Technical Document

Niagara MBus Driver Guide

April 5, 2019

niagara4

Niagara MBus Driver Guide

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Contents

Preface

About this guide

This topic contains important information about the purpose, content, context, and intended audience for this document.

Product documentation

This document is part of the Niagara technical documentation library. Released versions of Niagara software include a complete collection of technical information that is provided in both online help and PDF format. The information in this document is written primarily for Systems Integrators. In order to make the most of the information in this book, readers should have some training or previous experience with Niagara 4 or NiagaraAX software, as well as experience working with JACE network controllers.

Document content

This document provides basic information about the Mbus driver. Included are descriptions and concepts as well as reference information to help systems Integrators and engineers integrate devices on an Mbus network.

Document change log

Updates to this document are listed below.

April 5, 2019

Initial publication.

Related Documentation

Several documents provide additional information about this driver.

- Niagara Drivers Guide
- Niagara Platform Guide
- Niagara Tagging Guide

Chapter 1 Getting started

Topics covered in this chapter

- ♦ Frequently-asked questions
- ♦ Discovery modes
- ♦ Installing the Mbus components

A Meter Bus (Mbus) network consists of one master device and one or more slave devices (up to 250 devices) interconnected using twin wire cabling. The master device controls the communications over the whole network. This Mbus driver conforms to the European standard: EN13757. Getting started involves setting up the driver components, configuring communication properties (baud rate, etc.), and configuring timing properties.

In a network with a JACE controller, the JACE is connected directly to the master device via an RS232 cable. The JACE takes on the control functions of the master device, interrogating the network for information.

While all slave devices must be compatible with a communication rate of 300 baud, this driver supports multiple baud rates, which means that all slave devices, sharing the same network, can communicate with the master at the most efficient baud rate for the device.

Frequently-asked questions

The answers to these questions provide information about how the driver works and responds to configuration options.

Is my meter fully supported?

Chances are that your meter is supported, providing that it is fully compliant with the EN13757 Mbus standard. The standard allows for manufacturer-specific data, which the driver may not support. Refer to the *Meter Installation Notes* for further information.

Why does the discovery process have two major operations?

The Mbus driver carries out a detection phase before the normal Niagara discovery phase because of the inherent delays an Mbus network requires. You manage these delays by adding Mbus slave meters to the network on a unit-by-unit basis.

For example, some slave units require at least 10 seconds between messages. After transmitting the initialisation message, the system follows up with an are-you-there message and two requests for data with differing FCB (Frame Count Bit) values. These messages can require over 40 seconds just for a single slave device.

A full primary address search for potentially 250 devices could take over two hours. The selective search offered by the Network Manager makes detection followed by discovery more manageable.

Why does Niagara not discover my device, but another software tool does?

Some Mbus devices do not fully support the Mbus standard (EN13757–3) default modulation rate of 300 baud.

Can I speed up the discovery process?

The time between messages and time-out periods are set to cater to the worst case meters tested by the software developers. You can use the **`Inter Message Delay`** and **`Response Time`** properties on the **`Mbus Network`** property sheet to speed up the process, typically down to five seconds.

How do I add a slave device to the network?

There are two ways to add slave devices:

1. Use each device's known primary address to discover the device.

If you know the primary address of the unit, and the address is unique on the network, discover the device using the `Address Search Discover` option. For a single device, enter the known address as both the **`Start Address`** and **`End Address`**.

2. Connect the device to the network as the only device (point-to-point) and discover the device.

   If you do not know the primary address of the device, connect it on its own and use the `Single Device Discover` option. This displays the device's primary address.

If the device's primary address is not unique, or if it has a value of zero (0), disconnect any already-connected devices, connect the device that needs a new primary address to the network as the only device on the network, right-click the Mbus network component in the Nav tree and click **Actions→Assign Address**. This action gives the device a valid and unique primary address.

Following the initial discovery, another discovery may be required after you add a device to the network. This is because some devices output a series of different messages, which require multiple requests. The **`Cycle Quantity`** property serves these devices. This property defines the number of commands required to obtain all message information. To access this property, select the meter device in the **`Discovered`** pane of the **`Mbus Device Manager`** view, then click the **Edit** button.

How do I verify the value to set for the Device Cycle Counter?

After adding a device to the network, import a history or do a point discovery, and check that all data you expect are present. In the point and history discovery windows, the **Record Counter** values identify the responses to the different commands.

Why can't I discover my device after connecting it as the only device on the network?

Some devices require more time for initialisation and discovery. If you reduced the values for **`Inter Message Delay`**, **`Response Timeout`** and **`Initialisation Delay`**, set them back to their defaults (12 seconds) until you successfully add this device.

The system's inability to discover a device is a limitation of the device, not the driver. Twelve (12) seconds may be insufficient for some devices.

Changing the baud rate on the device from 300 baud to a higher rate may speed discovery.

How unique is my parameter?

The Mbus driver uses the **`Units`**, **`Description`**, **`Orthogonal Description`**, and **`Record Number`** properties to identify a parameter. This identity must be unique unless the parameter is part of a data block or array. This identity also complies with the needs of the storage block, for example, length of block, start time, time interval, and position in block. The block cannot traverse message boundaries. All elements of the block must be in the same message and follow contiguously.

Why does the Relay MBSheet software read in data faster than this driver?

The Relay MBSheet does not fully comply with the Mbus standard. When tested, it did not seem to support continuation blocks. This means that it reads the first set of data only. The Niagara Mbus driver continues to read the continuation blocks until all are received. Thus, the Relay seems to complete the process fairly quickly.

Some meters require an inter-message interval. The Niagara Mbus driver supports these required intervals between continuation blocks, which can amount to several minutes before the system reads all data and updates the interface.

Discovery modes

These modes provide ways to customize the discovery of Mbus devices. Using them can shorten the time required by the discovery process.

Each mode searches the device database.

Mode	Description
Scan Device Database	Retrieves information for all devices from the internal network database.
Primary Address Search Discover	Searches for devices based on baud rate, primary address range, and communication timings (retry count, response timeout, intermessage delay, and initialisation delay).
Single Device Discover	Searches for a single device by baud rate and communication timings. Only one device may be connected to the network.
Secondary Address Search Discover	Searches for devices based on baud rate, secondary address, and communication timings.
Specific Secondary Address Discover	Searches for a single device by baud rate, manufacturer, and communication timings.

Installing the Mbus components

The core Mbus components are: MbusSerialNetwork and MbusTcpIpNetwork. This procedure adds these components under the station's **Drivers** container.

Prerequisites: Your computer is connected to the network and running Workbench.

Step 1 If needed, open the **Palette** side bar by selecting **Window→Side Bars→Palette** from the **Menu** bar.

Step 2 Locate and open the Mbus palette.

Step 3 Drag the MbusSerialNetwork and MbusTcpIpNetwork components from the palette to the **Station→Config→Drivers** container.

Chapter 2 Discovery and configuration

Topics covered in this chapter

- ♦ Configuring network properties
- ♦ Discovering a range of devices
- ♦ Discovering a Single Device
- ♦ Giving a device a new primary address
- ♦ Adding devices to the station
- ♦ Discovering points
- ♦ Tagging devices and points
- ♦ Deleting a single device
- ♦ Deleting all devices

Discovery includes initial device detection and several options, which are designed to manage what can be a time-consuming process. After discovery, you may configure a variety of properties associated with each unique meter.

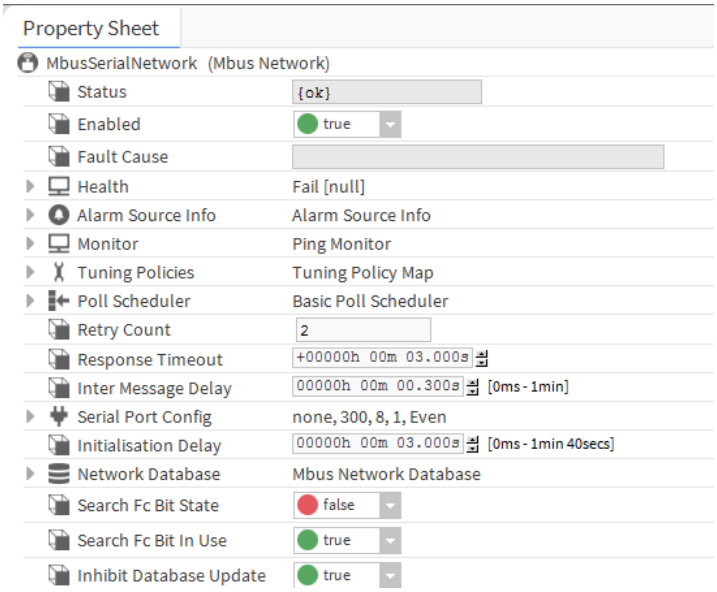
Configuring network properties

Before discovering devices, this procedure configures general network properties.

Prerequisites: The JACEcontroller is installed, your computer is connected to the network and running Workbench.

Step 1 Right-click the MbusSerialNetwork component in the Nav tree, and click **Views→ Property Sheet**.

The **Property Sheet** opens.



Step 2 Configure properties based on the meters you are about to discover.

Consider setting:

- **`Retry Count`** to zero (0). This is because of some of the testing mechanisms required for changing slave parameters.
- **`Response Timeout`** to `12.5` seconds.

- **Inter Message Delay** to 12.0 seconds.

Step 3 Expand the **Serial Port Config** property and enter the **Port Name**.

Step 4 Set up serial port properties.

The defaults are: none, 300, 8, 1, Even.

Discovering a range of devices

Through device discovery, the network learns about the devices connected to it. The discovery process begins with the network detecting which devices are connected. Next, a wizard lets you choose a specific device or range of devices to discover. This feature shortens the time required to discover devices, which require multiple messages separated by sometimes lengthy time intervals.

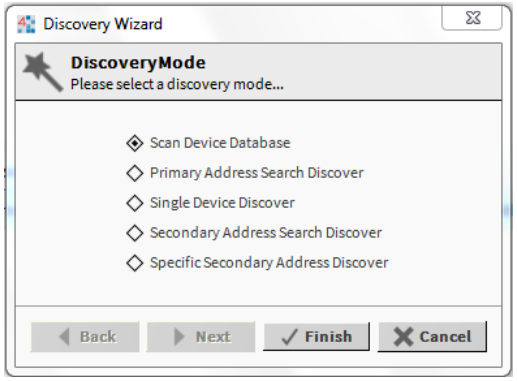
Prerequisites: The devices to discover are physically connected to the network.

Step 1 Double-click on the **mbusNetwork** folder in the Nav tree.

The **Database** pane opens.

Step 2 Click the **Discover** button at the bottom of the Database pane.

The system detects all devices, reduces the **Database** pane in height, opens the **Discovered** pane above it, and opens **Discovery Wizard** .



Step 3 Select Primary Address Search Discover and click **Next**.

Step 4 Configure the wizard and click **Next** or **Finish**.

Defining an address range reduces the overall time spent searching for devices on the network. The permitted address range is between 1 and 250 inclusive and the end address should always be equal to or greater than the start address. The system issues warnings if you enter incorrect range values. If you know the particular primary address required, enter it for both the start and end addresses.

The wizard displays an additional warning concerning the possible length of time required to carry out the search.

Step 5 To opt out of the process, click **No** or, to continue, click **Yes**.

The system collects the network device information, interrogating each device in turn to obtain the type of information output for both FCB (Frame Count Bit) and non-FCB commands. It stores the information in the internal database.

A progress bar appears above the Discovered pane. This bar shows the estimated progress.

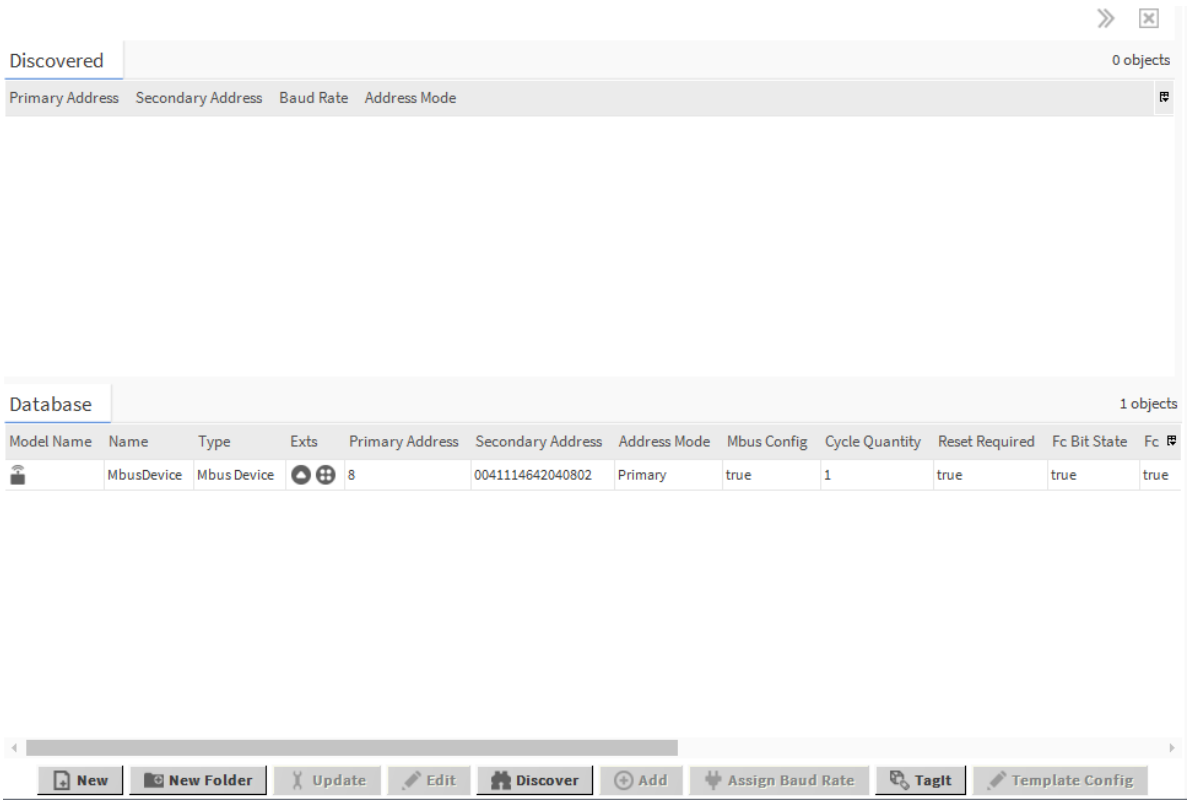
NOTE:

The progress bar provides only a rough guide as to how long the search is taking. Until the system detects the connected devices, it cannot estimate how much additional time the process requires. Thus, the indicator may appear to move backwards under certain conditions.

Step 6 To view the job log, click the double arrow heads on the progress bar.

The system displays the log.

When finished, the discovered devices appear in the **Discovered** pane.



Step 7 To refresh the data for a specific device, select the device in the **Database** pane and click the **Update** button.

The driver launches a job to interrogate the device and update its data with current information.

Step 8 To optimize performance, select one or more devices in the **Database** pane and click **Assign Baud Rate**.

The **Choose baud rate** window opens.

Step 9 Select the baud rate from the drop-down list and click **OK**.

Discovering a Single Device

Use the following procedure to discover a single Mbus device.

Prerequisites: The device is connected to the network and its address is known. No other devices are connected to the network.

Step 1 Double-click on the mbusNetwork folder.

The **Database** pane opens.

Step 2 Click the **Discover** button.

The **Discovery Wizard** opens.

Step 3 Select `Single Device Discover` option and click **Finish**.

The system displays a warning message indicating that only one device should be connected on the network. This is because the command output from the controller is a request for all slave devices to respond and, if there are more than one slave device, the multiple messages may confuse the master.

Giving a device a new primary address

Each device must have a unique primary address. The discovery wizard under the network determines each slave device's primary address. This procedure assigns a new primary address to a device for which the current address is zero (0), or the current address is not unique.

Prerequisites: The Mbus components are installed under the Drivers container.

Step 1 Connect the slave device to the network as the only device (point-to-point).

Step 2 In Workbench, discover or add the device.

Step 3 Right click on the device and click **Actions→Assign Address**.

The system prompts you to confirm.

Step 4 Click **Yes**, assign the address, and click **OK**.

The new address appears under the Primary Address column in the table.

Adding devices to the station

Once the system detects devices, the network database contains all network device information. The next step is to add all devices to the station.

Prerequisites: All devices have been initially discovered (detected) by the system.

Step 1 Double click on the mbusNetwork folder.

The **Database** pane opens.

Step 2 Click the **Discover** button.

The Discovery Wizard opens.

Step 3 Confirm that `Scan Device Database` is selected and click **Finish**.

A progress bar is displayed above the **`Discovered`** pane indicates the estimated progress.

Step 4 Do one of the following:

a. To add the device to the station, select the device in the **`Discovery`** pane, and click the **Add** button.

b. Drag the device from the **`Discovered`** pane to the **`Database`** pane.

Step 5 To edit device properties, select the device in the **`Database`** pane and click the **Edit** button.

Step 6 Continue with point discovery.

Discovering points

This procedure explains how to discover the points associated with each meter device.

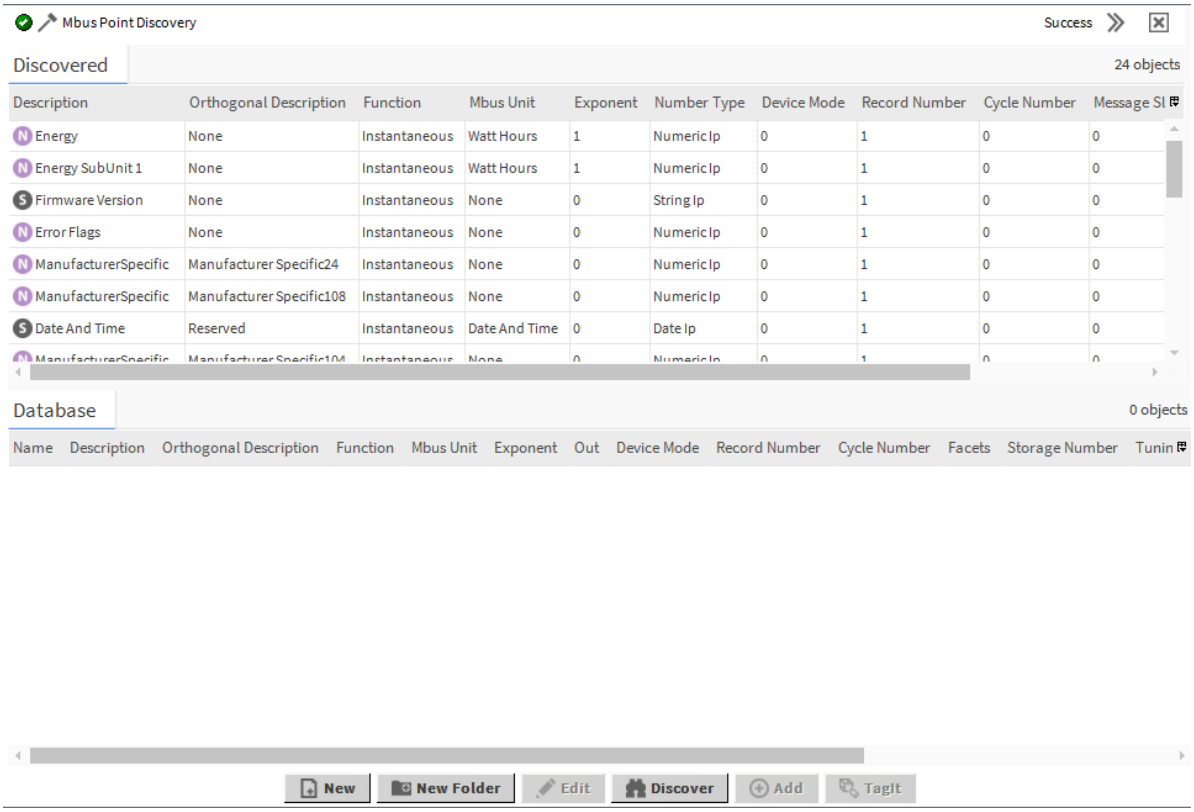
Prerequisites: Devices have been detected and discovered.

Step 1 Double-click on the Points folder under the required device in the Nav tree.

The **`Database`** pane of the **`Mbus Point Manager`** view opens showing all current points.

Step 2 Click the **`Discover`** button.

The Discover button opens the Point Discovery Wizard, which scans the network database or scans the device directly. Scanning the database is quicker, but may be incomplete. After the scan, the **Discovered** pane lists the discovered points.



The Description identifies each point. The Orthogonal Description (additional description) is defined by the EN13757 standard.

Step 3 Select the required point(s) in the **Discovered** pane and either drag them to the **Database** pane or select them and click **Add**.

Step 4 To edit point properties, select the point and click the **Edit** button.

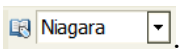
Tagging devices and points

Tags on devices and points provide additional semantic information, making it possible to create hierarchical navigation schemes and to enhance the analysis of historical data. You may add more than one tag to a device or point and use tag groups to add a predefined collection of tags in a single add action. The Niagara Tagging Guide documents how to create tag dictionaries and apply tags to system objects.

Prerequisites: You have a TagDictionaryService in your Services folder. The tag dictionary you are using contains the tags you need. You have discovered devices and points and have the appropriate device or point manager open discovered objects in the Database pane.

Step 1 Select the devices or points to tag and click the **TagIt** button at the bottom of the view.

The **Edit Tags** window opens.

Step 2 Select the dictionary from the option list in the top left corner 

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TIP: In the Search property, you can use a shortcut to designate the dictionary. Type `hs:` for Haystack, `n:` for Niagara, and similarly for other dictionaries.

The top half of the window shows a list of tags available from the selected dictionary.

Step 3 Use the filter fields as needed to limit the number of tags displayed. For example:

- Type in the **Search** field  to filter by tag name. Tags are filtered immediately as you type.
- Select an option from the option list  to filter based on validity options (`Show All`, `Valid Only`, or `Best Only`).

Step 4 Add any number of tags to suit your needs (such as, n:device, hs:geoState, my:bldgRef, etc.) using either of the following methods:

- To add an individual tag from a tag dictionary, select one or more tags in the **Tag Dictionary** (upper) pane and click **Add Tag** to assign the selected tag(s) to the device
- To add a predefined collection of tags from a tag dictionary, in the **Tag Dictionary** (upper) pane in the dialog, scroll down to **Tag Groups** and select a tag group, and click **Add Tag** to assign the selected collection of tags at once.

The assigned individual tags and added tag groups are listed on the **Direct Tags** tab in the lower half of the window.

Step 5 Edit any tag value propoerties, as appropriate, and click the **Save** button to save the added tag assignments.

Step 6 **Optional:** For tags that have Ord type values (such as `hs:siteRef`), refer to the following steps as an example of how to add a link to your tag.

a. Click the option list arrow located to the right of the tag value field.

b. Select the appropriate link type from the options menu.

c. Browse to the desired link and select it.

d. Select the `Handle` option and click **OK**.

Deleting a single device

When a device is no longer needed, you may delete it from both the MBus Device Manager and network databases.

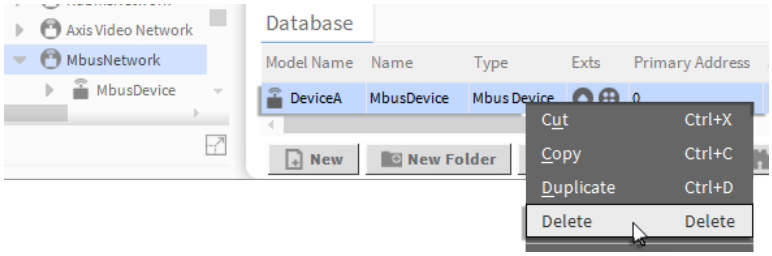
Step 1 To remove a single device right-click the network component in the Nav tree and click **View-s→Property Sheet**

Step 2 Expand the **`Network Database`** property.

Step 3 Right-click the device.

Step 4 Click **Delete**.

NOTE: You can also delete one or more devices by displaying them in the database view, selecting them and using the right-click menu to select delete, as shown below:



Deleting all devices

To start over with a fresh discovery of devices, you may delete all devices from the device and network databases.

Step 1 To delete devices from the device database, right-click the device component (MbusDevice) in the Nav tree and click **Actions→Remove from Database**.

The system removes the device from the device database.

Step 2 To delete devices from the network database (MbusSerialNetwork or MbusTcpIpNetwork), right-click the network component in the Nav tree and click **ActionsClear Network Database**.

The system removes all devices from the network database.

Chapter 3 Components

Topics covered in this chapter

- MbusSerialNetwork
- MbusTcpIPNetwork
- MbusDevice
- MbusCommand
- Mbus Proxy Ext

Components include services, folders and other model building blocks associated with a module. You may drag them to a property or wire sheet from a palette.

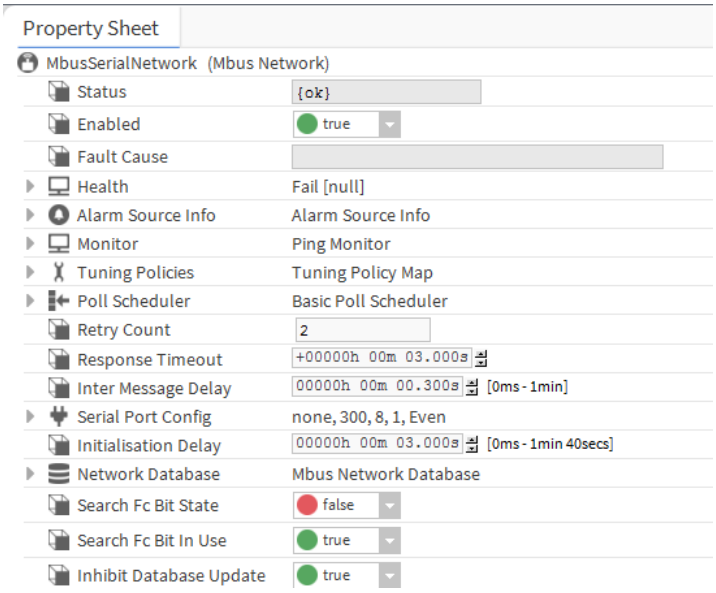
Descriptions included in the following topics appear as context-sensitive help topics when accessed by:

- Right-clicking on the object and selecting **Views→Guide Help**
- Clicking **Help→Guide On Target**

MbusSerialNetwork

This component provides Mbus serial network functionality.

Figure 1 MbusSerialNetwork Property Sheet

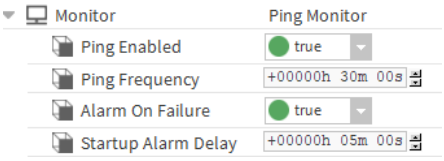


To access this view, right-click the MbusSerialNetwork component in the Nav tree and click **Views→Property Sheet**.

Property	Value	Description
Status	read-only	Indicates the condition of the component at the last check. `{ok}` indicates that the component is licensed and polling successfully. `{down}` indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. `{disabled}` indicates that the **`Enable`** property is set to `false`. `{fault}` indicates another problem. Refer to **`Fault Cause`** for more information.
Enabled	`true` or `false`	Activates and deactivates use of the component.
Fault Cause	read-only	Indicates the reason why a system object (network, device, component, extension, etc.) is in fault. This property is empty unless a fault exists.
Health	read-only	Indicates the status of a system object (network, device or component) in the station. Includes a timestamp.
Alarm Source Info	additional properties	Contains a set of properties for configuring and routing alarms when this component is the alarm source.
Monitor	additional properties	See Monitor properties, page 21.
Tuning Policies	additional properties	Configures network rules for evaluating both write requests (for example, to writable proxy points) as well as the acceptable freshness of read requests.
Poll Scheduler	additional properties	Configures system timing functions.
Retry Count	number (defaults to 2)	Configures how many times to repeat a network read request, if no response is received before the response timeout interval.
Response Timeout	hours, minutes, seconds, milliseconds (defaults to 2 seconds)	Configures the length of time before the system times out when interrogating an Mbus device. You should start by setting this value to a large number, such as 40 seconds. Then, reduce it depending on the number of meters and discovery performance. During testing, a value of 12.5 seconds was used. **NOTE:** The baud rate also impacts performance. Each device may have a different baud rate.
Inter Message Delay	hours, minutes, seconds (defaults to 0.3 seconds)	Defines the amount of time between messages.
Serial Port Config	additional properties	See Serial Port Config properties, page 22.
Initialization Delay	hours, minutes, seconds,	Defines the period before the system sends next command following an initialization request to the network (SND_NKE). This period should be adjusted to suit the hardware installed

Property	Value	Description
	milliseconds (defaults to 1 seconds)	on the network. Please consult the device documentation for a suitable value.
Network Database	additional properties	See Network Database, page 23.
Search Fc Bit State	`true` (default) or `false`	Refers to data transmitted from the slave device to the master, and functions with the **`Search Fc Bit in Use`** property. `true` indicates that a follow-on message contains the next set of data. In other words, the slave has more data to communicate to the master than fits into a single message. FC stands for Frame Count.
Search Fc Bit in Use	`true` (default) or `false`	Refers to data transmitted from the slave device to the master, and functions with the **`Search Fc Bit State`** property. `true` indicates that the **`Search Fc Bit State`** should be evaluated for additional data. Not all devices need to implement this, and those that do declare within the message if the mechanism is active or not.
Inhibit Database Update	`true` (default) or `false`	Controls the updating of the database at the network level. `true` inhibits updates to the network database. To speed up access to devices, discovery populates the network database. For system stability after initial discovery and device configuration, disable database updates (set this property to false).

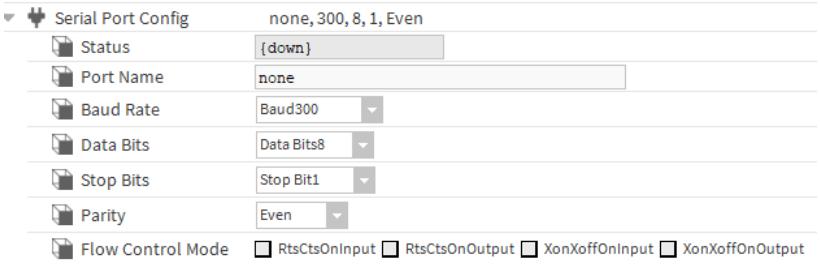
Monitor properties



Property	Value	Description
Ping Enabled	`true` (default) or `false`	Controls the monitor ping. • If *true* a ping occurs for each device under the network, as needed • If *false* device status pings do not occur. Moreover, device statuses cannot change from what existed when this property was last true It is recommended you leave Ping Enabled as true in almost all cases.
Ping Frequency	`hours:minutes:seconds`	Specifies the interval between periodic pings of all devices. Typical default value is every 5 minutes (05m 00s), you can adjust differently if needed.

Property	Value	Description
Alarm On Failure	`true` (default) or `false`	Controls the recording of ping failure alarms. If `true`, the system records an alarm in the station's AlarmHistory upon each ping-detected device event ("down" or subsequent "up"). If `false`, the system ignores and does not record device "down" and "up" events in the station's AlarmHistory.
Startup Alarm Delay	`hours:minutes:seconds`	Specifies the period a station must wait after restarting before device "down" or "up" alarms are generated. Applies only if the Monitor's property **`Alarm On Failure`** is true.

Serial Port Config properties



Property	Value	Description
Status	read-only	Indicates the condition of the component at the last check. `{ok}` indicates that the component is licensed and polling successfully. `{down}` indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. `{disabled}` indicates that the **`Enable`** property is set to `false`. `{fault}` indicates another problem. Refer to **`Fault Cause`** for more information.
Port Name	text (defaults to `none`)	Identifies the port.
Baud Rate	drop-down list (defaults to `Baud300`)	Defines the rate at which data bits are transmitted.
Data Bits	drop-down list (defaults to `Data Bits8`)	Defines how many bits form a character (byte).
Stop Bits	drop-down list (defaults to `Stop Bit1`)	Defines how many bits indicate the end of a character.

Property	Value	Description
Parity	drop-down list (defaults to `Even`)	Defines how to confirm that the system communicated each character successfully
Flow Control Mode	tick (check) boxes	Manages the flow of data through the serial port. `RtsCtsOnInput` selects Request-to-Send and Clear-to-Send commands for data coming in to the station. `RtsCtsOnOutput` selects Request-to-Send and Clear-to-Sent commands for data going out of the station. `XonXoffOnInput` selects Xon/Xoff to manage data coming in to the station. `XonXoffOnOutput` selects Xon/Xoff to manage data going out of the station.

Network Database

Property	Value	Description
Status Message	read-only	Reports the progress of a hardware search.
Detected Devices	read-only	Displays a list of all the devices detected on the network. The device name is constructed by the name of the detected device plus a suffix that includes the device's address and an indicator: P for Primary address, which is a unique number for the device as defined on the MbusDevice property sheet. S for Secondary address, is an alternative number for the device as defined on the MbusDevice property sheet.

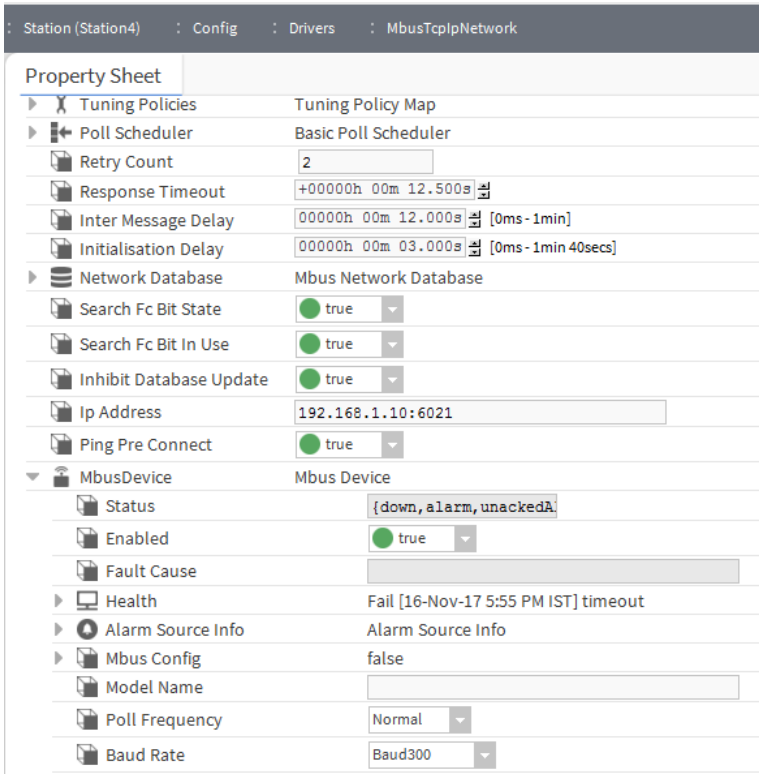
Actions

- **Assign Address** changes the primary address of a single device connected to the network. This device must be the only meter currently connected to the network.
- **Clear Network Database** removes all the currently-detected devices from the internal network database.

MbusTcpIPNetwork

This component supports an Mbus network that uses the TCP/IP protocol.

Figure 2 MbusTcpIPNetwork Property Sheet



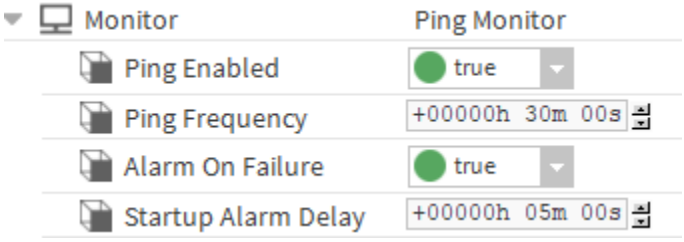
To access this view, right-click the MbusTcpIPNetwork component in the Nav tree and click **Views→Property Sheet**.

Property	Value	Description
Status	read-only	Indicates the condition of the component at the last check. `{ok}` indicates that the component is licensed and polling successfully. `{down}` indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. `{disabled}` indicates that the **`Enable`** property is set to `false`. `{fault}` indicates another problem. Refer to **`Fault Cause`** for more information.
Enabled	`true` or `false`	Activates and deactivates use of the component.
Fault Cause	read-only	Indicates the reason why a system object (network, device, component, extension, etc.) is in fault. This property is empty unless a fault exists.
Health	read-only	Indicates the status of a system object (network, device or component) in the station. Includes a timestamp.
Alarm Source Info	additional properties	Contains a set of properties for configuring and routing alarms when this component is the alarm source.

Property	Value	Description
Monitor	additional properties	See Monitor properties, page 26.
Tuning Policies	additional properties	Configures network rules for evaluating both write requests (for example, to writable proxy points) as well as the acceptable freshness of read requests.
Poll Scheduler	additional properties	Configures system timing functions.
Retry Count	number (defaults to 2)	Configures how many times to repeat a network read request, if no response is received before the response timeout interval.
Response Timeout	hours, minutes, seconds, milliseconds (defaults to 2 seconds)	Configures the length of time before the system times out when interrogating an Mbus device. You should start by setting this value to a large number, such as 40 seconds. Then, reduce it depending on the number of meters and discovery performance. During testing, a value of 12.5 seconds was used. **NOTE:** The baud rate also impacts performance. Each device may have a different baud rate.
Inter Message Delay	hours, minutes, seconds (defaults to 0.3 seconds)	Defines the amount of time between messages.
Initialization Delay	hours, minutes, seconds, milliseconds (defaults to 1 seconds)	Defines the period before the system sends next command following an initialization request to the network (SND_NKE). This period should be adjusted to suit the hardware installed on the network. Please consult the device documentation for a suitable value.
Network Database	additional properties	See Network Database, page 27.
Search Fc Bit State	`true` (default) or `false`	Refers to data transmitted from the slave device to the master, and functions with the **`Search Fc Bit in Use`** property. `true` indicates that a follow-on message contains the next set of data. In other words, the slave has more data to communicate to the master than fits into a single message. FC stands for Frame Count.
Search Fc Bit in Use	`true` (default) or `false`	Refers to data transmitted from the slave device to the master, and functions with the **`Search Fc Bit State`** property. `true` indicates that the **`Search Fc Bit State`** should be evaluated for additional data. Not all devices need to implement this, and those that do declare within the message if the mechanism is active or not.
Inhibit Database Update	`true` (default) or `false`	Controls the updating of the database at the network level. `true` inhibits updates to the network database. To speed up access to devices, discovery populates the network database. For system stability after initial discovery and

Property	Value	Description
		device configuration, disable database updates (set this property to false).
IP Address	IP address	Identifies the IP address of the device.
Ping Pre Connect	`true` (default) or `false`	`true` uses an ICMP (Internet Control Message Protocol) ping to confirm that the link to the Gateway is possible before attempting a connection.

Monitor properties



Property	Value	Description
Ping Enabled	`true` (default) or `false`	Controls the monitor ping. • If *true* a ping occurs for each device under the network, as needed • If *false* device status pings do not occur. Moreover, device statuses cannot change from what existed when this property was last true It is recommended you leave Ping Enabled as true in almost all cases.
Ping Frequency	`hours:minutes:seconds`	Specifies the interval between periodic pings of all devices. Typical default value is every 5 minutes (05m 00s), you can adjust differently if needed.
Alarm On Failure	`true` (default) or `false`	Controls the recording of ping failure alarms. If `true`, the system records an alarm in the station's AlarmHistory upon each ping-detected device event ("down" or subsequent "up"). If `false`, the system ignores and does not record device "down" and "up" events in the station's AlarmHistory.
Startup Alarm Delay	`hours:minutes:seconds`	Specifies the period a station must wait after restarting before device "down" or "up" alarms are generated. Applies only if the Monitor's property **`Alarm On Failure`** is true.

Network Database

Property	Value	Description
Status Message	read-only	Reports the progress of a hardware search.
Detected Devices	read-only	Displays a list of all the devices detected on the network. The device name is constructed by the name of the detected device plus a suffix that includes the device's address and an indicator: P for Primary address, which is a unique number for the device as defined on the MbusDevice property sheet. S for Secondary address, is an alternative number for the device as defined on the MbusDevice property sheet.

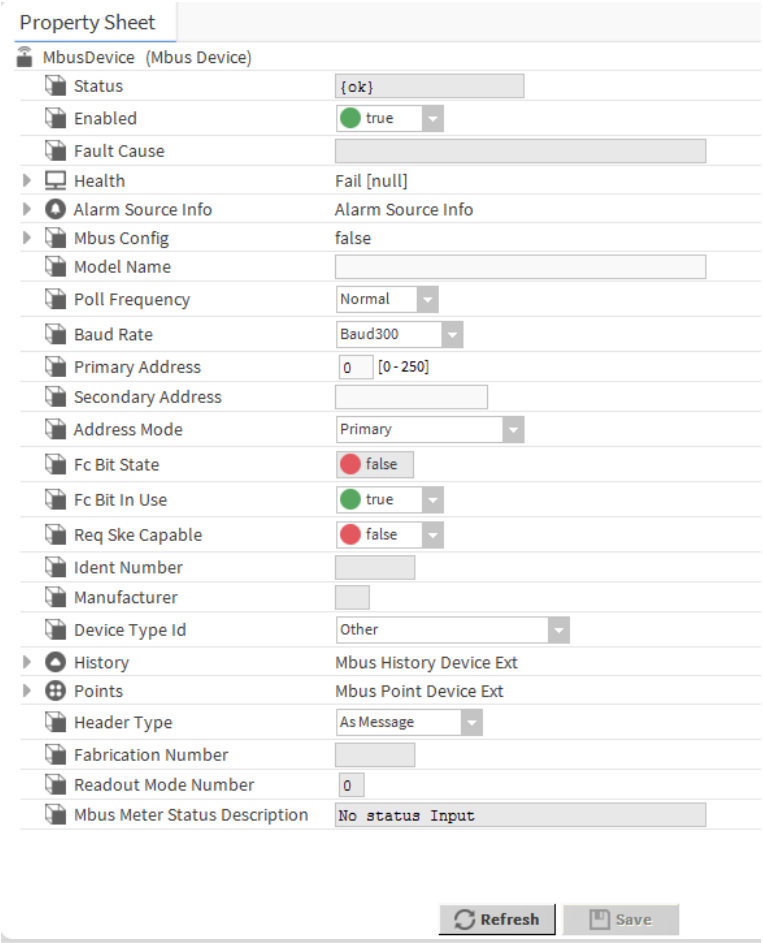
Actions

- **Assign Address** does more than update the station database. It actually writes the primary address to a single device connected to the network. This device must be the only meter currently connected to the network.
- **Clear Network Database** removes all the currently-detected devices from the internal network database.

MbusDevice

This component configures and Mbus device.

Figure 3 MbusDevice Property Sheet



To access this view, right-click the device component in the Nav tree and click **Views→Property Sheet**.

Property	Value	Description
Status	read-only	Indicates the condition of the component at the last check. `{ok}` indicates that the component is licensed and polling successfully. `{down}` indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. `{disabled}` indicates that the **`Enable`** property is set to `false`. `{fault}` indicates another problem. Refer to **`Fault Cause`** for more information.
Enabled	`true` or `false`	Activates and deactivates use of the component.
Fault Cause	read-only	Indicates the reason why a system object (network, device, component, extension, etc.) is in fault. This property is empty unless a fault exists.
Health	read-only	Indicates the status of a system object (network, device or component) in the station. Includes a timestamp.

Property	Value	Description
Alarm Source Info	additional properties	Contains a set of properties for configuring and routing alarms when this component is the alarm source.
Mbus Config	additional properties	See Mbus Config properties, page 30.
Model Name	text	Identifies the model of the meter.
Poll Frequency	drop-down list, defaults to `Normal`	Specifies which of the three poll tables to use. `Fast` interrogates each device frequently. `Normal` interrogates each device at a standard rate. `Slow` interrogates each device infrequently.
Baud Rate	drop-down list, defaults to `300 Baud`	Configures the device's communication speed.
Primary Address	0 to 250	Defines a unique number for each device.
Secondary Address	number	Defines an alternate number to identify each device.
Address Mode	drop-down list	Indicates which address to use: `Primary`, `Secondary` or `Secondary Extended`.
Cycle Quantity	number	Identifies the number of message commands required to obtain all messages from a device.
Reset Required (optional)	`true` or `false` (default)	Defines if the device requires a reset to be output prior to requesting messages.
Search Fc Bit State	`true` (default) or `false`	Refers to data transmitted from the slave device to the master, and functions with the **`Search Fc Bit in Use`** property. `true` indicates that a follow-on message contains the next set of data. In other words, the slave has more data to communicate to the master than fits into a single message. FC stands for Frame Count.
Search Fc Bit in Use	`true` (default) or `false`	Refers to data transmitted from the slave device to the master, and functions with the **`Search Fc Bit State`** property. `true` indicates that the **`Search Fc Bit State`** should be evaluated for additional data. Not all devices need to implement this, and those that do declare within the message if the mechanism is active or not.
Req Ske Capable	`true` or `false` (default)	Defines as a capability in the protocol, which the driver can use if the device supports the feature. Not all devices support this functionality.
Ident Number	read-only	Reports the number contained in each communication message received from the device.
Manufacturer	read-only	Identifies the device manufacturer. This code is contained in the communication messages from this device.
Device Type ID	drop-down list	Defines the device type. This information is found in the communication messages from this device.

Property	Value	Description
Application Reset Type (hidden slot)	defaults to `All`	Defines which data within the remote device can be reset if the device supports it.
Sub Telegram Number (hidden slot)	number	Identifies the message (sub-telegram) to display when carrying out an **Application Reset** action.
Max Inputs Per Cycle Count (hidden slot)	number	Configures the additional number of data requests issued to retrieve data for one cycle. This applies when the initial data message input to the JACE or PC contains a continuation flag, which causes the device to make another request for more data. If subsequent inputs contain continuation flags, the request repeats.
History	additional properties	See History, page 30.

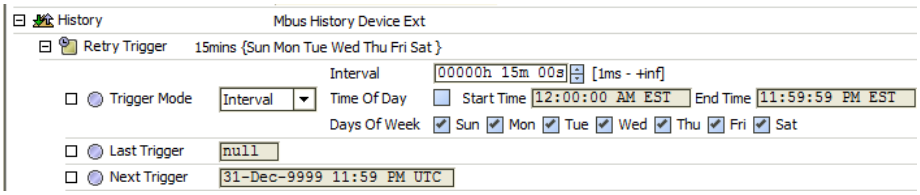
Mbus Config properties

Property	Value	Description
Override Network	`true` or `false` (default)	Configures the network to use alternative configuration properties. `false` configures the network to use the standard network-level properties. `true` configures the network to use the properties below.
Retry Count	number (defaults to 2)	Configures how many times to repeat a network read request, if no response is received before the response timeout interval.
Response Timeout	hours, minutes, seconds, milliseconds (defaults to 2 seconds)	Configures the length of time before the system times out when interrogating an Mbus device. You should start by setting this value to a large number, such as 40 seconds. Then, reduce it depending on the number of meters and discovery performance. During testing, a value of 12.5 seconds was used. **NOTE:** The baud rate also impacts performance. Each device may have a different baud rate.
Inter Message Delay	hours, minutes, seconds (defaults to 0.3 seconds)	Defines the amount of time between messages.
Initialization Delay	hours, minutes, seconds, milliseconds (defaults to 1 seconds)	Defines the period before the system sends next command following an initialization request to the network (SND_NKE). This period should be adjusted to suit the hardware installed on the network. Please consult the device documentation for a suitable value.

History

These properties define what automatically happens when the station regularly connects with a device. Retries occur with the frequency defined by the **`Interval`** property (every 15 minutes in the screen capture). Retries continue until the station successfully retrieves the history.

Figure 4 Mbus History Device Ext properties



Property	Value	Description
Retry Trigger	schedule	Adjusts the retry trigger in the event that the History Device Extension could not contact the device.
Trigger mode	drop-down list	Configures when the extension contacts the device.
Last Trigger	read-only	Reports the last time the extension contacted the device.
Next Trigger	read-only	Reports when the extension will contact the device next.

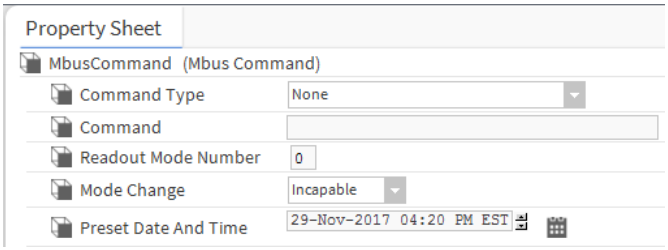
Actions

- **Ping** checks the communication path to the device.
- **Reset Datalink** resets the data link layer in the slave.
- **Reset Application** resets the application in the slave.
- **Remove From Database** removes details of this device from the internal database.
- **Retry** causes the system to retry a data communication with the device.

MbusCommand

This protocol sends data to devices, provided the device supports this functionality. For example, if you are replacing a meter, you may use this command to update a value in the new meter with the accumulated value from the outgoing meter. Another example might be to set the current date and time in a new meter, which would replace the default date and time set by the manufacturer.

Figure 5 MbusCommand Property Sheet



You access these properties (after dragging an MbusCommand from the palette to an Mbus device in the Nav tree) by double-clicking the MbusCommand. Refer to the device manufacturer's documentation for details of the supported commands.

Property	Value	Description

Command Type	drop-down list (defaults to `None`)	If the device supports updates, this property selects the type of command to use:
		`Command`
		`Current Date`
		`Current Date And Time`
		`Command With Preset Date And Time`

Command	text	Supplies the command to send to the device.
Readout Mode Number	number (defaults to zero (0))	Refer to the device manufacturer's documentation for details of the supported commands.
Mode Change	`Incapable` (default) or `Capable`	Refer to the device manufacturer's documentation for details of the supported commands.
Preset Date And Time	date and time	Supplies the date and time to send to the device.

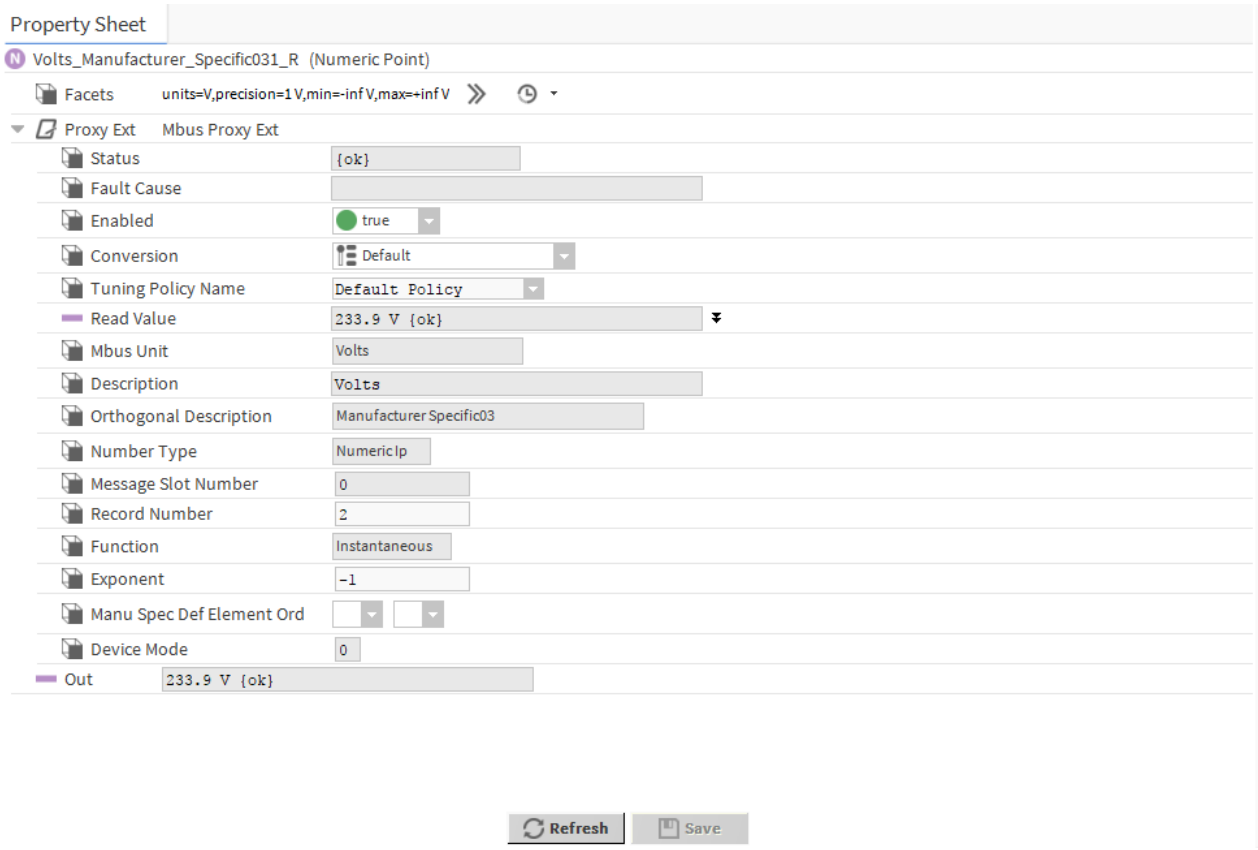
Action

A single action is associated with this component, **Execute**. This action runs the command.

Mbus Proxy Ext

This extension, which configures point properties is located beneath any Mbus proxied point.

This extension is visible once you add a point to the point database.



Property	Value	Description
Status	read-only	Indicates the condition of the component at the last check. `{ok}` indicates that the component is licensed and polling successfully. `{down}` indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. `{disabled}` indicates that the **`Enable`** property is set to `false`. `{fault}` indicates another problem. Refer to **`Fault Cause`** for more information.
Fault Cause	read-only	Indicates the reason why a system object (network, device, component, extension, etc.) is in fault. This property is empty unless a fault exists.
Enabled	`true` or `false`	Activates and deactivates use of the component.
Conversion	Drop-down list	Defines how the system converts proxy extension units to parent point units. `Default` automatically converts similar units (such as Fahrenheit to Celsius) within the proxy point. **NOTE:** In most cases, the standard `Default` conversion is best.

Property	Value	Description
		`Linear` applies to voltage input, resistive input and voltage output writable points. Works with linear-acting devices. You use the Scale and Offset properties to convert the output value to a unit other than that defined by device facets. `Reverse Polarity` applies only to Boolean input and relay output writable points. Reverses the logic of the hardware binary input or output. `500 Ohm Shunt` applies to voltage input points only. It reads a 4-to-20mA sensor, where the Ui input requires a 500 ohm resistor wired across (shunting) the input terminals. `Tabular Thermistor` applies to only a Thermistor input point and involves a custom resistance-to-temperature value response curve for Type 3 Thermistor temperature sensors.
Tuning Policy Name		Selects the tuning policy for this point.
Read Value	read-only	Displays the actual value imported from the device, and formatted based on device facets. The display accords with the point facets.
Mbus Unit	text	Displays the unit as defined in the Mbus specification. The unit is text only and can be changed for information purposes.
Description	text	Describes the point. This text can be changed.
Orthogonal Description	text	Displays the Orthogonal Description as defined in the Mbus specification. This can be changed.
Number Type	read-only	Reports the type of number for the input.
Message Slot Number	read-only	Refer to the manufacturer's documentation.
Record Number	read-only	Refer to the manufacturer's documentation.
Function	read-only	Refer to the manufacturer's documentation.
Exponent	read-only	Reports value information provided by the device manufacturer.
Manu Spec Def Element Ord	read-only	Refer to the manufacturer's documentation.
Device Mode	read-only	Refer to the manufacturer's documentation.
Out	read-only	Reports the current value and status of the point.

Chapter 4 Plugins (views)

Topics covered in this chapter

♦ Mbus Device Manager
♦ Mbus Point Manager
♦ History Import Manager

Plugins provide views of components and can be accessed in many ways. For example, double-click a component in the Nav tree to see its default view. In addition, you can right-click on a component and select from its **Views** menu.

For summary documentation on any view, select **Help→On View** (**F1**) from the menu or press **F1** while the view is open.

Mbus Device Manager

This view manages discovered devices.

You access this view by double-clicking the MbusSerialNetwork node in the Nav tree.

Figure 6 Mbus Device Manager

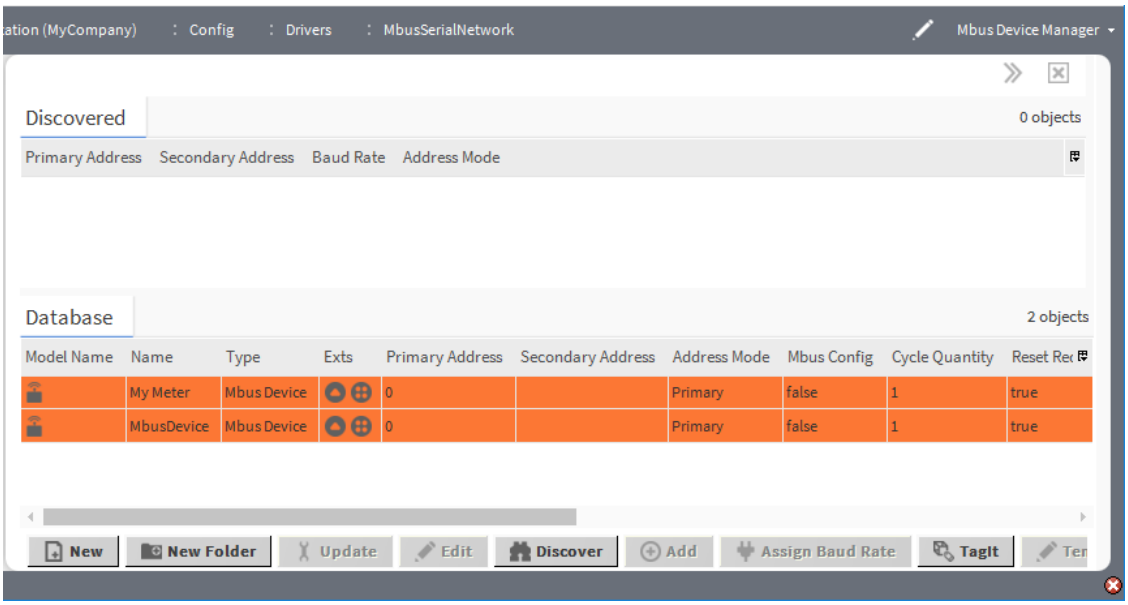


Table columns

Column	Description
Model Name	Reports the manufacturer's model name of the meter.
Name	Reports the name of the device you supplied when you created the device (clicked **New**). To edit this name, use the MbusNetwork property sheet above the device.
Type	Reports the `Device Type Id` of the device.
Exts	Identifies the extensions for the device, for example, histories and points.
Primary Address	Reports the unique device number (from 0 to 250) for the device.

Column	Description
Secondary Address	Reports an alternate number with which to identify the device.
Address Mode	Indicates which address to use.
Mbus Config	Indicates if **`Override Network`** is true or false.
Cycle Quantity	Reports the number of message commands required to obtain all messages from a device.
Reset Required	Indicates if the device requires a reset before requesting messages.
Fc Bit State	Indicates if a follow-on message contains the next set of data (true) or not (false).
Fc Bit In Use	Indicates if the **`Fc Bit State`** should be evaluated (true) or ignored (false).
Ident Number	Reports the number contained in each communication message received from the device.
Manufacturer	Identifies the device manufacturer.
Version Number	Reports the manufacturer's version number for the device.
Device Type Id	Reports the type of device.
Status	Reports the condition of the device.
Baud Rate	Reports the current baud rate.
Enabled	Indicates if the device is in operation.
Health	Indicates the condition of the device.

.

Buttons

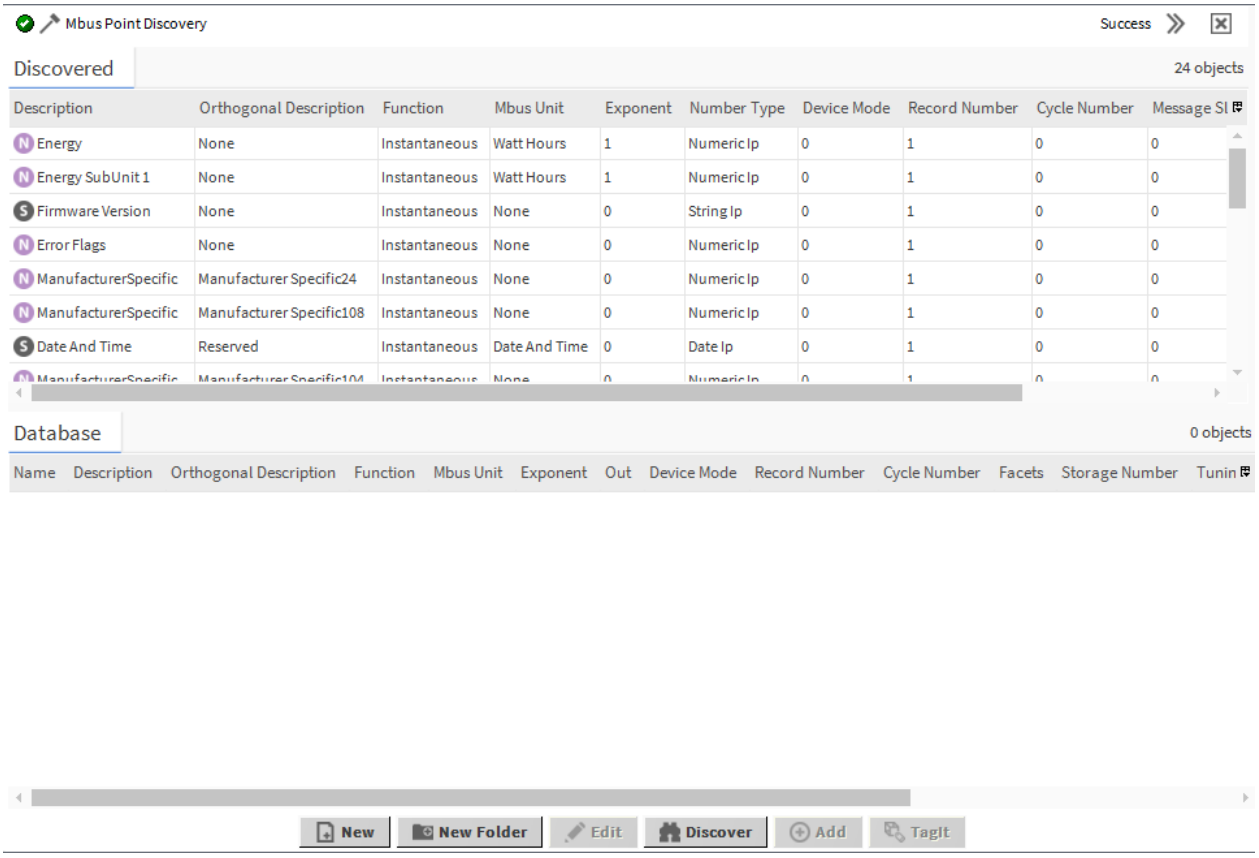
The buttons at the bottom of the **`Database`** pane serve these functions:

- **New** creates a new device record in the database.
- **New Folder** creates a new folder in the station for grouping devices.
- **Update** refreshes device configuration information from the network. This button becomes active when you select the device in the **`Database`** pane.
- **Edit** opens the **Edit** window for the device, which is used to configure device properties.
- **Discover** launches the Discover Wizard, which searches the network for devices.
- **Add** creates a single, new device record in the database.
- **Assign Baud Rate** changes the baud rate for the selected slave device so as to obtain optimum performance. This button activates when you select one or more discovered devices.
- **TagIt** associates meta data with the device for the purpose of constructing a hierarchy in the Nav tree or for analyzing collected data.

Mbus Point Manager

This view manages discovered points.

Figure 7 Mbus Point Manager



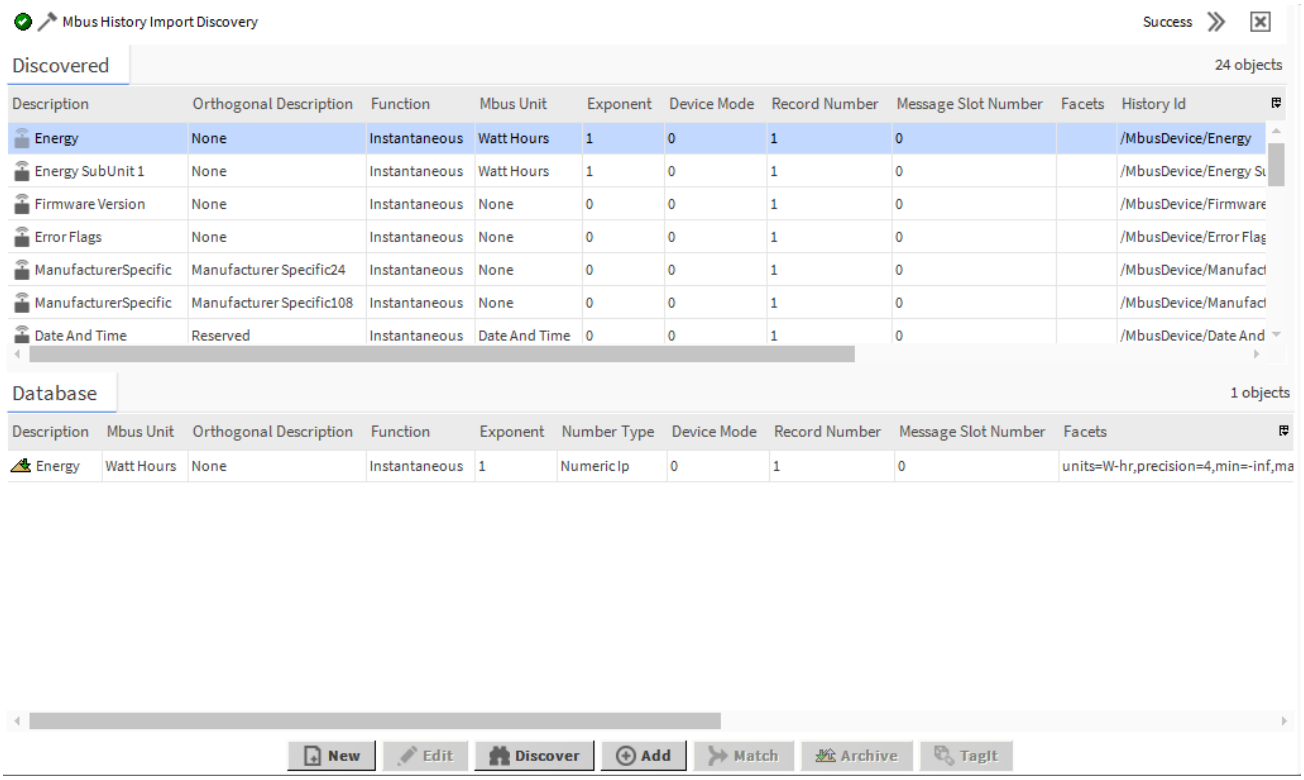
Column	Description
Name	Reports the name of the proxy point component.
Description	Describes the point.
Orthogonal Description	Reports value information provided by the device manufacturer.
Function	Reports value information provided by the device manufacturer.
Mbus Unit	Reports the unit as defined in the Mbus specification.
Exponent	Reports value information provided by the device manufacturer.
out	Reports the current value and status of the point.
Device Mode	Indicates the message formatting, for example, LSB first or MSB first.
Record Number	Reports how many linked messages to accept for this point in a sequence of linked messages.
Cycle Number	Increments each time a point receives a new message.
Facets	Reports the terms configured for the device.
Storage Number	Reports value information provided by the device manufacturer for this hidden slot.
Tuning Policy Name	Reports the tuning policy for the point.
Conversion	Reports the unit used to convert the point value.
Fault Cause	Reports why a point is in fault.

Column	Description
Path	Reports the ORD that identifies the location of the point in the station.
Type	Identifies the type of point.
Enabled	Indicates if the point is functional.
Number type	Reports the type of number for the input. Refer to the manufacturer's documentation.
Message Slot Number	Refer to the manufacturer's documentation.

History Import Manager

Mbus devices retain historic values, which the driver can retrieve.

The default view of the Mbus history import is **`History Import Manager`** view. The system imports history records using a discovery job.



Column	Description
Description	Describes the point for the history record.
Orthogonal Description	Provides another description.
Function	Identifies the manufacturer's version number that defines the device.
Mbus Unit	Displays the unit as defined in the Mbus specification. The unit is text only and can be changed for information purposes.
Exponent	Reports value information provided by the device manufacturer.
Device Mode	Indicates the message formatting, for example, LSB first or MSB first.
Record Number	Reports how many linked messages to accept for this point in a sequence of linked messages.

Column	Description
Message Slot Number	Refer to the manufacturer's documentation.
Facets	Reports the units and resolution of the imported data.
History ID	Reports the identification number for the import. This value identifies the name of the imported history file.

Action

A single action, **Execute**, is available on each import. This action initiates data communication with the device.

Chapter 5 Windows

Topics covered in this chapter

- New (or edit) device window
- Discovery Wizard Filters window
- Customized Comm Timings window

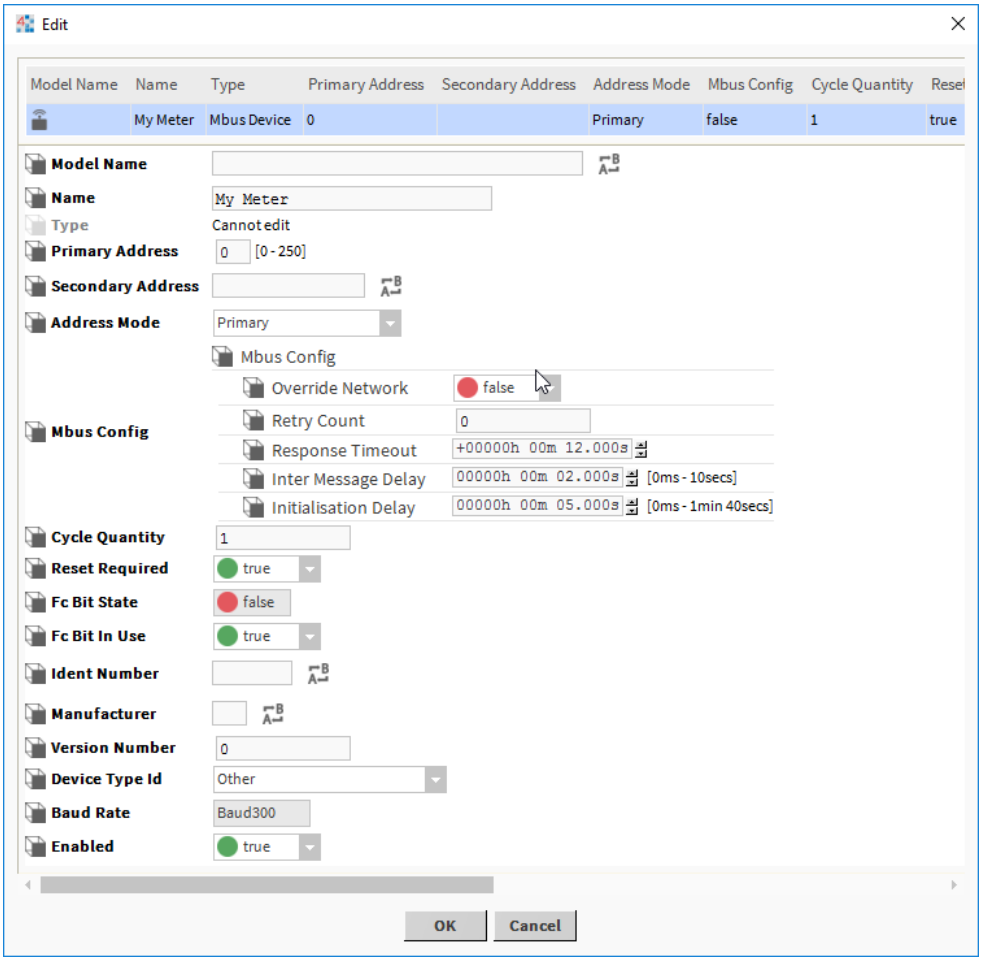
Windows create and edit database records or collect information when accessing a component. You access them by dragging a component from a palette to a nav tree node or by clicking a button.

Windows do not support **On View (F1)** and **Guide on Target** help. To learn about the information each contains, search the help system for key words.

New (or edit) device window

This window configures individual Mbus devices.

Figure 8 Edit Device window



Property	Value	Description
Model Name	text	Identifies the model of the meter.
Name	text	Identifies the name given to the meter.
Primary Address	0 to 250	Defines a unique number for each device.
Secondary Address	number	Defines an alternate number to identify each device.
Address Mode	drop-down list	Indicates which address to use: `Primary`, `Secondary` or `Secondary Extended`.
Mbus Config	additional properties	See Mbus Config, page 42.
Cycle Quantity	number	Identifies the number of message commands required to obtain all messages from a device.
Reset Required (optional)	`true` or `false` (default)	Defines if the device requires a reset to be output prior to requesting messages.
Search Fc Bit State	`true` (default) or `false`	Refers to data transmitted from the slave device to the master, and functions with the **`Search Fc Bit in Use`** property. `true` indicates that a follow-on message contains the next set of data. In other words, the slave has more data to communicate to the master than fits into a single message. FC stands for Frame Count.
Search Fc Bit in Use	`true` (default) or `false`	Refers to data transmitted from the slave device to the master, and functions with the **`Search Fc Bit State`** property. `true` indicates that the **`Search Fc Bit State`** should be evaluated for additional data. Not all devices need to implement this, and those that do declare within the message if the mechanism is active or not.
Ident Number	read-only	Reports the number contained in each communication message received from the device.
Manufacturer	read-only	Identifies the device manufacturer. This code is contained in the communication messages from this device.
Version Number	read-only	Identifies the manufacturer's version number that defines the device.
Device Type ID	drop-down list	Defines the device type. This information is found in the communication messages from this device.
Baud Rate	read-only	Reports the baud rate configured for the device.
Enabled	`true` (default) or `false`	Enables and disables the device.

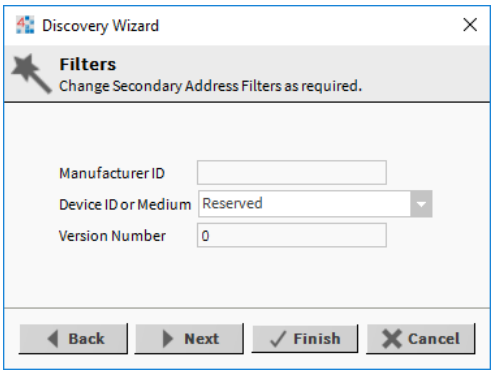
Mbus Config

These properties allow for device-specific timing overrides, which the driver uses to communicate with a device. When the driver discovers devices, it automatically enters and enables the timings that worked. You may further customise these timings on each device as necessary. To batch edit multiple identical devices, select the devices in the **`Mbus Device Manager`**, and use the edit function.

Discovery Wizard Filters window

This window is one of the series presented by the Discovery Wizard.

Figure 9 Discovery Wizard Filters window

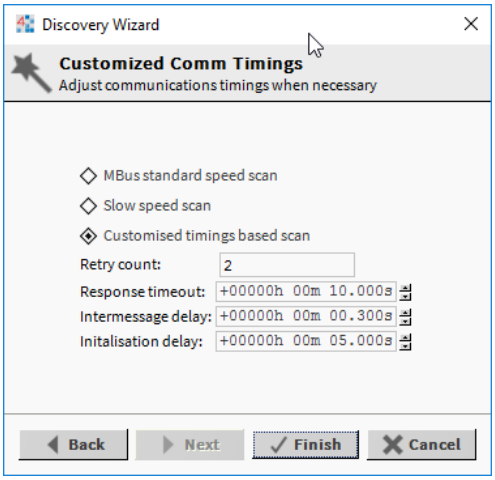


Property	Value	Description
Manufacturer ID	read-only	Identifies the manufacturer.
Device ID or Medium	drop-down list	Defines the device type. This information is found in the communication messages from this device.

Customized Comm Timings window

The Discovery Wizard windows limit the discovery search in an effort to optimize performance. Most of the wizard windows are self-explanatory. The **Customized Comm Timings** window benefits from explanation.

Figure 10 Customized Comm Timings window



You access this window by clicking the **Discover** button on the **Database** pane of the **Mbus Device Manager** view, selecting an option other than `Scan Device Database`, followed by clicking **Next**.

Property	Value	Description
Radio buttons	N/A	Configure the timings of the database search. `Mbus standard speed scan` retries the search twice with a response timeout of two seconds, an inter-message delay of 0.3 seconds, and an initialisation delay of one second. `Slow speed scan settings` retries the search twice with a response timeout of 10 seconds, an inter-message delay of 0.3 seconds, and an initialisation delay of five seconds. `Customized timings based scan` configures the speed based on the following properties.
Retry Count	number (defaults to 2)	Configures how many times to repeat a network read request, if no response is received before the response timeout interval.
Response Timeout	hours, minutes, seconds, milliseconds (defaults to 2 seconds)	Configures the length of time before the system times out when interrogating an Mbus device. You should start by setting this value to a large number, such as 40 seconds. Then, reduce it depending on the number of meters and discovery performance. During testing, a value of 12.5 seconds was used. **NOTE:** The baud rate also impacts performance. Each device may have a different baud rate.
Inter Message Delay	hours, minutes, seconds (defaults to 0.3 seconds)	Defines the amount of time between messages.
Initialization Delay	hours, minutes, seconds, milliseconds (defaults to 1 seconds)	Defines the period before the system sends next command following an initialization request to the network (SND_NKE). This period should be adjusted to suit the hardware installed on the network. Please consult the device documentation for a suitable value.

Chapter 6 User and meter installation notes

Topics covered in this chapter

- User notes
- Serial interface units
- Meters tested
- Ethernet communication

These notes have been created post the initial installation testing of the Mbus driver. It is hoped to provide assistance in future installations. Please read the accompanying instruction/documentation and install as directed.

You can configure the Device property **`Fc Bit In Use`** for all meters unless the device manufacturer specifies otherwise. The **`Reset Required`** property resets a device's communications sequence prior to obtaining data and should be set to `true` or `false` as specified by the device manufacturer.

User notes

These notes identify known problems and features that are not supported.

Known problem

Some Mbus devices respond slowly. To accommodate these devices, set **`Response Timeout`** to 12.5 seconds.

Features that are not supported (ref: EN13757–3 2004(E))

The JACE monitors the Mbus network and logs meter inputs using the history and/or points capabilities. The following features are not supported in this product because they only duplicate or interfere with driver functions:

1. Primary VIF codes (Table 9): "Address" (For EN 13757-2, EN13757-4)
2. Main VIFE code Extensions (Table 11): Daylight Saving
3. Action Codes for Generalised Object Layer Section 9 (Table 16)
4. Coding of Data Records (Annex A) : Type F "every" , Type G "every" , Type I "every" , Type I (2nd values), Type K Daylight Saving , Type L Listening Window Management
5. Signature Field (5.10) Data Encryption
6. Tariff Information (Section 6.9)
7. Subunit Information (Section 6.10)
8. Application Layer Status and error reporting (Section 8)
9. Manufacturer Specific Unstructured Data Block(Section 10). The following Kamstrup Meters are supported:- Multical, 162, 382, 351 Combi, Multical III, Multical Compact, Multical 401. The meter type can be selected after the Device has been added into the system.
10. Alarm Protocol Annex D
11. Any feature defined as being specific to a manufacturer, except those meters defined in para 9.

Serial interface units

These are the units that interface between the JACE or PC and the Mbus Network using the RS232 serial port.

Westermo AD-01

Dip switch settings S1 = all off, S2.1 & SW2.2= On (S2.3-S2.5 = off).

Serial interface plugged into 9 Pin D type.

Mbus Connected to pins 4 & 5 of Mbus connection block.

Mains Supply to pins N & L.

Westermo website, www.westermo.com.

Kamstrup Mbus Master

Used conections 24 & 25 for Mbus.

Used conections 62-64 for RS232.

Mains Supply to pins 27 & 28.

Kamstrup website, www.kamstrup.com

Relay PW20 & PW3 Master

Mbus connected to M+ & M-.

Power Supply to V+ & V-.

Serial interface to 9 pin D type(or terminal block).

Relay website, www.relay.de

Meters tested

Each meter was tested for its minimum poll interval.

The property, **`Max Inputs Per Cycle Count`**, shows the maximum number of additional inputs in a single cycle of a device. This property appears in a hidden slot. The test used the value of this property to calculate the minimum poll interval as follows:

Minimum poll interval = (Max Inputs Per Cycle Count +2) x (interval times + timeout periods)

Thus, with an interval time of five seconds, a timeout of one second, and a maximum number of data requests of 20, the minimum poll interval should be 72 seconds.

Sensus PolluTherm

Cycle count set to 1

Reset Required set to true

Mbus Connection to terminals 24 & 25

Baud rate of 300 or 2400 used

Maximum number of additional inputs in a complete cycle is 6

Time interval can be set down to 1 second at 2400 Baud (subject to other meters on the network)

Sensus website, www.sensusesaap.com

Sensus HRI-B2

Cycle count set to 1

Reset Required set to true

Baud rate of 300 or 2400

Maximum number of additional inputs in a complete cycle is 0

Time interval can be set down to 1 second at 2400 Baud (subject to other meters on the network)

Sensus website, www.sensusesaap.com

Sensus PolluCom E

Cycle count set to 1

Reset Required set to true

Baud rate of 300 or 2400

Maximum number of additional inputs in a complete cycle is 19

Time interval can be set down to 1 second at 2400 Baud (subject to other meters on the network)

Sensus website, www.sensusesaap.com

Kamstrup Multical

Baud rate of 300 or 2400

Cycle count set to 1.

Reset Required set to true.

Maximum number of additional inputs in a complete cycle is 0

Time interval of 12 seconds has been found to be required, for baud rate of 300

Manufacturer Specific Data is supported.

Kamstrup website, www.kamstrup.com

PEWO Station

Requires a baudrate of 2400

Endress+Hauser RMS621

This is a sophisticated design and can be programmed for different message inputs.

Endress+Hauser website, www.endress.com

NZR Apartment water Meter WZ-M-Modularis

Baud rate of 2400

Cycle count set to 1

Reset Required set to false.

Device Fc Bit In Use set to true

NZR website, www.nzr.de

NZR Heat Meter WZ-HY

Baud rate of 2400

Cycle count set to 1.

Reset Required set to false.

NZR website, www.nzr.de

Relay PadPuls M2

Baud rate of 300,2400 and 9600

Cycle count set to 1.

Reset Required set to false.

Relay website, www.relay.de

NOTE:

Manufacturer-specific data are NOT supported on this device. These data are not defined in the manufacturer's specification.

Ethernet communication

For this communication method, use the MbusTcpIpNetwork component instead of the MbusSerialNetwork component and set up the **`Ip Address`** in the properties as required for the unit.

NOTE: This includes the port number, which follows the IP part, prefixed by a colon.

ABB Ethernet Communications Adapter

Refer to the manual.

Use the built-in Web Server to obtain a set of example readings from the meter, for use in establishing what the manufacturer's properties represent.

ABB Ethernet Meter

This meter uses manufacturer-specific data, a primary address of zero (0) and the FC bit toggle. A double discovery is required.

For a double discovery, first carry out a discovery, then add the device (do not discover the history or points), set up device properties (see following), remove the device from the network database (a device action), and carry out another discovery. This ensures that the Fc Bit is in the correct state and in agreement with the meter. Now discover the history or points.

Device properties should include: Device Cycle Quantity = 1, Reset Required = true and Fc Bit In Use = true.

After reading the data, examine it and set up the scaling factor to give the correct readings. The scaling factor is defined by the **`Conversion`** property in the proxy extension of each point. For example, you might choose a **`Conversion`** of `Linear` with Scale and Offset instead of the default settings.

- Manufacturer Specific89 was found to represent the Frequency and had to be rescaled by 0.01.
- Manufacturer Specific24 was found to be the Power Fail Counter no rescaling required, left at 1.0.
- Manufacturer Specific96 was found to be the Power Factor value, and had to be rescaled by 0.001.

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