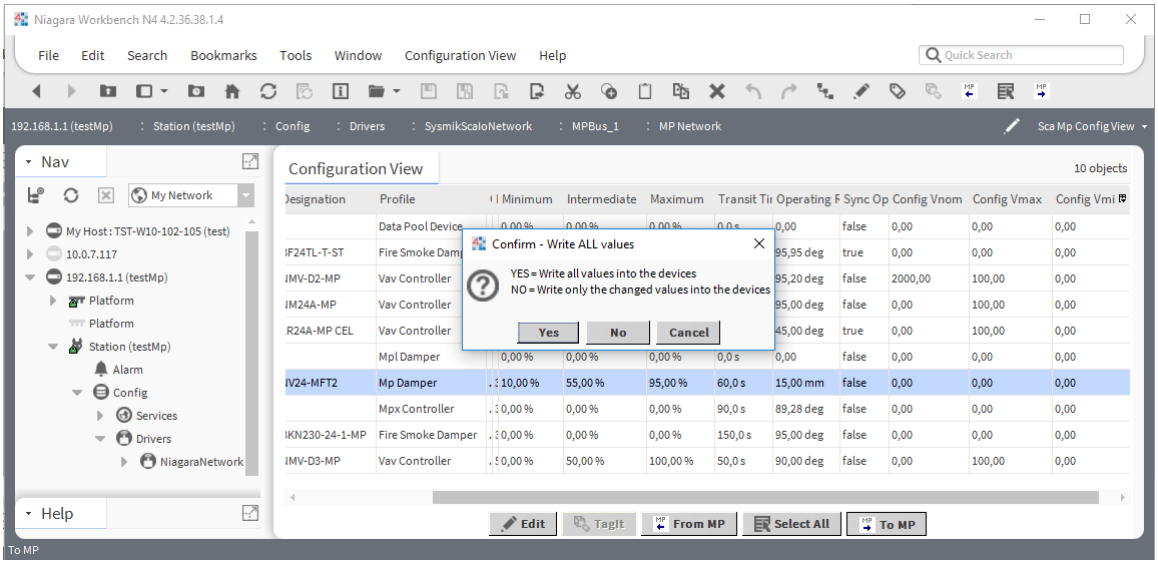
Write Configuration

Use the button Edit to change the needed configuration properties in the MP Config View.

Note:

> It can be that not all devices are providing all information and some values cannot be changed depending on the profile type!

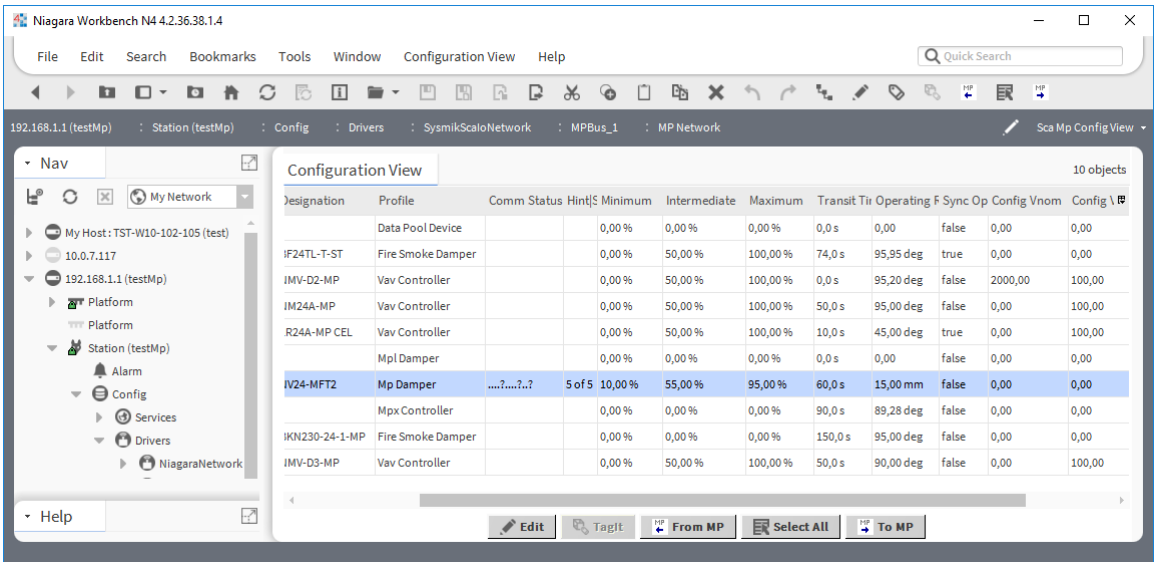
Figure - Use Edit to change the values



Use finally the button To MP to write all or only all changed configuration properties into the MP devices.

If all values have been written and read back the table shows the new settings.
Depending on the profile type it is possible that some values are rejected and not changed!

Figure - To Mp finished



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Runtime and Points usage

The MP-Bus point usage is the second step in the workflow of using connected MP-Bus devices.
In this step you can add points via Discover.

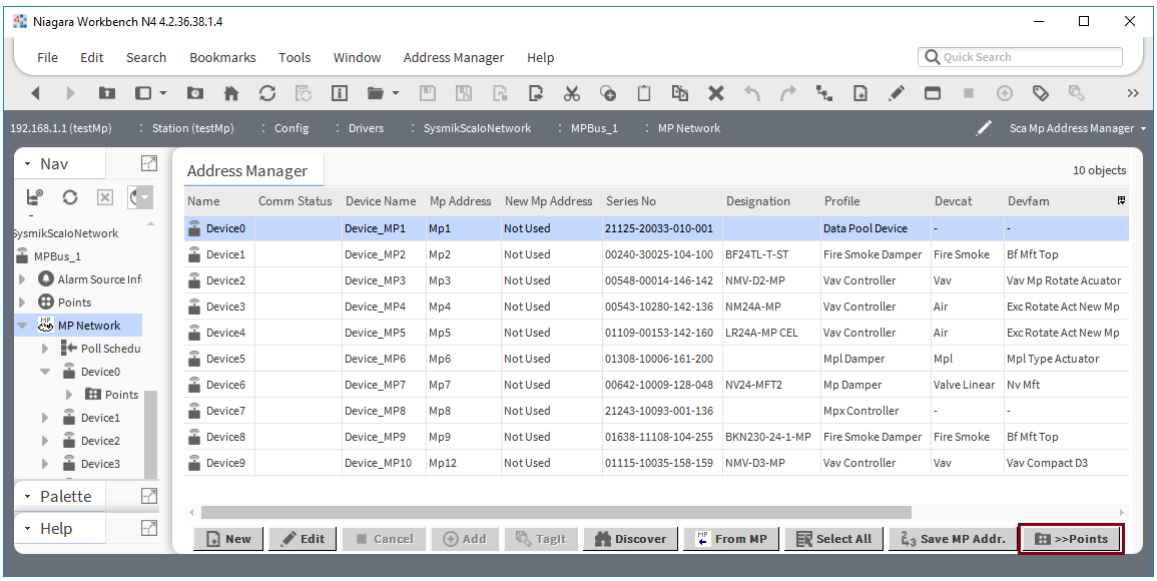
Note:

> You must set the Enabled property within the component sysmikScaMp-ScaMpNetwork to true to be able to poll and invoke point values.

Tip:

> You can use the MP Address Manager view to navigate to the points manager.
>
> Select a device and use the button >>Points to navigate to the points component of the device.
>
> The Points folder is a child (frozen slot) of the sysmikScaMp-ScaMpDevice component.

Figure - Using button >>Points in MP Address Manager



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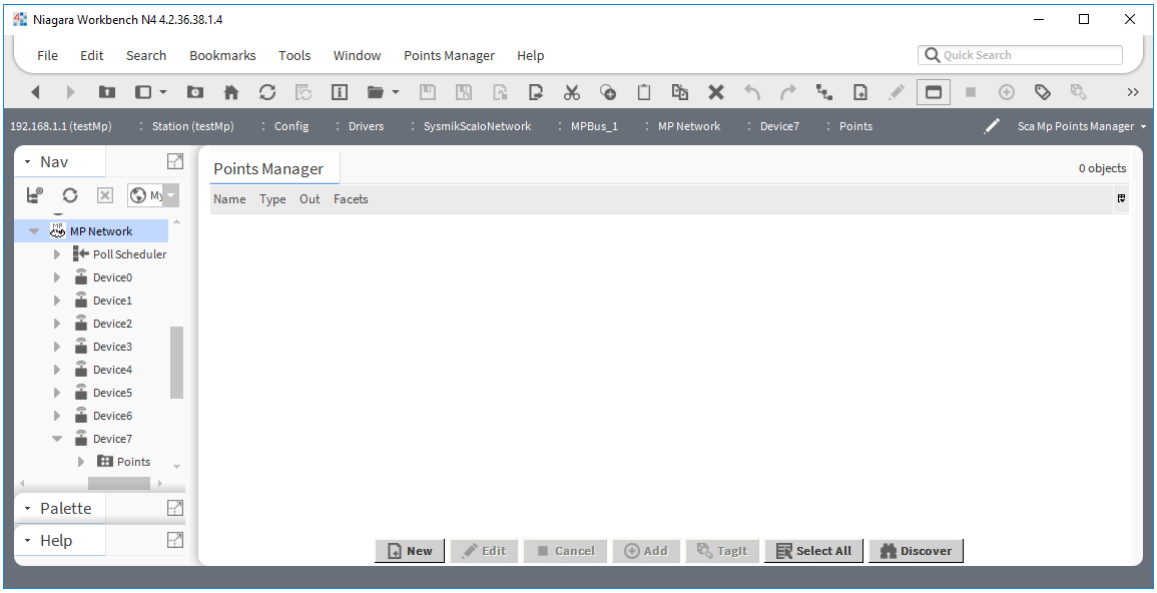
Points Manager

The default manager view of the Points folder is the MP Points Manager.

Note:

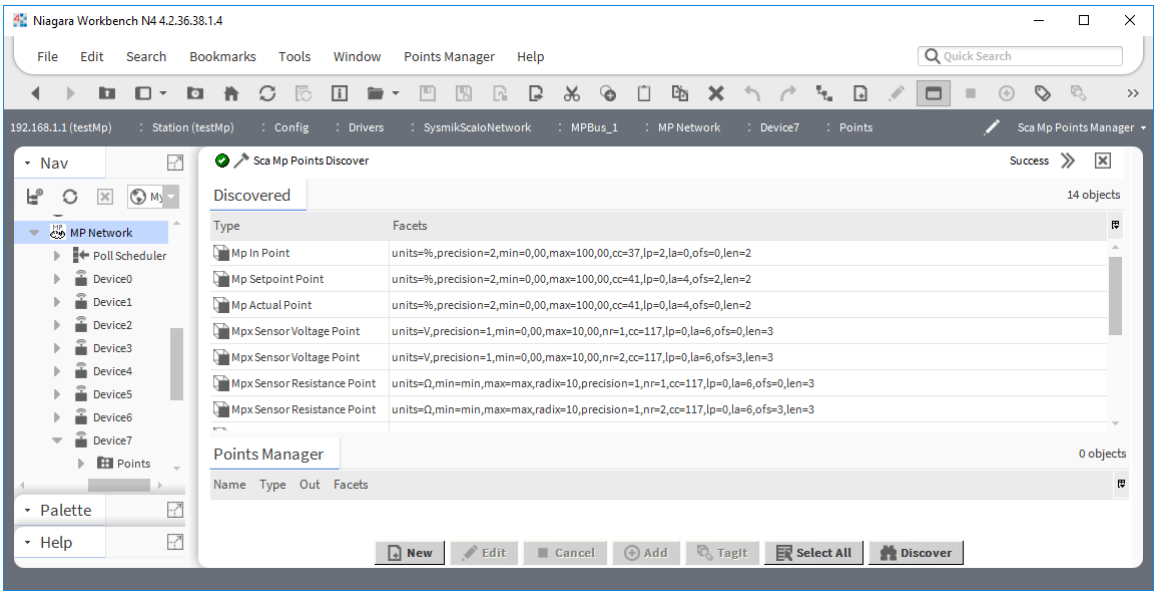
> You must set the Enabled property within the MP Network component *sysmikScaMp-ScaMpNetwork* to true to be able to use the points later!
>
> (see *sysmikScaMp-ScaMpPollScheduler* for details about the poll and invoke properties)

Figure - MP Points Manager



Use the button Discover to get all available points for this device depending on the profile type.
The following figure shows an example of the MPX controller points.

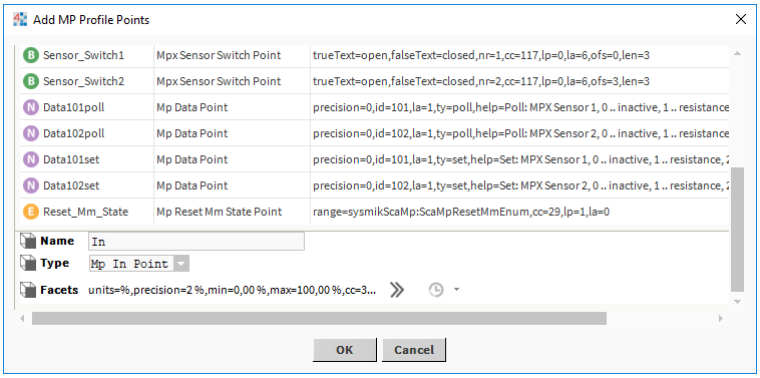
Figure - Discover Points Example



Adding points is done like known from almost all .

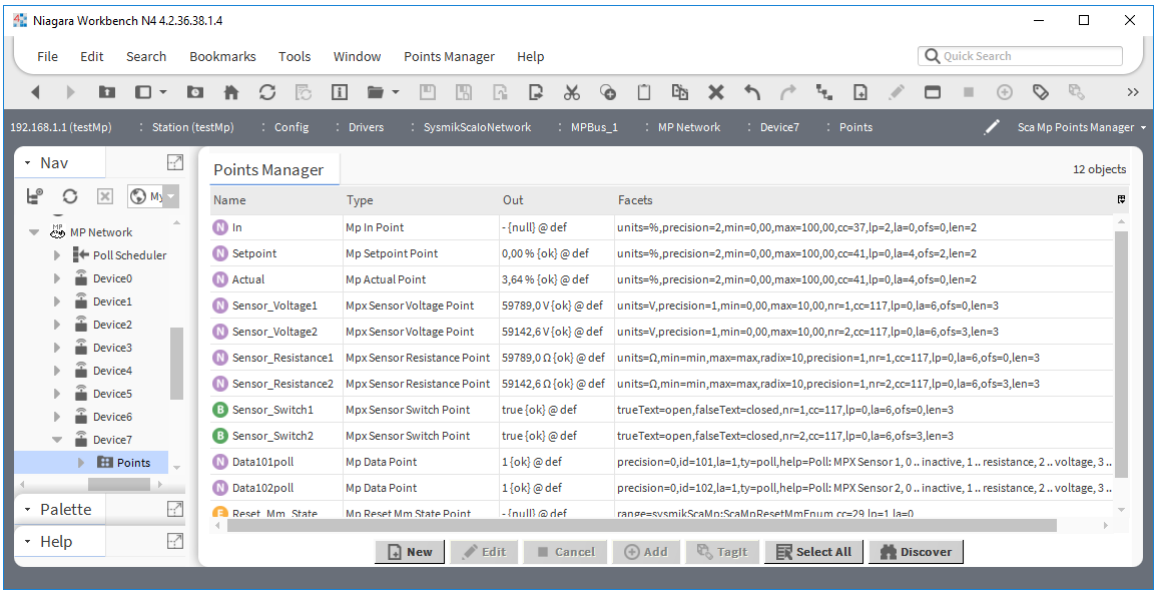
- Select all needed points in the Discover/Learn table.

Figure - Add Points



- Press the Add button and finally Ok to add the points to the station database.

Figure - Points added



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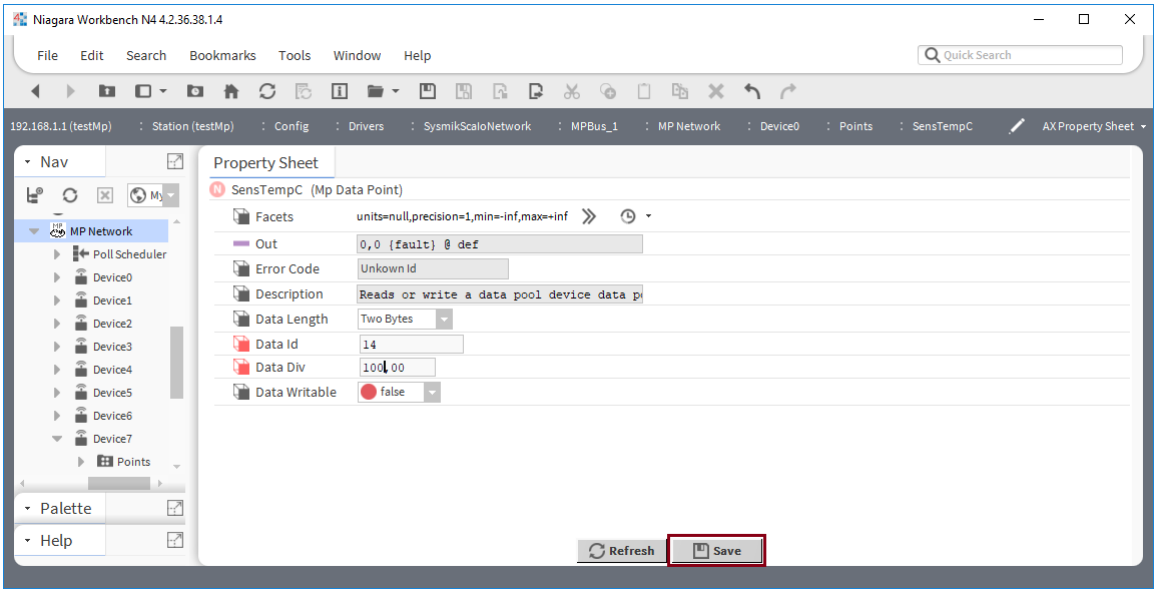
Using Data Pool Points

The points of Data Pool devices are a little bit different to normal MP points.
A data pool device point is a generic component sysmikScaMp-ScaMpDataPoint component.
Use the Property Sheet view to configure such a data point.

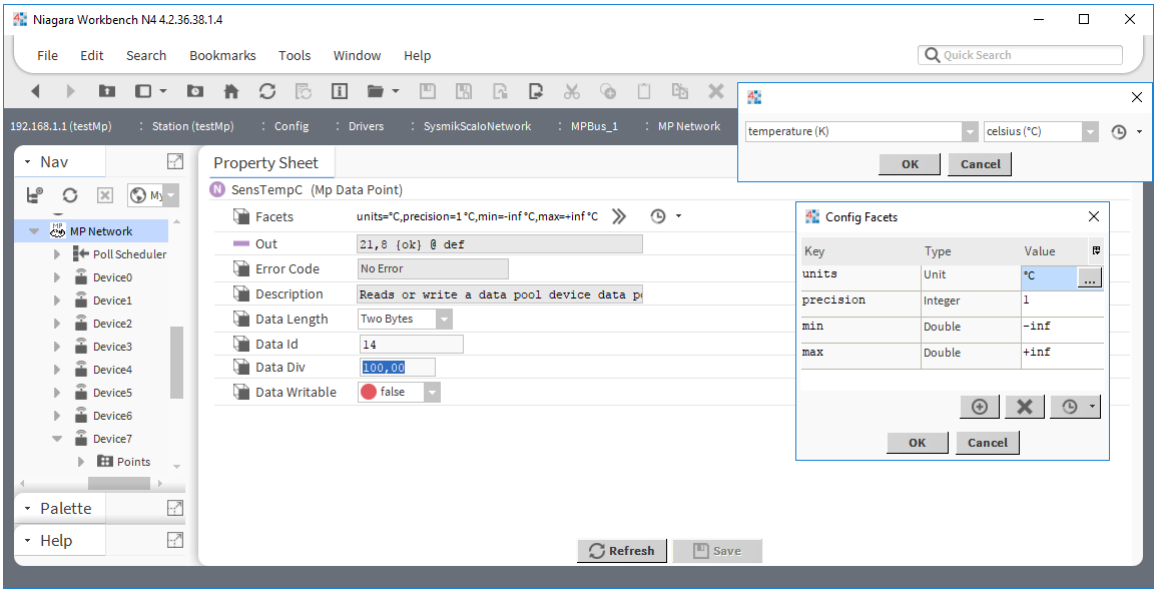
Each Data-Pool device comes with a datasheet containing a description of all available Data-Pool values.
Set the properties depending on the needed point ID.

Figure - Data Pool Point properties



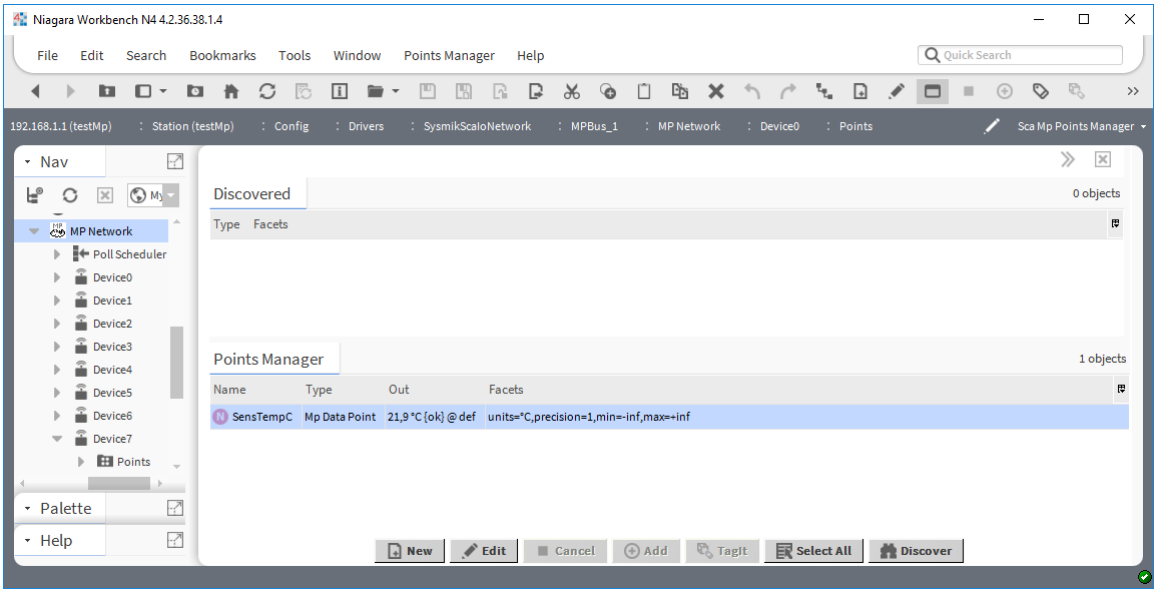
Additionally, you can set the point facets still.

Figure - Point facets



If the properties are correct the point should now contain a valid Out value.

Figure - Valid Data Pool Point



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Component Details

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ScaMpNetwork

This component models an MP bus network underneath a MP-Bus terminal device in a sysmikScaIoNetwork.

Properties

Name	Description
Enabled	Here you can enable or disable the runtime engine and change from configuration (false) to runtime mode The default value is false.
Description	Here you can add some information about the network.

Note:

> You must set the Enabled property to true to be able to use the points (with poll and invoke) later!
>
> (see *Runtime and Points usage* for details about the poll and invoke properties)!
>
> This can be done by performing the MP Network action “Set Runtime Mode” or by setting the following MP network properties to **true**:
>
> - Enabled

> - Poll Scheduler -> Poll enabled
> - Poll Scheduler -> Invoke Enabled

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ScaMpDevice

This component models an MP bus device in Niagara and is not intended to be used manually.
Please use the following managers and views to create and read the configuration and information properties.

Links to managers and views:

- *MP Address Manager*
- *MP Information View*
- *MP Configuration View*

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ScaMpPoints

This component models a points folder within an MP-Bus device component and is a frozen property of sysmikScaMp-ScaMpDevice.
Please use the following Sca Mp Points Manager to manage the needed points.

See here for details:

- *Points Manager*

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MpActualPoint

This point is the actual relative output value of a MP device modeled as BStatusNumeric in property Out.

The resolution is 0.01 and the unit is percent.
The valid range is from 0.00% to 100.00%.

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MpDamperPosPoint

This point shows the damper position of a MP fire and smoke device modeled as BStatusEnum in property Out.

Valid values are:

- Traveling,
- ClosedPosition,
- OpenPosition,
- Invalid.

More properties

Name	Description
SwptS1	The trip-point of the closing side soft-switch. The resolution is 0.01 and the unit is percent. The valid range is from 0.00% to 100.00%.
SwptS2	The trip-point of the opening side soft-switch. The resolution is 0.01 and the unit is percent. The valid range is from 0.00% to 100.00%.

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MpDamperTestPoint

Shows the bit Damper test error (fire smoke actuators only) of the malfunction state information modeled as BStatusBoolean in property Out.

More properties

Name	Description
Fire Test Run Active	Is true if a fire test is running otherwise false.
Damper Test Active	Is true if a damper test is running otherwise false.
Nominal Range Active	Is true if the nominal range is used instead of the adapted range.

Note:

> To control the actuator the right way, you must know whether it is working with an adapted or with a programmed range.
> Depending on this value you must use Set_Forced_Adapted (nominalRangeActive=false) or Set_Forced_Nominal (nominalRangeActive=true) control point.

Ambient Temp Higher72deg C	Is true if the ambient temperature is higher than 72°C.

Internal Error	Is true if an internal error has been occurred within the device.

Actions

Name	Description
Start Test Run Fire	Use the Action to start an Adaption, Fire Test Run, Free Damper Test, or Synchronisation.

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MpDataPoint

Reads or writes a data pool device data point with configured length and ID. The value is modeled as BStatusNumeric in property Out.

More properties

Name	Description
Data Length	Use this value to set the correct data length (1,2 or 4).

Note:

> At the moment only length values of 1, 2 or 4 are supported.

Data Id	Use this value to set the correct data ID.
Data Div	Use this value to set the correct presentation (precision) of the value. Example: To show the correct value of ID 14 (SensTempC) of a MS24A-R0#-MPX device use 100,0.

Tip:

> Use the Facets slot of the component to adjust the precision and or unit of the data point.

Data Writable	If a data point is writable set this Boolean value to true.
Error Code	Use this property to check whether an action was successful or not.

If a data point is writable you can use the following actions.

Actions

Name	Description
Set	This will set (prepare) the value for a later SendData action.
Send Login	Use this action to send a login command if needed first.
Send Data	Use finally this action to send the value to the data pool device.

Tip:

> Use a readonly point with the same settings for DataLength, DataId and DataDiv to check whether or not the value is really changed.
>
> You should also check the Error Code value for success or fail of the action.

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MpDuctTemperaturPoint

Shows the bit Duct temperature too high (fire damper actuators only) of the malfunction state information modeled as BStatusBoolean in property Out.

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MpFlowActualPoint

This point is the actual relative airflow output value of a MP device (VAV Controller) modeled as BStatusNumeric in property Out.

The resolution is 0.01 and the unit is percent.

The valid range is from 0.00% to 100.00%.

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MpFlowSetpointPoint

This point is feedback value of the Flow Setpoint value of a MP device (VAV Controller) modeled as BStatusNumeric in property Out.

The resolution is 0.01 and the unit is percent.

The valid range is from 0.00% to 100.00%.

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MpHeavyUsagePoint

Shows the bit Excessive Utilisation of the malfunction state information modeled as BStatusBoolean in property Out.

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MpInPoint

This point is the Setpoint value of a MP device (VAV Controller) modeled as BStatusNumeric. in property In and Out.

The Out value is sent to the MP device if a changed event has been occurred at any of the input slots.

You can use all priority Input slots like known from each BNmericWritable point.

The resolution is 0.01 and the unit is percent.

The valid range is from 0.00% to 100.00%.

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MpNoSmokeDetectorPoint

Shows the bit Smoke detector Alarm not connected (fire damper actuators only) of the malfunction state information modeled as BStatusBoolean in property Out.

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MpOutResistancePoint

This point shows the resistance value of a passive sensor on Y-input in Ohm and is modeled as BStatusNumeric in property Out
The parameter slot Choice Ad Convert must be configured fitting to the passive sensor type.

The resolution is 1 and the unit is Ohm.

The valid range depends on the selected Choice Ad Convert value and can be 850Ohm..1600Ohm or 200Ohm..50000Ohm.

Note:

> Using this point will disable the analog forced control functionality.
>
> Re-activating the analog forced control functionality needs a warm- or cold-start.
>
> Reading a passive sensor activates a current source on wire Y to enable sensor measurement.
>
> With older actuators this current source stays active, thus the switch values will be wrong until the next warm- or cold-start.

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MpOutVoltagePoint

This point shows the voltage value of an active sensor on Y-input in V and is modeled as BStatusNumeric in property Out.

The resolution is 0.01 and the unit is Volt.

The valid range is 0.00V .. 10.00V.

Note:

> Using this point will disable the analog forced control functionality.
>
> Re-activating the analog forced control functionality needs a warm- or cold-start.

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MpOverloadPoint

Shows the bit Overload, setpoint position not reached of the malfunction state information modeled as BStatusBoolean in property Out.

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MpRangeExtendedPoint

Shows the bit Control range increased of the malfunction state information modeled as BStatusBoolean in property Out.

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MpResetMmStatePoint

This point writes a reset malfunction maintenance bits command to MP device and is modeled as BStatusEnum in property Out.

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MpSecurityRelevantPoint

Shows the bit Security relevant malfunction (fire damper actuators only) of the malfunction state information modeled as BStatusBoolean in property Out.

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MpSetForcedAdaptedPoint

This point writes a forced control command to a fire and smoke device with adapted range mode.
It is modeled as BStatusEnum in property Out.

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MpSetForcedNominalPoint

This point writes a forced control command to a fire and smoke device with nominal range mode.
It is modeled as BStatusEnum in property Out.

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MpSetForcedPoint

This point writes a forced control command to a MP device.
It is modeled as BStatusEnum in property Out.

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MpSetpointPoint

This point is feedback value of the Setpoint value of a MP device modeled as BStatusNumeric in property Out.

The resolution is 0.01 and the unit is percent.

The valid range is from 0.00% to 100.00%.

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MpStartAdaptionPoint

This point writes a start adaption command to a MPL device.

Note:

> Use the action Set to start the invoke of the adaption command to the MPL device.

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MpSupercapPoint

Shows the bit Supercap malfunction of the malfunction state information modeled as BStatusBoolean in property Out.

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MpSwitchPoint

This point shows the switch value connected between wire Y and 24V and is modeled as BStatusBoolean in property Out.

Note:

> Using this point will disable the analog forced control functionality.
>
> Re-activating the analog forced control functionality needs a warm- or cold-start.
>
> Using this point switches a 1.0kOhm resistor from Y to GND.
>
> With older actuators this resistor stays active, thus the passive sensor values will be wrong until the next warm- or cold-start.

There is an additional property Forced Control available that holds the forced control feedback.

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MpxSensorResistancePoint

This point shows the resistance value of a passive sensor on Y-input (1 and/or 2) in Ohm and is modeled as BStatusNumeric in property Out.

The resolution is 1 and the unit is Ohm.

The valid range 200Ohm..55000Ohm.

Note:

> This is a special point for LR24A-MPX devices only.

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MpxSensorSwitchPoint

This point shows the switch value connected between wire Y (1 and/or 2) and 24V and is modeled as BStatusBoolean in property Out.

Note:

> This is a special point for LR24A-MPX devices only.

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MpxSensorVoltagePoint

This point shows the voltage value of an active sensor on Y-input (1 and/or 2) in V and is modeled as BStatusNumeric in property Out.

The resolution is 0.01 and the unit is Volt.

The valid range 0.00V..10.00V.

Note:

> This is a special point for LR24A-MPX devices only.

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