ENGLISH

IN702MEB***0000 Configuration Guide

700 Series Metering

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Intesis MAPS

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1. Introduction to Intesis MAPS

Intesis MAPS© is a software tool for configuring and monitoring the Intesis® gateways. Intesis MAPS has been designed and developed in-house, assuring an up-to-date tool to get all the potential of Intesis gateways.

NOTICE
Intesis MAPS is compatible with Windows® 10 and higher.

The design of this configuration tool focuses on four main pillars:

- A user-friendly interface.
- Multiple ways to create your project:
  - From scratch, using a template.
  - Importing data from your computer.
  - Downloading the settings from an already configured gateway.
- Full linkage between the control system and the device installation signals.
- Real-time monitoring of the device network.

2. Prerequisites

To configure the gateway, you need:

- The items supplied by HMS Networks:
  - Intesis IN702MEB∗∗∗0000 gateway

    NOTICE
    ∗∗∗ defines the gateway capacity.

  - Gateway documentation:
    - Installation Guide
    - User Manual
- USB Type-C cable to connect the gateway to the computer.

  NOTICE
  You can use an Ethernet cable instead.

- A computer to run the configuration tool Intesis MAPS.

  NOTE
  Requirements:

  - Windows 10 or higher (Windows 11 is recommended)
  - Hard disk free space: 1 GB
  - RAM: 4 GB

3. Installation

Downloading the software

1. Enter the Intesis MAPS webpage.
2. Click the **Download now** button. The page will scroll down to the download form.
3. Fill out the form.

   NOTICE
   You can review the privacy policy section for more information about how HMS processes the form data.

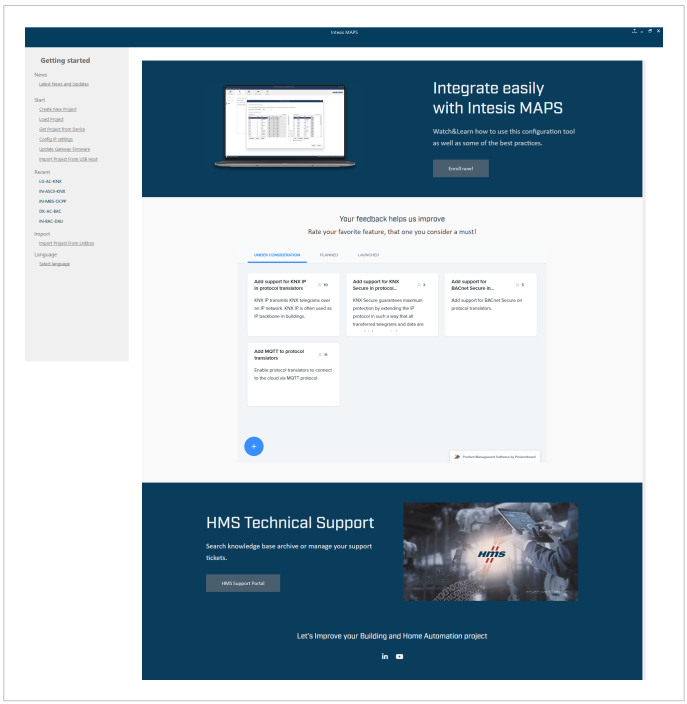
4. Click the **Download** button.
5. A .zip file will be downloaded to your computer.

Installing the software

1. Click the .zip file to open it.
2. Double-click the EXE file.
3. The Intesis MAPS Setup Wizard will guide you through the steps required to install Intesis MAPS on your computer:
   a. Read the license agreement and select **I Agree**.
   b. Select the installation folder.
4. Once the installation is completed, click the **Close** button.

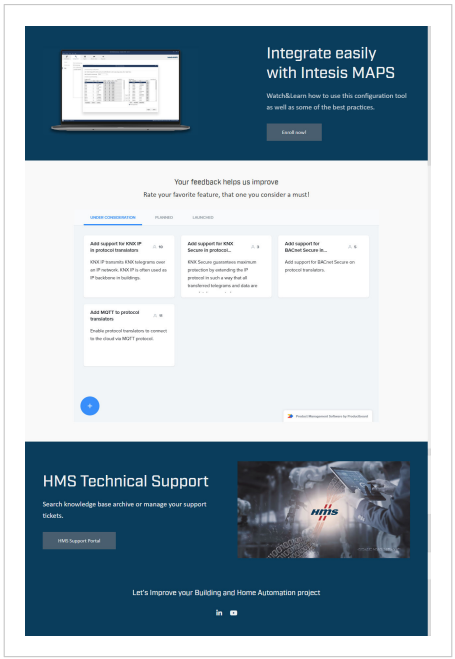
4. First steps in Intesis MAPS

Upon launching Intesis MAPS, you will be greeted with the home screen. This window is divided into two sections: The **Getting Started** column on the left and the **Latest News and Updates** section in the main body.



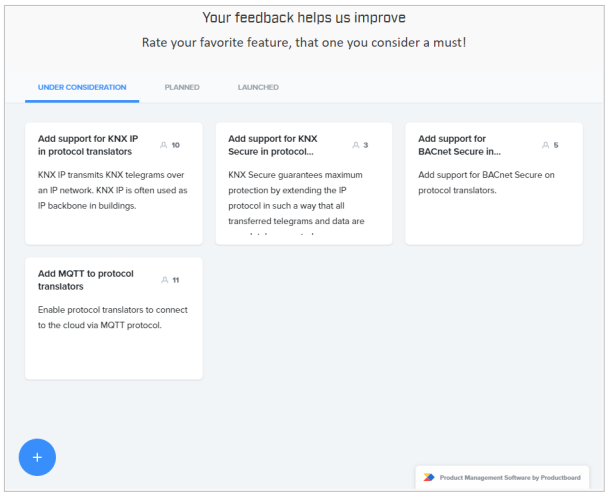
4.1. Latest News and Updates

This section contains useful information related to Intesis MAPS.



Through this section, you can:

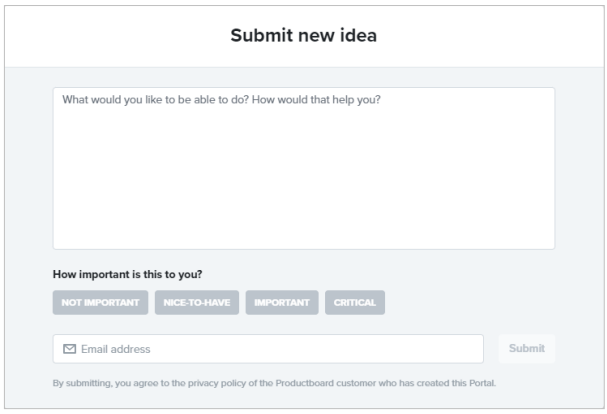
- Get access to an Intesis MAPS online course in the top section.
- Get information about features under consideration for implementation, planned, or recently launched in the features board of the middle section.



NOTE

Click a feature to expand it and rate it. To share a feature, expand it, click the icon, and click on **Copy private link**.

This board also gives the option to submit ideas and suggestions for future features. To submit an idea, click the button and fill out the form.



- You can also enter the HMS Support Portal by clicking the **HMS Support Portal** button at the bottom section.

4.2. Getting Started

This section allows direct access to some of the most commonly used features of Intesis MAPS. These are:

NEWS

- **Latest News and Updates**: Click this option to load the **Latest News and Updates** section.

START

- **Create New Project**: Click this option to open the **New Project** menu.

> **NOTE**
> To know more about creating a new project, consult the section Create a New Project from a Template (page 9).

- **Load Project**: Click this option to load an Intesis MAPS project (.ibmaps file) to Intesis MAPS.

1. Use the new dialog to look for the file and select it.
2. Click **Open** or double-click the file.
3. The project will be loaded to Intesis MAPS.

> **NOTE**
> For more information about file management, consult the section Saving, Opening, Importing, and Exporting the Project (page 10).

- **Get Project from Device**: Click this option to import the Intesis MAPS project file (.ibmaps file) directly from a gateway.

1. Connect the gateway to the computer.
2. On the **Discovered Devices** dialog, select the way you connected the gateway:
   a. **IP**: If you are using the **Ethernet Port** of the gateway.
   b. **USB**: If you are using the **USB** port of the gateway.
3. Select the gateway name (for IP) or the computer COM port (for USB) from the list.

> **NOTICE**
> If the gateway name or the computer COM port does not appear, click the **Refresh** button.
>
> If the problem persists, ensure the gateway and the computer are correctly connected.

4. Once selected, the options on the right will autofill.
5. Click **Import Project**.
6. Once downloaded, use the **Save file** dialog to type a name for the file and select a folder to save it.

> **NOTE**
> For more information on connecting the gateway to your computer, consult the section .

- **Config IP settings**: This section lists the discovered devices in the network. Select a gateway from the list to check its properties and to gain direct access to the **Identify** and **Edit** functions.

> **NOTE**
> These two functions are covered in the section .

- **Import Project From USB Host**: Opens a file browser to select an Intesis MAPS project file in USB MAPS Project format (.expmaps) to load.

> **NOTE**
> For more information about file management, consult the section Saving, Opening, Importing, and Exporting the Project (page 10).

RECENT

- **Recent**: A list of up to the last five saved projects is available here. To load any of these last projects, click on its name.

> **NOTICE**
> To check the location path of a recent file, simply hover your cursor over it.

IMPORT

- **Import Project From Linkbox.**

> **NOTICE**
> This option does not apply to the IN702MEB***0000 gateway.

UPDATES

- **Update Gateway Firmware**: Use this option to check for updates and load a new firmware version to your gateway.

> **NOTE**
> When connecting to the gateway, Intesis MAPS will automatically detect if a new firmware version is available. If so, a new dialog appears showing the firmware version number, the release date, and what's new for this version. Through the **Download** and **Later** buttons, you can update the firmware immediately or postpone the update.

1. Click **Update Gateway Firmware**.
2. On the **Discovered Devices** dialog, select the way you connected the gateway to your computer:
   a. **IP**: If you are using the **Ethernet Port** of the gateway.
   b. **USB**: If you are using the **USB C** port of the gateway.
3. Select the gateway name (for IP) or the computer COM port (for USB) from the list.

> **NOTICE**
> If the gateway name or the computer COM port does not appear, click the **Refresh** button.
>
> If the problem persists, ensure the gateway and the computer are correctly connected.

4. Once selected, the options on the right will autofill.
5. Click **Update Firmware**.

6. The **Firmware Manager** dialog offers two options to update the gateway's firmware:
   - **Update from File**: Use this option if you have a file with the new firmware version stored locally on your computer.
   - **Check for Update**: Use this option if you want to update the firmware online:

> **IMPORTANT**
> You need an internet connection to use this option.

> **NOTE**
> After creating or loading a project, the firmware manager is also available through the **Tools - Firmware** option in the top menu.

- **Software Update**: Click this option to update Intesis MAPS.
  - If you are already using the latest version available, a dialog appears informing you that the software is up to date.
  - If there is a new version available, a dialog will show the information about the new version and three options:
    - **Skip this version**: Click this option to avoid the software update.

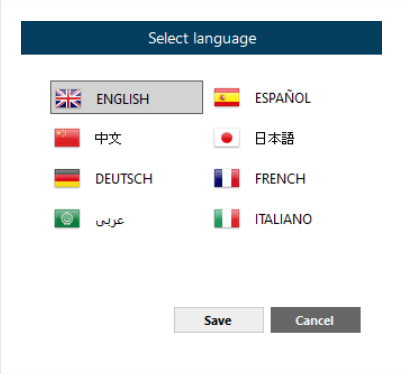
> **IMPORTANT**
> Each new version of Intesis MAPS includes improvements, issue fixes, support for new products, and more. It is recommended to keep the software up to date.

    - **Remind me later**: When clicking this option, a new dialog appears, allowing you to select the time lapse for the reminder or to download the update now.
    - **Update**: The new software version will be downloaded to your computer, and the setup wizard will be launched.

LANGUAGE

- **Select language**: Click this option to change the language.

1. Select a language from the dialog.
2. Click **Save**.
3. To apply the new selected language, close Intesis MAPS and open it again.

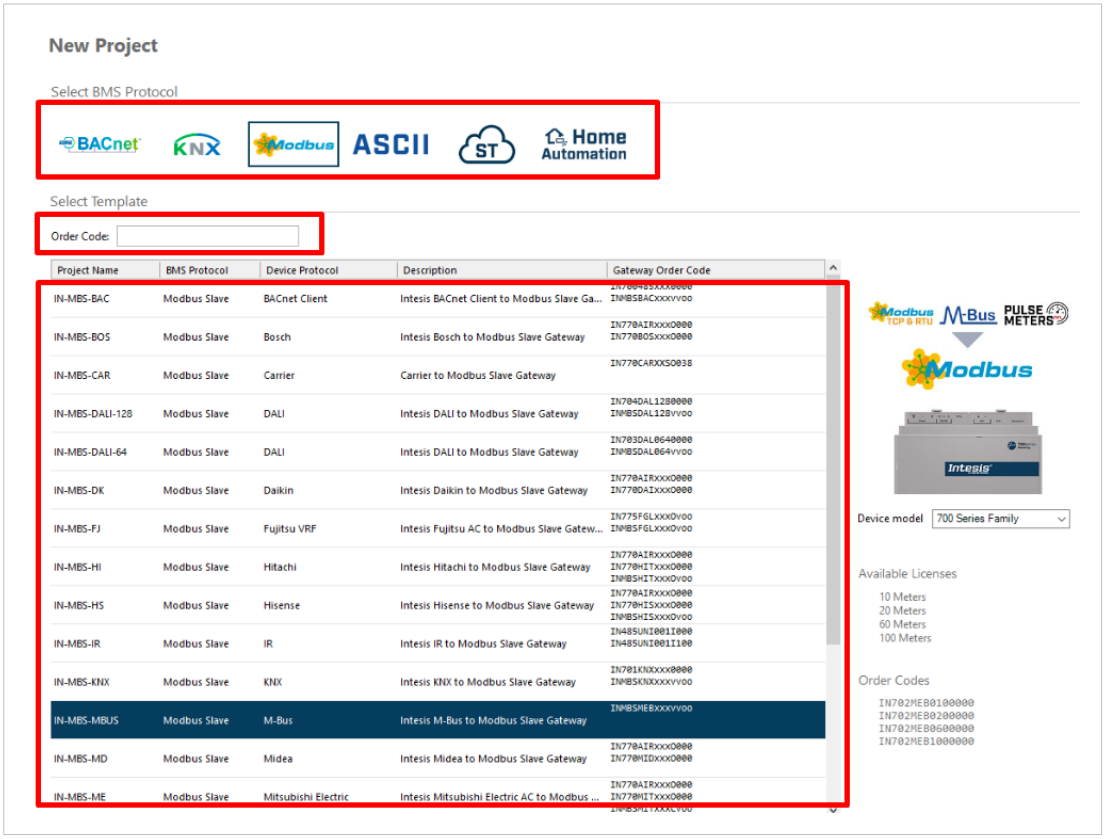


5. Create a New Project from a Template

1. Open Intesis MAPS.
2. Click **Create New Project** in the **Start** menu on the left.
   You can create a project from scratch using a template. To find the appropriate template, filter the search by:
   - Clicking Modbus, BACnet, or KNX on the protocol logos, depending on the desired configuration.
   - Typing the order code in the **Order Code** field.

     NOTE
     The order code is printed on the silver label located on either side of the gateway.

   - Looking for the **Project Name** on the list: IN-MBS-MBUS for Modbus, IN-KNX-MBUS for KNX, or IN-BAC-MBUS for BACnet.

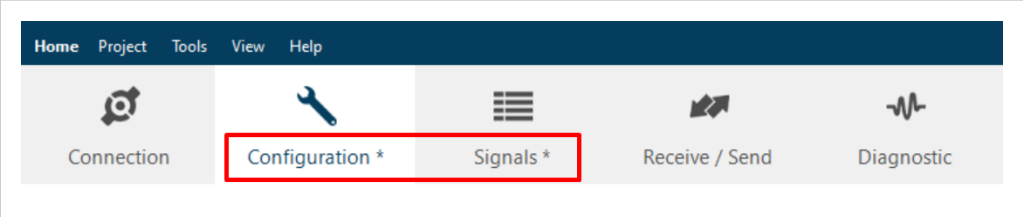


3. Select the desired template.
4. Click **Next** or **double-click the template** on the list.

NOTE
Templates are just a starting point for your integration. Depending on the type of integration, you may have to modify some parameters.

6. Saving, Opening, Importing, and Exporting the Project

After editing any option from the **Configuration** and **Signals** tabs, an asterisk appears to indicate that you have made changes to the project but have not saved them or sent the project to the gateway yet:

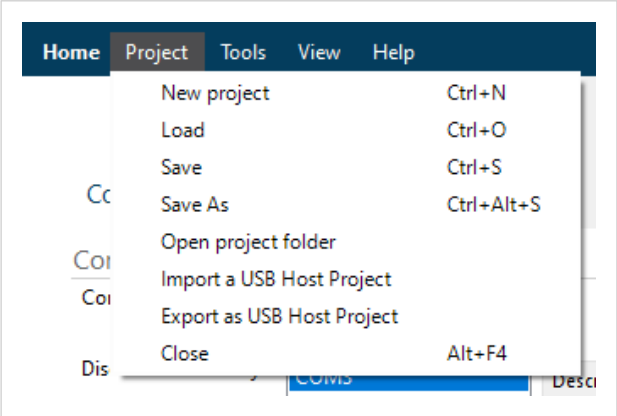


To know how to send your project to the gateway, see Receive/Send Tab (page 76).

- **SAVING YOUR INTESIS MAPS PROJECT**

> **IMPORTANT**
> Remember to save your project periodically to keep your changes.

1. Click **Project**.



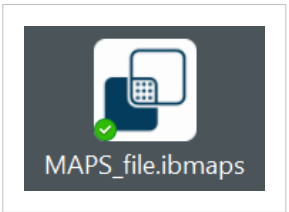
2. Click **Save** or **Save As**.

> **TIP**
> Instead, you can use the shortcut **Ctrl+S** (Save) or **Ctrl+Alt+S** (Save As).

3. On the **Save file** menu, type a **File name** and select where to save the file.
4. Click **Save**.

- **OPENING AN INTESIS MAPS PROJECT FROM YOUR COMPUTER**

> **TIP**
> Double-click a .ibmaps file saved on your computer to automatically open it in Intesis MAPS.

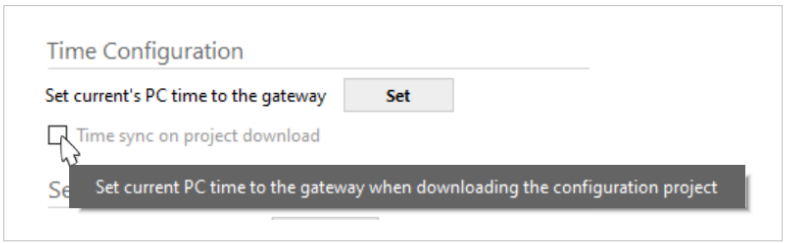


1. Click **Project**.
2. Click **Load**.
3. On the emergent window, select the desired file from your computer.
4. Click **Open**.

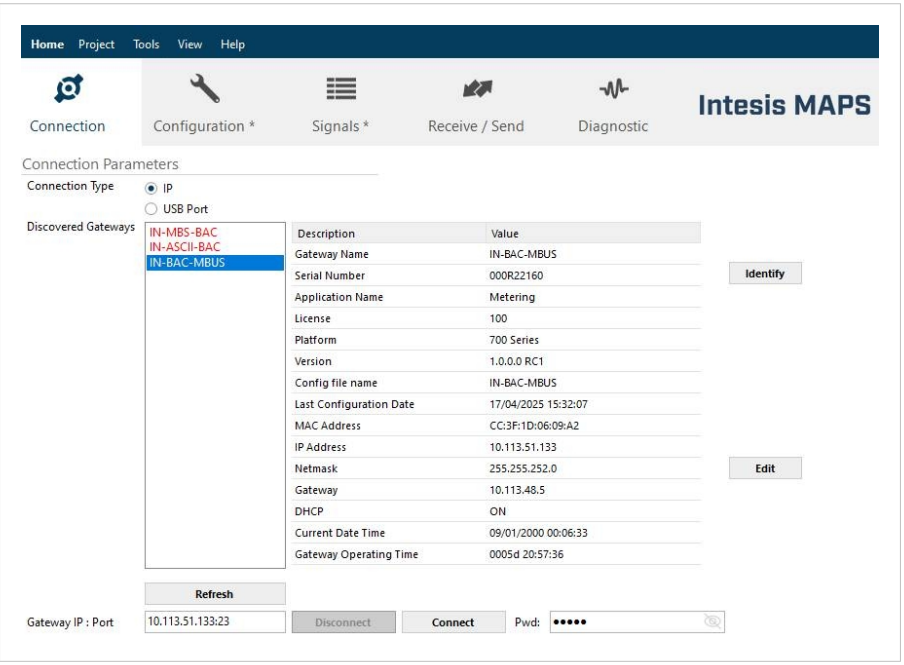
7. Main Menu Overview

The following sections provide an overview of the five tabs that compose the Intesis MAPS main menu. Through these options, you will establish a connection between the gateway and the computer, set up your project through the **Configuration** and **Signals** tabs, send it to the gateway, and monitor that everything works fine using the **Diagnostic** tab.

TIP
Tooltip: Hover the cursor over a field, and a message will appear indicating the purpose of the parameter.



8. Connection Tab



1. Connect the gateway to your computer. Two possibilities are available:
   - Use the **USB-C** port.

     TIP
     This type of connection is recommended.

   - Use the gateway's **Ethernet port**.

     IMPORTANT
     When using this type of connection, some considerations must be taken into account. Consult the Troubleshooting section at the end of the document. See Connecting the Gateway to the Computer through Ethernet (page 84).

2. If the gateway is not powered on yet, turn it on.

   IMPORTANT
   Use an adequate power supply. Consult the gateway's User Manual or Installation Guide.

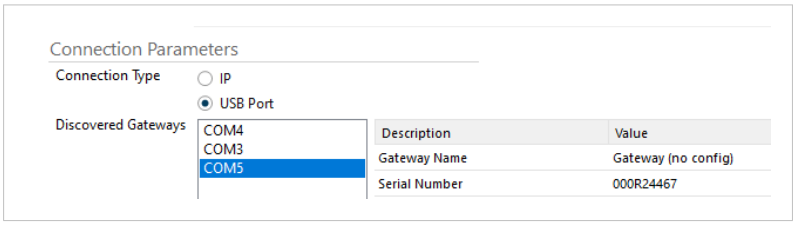
   TIP
   If the gateway still has its factory settings or has been factory reset, wait a few seconds for it to initialize and become ready before continuing.

3. On the **Connection Type** parameter, select the way you connected the gateway to your computer:
   a. Select **USB Port** if you are using the **USB-C** port of the gateway.

TIP
No password is needed when connecting via USB.

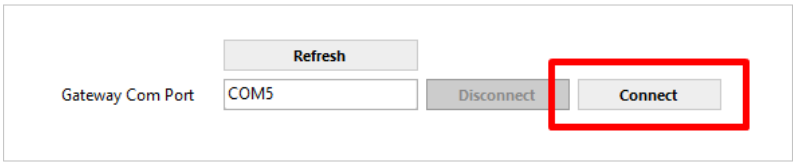
NOTICE
When using the USB connection, the active ports of your computer will appear in the **Discovered Gateways** field as **COM** + the number of the port (**COM5** in the image below).

i. In the **Discovered Gateways** field, select the port of the computer where the gateway is connected.

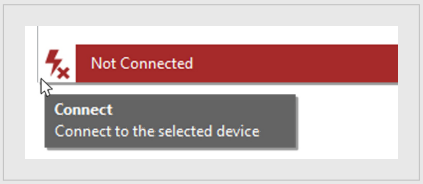


NOTICE
All data from the **Value** column on the right will be automatically populated when the correct gateway is selected.

ii. Click the **Connect** button.



TIP
You can also connect to the gateway using the button from the lower bar:

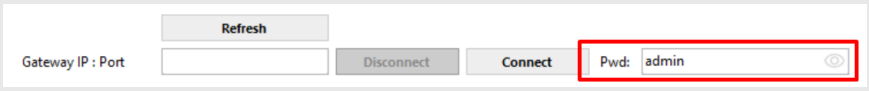


NOTICE
When the connection is established, the lower red bar will turn blue.

b. Select **IP** if you are using the **Ethernet port** of the gateway.

NOTE

- The default password when connecting via IP is **admin**.



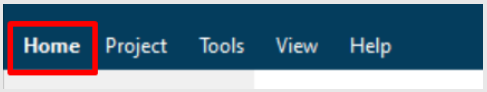
  You can change this password as explained in Configuration Tab → General → Connection (page 19).

- When the gateway still has its factory settings or has been factory reset, it appears in the **Discovered Gateways** field as **Gateway (no config)**.

IMPORTANT

When using the IP connection, the gateway's name should appear in black. If it appears in red:

- The gateway is not compatible with the selected template. To solve the problem, click **Home** in the upper menu to go to the **New Project** page, and make sure you select the correct template, as explained in Create a New Project from a Template (page 9).

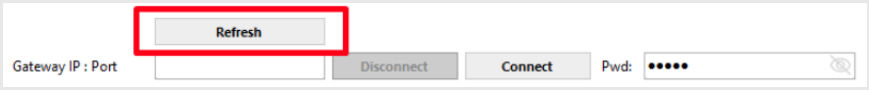


- There is a problem with the gateway IP address. Consult the Troubleshooting section at the end of the document. See Connecting the Gateway to the Computer through Ethernet (page 84).
- If the problem persists, try to update the gateway's firmware as explained in Getting Started → UPDATES → Update Gateway Firmware (page 7).

TIP

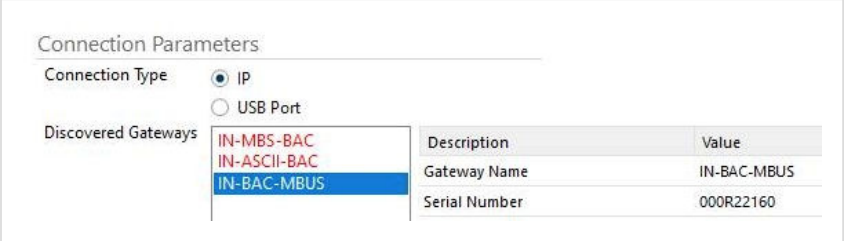
If your gateway does not appear in the **Discovered Gateways** field:

- Wait a minute for the gateway to initialize and become ready.
- Click the **Refresh** button.



- Deactivate the Wi-Fi connection on your computer.
  - On rare occasions, having the Wi-Fi connection activated causes the Windows system to bypass the Ethernet connector, preventing the computer from finding the gateway.
- If the problem persists, follow the instructions explained in Troubleshooting - Connection Tab (page 84).

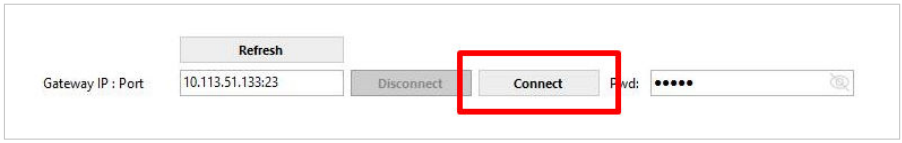
i. Select your gateway from the **Discovered Gateways** field.



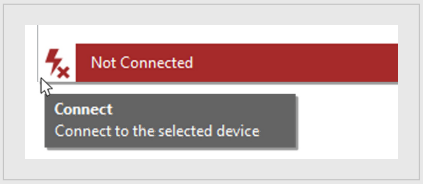
NOTICE
All data from the **Value** column on the right will be automatically populated when the correct gateway is selected.

The IP address and port of the gateway will also be displayed in the **Gateway IP : Port** option below the **Refresh** button.

ii. Click the **Connect** button.



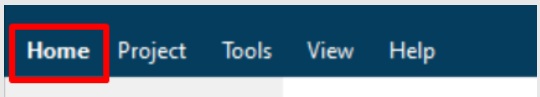
TIP
You can also connect to the gateway using the button from the lower bar:



NOTICE
When the connection is established, the lower red bar will turn blue.

IMPORTANT
If your gateway doesn't match the selected template, a warning message will emerge.

- Go back to **Home** and ensure you selected the correct template.



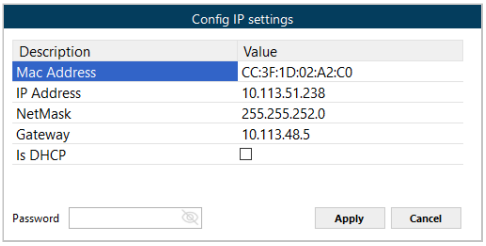
The IN702MEBxxx0000 gateway is compatible with the following templates:

  - For BACnet: IN-BAC-MBUS
  - For KNX: IN-KNX-MBUS
  - For Modbus: IN-MBS-MBUS

- If the problem persists, try to update the gateway's firmware as explained in Getting Started → UPDATES → Update Gateway Firmware (page 7).

When selecting IP as the connection type, two additional buttons will appear once the connection is established:

- **Identify**: Click the **Identify** button to make the gateway's LEDs blink for 10 seconds.
- **Edit**: Click the **Edit** button to open the **Config IP settings** window.



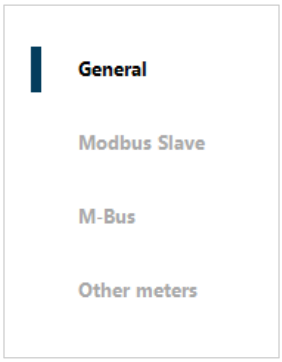
You can edit the **IP Address**, **NetMask**, and Default **Gateway** IP.

NOTICE

These parameters can also be edited in the **Configuration** tab. See Configuration Tab → Connection (page 19).

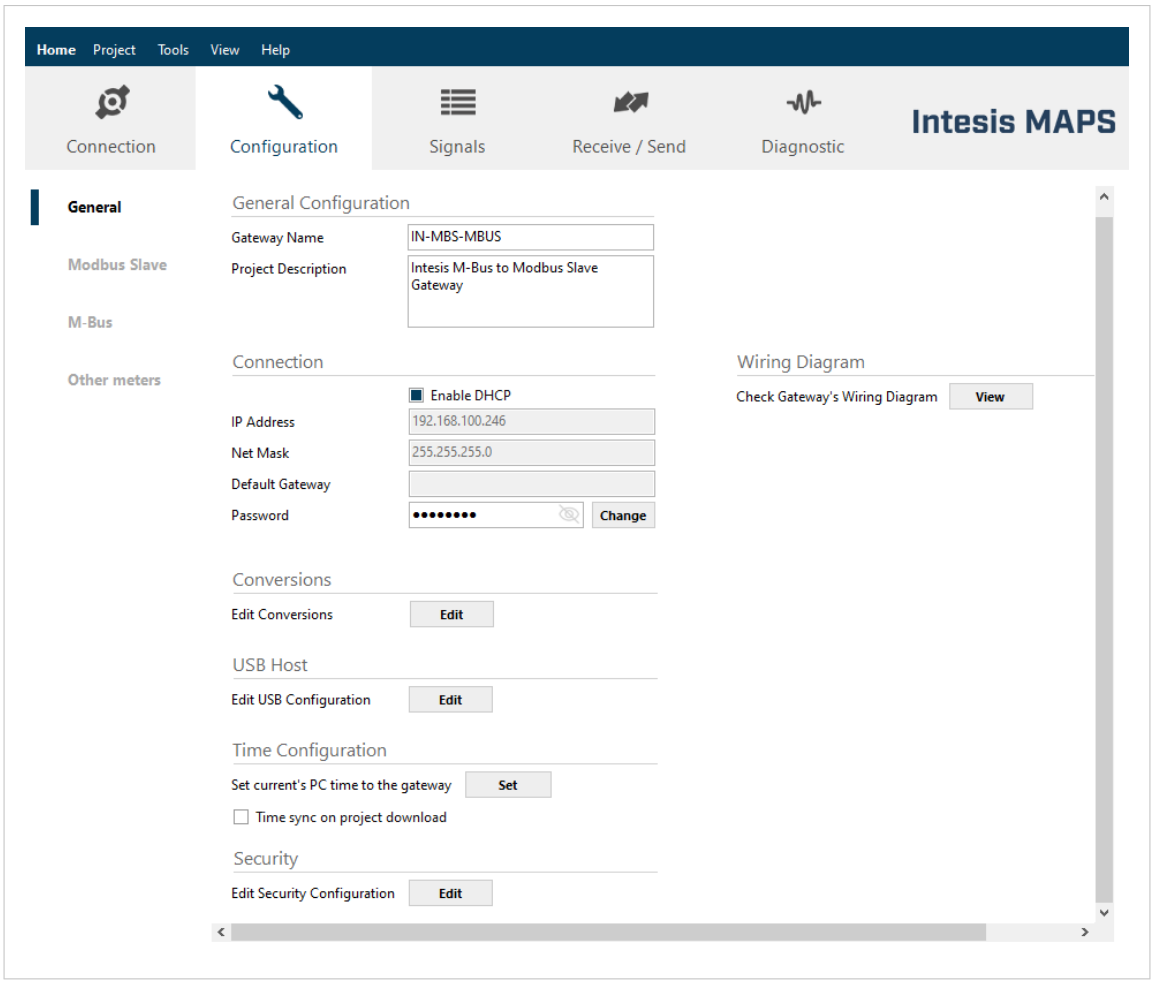
9. Configuration Tab

A menu with some options appears on the left side of the window:



- **General**: Configure the general parameters of the gateway.
- **BMS Protocol**: Modbus, KNX, or BACnet, depending on the selected template. In the case of the image on the left, the control system is based on Modbus.
- **M-Bus**: Configure the parameters for the M-Bus installation.
- **Other meters**: Configure the parameters for the Modbus devices, Modbus meters, and pulse meters.

9.1. General Configuration Menu



Use this menu to configure some general parameters of the gateway.

9.1.1. General Configuration

- **Gateway Name**: Type a descriptive name for your gateway (max. 32 characters).
- **Project Description**: Type a short description of your project (max. 255 characters).

9.1.2. Connection

- **Enable DHCP (selected by default)**.
  When sending the project to the gateway, the status of this parameter determines how the IP address is assigned:
  - The parameter is selected: No IP address is assigned to the gateway, which will be permanently waiting for a DHCP server to assign an IP address.
  - The parameter is deselected: A static IP address must be assigned to the gateway through the following parameters:
    - **IP Address**: Set the static IP address (default value: **192.168.100.246**).

      IMPORTANT
      Change the gateway's default IP address before integrating it at the final installation site to prevent security issues and IP conflicts.

    - **Net Mask**: Set the subnet mask (default value: **255.255.255.0**).
    - **Default Gateway**: Type the access point/router IP address.

      NOTE
      The **Default Gateway** parameter is a networking concept that is not related to the Intesis gateway. It refers to the IP address of the device (usually a router) that serves as the access point for sending data from the local network to other networks, including the Internet. Therefore, this field only needs to be filled in if the Intesis gateway is connected outside the local network.

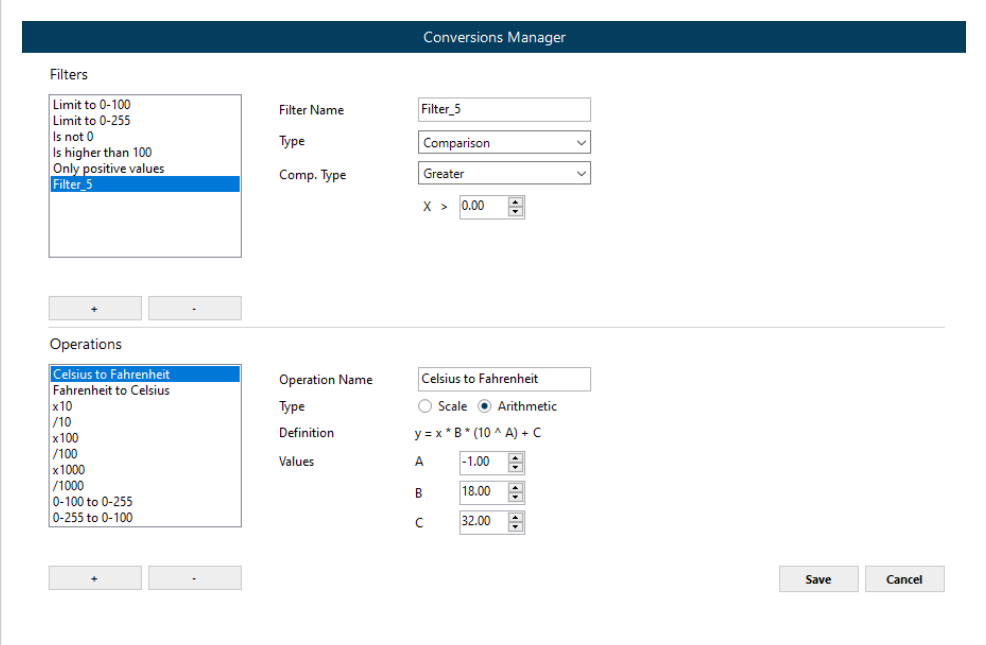
- **Password**. Use this option to visualize the gateway's password and set a new one.

  IMPORTANT
  Change the default password before sending the project to the gateway. Follow the instructions below.

  1. Click the **Change** button.
  2. Type a new password.
  3. Go to the **Receive/Send** tab.
  4. In the **Send** menu, click the **Send** button.
  5. Go to the **Connection** tab.
  6. Select the gateway from the **Discovered Gateways** window.
  7. Click **Connect**.

9.1.3. Conversions

Click the **Edit** button to open the **Conversions Manager**.



Use this menu to create and configure filters and operations to be applied to any signal later.

Filters:

By default, five filters appear listed:

- **Limit to 0-100**
- **Limit to 0-255**
- **Is not 0**
- **Is higher than 100**
- **Only positive values**

Click the + button to add more filters.

Select a filter and click the — button to delete it.

For each filter, you can set:

- **Filter Name**: Type a name for the filter.
- **Type**: Select the filter type.
  - **Comparison**
  - **Non-limited Filter**
  - **Limited Filter**

- **Comp. Type**: Set the comparison type for this filter and set the value(s) to complete each formula.
  - **Equal**: X== Set a value
  - **Different**: X != Set a value
  - **Less**: X < Set a value
  - **Greater**: X > Set a value
  - **InRange**: Set a value ≤ X ≤ Set a value
  - **OutOfRange**: X < Set a value or X > Set a value

Operations:

By default, 10 operations appear listed:

- **Celsius to Fahrenheit**
- **Fahrenheit to Celsius**
- **x 10**
- **/ 10**
- **x 100**
- **/ 100**
- **x 1000**
- **/ 1000**
- **0-100 to 0-255**
- **0-255 to 0-100**

Click the + button to add more operations.

Select an operation and click the — button to delete it.

For each operation, you can set:

- **Operation Name**: Type a Name for the operation.
- **Type**: Choose Scale or Arithmetic.
  Scale

  Set the **Values** for:

  - **min**imum **In**put / **max**imum **In**put
  - **min**imum **Out**put / **max**imum **Out**put

  Arithmetic

  Considering the **Definition** formula $\mathbf{y = x \times B \times (10^{A}) + C}$, set the **Values** for:

  - **A**
  - **B**
  - **C**

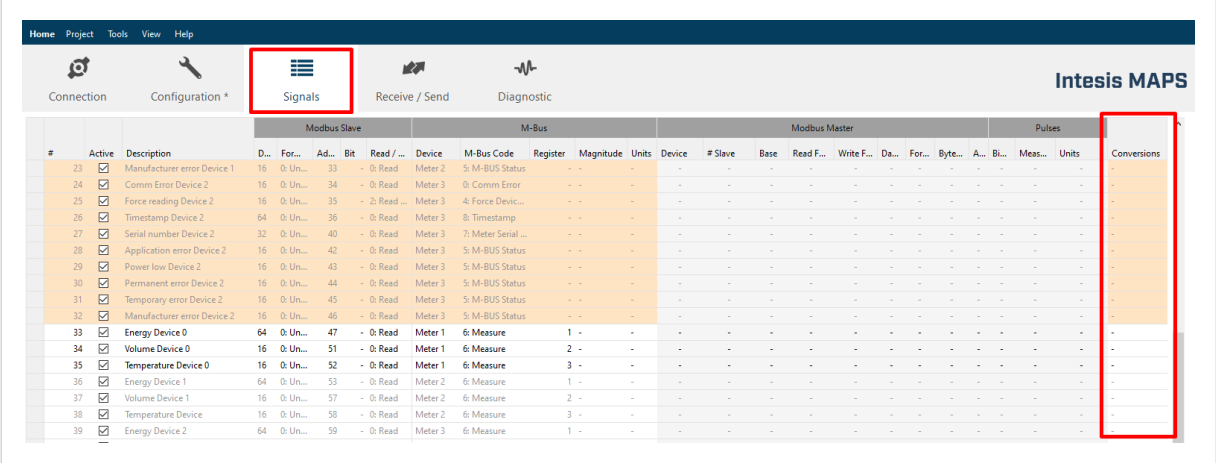
Click **Save** to save the changes.

9.1.3.1. Enabling Conversions in a Signal

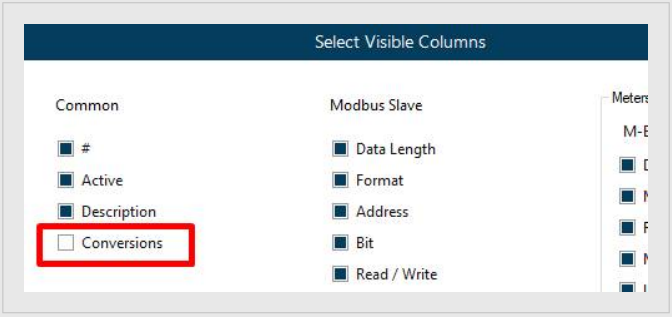
NOTICE
To better understand this topic on conversions, we are moving from the **Configuration** tab to the **Signals** tab.

Once the needed filters and operations are created and configured, follow these steps to enable them in a signal:

1. Go to the **Signals** tab.
   The **Conversions** column is at the end.

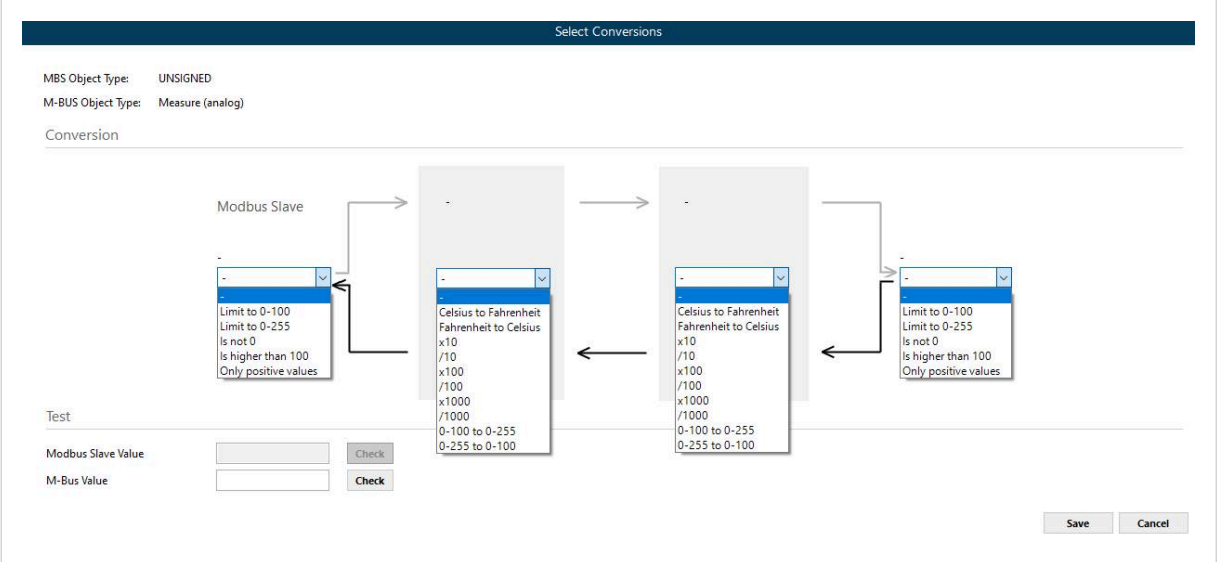


NOTICE
If the **Conversions** column does not appear, use the **Edit Columns** button from the bottom menu to enable it.



2. Choose the signal you want to apply the conversion to and click the ... button at the end.
   The **Select Conversions** window appears.

3. Use the dropdown menus to choose the needed filters and operations.

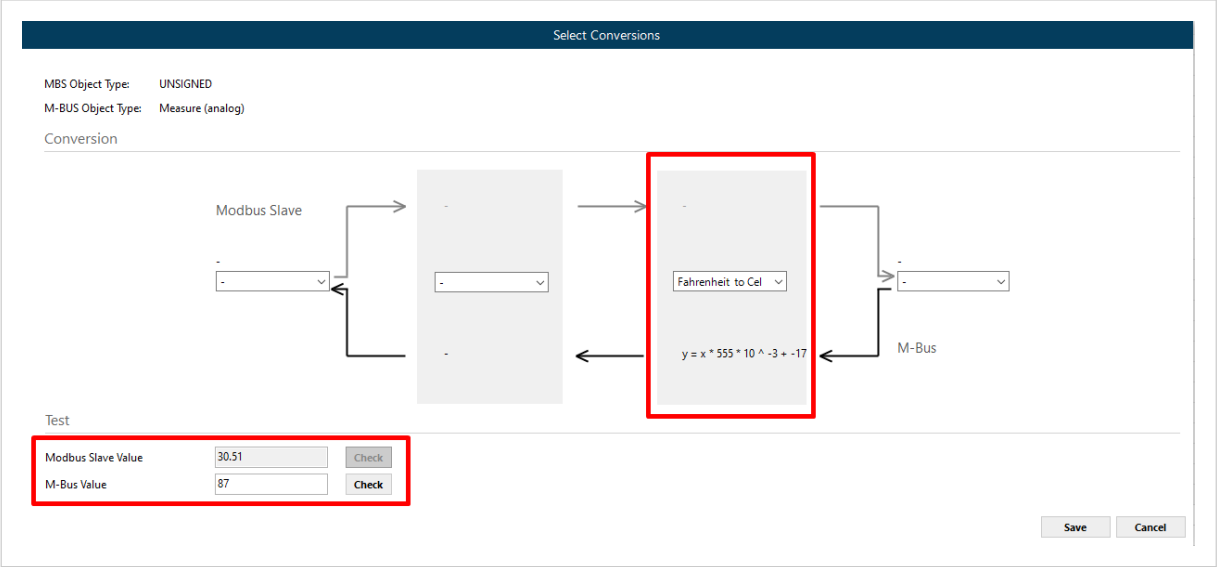


NOTICE

The direction of the conversion depends on the type of the selected object and is indicated by the black arrows.

This also determines the active text input in the **Test** section.

For example, if you have an M-Bus temperature meter reporting the value in degrees Fahrenheit and you want to convert it to degrees Celsius, use the second dropdown menu starting from the right to select the desired operation:



4. Test the configuration by writing a value in the appropriate option and clicking the **Check** button.
   For example, we typed **87** (degrees Fahrenheit) in the **M-Bus Value** option, which is converted to **30.51**(degrees Celsius) in the **Modbus Slave Value** option.
5. Click **Save** to apply the changes.
   The word **Enabled** appears in the **Conversions** column for the signals with an assigned conversion.

9.1.4. Security

- **Edit Security Configuration**: Click the **Edit** button to open the **Security Configuration** window.

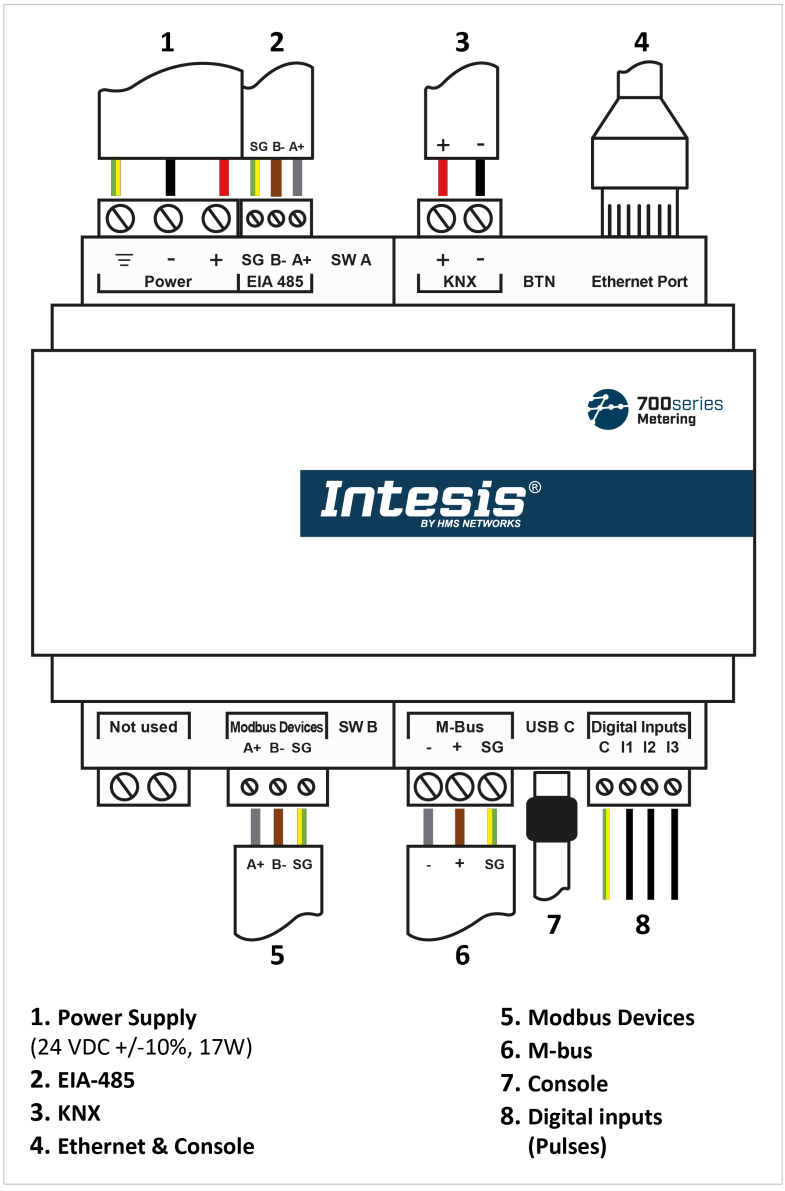
  IMPORTANT
  We recommend keeping the predetermined configuration.

  - **Disable UPD Discover Service** (disabled by default): If selected, the gateway is not discoverable through UDP communication.
  - **Disable TCP Console Service** (disabled by default): If selected, the gateway stops communicating with the configuration and diagnostic software through TCP. This only applies to gateways supporting connection to the computer via both Ethernet and console ports.
  - **Use custom UDP/TCP port** (disabled by default): Enable to set the UDP/TCP port manually.
  - **Disable HTTPS Certificates Auto Update** (enabled by default): If selected, automatic updates for HTTPS certificates are not allowed. If deselected, you can set the update time period using the parameter below.

Click **Save** to save the changes.

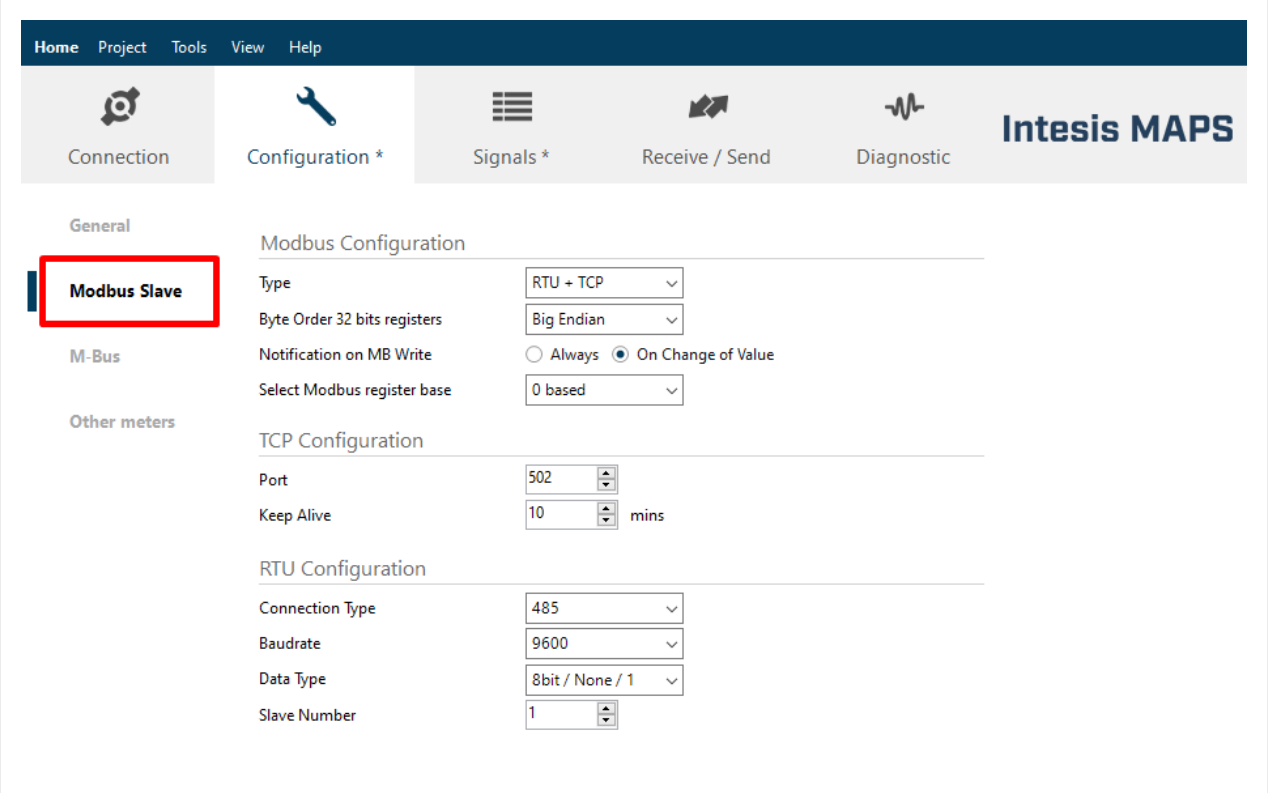
9.1.5. Wiring Diagram

- **Check Gateway's Wiring Diagram**: Click the **View** button to open the schematic image showing how to wire the gateway.



1. Power Supply
(24 VDC +/-10%, 17W)
2. EIA-485
3. KNX
4. Ethernet & Console
5. Modbus Devices
6. M-bus
7. Console
8. Digital inputs (Pulses)

9.2. BMS Protocol: Modbus



9.2.1. Modbus Configuration

- **Type**: Select the communication type.
  - **RTU**: Serial communication over the EIA-485 bus.
  - **TCP**: IP communication over Ethernet.
  - **RTU + TCP**: Simultaneous communication (serial over the EIA-485 bus and IP over Ethernet at the same time).
- **Byte Order 32 bits registers**: Select the byte order for the BMS configuration.
  - **Big Endian**
  - **Little Endian**
  - **Word Inv BE** (Word Inverted Big Endian)
  - **Word Inv LE** (Word Inverted Little Endian)
- **Notification on MB Write**: Select when to send Modbus writing notifications to the device protocol.
  - **Always**
  - **On Change of Value** (default value)
- **Select Modbus register base**: Select the Modbus addressing type.
  - **0 based** (default value)
  - **1 based**

9.2.2. TCP Configuration

By selecting TCP as the communication type, you can configure:

- **Port**: Set the port for communication between the gateway and the Modbus TCP system (1 .. 65535).

  NOTE
  The default port is 502.

- **Keep Alive**: Set the time in minutes before sending a keep-alive message (1 .. 1440. Default value: **10 minutes**).

  NOTE
  Set the parameter to 0 to disable this function.

- **Slave Number**: Set the server address (1 .. 255. Default value: **1**).

9.2.3. RTU Configuration

By selecting RTU as the communication type, you can configure:

- **Connection type**:
  - **485** (default value): EIA-485 port of the gateway.

  NOTICE
  No selectable option.

- **Baudrate**: Select the communication speed: 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200 bps.

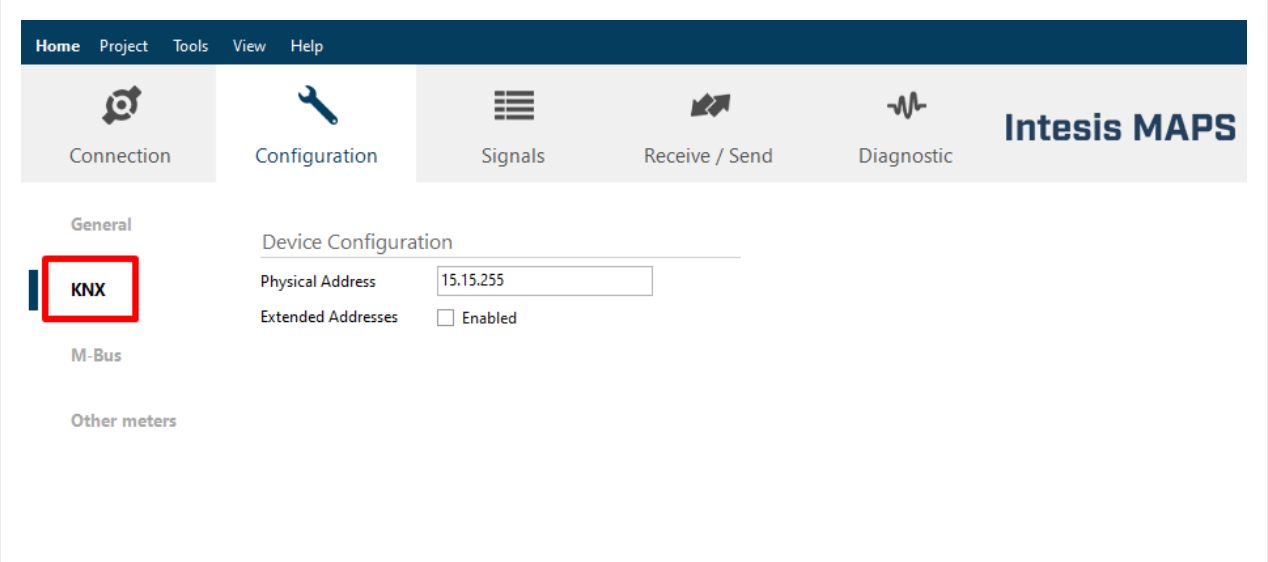
  NOTE
  The baudrate is set to 9600 bps by default.

- **Data type**: Select the frame format (Default format: **8bit/None/1**).

Data bits	Parity	Stop bits
8bit	None Even Odd	1 2

- **Slave Number**: Set the server starting address (1 .. 255. Default value: **1**).

9.3. BMS Protocol: KNX



9.3.1. Device Configuration

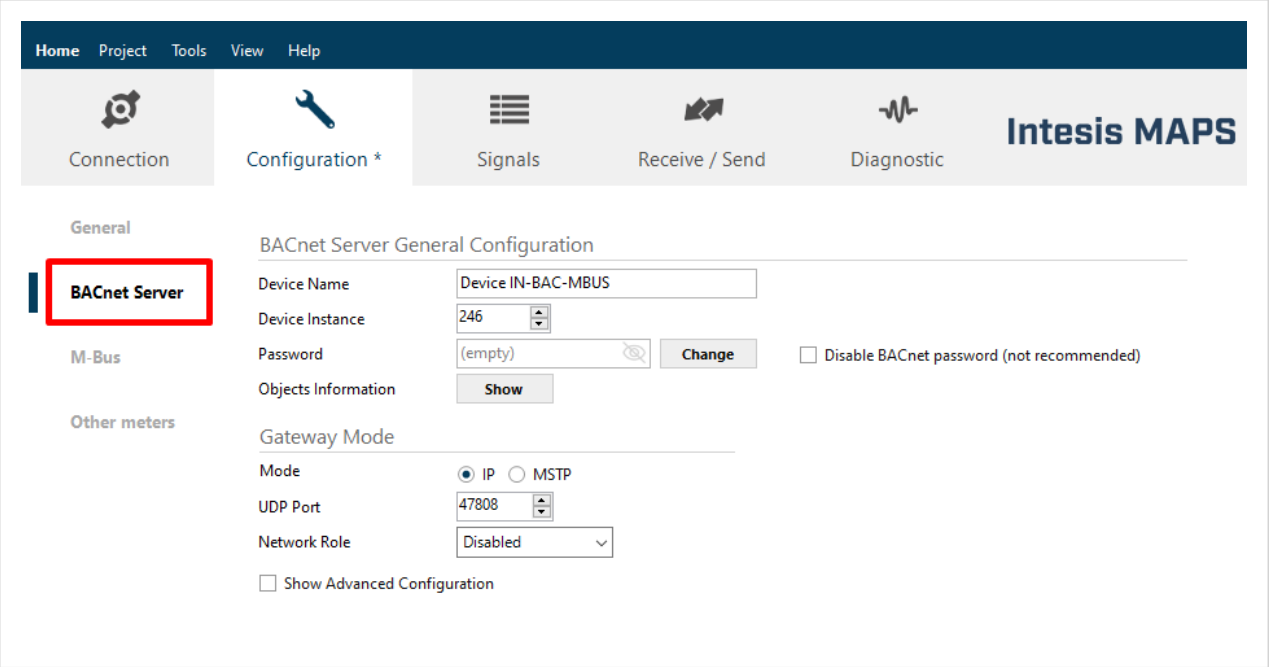
- **Physical Address**: Set the physical address for the gateway.

> **NOTE**
> The address by default is **15.15.255**

- **Extended Addresses**: Allow extended addresses (disabled by default). This extends the group address range from the standard 0/0/1 .. 15/7/255 up to 31/7/255.

> **IMPORTANT**
> This option should only be used in very large projects. Do not enable it unless required.

9.4. BMS Protocol: BACnet



9.4.1. BACnet Server General Configuration

- **Device Name**: Type a descriptive name for your gateway.
- **Device Instance**: Set the BACnet device object instance property. This is a unique identifier for the gateway inside a single BACnet network segment (0 to 4194302. Default value: **246**).
- **Password**: Click the **Change** button and follow the instructions to set a password for the gateway.
- **Objects Information**: Click **Show** to see a table with the type of objects available.
- **Disable BACnet password (not recommended)** (parameter disabled by default): Disable the BACnet password.

> **IMPORTANT**
> Keep the BACnet password enabled to ensure the security of the gateway and the installation.

9.4.2. Gateway Mode

- **Mode**: Select the communication type.
  - **IP** (default value): IP communication over Ethernet.
    - **UDP Port**: Select the UDP port for the BACnet/IP communication (1 .. 65535).

> **NOTE**
> The UDP port is set to 47808 (BAC0 in hexadecimal) by default.

    - **Network Role** (disabled by default): Define the gateway behavior regarding other network elements.

> **IMPORTANT**
> If you are unfamiliar with these options, please leave the parameter as **Disabled** to avoid issues with the BACnet communication/configuration.

  - **Disabled**: The gateway provides no special service regarding network communication or settings.
  - **Foreign Device**: The gateway acts as a foreign device from the BACnet network point of view.
  - **BBMD**: The gateway acts as a BBMD in the BACnet network.

- **MS/TP**: Serial communication over the EIA-485 bus.
  - **Baud rate**: Select the communication speed: Auto, 9600, 19200, 38400, 57600, 76800, or 115200 bps.

    NOTE
    The baud rate is set to Auto by default.

  - **Max. Masters**: Set the highest master MAC address in the MS/TP network (1 .. 127. Default value: **127**).
  - **Max. Info Frames**: Set the maximum number of messages that can be sent onto MS/TP network per token pass (1 .. 100. Default value: **1**).
  - **MAC Address**: Set the MAC address of the gateway in the MS/TP network (0 .. 127. Default value: **1**).
  - **Edit MSTP Timeouts**: Click **Edit** to open the **MSTP Timeouts Configuration** window.
    - **PFM Timeout**: Set the polling for master timeout in milliseconds (20 .. 100 ms. Default value: **60 ms**).
    - **TP Timeout**: Set the token passing timeout in milliseconds (20 .. 100 ms. Default value: **60 ms**).

9.4.3. BACnet Advanced Configuration

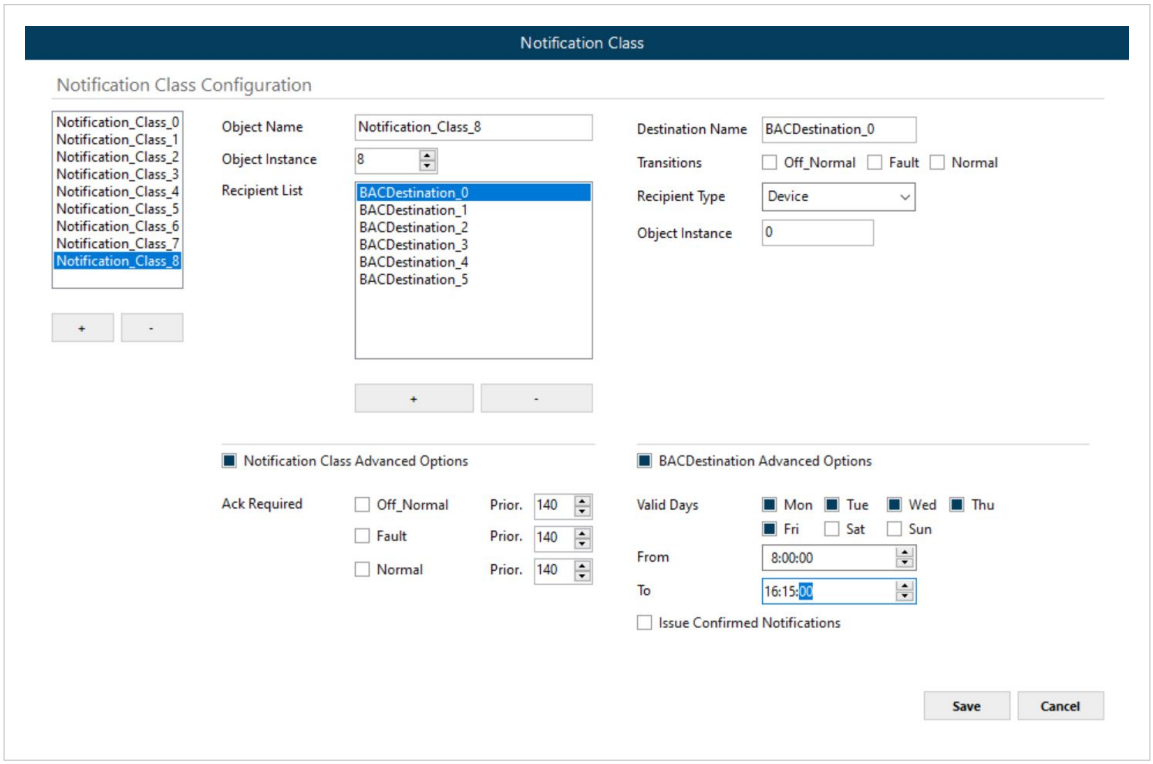
Show Advanced Configuration: Open advanced configuration parameters (disabled by default).

IMPORTANT
These menus provide advanced functionalities intended for expert users.

We recommend keeping these options set to their default values.

9.4.3.1. Notification Class

Click **Edit** to open the **Notification Class Configuration** parameters.



Click the + button to create up to ten Notification_Class objects. For each one, you can set:

- **Object Name**: Type a name for the Notification_Class.
- **Object Instance**: Set the BACnet object instance for the Notification_Class.
- **Recipient List**: Click the + button to create up to eight different BACnet destinations. For each one, you can set:
  - **Destination Name**: Type a descriptive name for the BACnet destination.
  - **Transitions**: Select which transitions will force this Notification_Class to be active:
    - **Off_Normal** (disabled by default): When the status changes from off to normal.
    - **Fault** (disabled by default): When the status changes to fault.
    - **Normal** (disabled by default): When the status changes from fault to normal.

  - **Recipient Type**: Select the type of destination:
    - **Device** (default value): The recipient is a device.
      - **Object Instance**: Select the device instance number for this device.
    - **Address (IP)**: The recipient is set using the specific address on BACnet/IP. Specify:
      - **Network Number** (0 .. 65535. Default value: **0**).
      - **IP** address (192.168.100.10 by default) and **Port** (47808 by default) for the destination.
      - Set the destination as a **Global Broadcast** (disabled by default).
      - Set the destination as a **Broadcast** (disabled by default).
    - **Address (MS/TP)**: The recipient is set using the specific address on BACnet MS/TP. You'll have to specify:
      - **Network Number** (0 .. 65535. Default value: **0**).
      - **MS/TP MAC Address** (0 .. 255. Default value: **0**).
      - Set the destination as a **Global Broadcast** (disabled by default).
      - Set the destination as a **Broadcast** (disabled by default).
    - **Address (Other):** The recipient is set using another type of address. You'll have to specify:
      - **Network Number** (0 .. 65535. Default value: **0**).
      - **Other Address** (HEX string. Default value: **ff**).
      - Set the destination as a **Global Broadcast** (disabled by default).
      - Set the destination as a **Broadcast** (disabled by default).

- **BACDestination Advanced Options** (disabled by default): Check this option to show some advanced options.
  - **Valid days:** Sets the days for receiving the notification.
  - **From**: Sets the starting point for the valid period.
  - **To**: Sets the ending point for the valid period.
  - **Issue Confirmed Notifications** (disabled by default): Determines if notification events are sent as Confirmed or Unconfirmed to the BACnet destination.

    IMPORTANT
    Sending them as Confirmed requires Ack.

- **Notification Class Advanced Options** (disabled by default): Check this option to show the **Ack Required** options.
  - **Off_Normal** (disabled by default): Enable the acknowledgment for the TO_OFF_NORMAL event.
  - **Fault** (disabled by default): Enable the acknowledgment for the TO_FAULT event.
  - **Normal** (disabled by default): Enable the acknowledgment for the TO_NORMAL event.

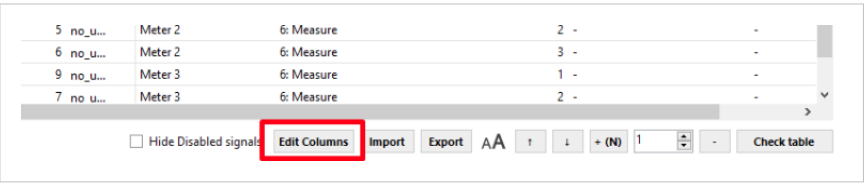
NOTE
Set the priority for each parameter (0 .. 255. Default value: **140**).

After creating and configuring the needed Notification_Class objects, the next step is to assign them to signals:

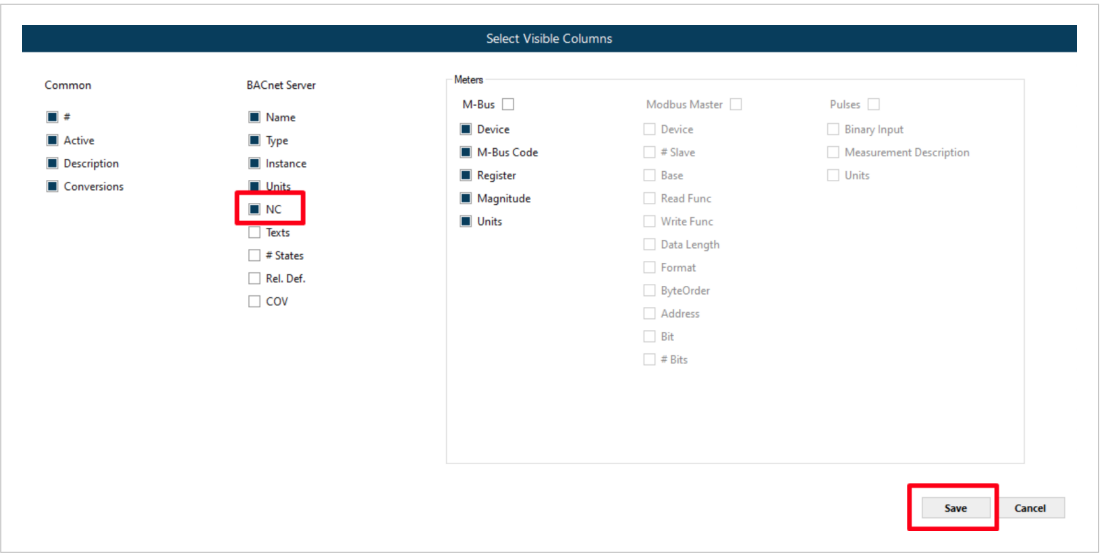
NOTICE
To better understand the assignment of Notification_Class objects to signals, we are moving from the **Configuration** tab to the **Signals** tab.

1. Go to the **Signals** tab.

2. Click the **Edit Columns** button from the bottom menu.

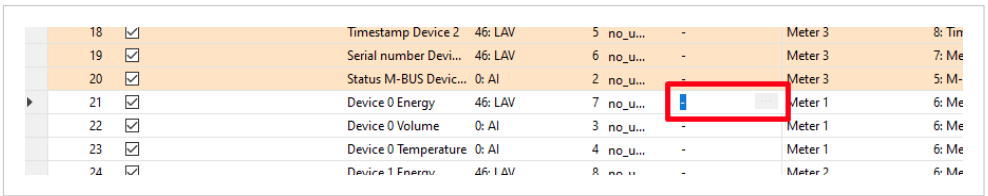


3. In the **Select Visible Columns** window, select **NC**.
4. Click **Save**.



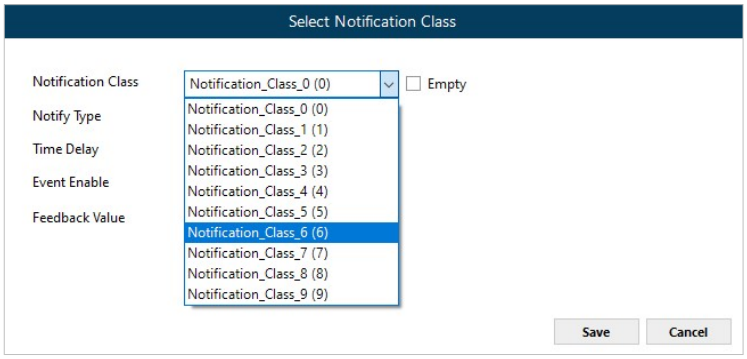
A new column named **NC** is now visible.

5. Look for the signal to which you want to assign the Notification_Class object and click the corresponding cell in the NC column.



6. Click the ... button.
7. In the **Select Notification Class** window, uncheck the **Empty** parameter.

8. Use the dropdown menu to select the Notification_Class object.



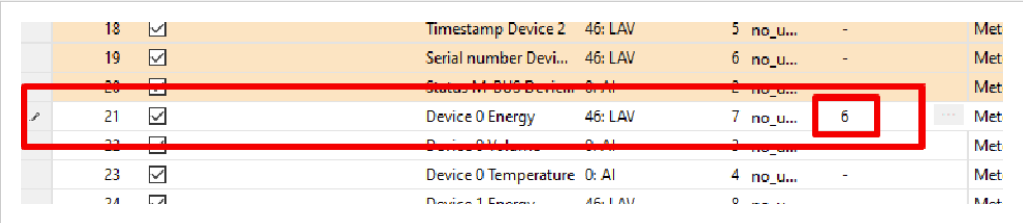
9. Set the rest of the parameters:

> **NOTE**
> These parameters vary depending on the signal type.

- **Notify Type**: Choose if the notification is sent as an **Alarm** (default) or an **Event**.
- **Time Delay**: Set the time in seconds before the notification launch (0 .. 65535. Default value: **0 seconds**).
- **Event Enable**: Click in the field to enable/disable the following options:
  - **TO_OFF_NORMAL** (enabled by default): Enable/disable the TO_OFF_NORMAL event.
  - **TO_FAULT** (enabled by default): Enable/disable the TO_FAULT event.
  - **TO_NORMAL** (enabled by default): Enable/disable the TO_NORMAL event.
- **Feedback Value:** Choose if the feedback value is **Active** or **Inactive** (default).
- **High Limit** (Disabled by default): Enable this parameter to set the high limit for the notification.
- **Low Limit** (Disabled by default): Enable this parameter to set the low limit for the notification (0.00 .. 999.00).
- **Deadband**: Set the deadband for the notification.

10. Click **Save** to save the changes.

Once assigned, the instance number of the Notification_Class object appears in the **NC** column.



9.4.3.2. Binary Active/Inactive Text

Use this menu to create new text pairs for binary-type objects, edit existing ones, or delete unused pairs.

1. Click **Edit** to open the **Binary Active/Inactive Text** editor.
2. Click any text cell to edit its content. The maximum length for any text is 24 characters.
3. Type the desired text.

4. +: Add a new row to the table.

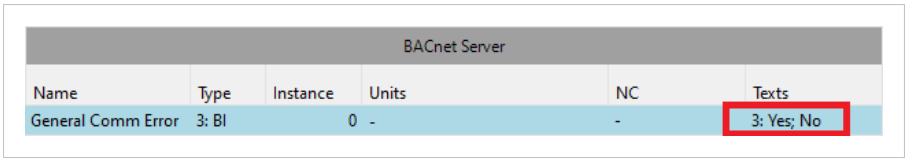
> **NOTE**
> You can add up to 100 string pairs.

5. —: Delete the selected row from the table.
6. Click **Save** to save the changes.

After creating or editing the desired text pairs, the next step is to assign them to the corresponding binary-type signals. To do so, select **Texts** as a visible column in the **Signals** tab.

> **NOTICE**
> For more information on adding visible columns to the Signals tab, refer to Steps 1 to 3 of the Notification Class section (page 33). In this case, however, select the **Texts** column from the BACnet Server section instead of **NC**.

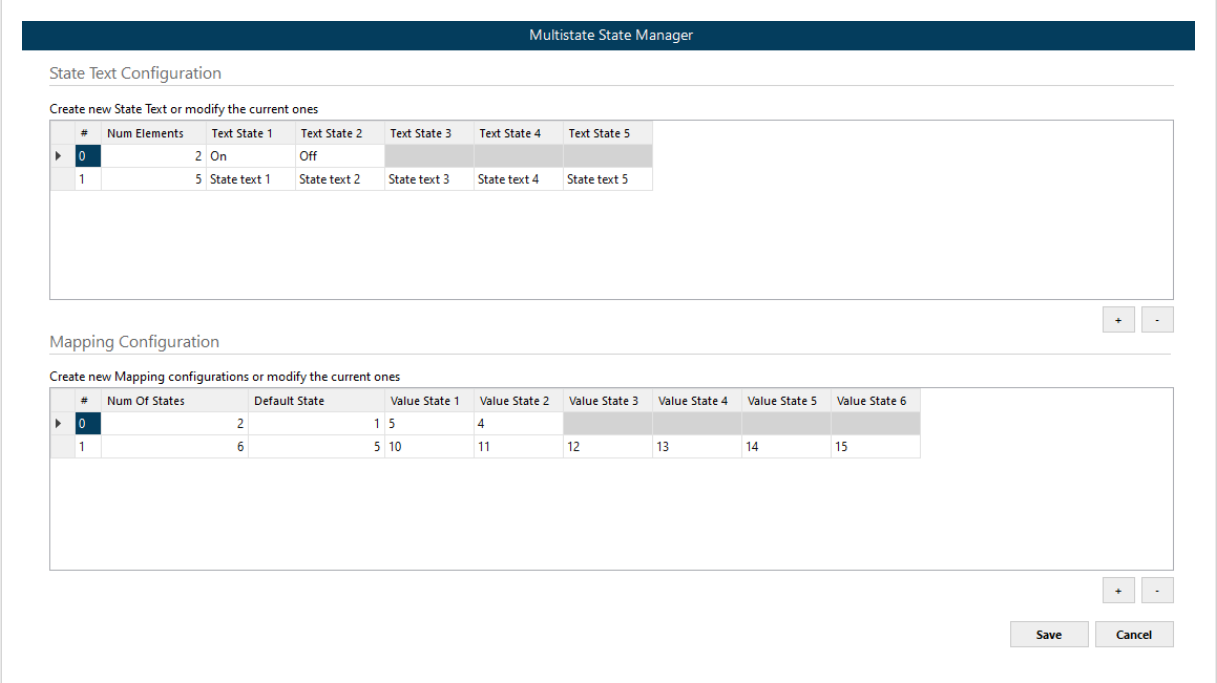
Having done that, click the three-dotted button on the **Texts** cell of any binary object to invoke the **Binary State Selector** window. Select the desired option. Once the assignment is complete, the currently selected text pair appears in the corresponding **Texts** column of the **Signals** tab.



9.4.3.3. Multistate States

Use this menu to create state text lists to be applied to Multistate Objects.

1. Click **Edit** to open the **Multistate State Manager**.



   a. Use the **State Text Configuration** table to create new state text lists or modify existing lists.

   b. Use the **Mapping Configuration** table to create a secondary mapping for the states to create custom conversions between the BACnet states received and the values that the gateway will transmit to the BMS protocol.

2. Click any cell in either table to edit its text.
3. Type the desired text. The maximum length for any state text is 24 characters.
4. +: Add a new row in the table above the button.

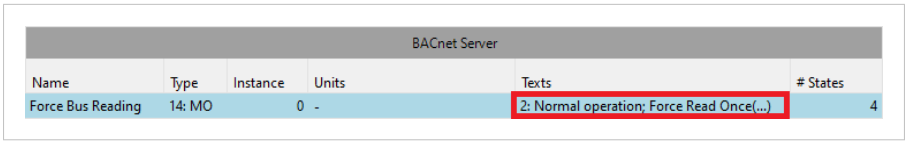
> **NOTE**
> You can add up to 100 lists, each one with a maximum of 100 elements.

5. —: Delete the selected row of the table above the button.
6. Click **Save** to save the changes.

After creating or editing the desired state texts, the next step is to assign them to the corresponding multistate-type signals. To do so, select Texts as a visible column in the Signals tab.

> **NOTICE**
> For more information on adding visible columns to the Signals tab, refer to Steps 1 to 3 of the Notification Class section (page 33). In this case, however, select the **Texts** column from the BACnet Server section instead of **NC**. The **# States** column can also be added to provide additional information.

Having done that, click the three-dotted button on the **Texts** cell of any multistate object to invoke the **Multi State Selector** window. Select the desired option. Once the assignment is complete, the currently selected state texts appear in the corresponding **Texts** column of the **Signals** tab.



BACnet Server

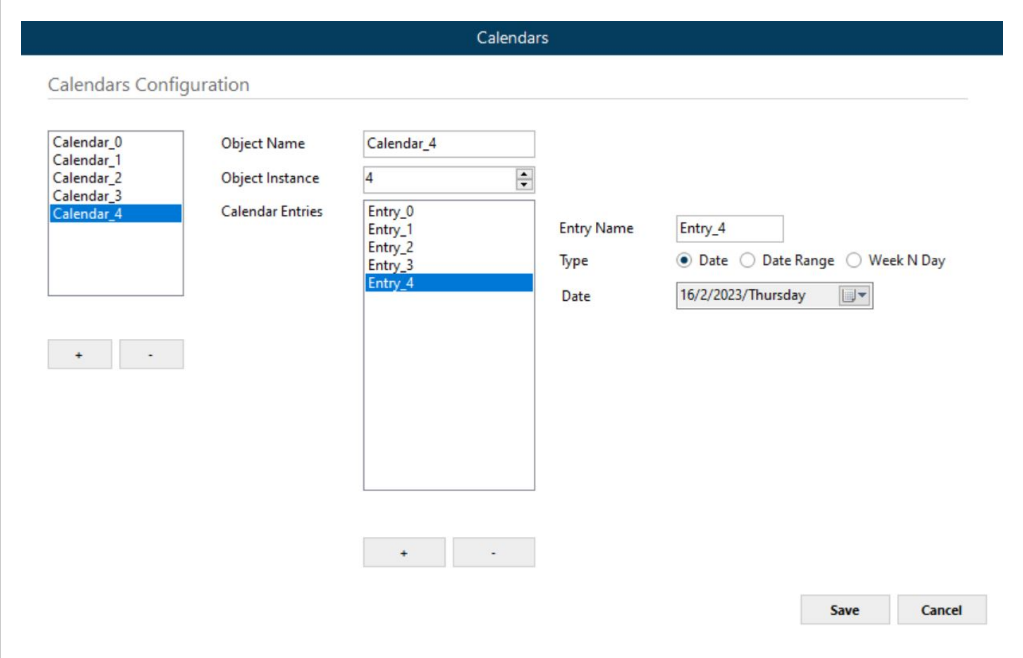
Name	Type	Instance	Units	Texts	# States
Force Bus Reading	14: MO	0	-	2: Normal operation; Force Read Once(...)	4

NOTICE

If the **# States** column is also visible, it will display the number of elements of the currently selected state text. Alternatively, the **# States** column can also be used to enter the number of elements for the currently selected object manually, but only when no state texts are being used.

9.4.3.4. Calendars

Click **Edit** to open the **Calendars Configuration** parameters.



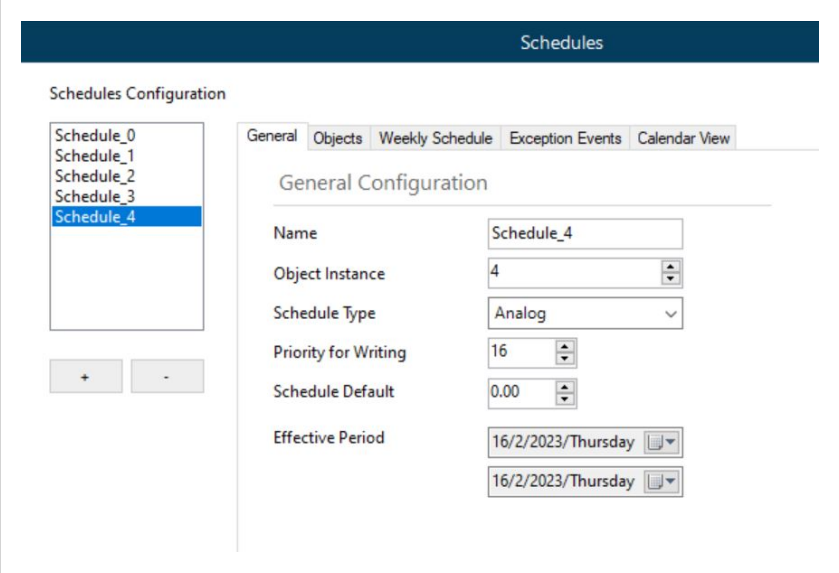
Click the + button to create up to 10 calendars. For each one, you can set:

- **Object Name**: Type a name for this calendar.
- **Object Instance**: Set the BACnet object instance for the calendar (0 .. 4194303. Default value: **0**).
- **Calendar Entries**: Click the + button to determine the number of calendar entries (patterns). Create up to 32 different entries per calendar. For each entry, you can set:
  - **Entry Name**: Type the name for that pattern.
  - **Type**: Set the date type for that pattern:
    - **Date** (default value): The pattern applies to a specific day.
    - **Date Range**: The pattern applies within a date range. Set the starting day (**From**) and the ending day (**To**).
    - **Week N Day**: The pattern applies to a specific **Month**, **Week of the Month**, and/or **Day of the Week**.

> **NOTE**
> Select an asterisk (*) to apply the rule to all cases, i.e., an asterisk in the **Month** option will make the pattern apply to every month.

9.4.3.5. Schedules

Click **Edit** to open the **Schedules Configuration** parameters.



Click the + button to create up to ten schedules. For each one, you can set:

- **General Configuration**:
  - **Name**: Type a name for this schedule.
  - **Object Instance**: Set the BACnet object instance for the schedule (0 .. 4194303. Default value: **0**).
  - **Schedule Type**: Set it as an **Analog** (default), **Binary**, **Multistate**, or **Large Analog** object.

    IMPORTANT
    Use the type that best suits this particular schedule. For example, if this schedule is used to turn a device ON, select **Binary**.

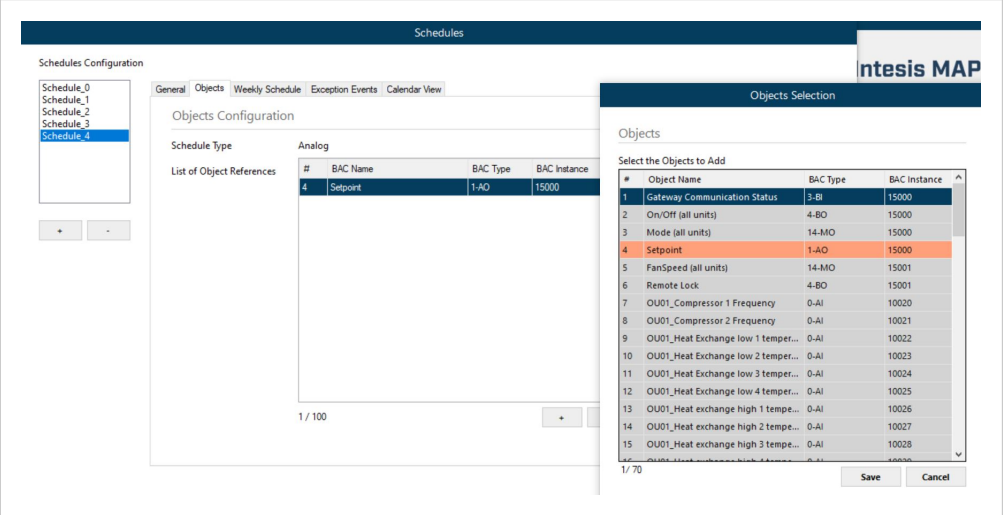
  - **Priority for Writing**: Select the writing priority of the schedule value (1 .. 16. Default value: **16**).
  - **Schedule Default**: Set the default value for the schedule.

    NOTICE
    The range of values allowed depends on the type of object previously selected:

    - **Analog**: 0.00 .. 65535.00
    - **Binary**: 0, 1
    - **Multistate**: 0 .. 65535
    - **Large Analog**: 0.00 .. 65535.00

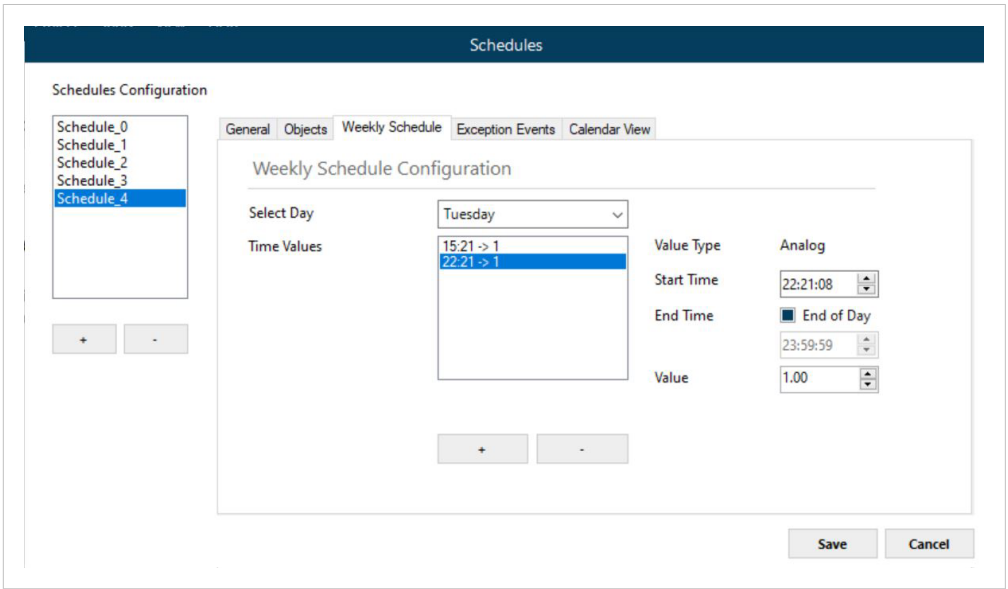
  - **Effective Period**: Set the starting and ending date. The schedule will be in effect during this period.

- **Objects Configuration**: Include BACnet objects in a specific schedule.



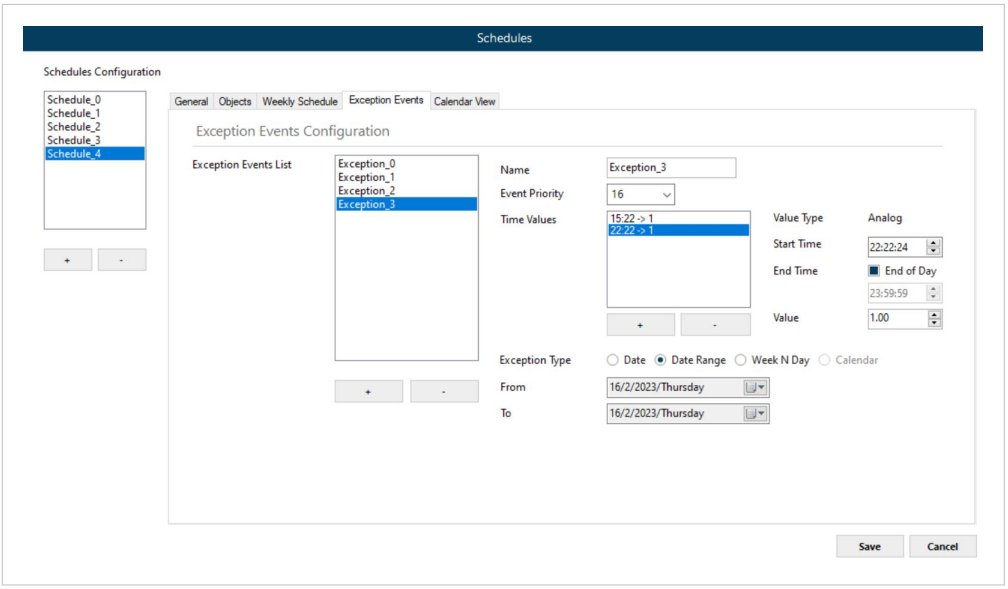
  - **Schedule Type**: It shows the previous **Schedule Type** object you selected: Analog, Binary, Multistate, or Large Analog.
  - **List of Object References**: Click the + button to open the **Objects Selection** dialog. The background color of each object indicates its status as follows:
    - **Grey**: Not allowed. This object type does not match the **Schedule Type** you previously selected.
    - **Yellow**: Allowed.
    - **Orange**: Already applied.

- **Weekly Schedule Configuration:**



  - **Select Day**: Select which day of the week the schedule applies.
  - **Time Values**: Click the + button to create up to six time periods. For each one, set the **Start Time**, the **End Time**, and the **Value**.

- **Exception Events Configuration**: Create exceptions to the schedules.



– **Exception Events List**: Click the + button to create up to 16 different exceptions. For each one, you can set:

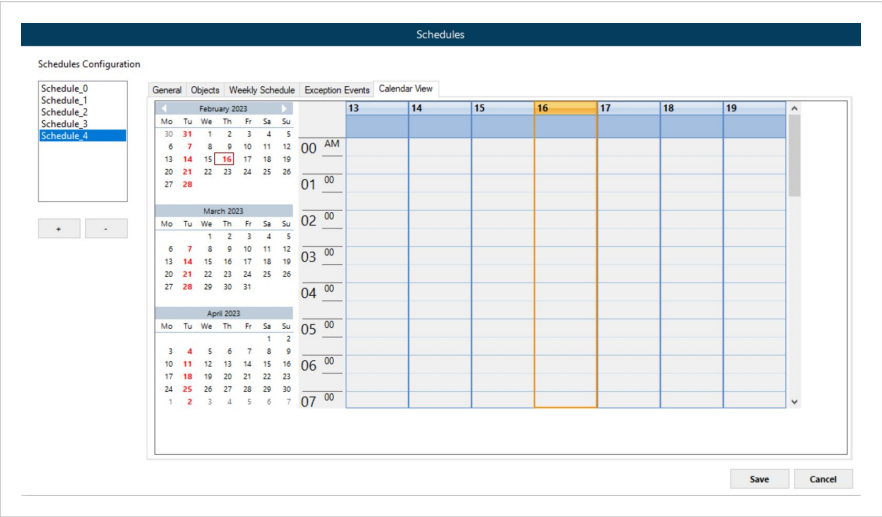
  - **Name**: Type a name for the exception.
  - **Event Priority**: Set a priority for the exception (1 [maximum priority] .. 16 [minimum priority]. Default value: **16**).
  - **Time Values**: Click the + button to create up to six time periods. For each one, set the **Starting Time**, the **End Time**, and the **Value**.
  - **Exception Type**: Set the type of date for the exception:
    – **Date** (default): Select a single day.
    – **Date Range**: Select a date range. Set the starting day (**From**) and the ending day (**To**). The exception will be in effect during this period.
    – **Week N Day**: Set the date by selecting a **Month**, a **Week of the Month**, and/or a **Day of the Week**.

> **NOTE**
> Select an asterisk (*) to apply the rule to all cases.

    – **Calendar**: Select a Calendar to apply its values to the exception event.

> **NOTE**
> This option is only enabled when at least one Calendar has been previously created. See Calendars (page 38).

- **Calendar View**: Display a calendar to consult all the configured schedules.

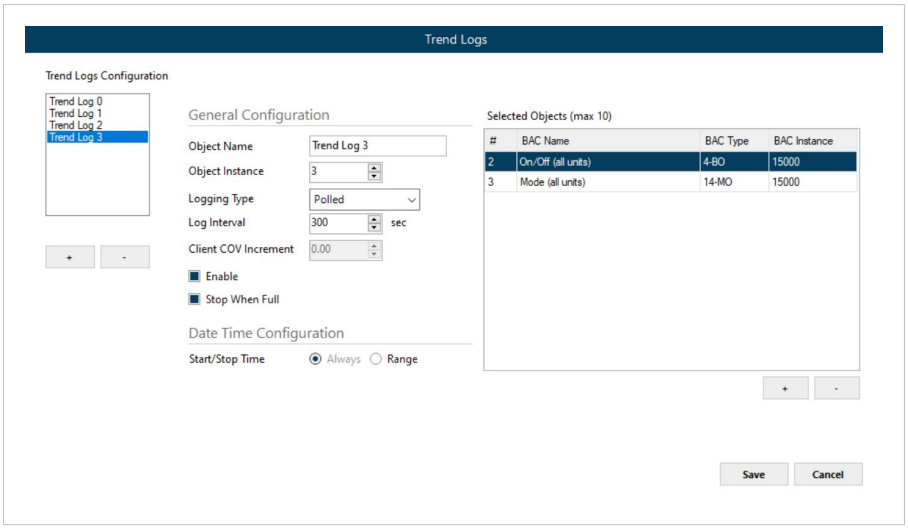


You can also create and modify **Weekly** and **Exception** schedules from this menu:

1. Use the calendar miniatures on the left to select the desired week.
2. Use the schedule view on the right to select the desired day and hour.
3. Right-click to open the settings menu. From this menu, the following options are available:
   - **Create Weekly Schedule**: Create a new weekly schedule.
   - **Create Exception Schedule**: Create a new exception event.
   - **Settings**: Edit an already created weekly schedule or exception event.
   - **Delete Event**: Delete the selected weekly schedule or exception event.

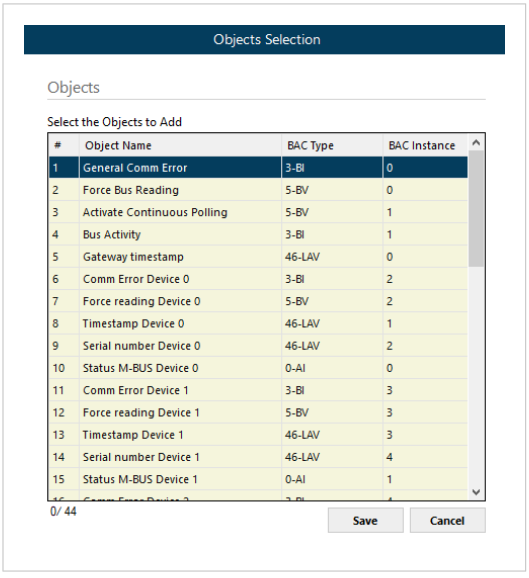
9.4.3.6. Trend Logs

Click **Edit** to open the **Trend Logs** parameters.



Click the + button to create up to five trend logs. For each one, you can set:

- **Object Name**: Type a name for the trend log.
- **Object Instance**: Set the BACnet object instance for the trend log (0 .. 4194303. Default value: **0**).
- **Logging Type**: Select the trend log type:
  - **Polled** (default value): The trend log is triggered when polling.
    Use the **Log Interval** parameter to set the poll cadence in seconds (1 .. 65535. Default value: **300 sec**).
  - **COV**: The trend log is triggered when there is a change of value.
    Use the **Client COV Increment** parameter to set (0.00 .. 100000.00. Default value: **0.00**).
  - **Triggered**: The trend log is triggered by the BACnet system.
- **Enable** (enabled by default): Enable/disable the specific trend log even if the trend log is in the valid time range.
- **Stop When Full** (enabled by default):
  - If **enabled**, it will stop the trend log when the buffer is full.
  - If **disabled**, it will keep the last 2880 valid values.
- **Date Time Configuration**: Set the period when trend logs are active.
  - **Always** (default value).
  - **Range**: Use the **Start Time** and **End Time** parameters to set a time range.
- **Selected Objects (max 10)**: Click the + button to include up to ten BACnet objects in a trend log. To remove previously added objects, use the − button.



NOTE

To select multiple items in both the **Selected Objects** and the **Objects Selection** tables, press and hold the **Shift** key when clicking for consecutive objects or the **Control** key for non-consecutive objects. Objects already added are shown with an orange background.

9.4.3.7. BACnet Description

Click **Edit** to open the **BACnet Description** window. You can add an editable **Description** column in the **Signals** tab table.

- **Disabled (By default)**: The Description column is not added.
- **Enable BACnet Description (96 bytes)**: The Description column is added, allowing a description up to 96 characters long.
- **Enable BACnet Description 255 bytes (only for licenses up to 1200 points/100 devices)**: The Description column is added, allowing a description up to 255 characters long.

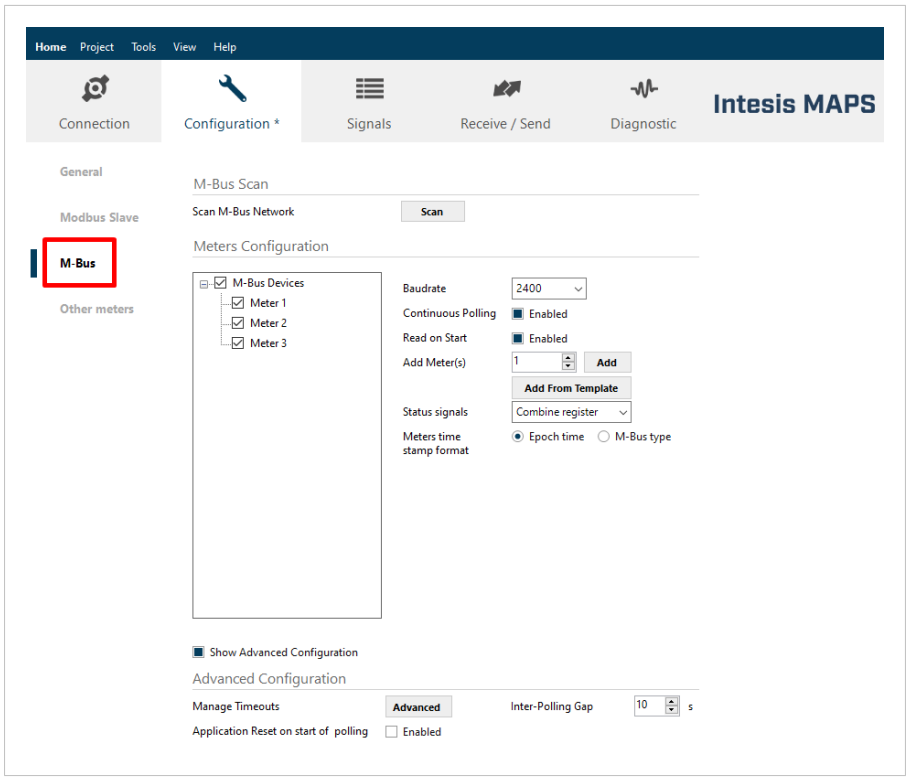
NOTE
Some special characters may use three bytes each.

9.4.3.8. Charset Configuration

There are four character sets available:

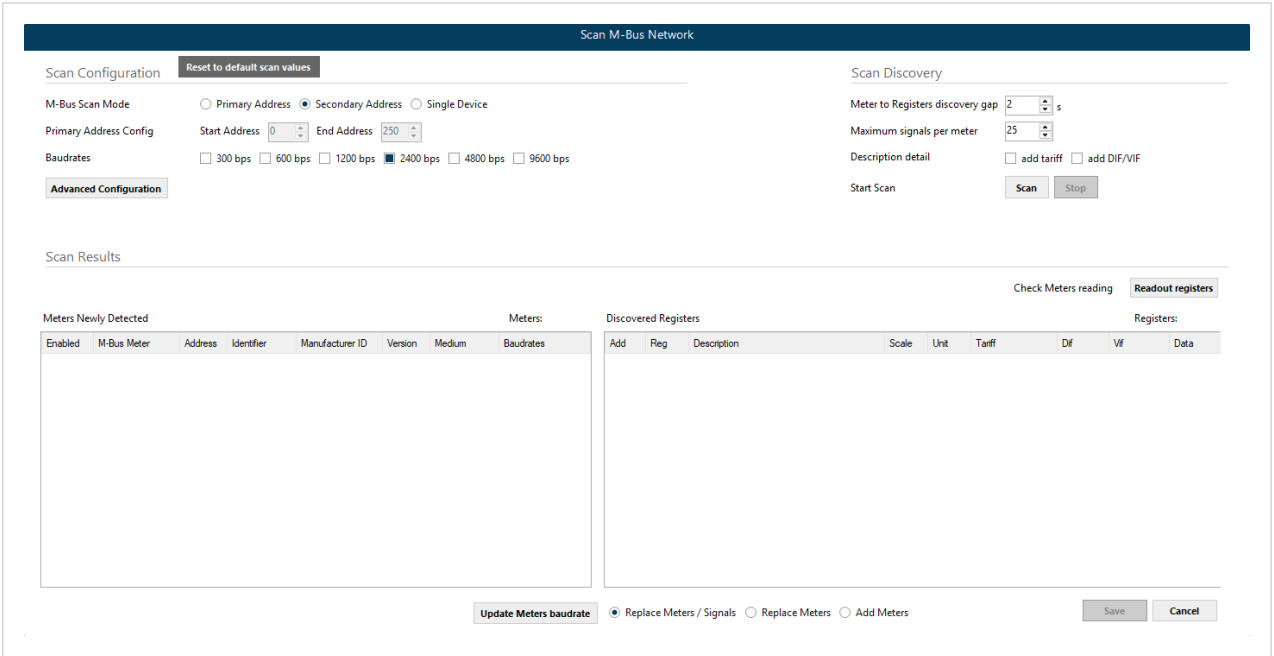
- **UTF 8** (default value)
- **UCS 4**
- **UCS 2**
- **ISO 8859-1**

9.5. Device Protocol: M-Bus



9.5.1. M-Bus Scan

Scan M-Bus Network: Click **Scan** to open the **Scan M-Bus Network** window.



9.5.1.1. Scan Configuration

- **Reset to default scan values**: Click this button to reset all the options of this menu to their default values.
- **M-Bus Scan Mode**: Select the type of addressing on which you want to run the scan.
  - **Primary Address**
  - **Secondary Address (selected by default)**
  - **Single Device**
- **Primary Address Config**: Use this option to run the scan between a range of addresses.

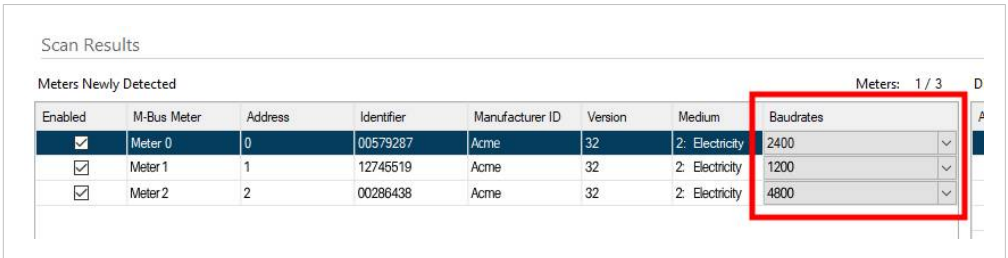
> **NOTE**
> This option is only available if the **M-Bus Scan Mode** option is set to **Primary Address**.

  - **Start Address**: Lower limit of the scan (0 .. 250. Default value: **0**).
  - **End Address**: Higher limit of the scan (0 .. 250. Default value: **250**).
- **Baudrates**: Select the M-Bus meters baudrate, in bits per second (bps).
  - 300, 600, 1200, 2400, 4800, 9600 (Default value: **2400 bps**).

> **NOTE**
> You can select several values.

> **IMPORTANT**
> The scanning process will only find the M-Bus meters operating at the selected baudrates.

For example, to discover the following meters during the bus scan, you should select **1200 bps**, **2400 bps**, and **4800 bps**:

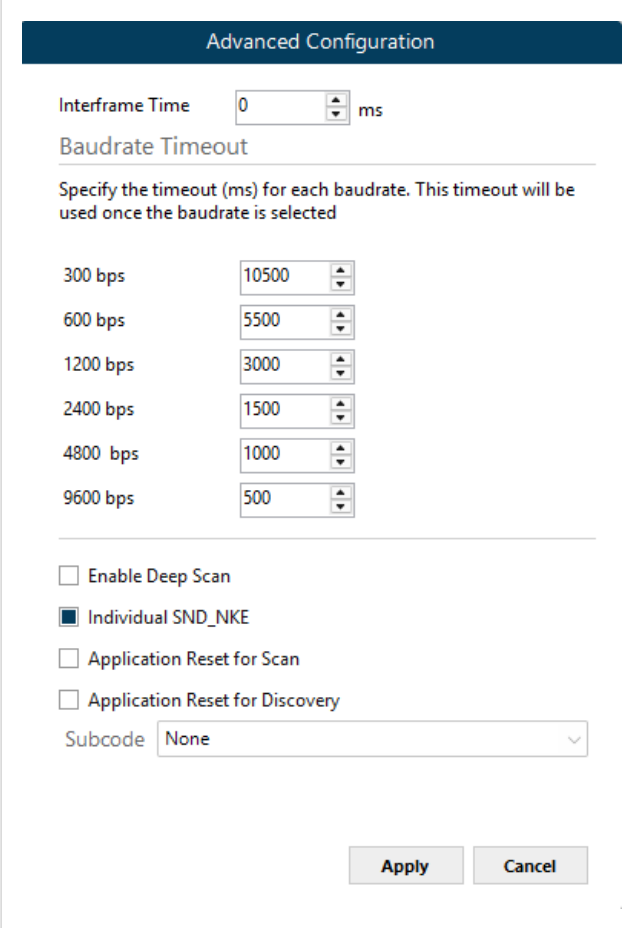


> **NOTICE**
> Selecting several baudrates will make the scanning process take longer.

> **IMPORTANT**
> Once discovered, meters with different baud rates must be configured to use the same baud rate as the gateway.

- **Advanced Configuration**: Click **Advanced** to open the **Advanced Configuration** window.

> **IMPORTANT**
> This menu provides advanced functionalities intended for expert users.
>
> We recommend keeping these options set to their default values.



– **Time Interframe**: Set the time, in milliseconds, to add to the standard minimum interframe time (0 .. 30000. Default value: **0 ms**).

> **NOTE**
> This value is used only during the scan process and does not apply after the process is complete.

– **Timeout for each baudrate**: Set a specific timeout, in milliseconds, for each previously selected baudrate.

- **300 bps**: 500 .. 30000. Default value: **10500 ms**.
- **600 bps**: 500 .. 30000. Default value: **5500 ms**.
- **1200 bps**: 500 .. 30000. Default value: **3000 ms**.
- **2400 bps**: 500 .. 30000. Default value: **1500 ms**.
- **4800 bps**: 500 .. 30000. Default value: **1000 ms**.
- **9600 bps**: 500 .. 30000. Default value: **500 ms**.

> **NOTE**
> These values are used only during the scan process and do not apply after the process is complete.

– **Enable Deep Scan (disabled by default)**: Enable this option to run a refined scan.

> **NOTICE**
> When this option is disabled, the scan algorithm considers that a meter has been found after receiving a unique ACK with no collisions.

NOTE
This option is only available if the **M-Bus Scan Mode** option is set to **Secondary Address**.

When activating the **Enable Deep Scan** option, two more options appear:

- **Deep scan (selected by default)**: This option forces the search to refine down to the last digit of the secondary address.
- **Deeper scan**: In addition to forcing the search to refine down to the last digit of the secondary address, this option also completes scanning the entire range where a meter has been found.

– **Individual SND_NKE (enabled by default)**: The behavior of this option varies depending on the M-Bus Scan Mode.

- The **M-Bus Scan Mode** option is set to **Primary Address**: An individual SND_NKE (initialization trigger) is added to each meter before starting the scan.
- The **M-Bus Scan Mode** option is set to **Secondary Address**: This option adds addressing SND_NKE in the network layer (FDh).

– **Application Reset for Scan (disabled by default)**: If enabled, this option sends an application reset to all the meters in the bus before the scan.

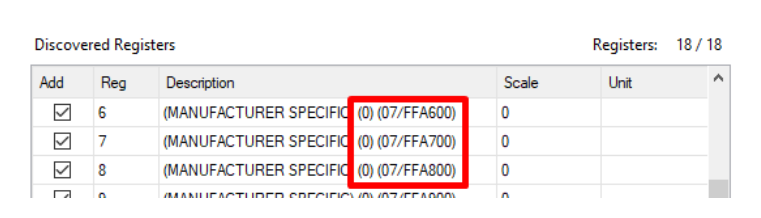
– **Application Reset for Discovery (disabled by default)**: If enabled, this option adds an application reset subcode to all the meters found in the bus before discovering the meters signals. Use the dropdown menu below the option to select the desired subcode.

Click the **Apply** button to save the advanced configuration settings.

9.5.1.2. Scan Discovery

- **Meter to Registers discovery gap**: Set the waiting time, in seconds, between the meter scan and the discovery of signals (0 .. 60. Default value: **2 seconds**).
- **Maximum signals per meter**: Set the maximum number of signals to import for each meter (0 .. 3000. Default value: **25 signals**).
- **Description detail**: Use these options to add some extra information to the **Description** column in the **Discovered Registers** table.
  – **add tariff (disabled by default)**: By enabling this option, the **Description** column will also display the tariff value.
  – **add DIF/VIF (disabled by default)**: By enabling this option, the **Description** column will also display the DIF/VIF values.

Figure 1. The tariff and DIF/VIF values are added in the Description column after enabling the previous options.



NOTICE
These options can be enabled/disabled either before or after scanning the bus.

- **Start Scan**:
  - Click the **Scan** button to start scanning the M-Bus bus.

    NOTICE
    A progress bar appears, showing the scanning process.

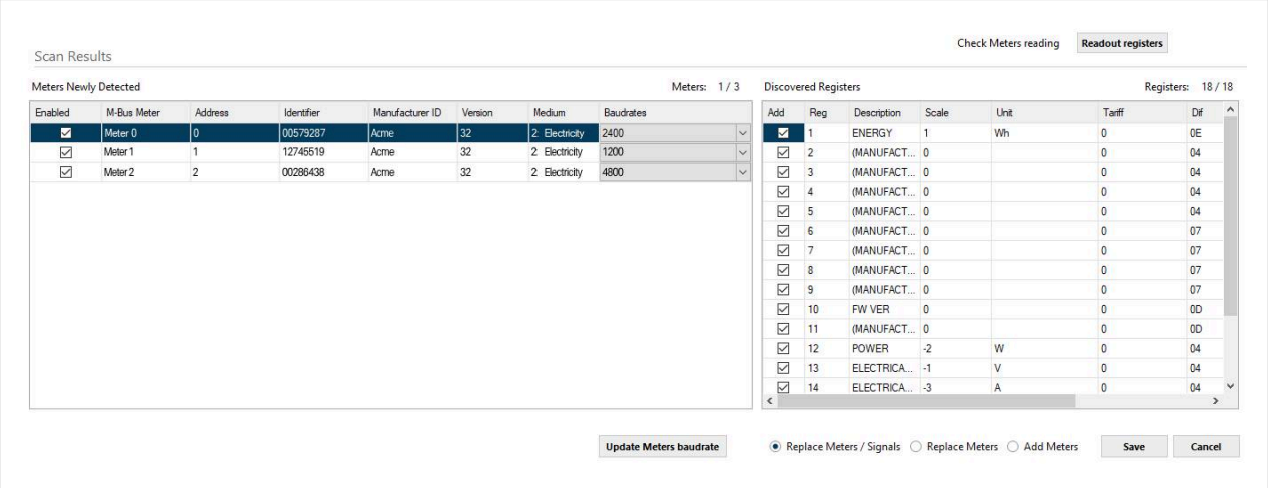
    After scanning the bus, the **Scan Results** tables will populate, showing the **Meters Newly Detected** and the **Discovered Registers** for each meter.

    NOTE
    If the **Discovered Registers** table does not show any result, click the **Readout registers** button from the **Check Meters reading** option.

  - Click the **Stop** button to stop scanning the M-Bus bus.

    NOTICE
    The devices already listed will not disappear.

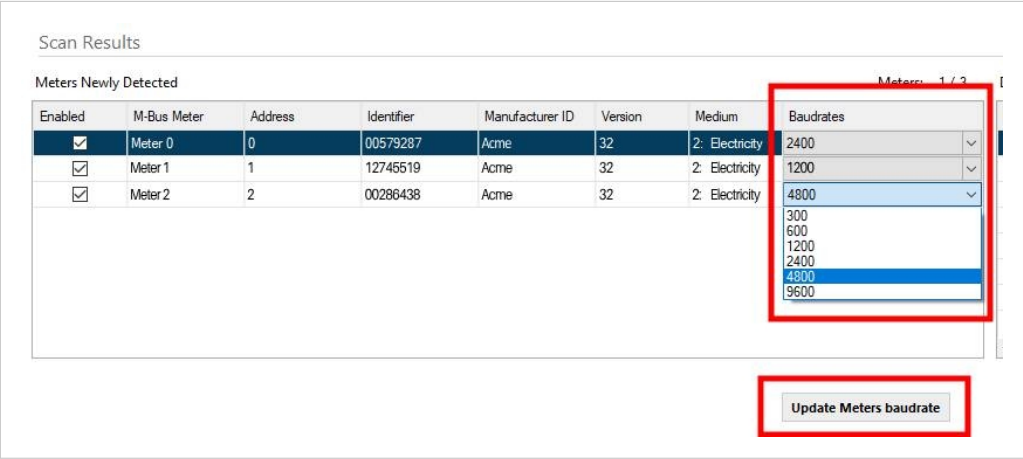
9.5.1.3. Scan Results



Once the scanning of the M-Bus bus is completed, the discovered meters will appear in the **Meters Newly Detected** table. The registers of the selected meter appear in the **Discovered Registers** table.

CHANGING A METER'S BAUDRATE

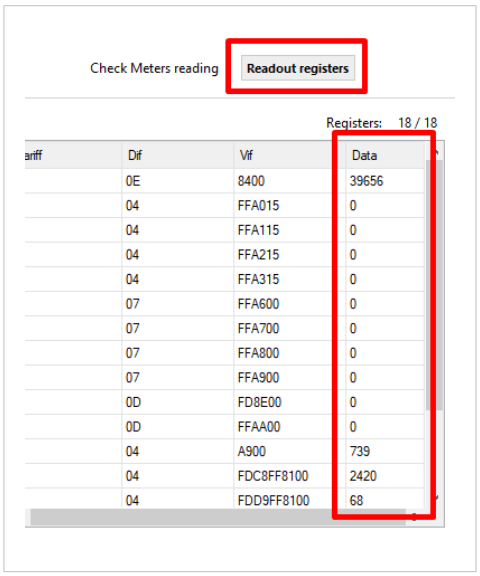
IMPORTANT
Once discovered, meters with different baud rates must be configured to use the same baud rate as the gateway.



1. Use the dropdown menu from the **Baudrate** column to select the desired baudrate.
2. Click the **Update Meters baudrate** button.
3. A message will inform that the new baudrate has been accepted by the meters or, conversely, that a meter has refused the new baudrate.

UPDATE A REGISTER'S DATA

Check Meters reading: Click the **Readout registers** button to update the data of registers.



9.5.1.4. Importing Newly Discovered Meters and Registers

NOTICE

Only for projects based on a Modbus BMS: An extra option named **Include Scale Conversions** appears in the lower menu (enabled by default). This functionality applies the conversion of scales for the selected registers. If so, the **Conversions** column in the **Signals** tab will show **Enabled**. To know more see Signals Tab (page 70).

REPLACE THE EXISTING METERS AND SIGNALS OF YOUR INTESIS MAPS PROJECT

IMPORTANT
This option will remove any existing meter and its signals from your project.

To replace your project's meters and their registers with the newly detected ones, follow this procedure:

1. In the **Meters Newly Detected** table, use the checkbox in the **Enabled** column to select the meters you want to import to your project.
2. In the **Discovered Registers** table, use the checkbox in the **Add** column to select the meter registers you want to import to your project.
3. Ensure that the **Replace Meters / Signals** option is enabled in the bottom menu.
4. Click **Save**.

REPLACE THE EXISTING METERS OF YOUR INTESIS MAPS PROJECT, BUT KEEPING THEIR SIGNALS

IMPORTANT
This option will remove any existing meter from your project, but its signals will be kept.

To replace your project's meters with the newly detected ones, but keeping their registers, follow this procedure:

1. In the **Meters Newly Detected** table, use the checkbox in the **Enabled** column to select the meters you want to import to your project.
2. In the **Discovered Registers** table, use the checkbox in the **Add** column to select the meter registers you want to import to your project.
3. Ensure that the **Replace Meters** option is enabled in the bottom menu.
4. Click **Save**.

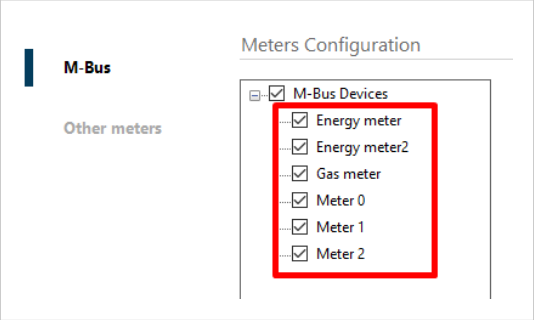
ADD THE NEWLY DISCOVERED METERS AND THEIR SIGNALS TO YOUR MAPS PROJECT

To add the newly detected meters and their signals to your project while keeping the meters and signals you already have, follow this procedure:

NOTE
With this option, any existing meter and its signals will be kept.

1. In the **Meters Newly Detected** table, use the checkbox in the **Enabled** column to select the meters you want to import to your project.
2. In the **Discovered Registers** table, use the checkbox in the **Add** column to select the meter registers you want to import to your project.
3. Ensure that the **Add Meters** option is enabled in the bottom menu.
4. Click **Save**.

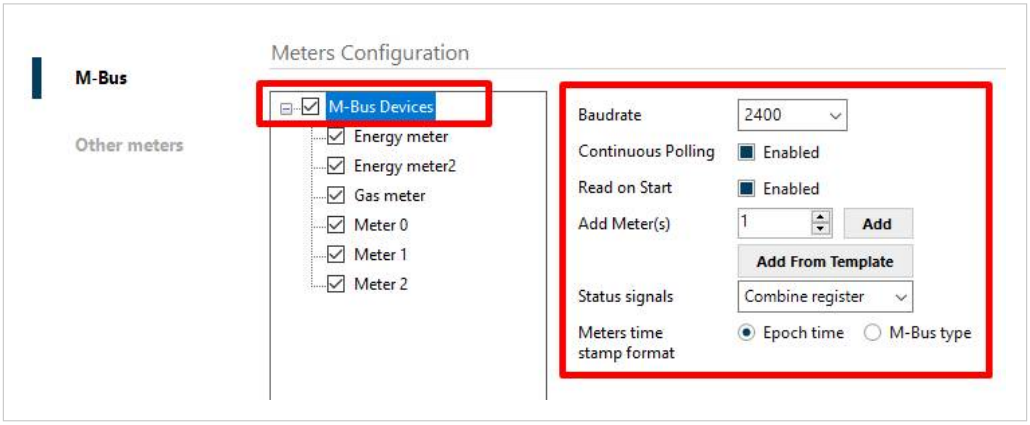
Figure 2. Newly discovered meters (Meter 0, Meter 1, and Meter 2) are added to the meters already configured in the project (Energy meter, Energy meter2, and Gas meter).



IMPORTANT
Whatever option you use to add meters to your project, remember that the total number of meters/devices supported by the gateway depends on the purchased license. To know more, consult the sections **Licensing** and **Gateway Capacity** in the IN702MEB∗∗∗0000 User Manual.

9.5.2. M-Bus Meters Configuration

CONFIGURE THE M-BUS BUS



Select the root of the tree view (**M-Bus Devices**) to set up the following options:

- **Baudrate**: Use the dropdown menu to select the baudrate for all the M-Bus meters in bits per second.
  - 300, 600, 1200, 2400, 4800, 9600 (Default value: **2400 bps**).

NOTICE
The most common baudrate for M-Bus networks is 2400 bps.

IMPORTANT
All M-Bus meters, either manually added or imported via the scan function, must be configured with this same baud rate.

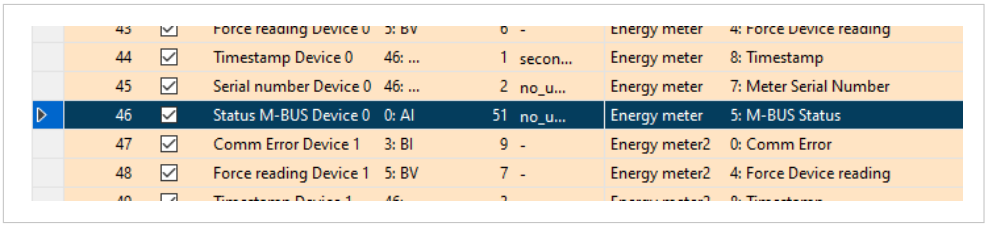
- **Continuous polling (enabled by default)**: Enable/disable the continuous polling of the bus by the gateway.
- **Read on Start (enabled by default)**: Enable/disable the reading of all values by the gateway on start.
- **Add Meter(s)**: Type or select the number of meters you want to add to the project and click the **Add** button.

You can also import a template from your local storage. To do so, follow this procedure:

1. Click the **Add From Template** button.
2. In the **M-BUS Server Templates** window, click **Import file**.
3. Select the desired M-Bus device template from a local folder on your computer and click **Open**.
4. The **Template Available Objects** section will populate with the signals included in the selected template.
5. If needed, filter the signals you want to import into your project:
   a. Click any signal's checkbox in the **Active** column to deselect that signal.
   b. Disable the **Import disabled objects** option below the table of signals.
6. Click **Apply** to import the selected signals into your project.

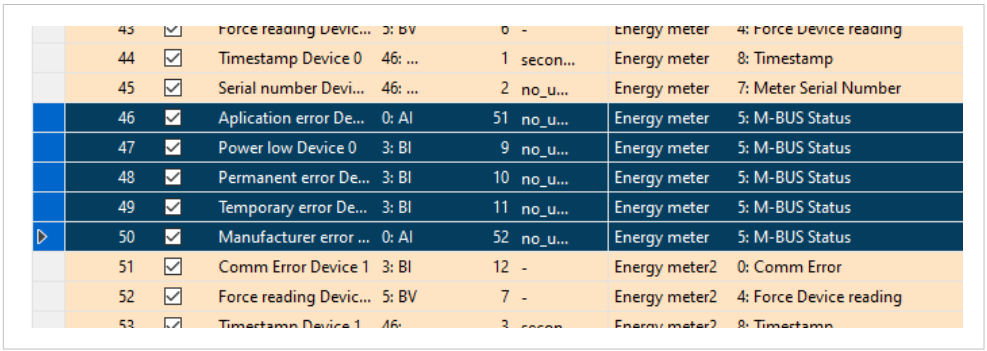
> **IMPORTANT**
> Whatever option you use to add meters to your project, remember that the total number of meters/devices supported by the gateway depends on the purchased license. To know more, consult the sections **Licensing** and **Gateway Capacity** in the IN702MEB***0000 User Manual.

- **Status signals**: Select how to check the status of the M-Bus meters.
  - **Combine Signals (default value)**: A unique 1 byte signal groups five different statuses for each meter.



44	☑	Timestamp Device 0	46: ...	1	secon...	Energy meter	8: Timestamp
45	☑	Serial number Device 0	46: ...	2	no_u...	Energy meter	7: Meter Serial Number
46	☑	Status M-BUS Device 0	0: AI	51	no_u...	Energy meter	5: M-BUS Status
47	☑	Comm Error Device 1	3: BI	9	-	Energy meter2	0: Comm Error
48	☑	Force reading Device 1	5: BV	7	-	Energy meter2	4: Force Device reading

  - **Separate Signals**: Five specific signals show each possible status of the meter:



44	☑	Timestamp Device 0	46: ...	1	secon...	Energy meter	8: Timestamp
45	☑	Serial number Devi...	46: ...	2	no_u...	Energy meter	7: Meter Serial Number
46	☑	Aplication error De...	0: AI	51	no_u...	Energy meter	5: M-BUS Status
47	☑	Power low Device 0	3: BI	9	no_u...	Energy meter	5: M-BUS Status
48	☑	Permanent error De...	3: BI	10	no_u...	Energy meter	5: M-BUS Status
49	☑	Temporary error De...	3: BI	11	no_u...	Energy meter	5: M-BUS Status
50	☑	Manufacturer error ...	0: AI	52	no_u...	Energy meter	5: M-BUS Status
51	☑	Comm Error Device 1	3: BI	12	-	Energy meter2	0: Comm Error
52	☑	Force reading Devic...	5: BV	7	-	Energy meter2	4: Force Device reading

- **Meters timestamp format**: Select the format for time and date signals for all the M-Bus meters in the bus.
  - **Epoch time (selected by default)**: This option reports the number of seconds that have elapsed since January 1, 1970, at 00:00:00 UTC.

> **NOTICE**
> If the meter timestamp signal reports a 0, the date it is providing is before or equal to January 1, 1970, at 00:00:00 UTC.

  - **M-Bus type**: This option uses the M-Bus data type F = Compound CP32: Date and Time.
- **Show Advanced Configuration (deselected by default)**: Select this option to enable the M-Bus meters advanced configuration.

IMPORTANT
This menu provides advanced functionalities intended for expert users.

We recommend keeping these options set to their default values.

– **Manage Timeouts**: Click the **Advanced** button to open the **Timeout Management** menu.

  • **Time Interframe**: Set the time, in milliseconds, to add to the standard minimum interframe time (0 .. 30000. Default value: **0 ms**).

  • **Reset Response Timeout**[1] and **User Data Response Timeout**[2]: Set a specific timeout, in milliseconds, for both options and for each baudrate.

NOTE
[1] **Reset Response Timeout**: Timeout after a SND_NKE transmission.

[2] **User Data Response Timeout**: Timeout after a REQ_UD2 transmission

  – **300 bps**: 500 .. 30000. Default value: **10500 ms**.

  – **600 bps**: 500 .. 30000. Default value: **5500 ms**.

  – **1200 bps**: 500 .. 30000. Default value: **3000 ms**.

  – **2400 bps**: 500 .. 30000. Default value: **1500 ms**.

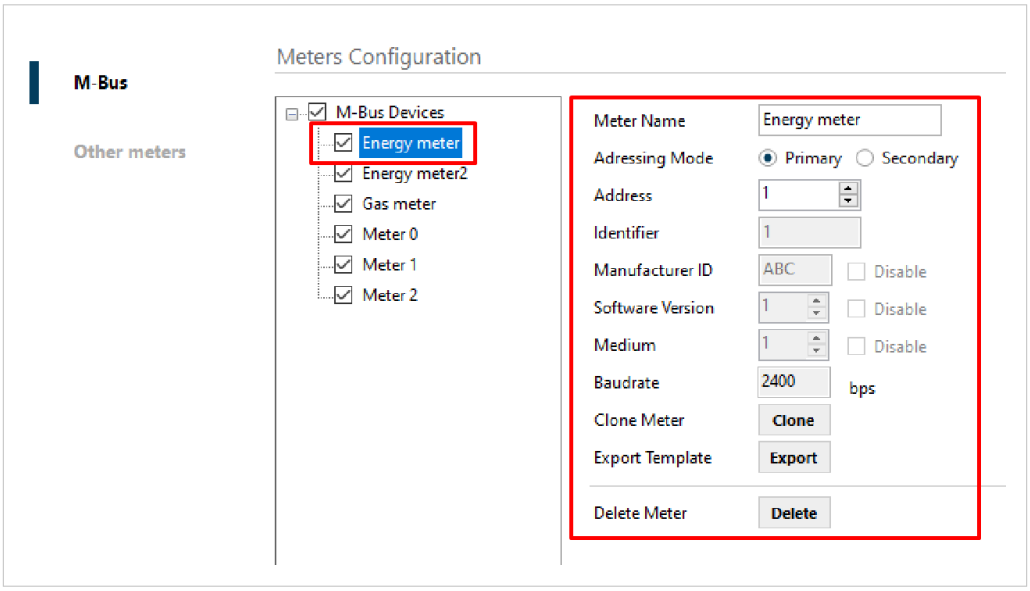
  – **4800 bps**: 500 .. 30000. Default value: **1000 ms**.

  – **9600 bps**: 500 .. 30000. Default value: **500 ms**.

– **Application Reset on start of polling (disabled by default)**: Enable/disable the application reset before every polling cycle.

– **Inter-Polling Gap**: Set the time in seconds between polling cycles (1 .. 65535. Default value: **10 seconds**).

CONFIGURE THE M-BUS METERS



Select any meter from the tree view to set up the following options:

NOTICE
Greyed-out options are not editable.

- **Meter Name**: Type a name for the meter.
- **Addressing Mode**: Set the redirection mode for the meter.
  - **Primary (selected by default)**: The meter uses the primary addressing mode.
    - **Address**: Type or select the meter's primary address (1 .. 250).
  - **Secondary**: The meter uses the secondary addressing mode.
    - **Identifier**: Type the secondary address identifier for this meter (0 .. 99999999).
    - **Manufacturer ID**: Type the meter's manufacturer ID. Three characters maximum.

      NOTICE
      By selecting the **Disable** option, this parameter will not be used to identify the meter.

    - **Software Version**: Type or select the meter's software version (0 .. 255).

      NOTICE
      By selecting the **Disable** option, this parameter will not be used to identify the meter.

    - **Medium**: Type or select the meter's medium (0 .. 255).

      NOTICE
      By selecting the **Disable** option, this parameter will not be used to identify the meter.

- **Baudrate (not editable)**: This option shows the baudrate of this meter.

  NOTICE
  Edit this option from the root of the tree view for manually added meters, as explained before in this section, and from the scan menu for meters imported using the scan function, as explained in Scan Results (page 49).

  IMPORTANT
  All M-Bus meters, either manually added or imported via the scan function, must be configured with this same baud rate.

- **Clone Meter**: When cloning a meter, one or more new meters with the same configuration and signals are created.

  IMPORTANT
  The total number of meters/devices supported by the gateway depends on the purchased license. To know more, consult the sections **Licensing** and **Gateway Capacity** in the IN702MEB***0000 User Manual.

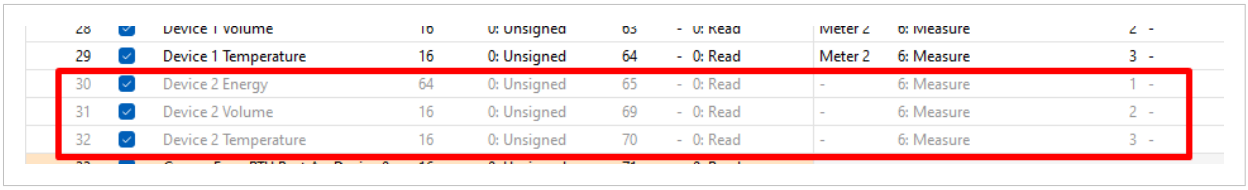
  1. Click **Clone**.
  2. Type or select the number of **Devices to Add**.
  3. Click **Apply**.

- **Export Template**: Save a template with the meter's configuration.

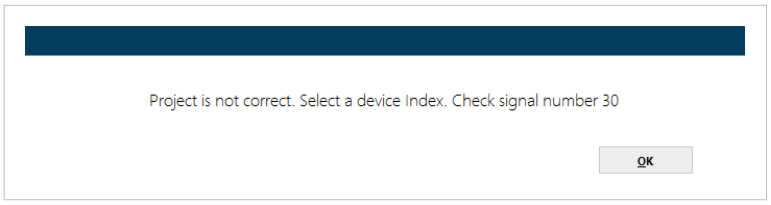
  1. Click **Export**.
  2. Type a **File name**.
  3. Select a folder to save the file.

4. Click **Save**.

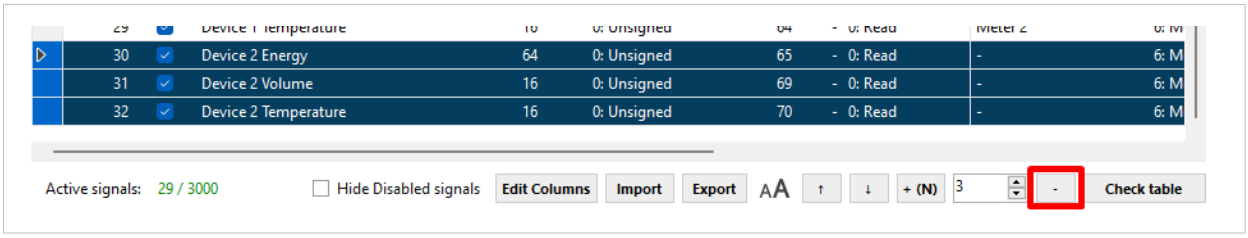
- **Delete Meter**: Click the **Delete** button to delete the meter.
  To avoid losing data by mistake, after deleting a meter, its associated registers remain visible in the **Signals** tab, but their text will appear dimmed, and the **Device** column shows —.



Given this situation, an error message will appear when checking the signals table:



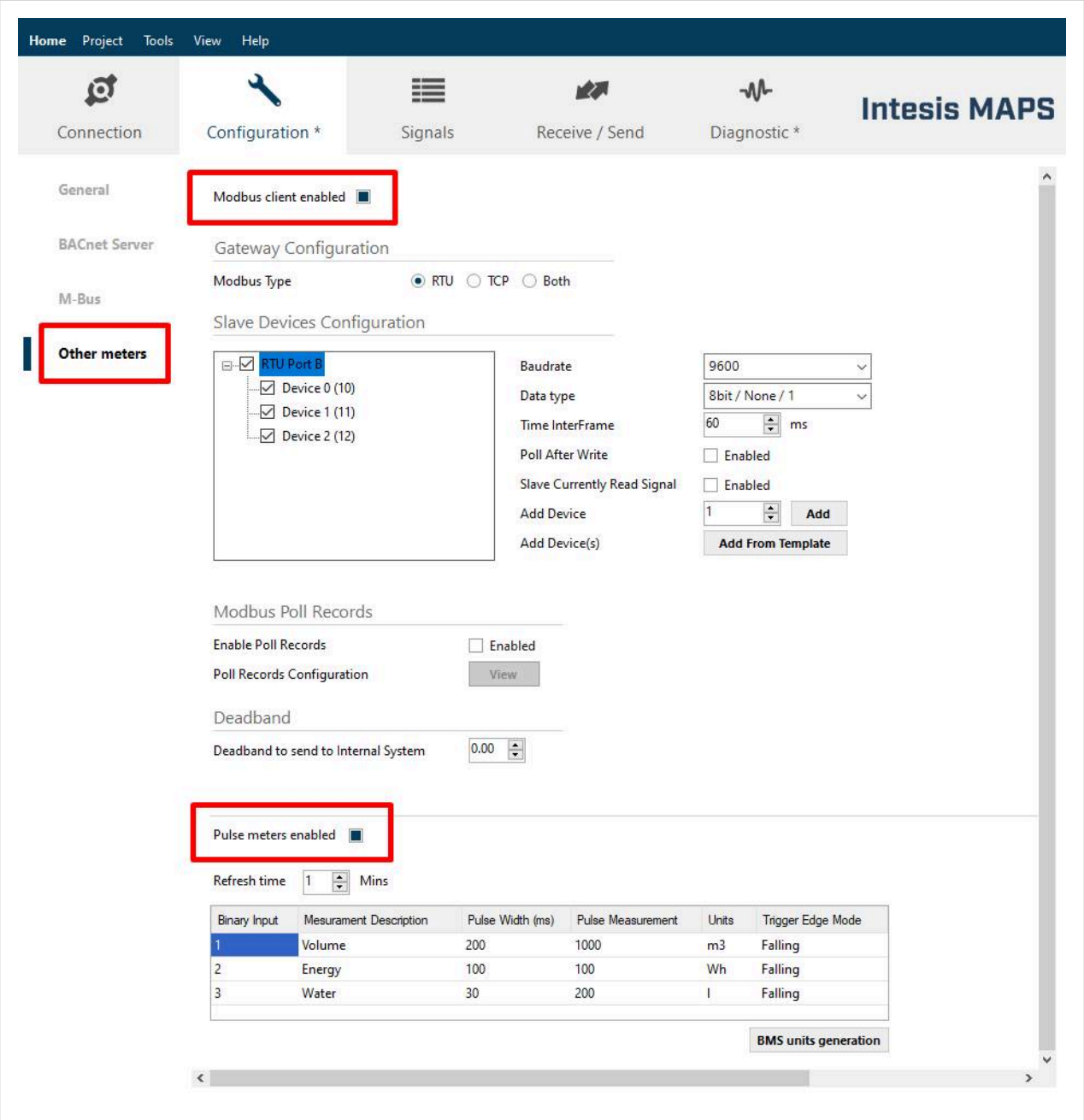
To solve this problem, select all the registers of the deleted meter and click the - button to definitely remove them from the table.



TIP
Instead of deleting them, you can add these registers to another active meter.

9.6. Device Protocol: Other Meters

Use the **Other meters** menu to enable and configure Modbus devices and pulse meters.



9.6.1. Modbus Devices

Select the **Modbus client enabled** option to activate the configuration of Modbus devices in your project.

NOTE
The gateway supports Modbus meters of any kind and Modbus devices such as electric vehicle chargers and photovoltaic systems.

9.6.1.1. Modbus Devices - Gateway Configuration

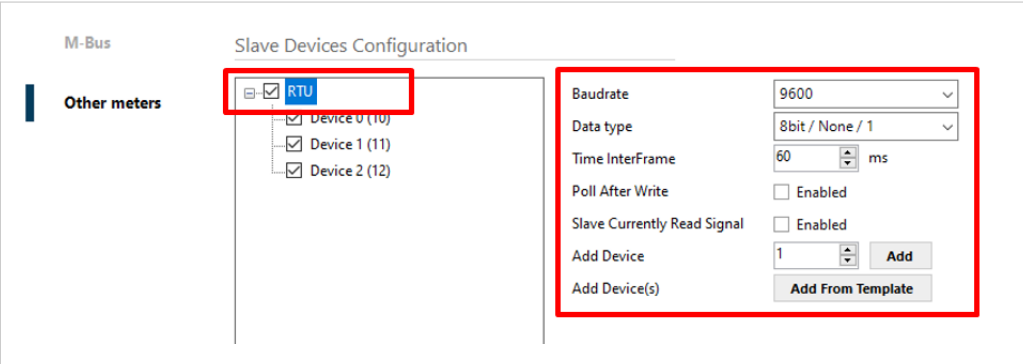
NOTE
The gateway supports meters and devices based on both Modbus RTU and Modbus TCP.

- **Modbus Type**: Select the type of Modbus devices on the server network.
  - **RTU**: The Modbus devices are connected to a Modbus RTU bus. This bus is connected to the gateway through the **Modbus Devices** port.
    The Configuration of the port and devices for Modbus RTU is explained in Modbus Devices - Slave Devices Configuration for Modbus RTU (page 58).
  - **TCP**: The Modbus devices are connected to a Modbus TCP bus. This bus is connected to the gateway through the **Ethernet port**.
    The Configuration of the port and devices for Modbus TCP is explained in Modbus Devices - Server Devices Configuration for Modbus TCP (page 63).
  - **Both**: Two networks of Modbus devices are present in the project, one using Modbus RTU, which is connected to the gateway through the **Modbus Devices** port, and the other using Modbus TCP, which is connected to the gateway through the **Ethernet port**.
    The Configuration of the port and devices for Modbus RTU+TCP is explained in Modbus Devices - Slave Devices Configuration for Modbus RTU+TCP (page 68).

NOTE
The sections linked here also explain the configuration of the **Modbus Poll Records** and **Deadband** options.

9.6.1.2. Modbus Devices - Slave Devices Configuration for Modbus RTU

CONFIGURE THE MODBUS RTU BUS



Select the root of the tree view (**RTU**) to set up the following options:

- **Baudrate**: Use the dropdown menu to select the baudrate for all the Modbus devices in bits per second.
  - 1200, 2400, 4800, 9600, 19200, 28400, 57600, 115200. (Default value: **9600 bps**).

- **Data type**: Select the frame format. (Default format: **8bit/None/1**).

Data bits	Parity	Stop bits
8bit	None Even Odd	1 2

- **Time Interframe**: Select the minimum time in milliseconds between received and sent frames (0 .. 100000. Default value: **60 ms**).
- **Poll After Write (disabled by default)**: Enable/disable polling a particular signal after sending a write command to it.
- **Slave Currently Read Signal (disabled by default)**: Generate a new signal indicating the current Modbus device that is being read.
- **Add Device(s)**: Type or select the number of devices you want to add to the project and click the **Add** button.

IMPORTANT
The total number of meters/devices supported by the gateway depends on the purchased license. To know more, consult the sections **Licensing** and **Gateway Capacity** in the IN702MEB***0000 User Manual.

You can also import a template from your local storage or download a template from the Intesis MAPS repository. To do so, follow this procedure:

IMPORT A FILE:

1. Click the **Add From Template** button.
2. In the **Modbus Server Templates** window, click **Import file**.
3. Select the desired Modbus device template from a local folder on your computer and click **Open**. At this point, the **Template Available Objects** section will populate with the signals included in the selected template.
4. If needed, filter the signals you want to import into your project:
   a. Click any signal's checkbox in the **Active** column to deselect that signal.
   b. Disable the **Import disabled objects** option below the table of signals.
5. Click **Apply** to import the selected signals into your project.

DOWNLOAD A TEMPLATE

IMPORTANT
You need a connection to the Internet to use this option.

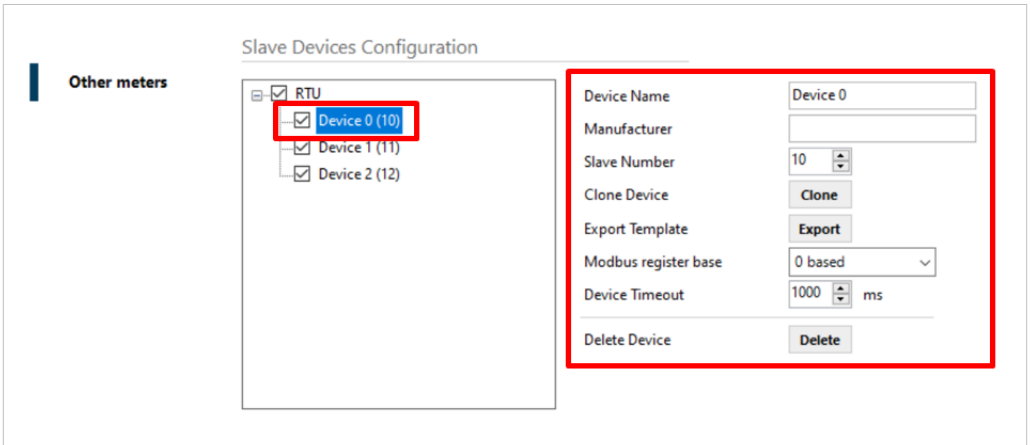
1. Click the **Add From Template** button.
2. In the **Modbus Server Templates** window, click **Download**.
3. Select the desired Modbus device template from the table and click **Load**.

NOTE
- Use the **Manufacturer** and **Model Name** options to filter the elements displayed.
- You can save the template in your local storage using the **Export** option instead.

At this point, the **Template Available Objects** section will populate with the signals included in the selected template.

4. If needed, filter the signals you want to import into your project:
   a. Click any signal's checkbox in the **Active** column to deselect that signal.
   b. Disable the **Import disabled objects** option below the table of signals.
5. Click **Apply** to import the selected signals into your project.

CONFIGURE THE MODBUS RTU DEVICES



Select any device from the tree view to set up the following options:

- **Device Name**: Type a name for the device.
- **Manufacturer**: Type the name of the manufacturer.
- **Slave Number**: Type or select the device's server number (1 .. 254).
- **Clone Device**: When cloning a device, one or more new devices with the same configuration are created.

> **IMPORTANT**
> The total number of meters/devices supported by the gateway depends on the purchased license. To know more, consult the sections **Licensing** and **Gateway Capacity** in the IN702MEB***0000 User Manual.

1. Click **Clone**.
2. Type or select the number of **Devices to Add**.

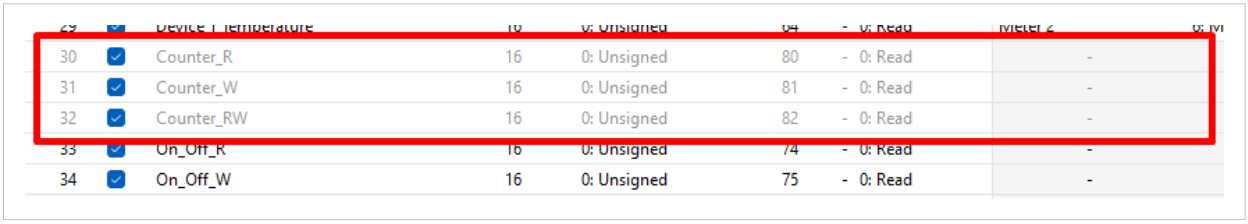
> **NOTE**
> Each device added will have the same configuration as the cloned device.

3. Click **Apply**.

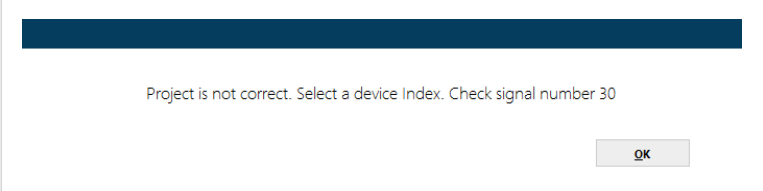
- **Export template**: Save a template with the device's configuration.

1. Click **Export**.
2. Type a **File name**.
3. Select a folder to save the file.
4. Click **Save**.

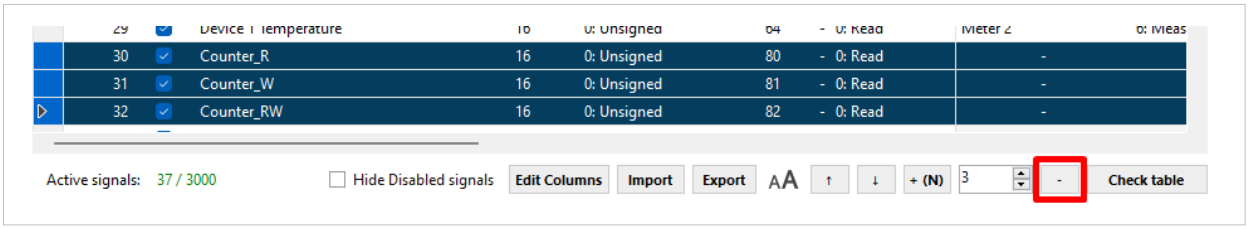
- **Modbus register base**: Select the Modbus addressing type.
  - **0 based**: The first register is addressed as 0.
  - **1 based**: The first register is addressed as 1.
- **Device Timeout**: Select the minimum time in milliseconds before launching a timeout message when there is no response from the server device (100 .. 30000. Default value: **1000 ms**).
- **Delete Device**: Click the **Delete** button to delete the device.
  To avoid losing data by mistake, after deleting a device, its associated registers remain visible in the **Signals** tab, but their text will appear dimmed.



Given this situation, an error message will appear when checking the signals table:



To solve this problem, select all the registers of the deleted device and click the - button to definitely remove them from the table.

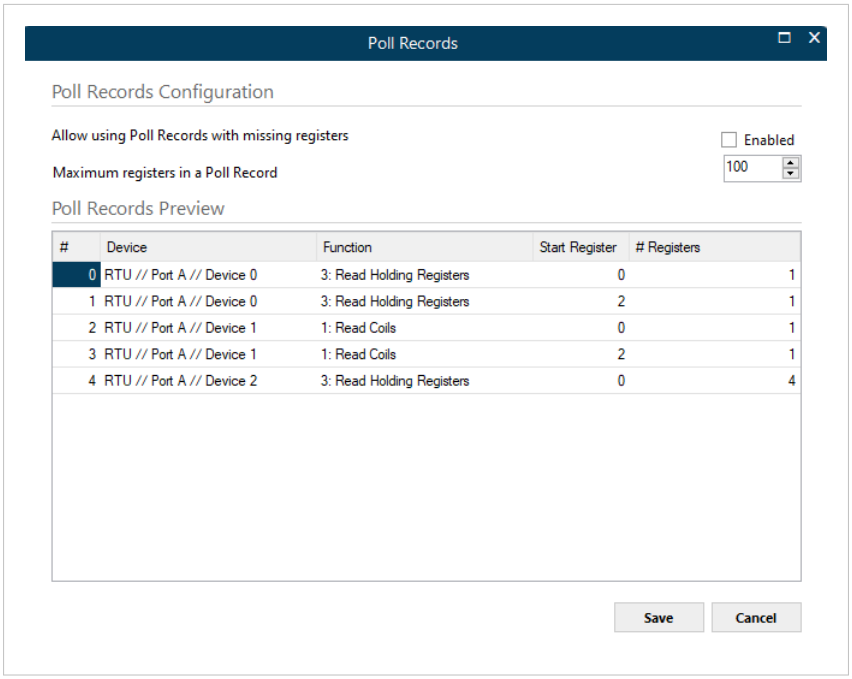


MODBUS POLL RECORDS (POLL MULTIPLE REGISTERS)

This option allows polling multiple Modbus registers on a single request, even if they are non-contiguous.

- **Enable Poll Records (disabled by default)**: Enable/disable the functionality.
- **Poll records configuration**:

1. Click **View**.



- **Allow using Poll Records with missing registers (disabled by default)**: Select this option to group non-contiguous registers in the same poll.
- **Maximum registers in a Poll Record**: Type or set the maximum number of registers per device to group in a single poll (2 .. 255. Default value: **100**).
- **Poll Records Preview**: This table shows a preview of the Modbus devices and registers that will be included in the poll according to the current configuration.

> **NOTICE**
> Each device's registers are added and configured through the **Signals** tab. See Signals Tab (page 70).

2. Click **Save** to save the changes.

DEADBAND

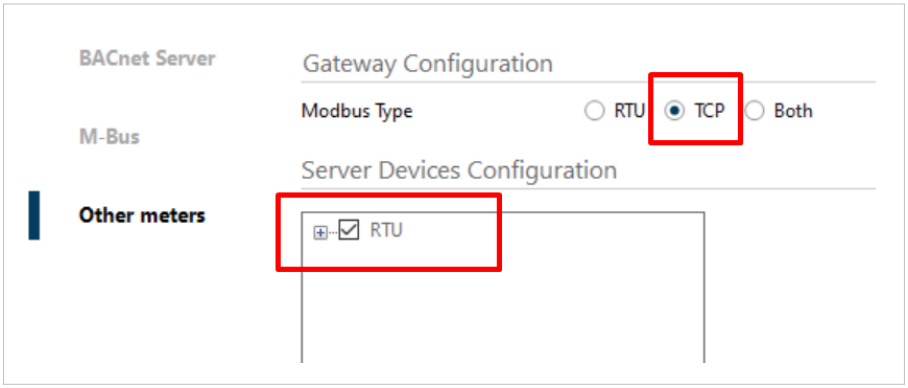
Deadband to send to Internal System: Minimum difference required between a new value and a previous value before the new value is reported to the control system (0.00 .. 1.00. Default value: **0.00**).

> **NOTICE**
> The deadband only applies to non-boolean signals.

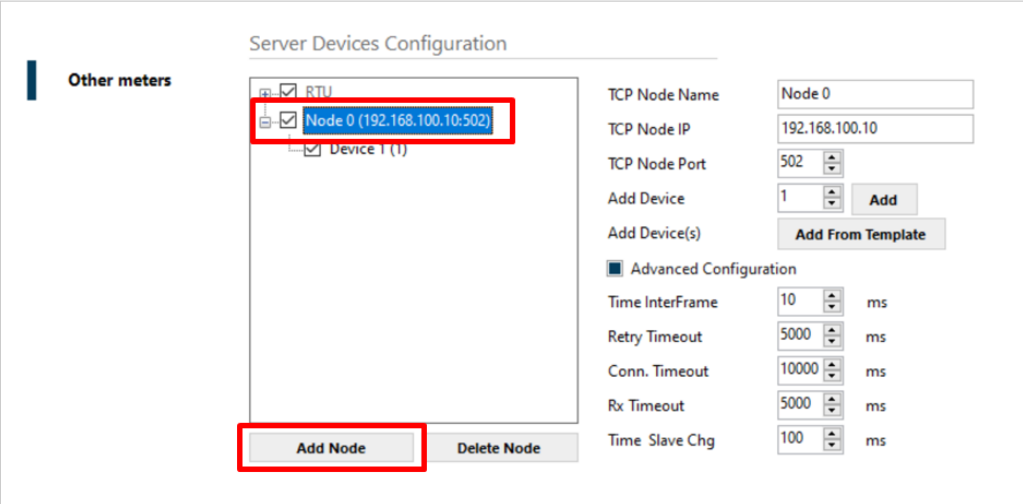
9.6.1.3. Modbus Devices - Server Devices Configuration for Modbus TCP

CONFIGURE THE MODBUS TCP BUS

After selecting **TCP** in the **Modbus Type** option, the tree view only shows the RTU root level, while the TCP root level (node) is still missing:



To add TCP nodes, click the **Add Node** button placed below the tree view. This will make **Node 0** appear together with its child level:



NOTE
Use the **Add Node** button to add up to five nodes.

Once you have selected a node from the tree view, you can configure the following options:

- **TCP Node Name**: Type a name for the node.
- **TCP Node IP**: Type the IP for the node (default IP: **192.168.100.10**).
- **TCP Node Port**: Type or set the port for the node (default port: **502**).
- **Add Device(s)**: Type or select the number of devices you want to add to the project and click the **Add** button.

IMPORTANT
The total number of meters/devices supported by the gateway depends on the purchased license. To know more, consult the sections **Licensing** and **Gateway Capacity** in the IN702MEB***0000 User Manual.

You can also import a template from your local storage or download a template from the Intesis MAPS repository. To do so, follow this procedure:

IMPORT A FILE:

1. Click the **Add From Template** button.
2. In the **Modbus Server Templates** window, click **Import file**.
3. Select the desired Modbus device template from a local folder on your computer and click **Open**.
   At this point, the **Template Available Objects** section will populate with the signals included in the selected template.
4. If needed, filter the signals you want to import into your project:
   a. Click any signal's checkbox in the **Active** column to deselect that signal.
   b. Disable the **Import disabled objects** option below the table of signals.
5. Click **Apply** to import the selected signals into your project.

DOWNLOAD A TEMPLATE

IMPORTANT
You need a connection to the Internet to use this option.

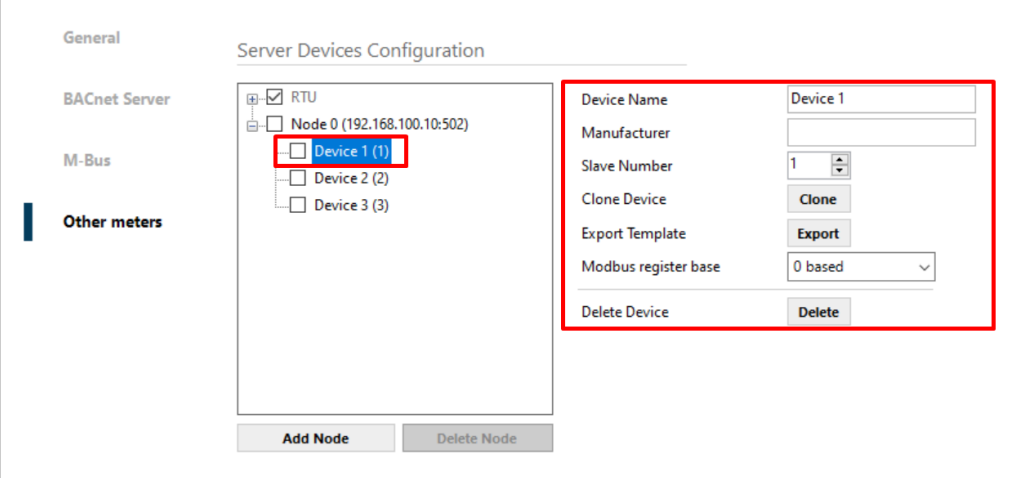
1. Click the **Add From Template** button.
2. In the **Modbus Server Templates** window, click **Download**.
3. Select the desired Modbus device template from the table and click **Load**.

   NOTE
   – Use the **Manufacturer** and **Model Name** options to filter the elements displayed.
   – You can save the template in your local storage using the **Export** option instead.

   At this point, the **Template Available Objects** section will populate with the signals included in the selected template.
4. If needed, filter the signals you want to import into your project:
   a. Click any signal's checkbox in the **Active** column to deselect that signal.
   b. Disable the **Import disabled objects** option below the table of signals.
5. Click **Apply** to import the selected signals into your project.

- **Advanced configuration (enabled by default)**: Enable/disable the advanced configuration options.
  – **Time Interframe**: Type or select the minimum time in milliseconds between received and sent frames (0 .. 100000. Default value: **10 ms**).
  – **Retry Timeout**: Type or select the minimum time in milliseconds before launching a retry frame after no response on the TCP connection (0 .. 30000. Default value: **5000 ms**).
  – **Conn. Timeout**: Type or select the minimum time in milliseconds before launching an error message after no response on the TCP connection (100 .. 30000. Default value: **10000 ms**).
  – **Rx Timeout**: Type or select the minimum time in milliseconds before launching an error message when the TCP connection is OK but no TCP frames are received (100 .. 30000. Default value: **5000 ms**).
  – **Time Slave Chg**: Type or select the minimum time of silence in milliseconds when changing from one server device to another (100 .. 10000. Default value: **100 ms**).

CONFIGURE THE MODBUS TCP DEVICES



Select any device from the tree view to set up the following options:

- **Device Name**: Type a name for the device.
- **Manufacturer**: Type the name of the manufacturer.
- **Slave Number**: Type or select the device's server number (1 .. 254).
- **Clone Device**: When cloning a device, one or more new devices with the same configuration are created.

> **IMPORTANT**
> The total number of meters/devices supported by the gateway depends on the purchased license. To know more, consult the sections **Licensing** and **Gateway Capacity** in the IN702MEB***0000 User Manual.

1. Click **Clone**.
2. Type or select the number of **Devices to Add**.

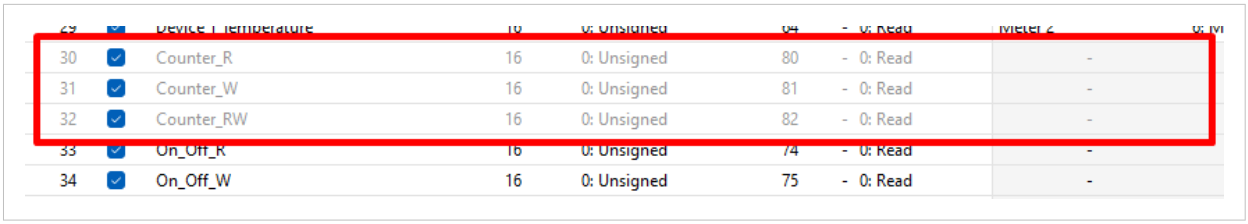
> **NOTE**
> Each device added will have the same configuration as the cloned device.

3. Click **Apply**.

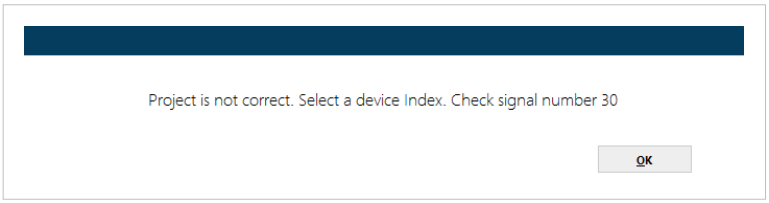
- **Export template**: Save a template with the device's configuration.

1. Click **Export**.
2. Type a **File name**.
3. Select a folder to save the file.
4. Click **Save**.

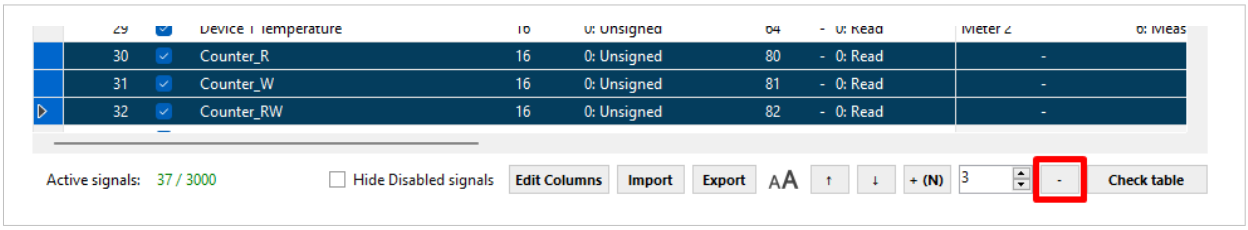
- **Modbus register base**: Select the Modbus addressing type.
  - **0 based**: The first register is addressed as 0.
  - **1 based**: The first register is addressed as 1.
- **Delete Device**: Click the **Delete** button to delete the device.
  To avoid losing data by mistake, after deleting a device, its associated registers remain visible in the **Signals** tab, but their text will appear dimmed.



Given this situation, an error message will appear when checking the signals table:



To solve this problem, select all the registers of the deleted device and click the - button to definitely remove them from the table.

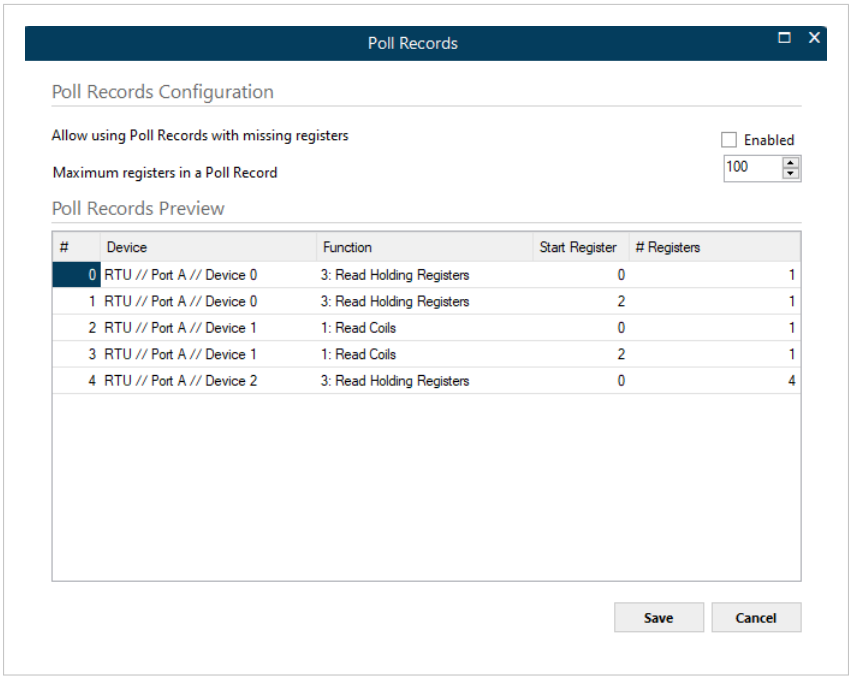


MODBUS POLL RECORDS (POLL MULTIPLE REGISTERS)

This option allows polling multiple Modbus registers on a single request, even if they are non-contiguous.

- **Enable Poll Records (disabled by default)**: Enable/disable the functionality.
- **Poll records configuration**:

1. Click **View**.



- **Allow using Poll Records with missing registers (disabled by default)**: Select this option to group non-contiguous registers in the same poll.
- **Maximum registers in a Poll Record**: Type or set the maximum number of registers per device to group in a single poll (2 .. 255. Default value: **100**).
- **Poll Records Preview**: This table shows a preview of the Modbus devices and registers that will be included in the poll according to the current configuration.

> **NOTICE**
> Each device's registers are added and configured through the **Signals** tab. See Signals Tab (page 70).

2. Click **Save** to save the changes.

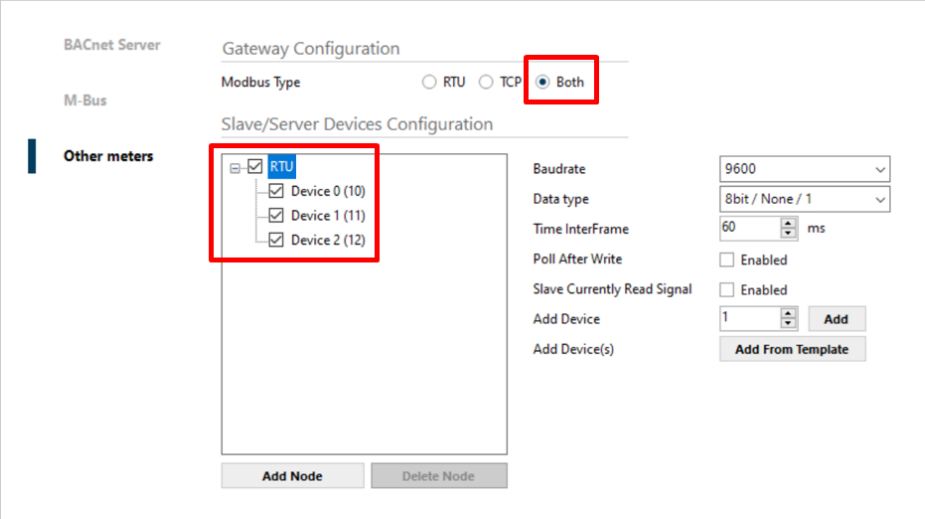
DEADBAND

Deadband to send to Internal System: Minimum difference required between a new value and a previous value before the new value is reported to the control system (0.00 .. 1.00. Default value: **0.00**).

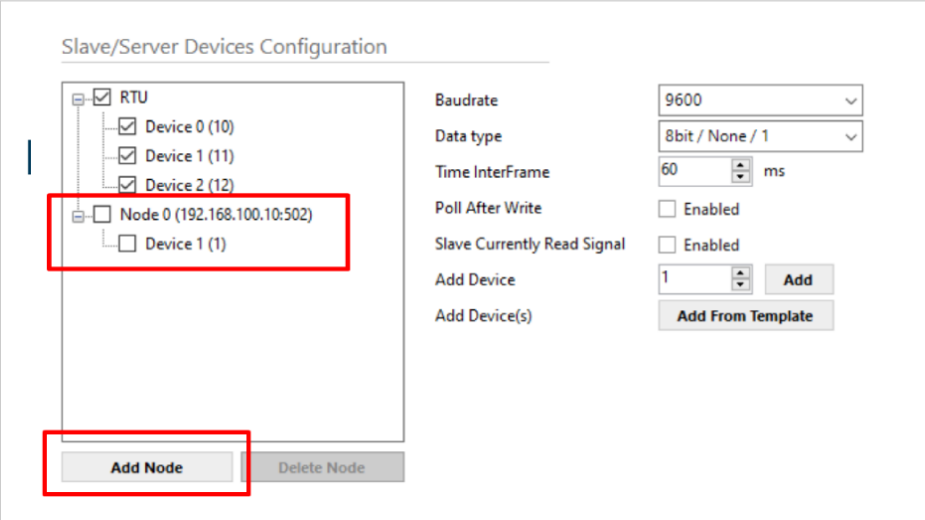
> **NOTICE**
> The deadband only applies to non-boolean signals.

9.6.1.4. Modbus Devices - Slave Devices Configuration for Modbus RTU+TCP

After selecting **Both** in the **Modbus Type** option, the tree view only shows the RTU root level, while the TCP root level (node) is still missing:



To add TCP nodes, click the **Add Node** button placed below the tree view. This will make **Node 0** appear together with its child level:



NOTE
Use the **Add Node** button to add up to five nodes.

NOTICE
The complete configuration of Modbus RTU and Modbus TCP buses and devices, as well as the configuration of **Modbus Poll Records** and **Deadband**, is explained in the previous sections. See:

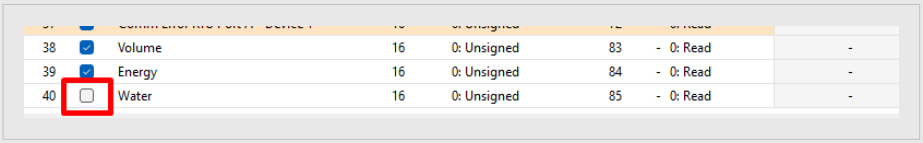
- Modbus Devices - Slave Devices Configuration for Modbus RTU (page 58).
- Modbus Devices - Server Devices Configuration for Modbus TCP (page 63).

9.6.2. Pulse Meters

Select the **Pulse meters enabled** option to activate the configuration of pulse meters in your project.

NOTE
The gateway supports up to three pulse meters.

NOTICE
When enabling this option, all three pulse meters are activated. To deactivate a specific pulse meter, proceed from the **Signals** tab by deselecting the **Active** option of that pulse meter:



- **Refresh time**: Type or select the refresh time in minutes (0 .. 100. Default value: **1 min**).
- **Pulse meters table**: Use this table to configure each pulse meter connected to the gateway.
  - **Binary Input**: There is a row for each pulse meter. Ensure that the pulse meter that you are configuring is connected to the correct terminal of the **Digital Inputs** port of the gateway:
    - **Binary Input 1**: This pulse meter must be connected to the terminal **I1** of the **Digital Inputs** port.
    - **Binary Input 2**: This pulse meter must be connected to the terminal **I2** of the **Digital Inputs** port.
    - **Binary Input 3**: This pulse meter must be connected to the terminal **I3** of the **Digital Inputs** port.
  - **Measurement Description**: Describe the type of pulse meter. By default, the Intesis MAPS template uses **Volume**, **Energy**, and **Water**, respectively.
  - **Pulse Width (ms)**: 30 .. 1,000,000.
  - **Pulse Measurement**: 0.0001 .. 1000.
  - **Units**: Use the dropdown menu to select the unit used by the pulse meter[1].
  - **Trigger Edge Mode**: Use the dropdown menu to select either **Falling** or **Rising**.

[1] FOR BACNET AND KNX ONLY
When configuring the gateway for BACnet or KNX, another option appears below the Pulse meters table:

- **BMS units generation**: You must click this button to export the units you set in the table to the **Signals** tab with the needed conversion to make them match with the units allowed by the BMS. For example, the setting **kJ/h** is automatically converted to **W** in KNX and to **J/s** in BACnet.

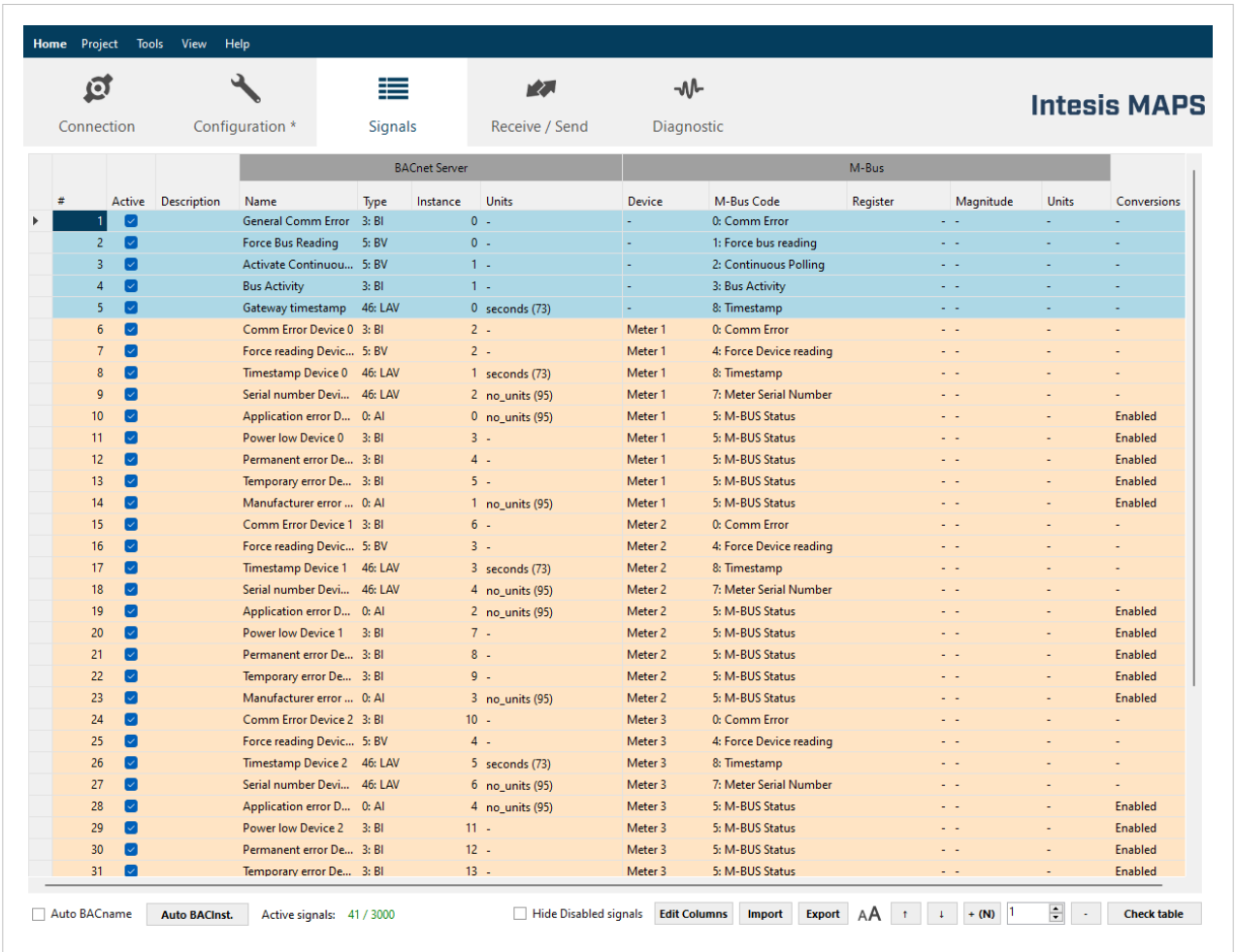
10. Signals Tab

The **Signals** menu shows a table used to define and configure the signals needed for the project.

This table has rows for every signal and a series of columns grouped by protocols.

After three general columns (**#**, **Active**, and **Description**), several columns with a dark grey header appear, showing the protocols of your current project:

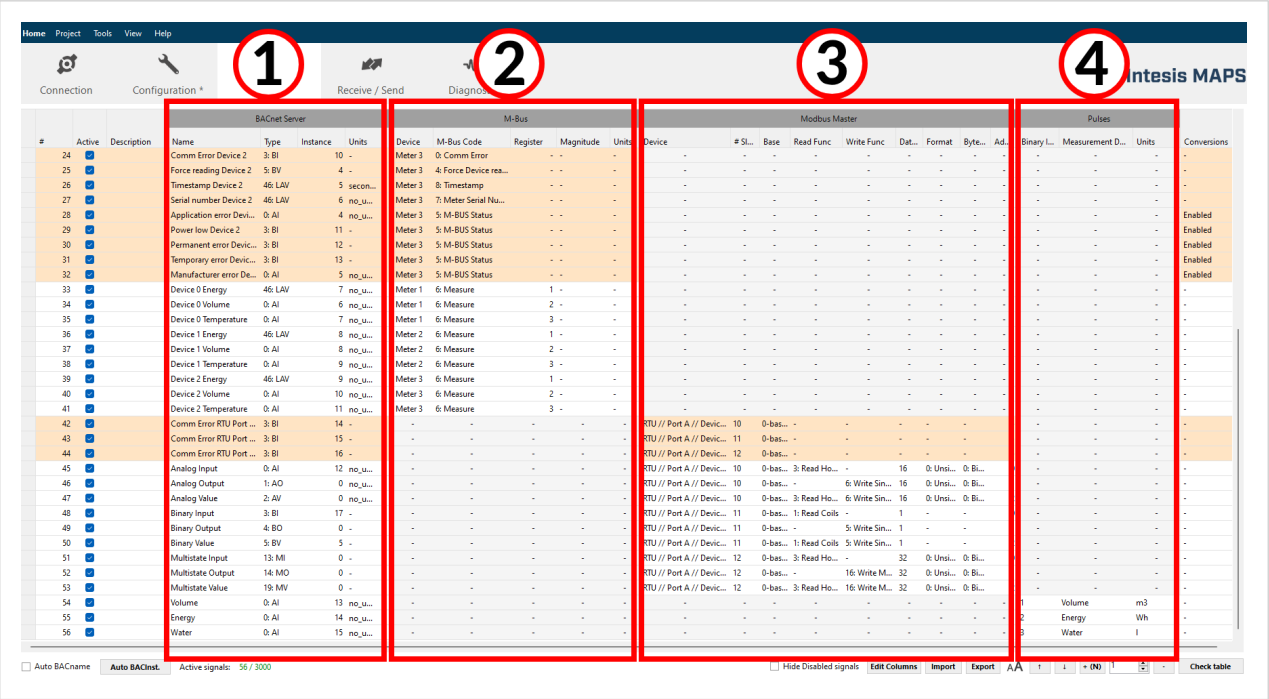
Figure 3. Signals tab for a project based on a BACnet BMS and an installation of M-Bus meters.



When enabling Modbus and Pulse through the **Other meters** menu, these protocols are:

1. BMS protocol (BACnet Server, Modbus Slave, or KNX)
2. M-Bus
3. Modbus Master
4. Pulses

Figure 4. Signals tab for a BACnet BMS and installations of M-Bus meters, Modbus devices, and pulse meters.



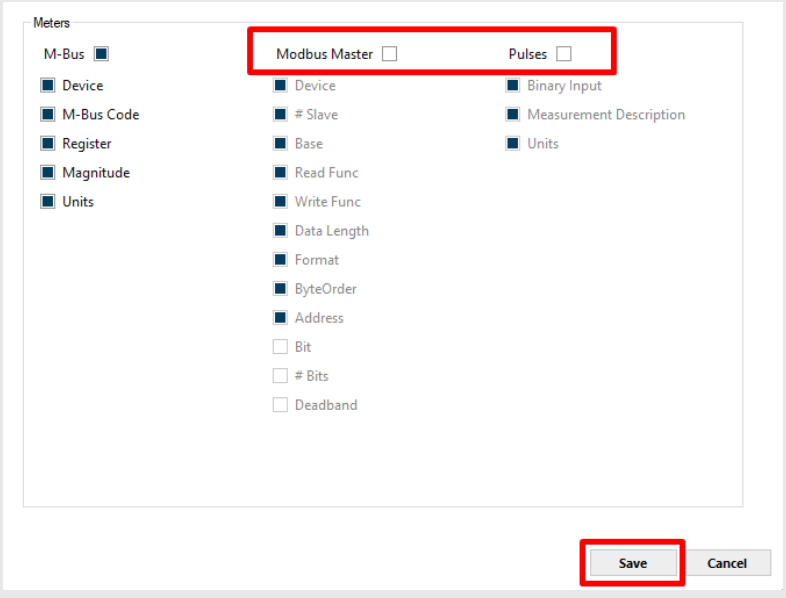
NOTICE

Use the horizontal and vertical scroll bars to view all the rows and columns.

HIDE COLUMNS FOR A CLEANER VIEW

When working on a project involving multiple protocols on the device side, you can hide the columns related to the protocols you are not currently using:

1. Click the **Edit Columns** button from the lower menu.
2. Deselect the protocols you are not currently configuring. For example, here we disable Modbus Master and Pulses to focus on the M-Bus meters configuration.



3. Click **Save**.

On the bottom menu placed below the table of signals, these options are available:

- **Auto BACname**: Check this option to automatically add the BACnet type and BACnet instance as a prefix to the current name field.

> **NOTE**
> This parameter is only available for **BACnet**.

- **Auto BACInst.**: Generates all BACnet instance numbers automatically, avoiding the risk of duplicate values.

> **NOTE**
> This parameter is only available for **BACnet**.

- **Active signals**: Number of active signals / total number of signals.
- **Hide Disabled signals (disabled by default)**: Show/hide all disabled signals from the list.
- **Edit Columns**: Click this button to hide/show any column of the table.
- **Import**: Click this button to import an XLSX file with the signals' configuration. You can either add the new signals from the imported file to the existing ones in your project or use the new signals to replace the current ones.
- **Export**: Click this button to export the current signals' configuration to an XLSX file for later import, helping to reduce commissioning time.

> **TIP**
> The **Import** and **Export** options can help you reduce commissioning time. However, you can also export and import the whole project's configuration, including the signal's settings, as explained in Saving, Opening, Importing, and Exporting the Project (page 10).

> **NOTICE**
> The resulting XLSX file includes a tab called **BMS report** showing the list of signals as they will appear to the integrator. The **External Protocol** column from that tab lists whether the signal is related to an M-Bus meter, a Modbus device. or a pulse meter.

- **AA**: Increases or decreases the font size.
- ↑ Move the selected row one position up.
- ↓ Move the selected row one position down.
- + (N) Add rows.
- 1 Type or select the number of rows to add.
- - Delete the selected rows.
- Click the **Check table** button to review the signals' configuration.

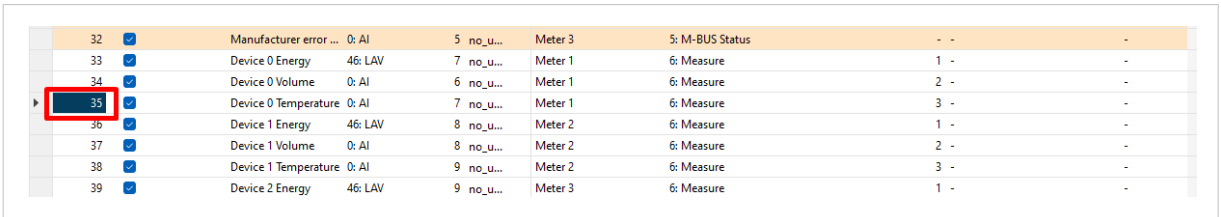
> **NOTE**
> If any parameter on any signal is wrong, a message will emerge with specific information about the error.

10.1. Adding and Deleting Signals

ADDING SIGNALS

TIP
New signals are added below the row you have currently selected.

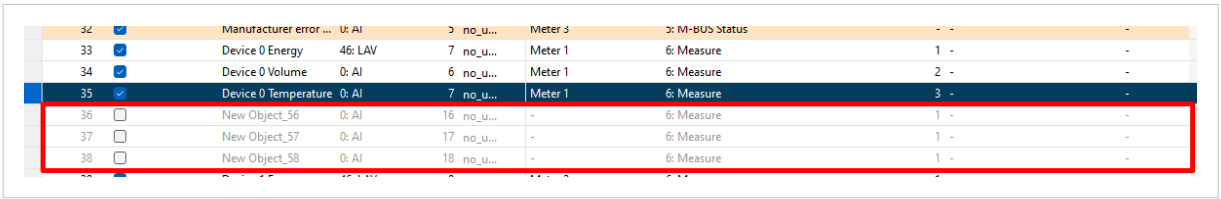
1. Select any cell from the desired row.
   For example, given this case, the new signal will be added below row 35:



2. Use the option from the bottom menu to type or select the number of rows to add.

NOTE
Add one row for each signal you want to add.

3. Click the button from the bottom menu to add the needed rows.
   For example, after adding three rows, these appear numbered 36, 37, 38:



As shown in the image before, once added, new signals appear with dimmed text. Once you assign a device to the new signal, the text turns black.

For example, we are adding the signal 36 named **New Object_56** to the M-Bus **Meter 1**:

TIP
You can assign multiple signals to the same device using a multiple selection. To know more, see Editing Signals (page 74).

Don't forget to select the new signal's checkbox in the **Active** column to include the signal in your project:

DELETING SIGNALS

1. Select any cell from the signal you want to delete.
2. Click the button from the bottom menu.

IMPORTANT
This action cannot be undone.

TIP
You can delete multiple signals using a multiple selection. To know more, see Editing Signals (page 74).

10.2. Editing Signals

All templates include a column called **Description**, whose cells are editable fields.

TIP
Use the **Description** column to type a text that makes the signal easily recognizable.

MULTIPLE SELECTION

- **Selecting multiple contiguous cells**:
  1. Click the first cell of your selection to select it.
  2. Press and hold the shift key on your keyboard.
  3. Click the last cell of your selection.

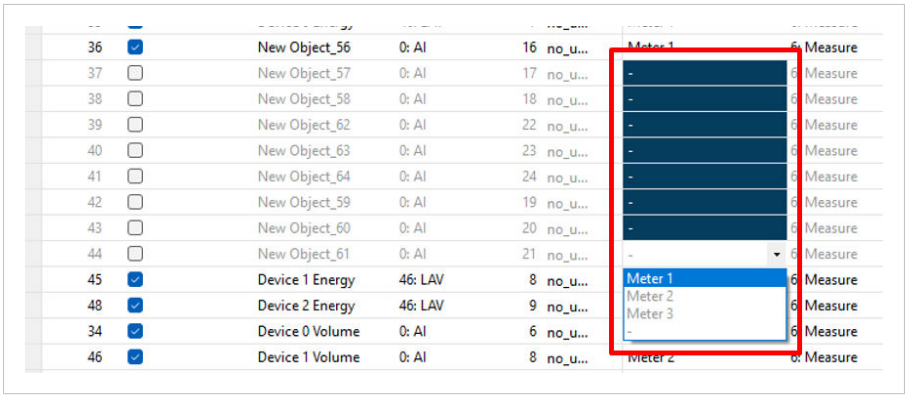
  TIP
  You can click a cell and drag the cursor over the other cells instead.

- **Selecting multiple non-contiguous cells**:
  1. Click the first cell of your selection to select it.
  2. Press and hold the Ctrl key on your keyboard.
  3. Click the rest of the cells of your selection one by one.

EDITING MULTIPLE PARAMETERS

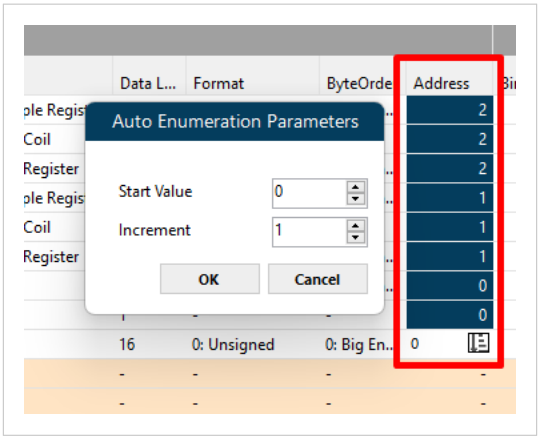
Once you have multiple parameters selected, you can edit them simultaneously:

For example, we are adding signals 37 to 44 to the M-Bus **Meter 1**:



Together with the multiple selection, you can use the **Auto Enumeration Parameters** functionality for some parameters.

For example, we are setting the address for these Modbus registers, starting from address 0 and incrementing the subsequent registers by 1 through this functionality:

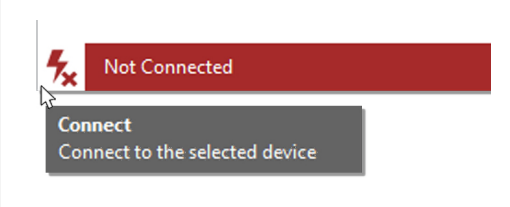


11. Receive/Send Tab

SEND

NOTE
Once you have finished setting all the necessary parameters for your Intesis MAPS project, you must load the project onto the gateway to configure it. The gateway will not be configured until the Intesis MAPS project is sent to it.

1. Click the **Send** button.
   a. If the gateway is still factory-set, you will be prompted to save the project on your PC. Once saved, the configuration is automatically sent to the gateway.
   b. If you have already saved the project, the configuration is automatically sent to the gateway.
2. Connect again with the gateway after sending the file.



NOTICE
The gateway reboots automatically once the new configuration is loaded. This process may take a few seconds.

Once the configuration is completed and sent, the gateway is already operative. Even so, you should review that everything works correctly by entering the **Diagnostic** tab.

RECEIVE

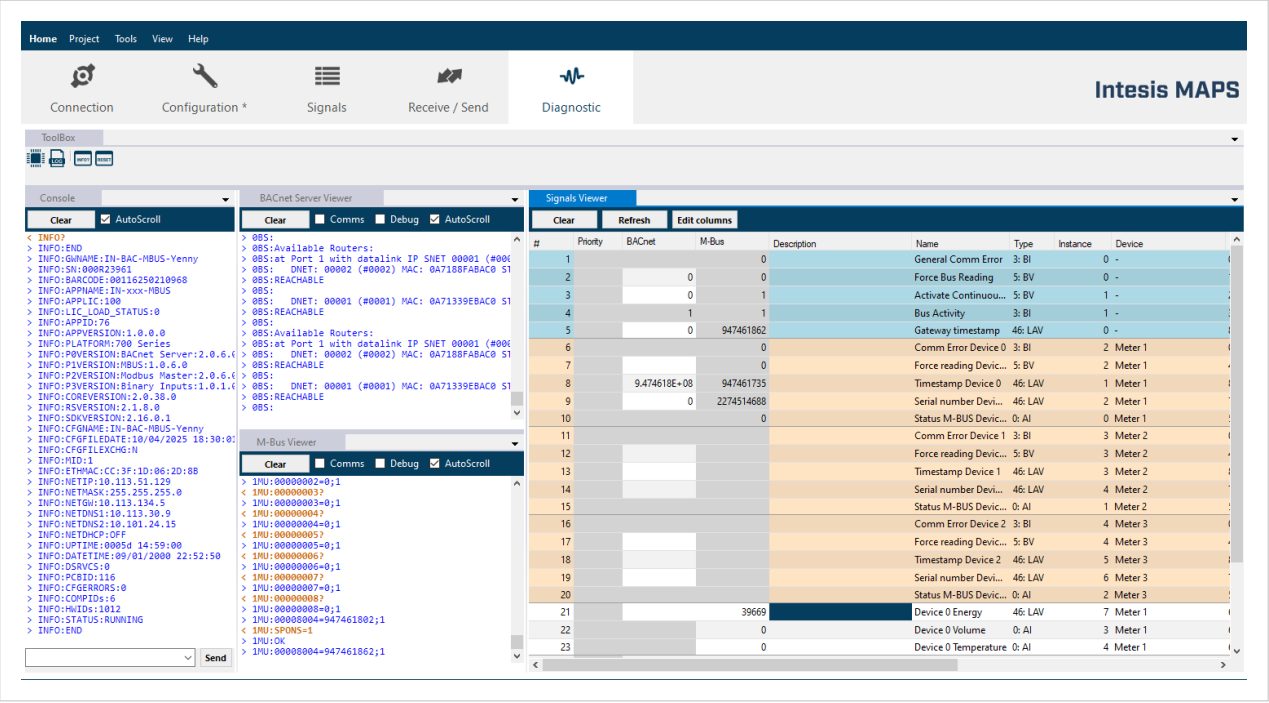
Use this function to load the configuration of a gateway to Intesis MAPS.

TIP
This function may be helpful when you need to change some parameters of an already configured gateway or to clone the project loaded in a gateway.

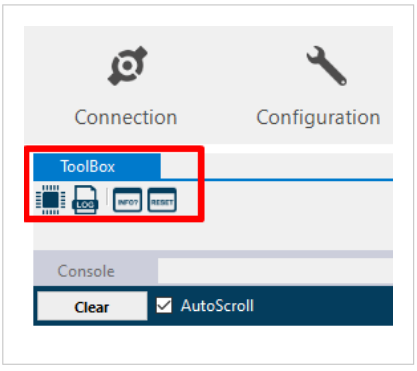
12. Diagnostic Tab

IMPORTANT
Connection with the gateway is required to use the diagnostic tools.

Figure 5. Diagnostic tab window. Find the ToolBox between the upper tabs bar and the Console view. Below it, from left to right: Console viewer, Protocol viewers (one above the other), and the Signals viewer



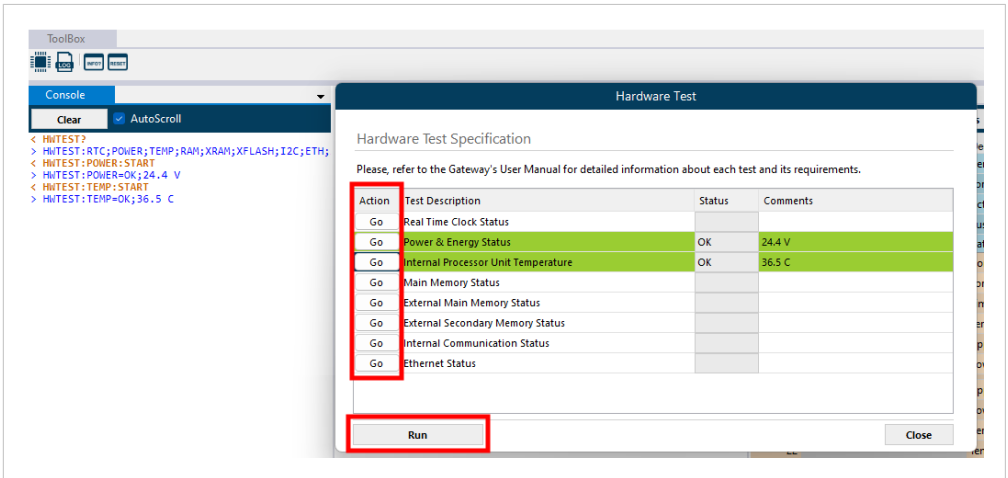
TOOLBOX



NOTE
Depending on your screen resolution, the **ToolBox** icons may appear partially hidden behind the **Viewers** window.

Options in the **ToolBox** menu, from left to right:

- **Microprocessor icon**: Run a hardware test for each component of the gateway.



  - Use the **Go** buttons to run a test for each specific element.
  - Use the **Run** button to run a test for all hardware elements.

> **NOTICE**
> The information will be displayed in both the **Hardware Test** dialog and the **Console** viewer.

- **LOG**: Set Intesis MAPS in logging mode to record all the information present in the viewers and save it in a .zip file.

> **NOTICE**
> - Once the recording starts, the **LOG** icon turns red.
> - You can stop the recording at any moment by clicking the **LOG** icon.
> - When the recording stops, a dialog appears allowing you to run a hardware test and include it in the log file.

- **INFO?**: This option shows the gateway information in the **Console** viewer.
- **RESET**: Reset the gateway.

VIEWERS

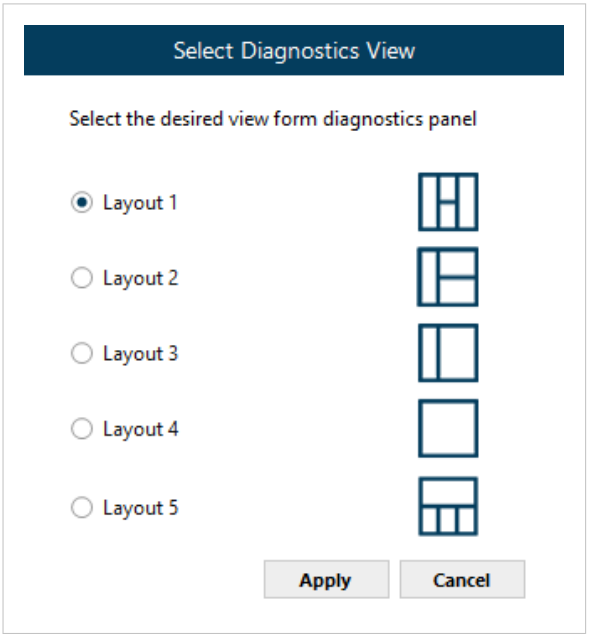
Intesis MAPS provides several viewers:

- A generic console viewer for general information about communications and the gateway status.
- A viewer for both protocols to check their current status.
- A signals viewers to simulate the BMS behavior or check the system's current values.

> **NOTE**
> Use the refresh button to get updated values on the signals viewer.

The layout of these viewers can be modified:

- Using the **Select Diagnostics View** option from the **View** menu:



NOTE
Layouts 3 and 4 offer two different tabbed options:

  – Fixed console to the left and tabbed browser for the other viewers

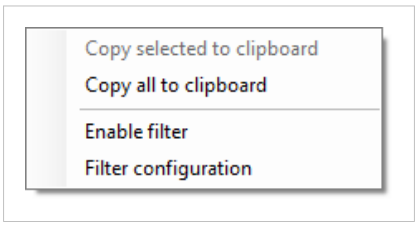
  – Full tabbed browser

- Clicking and dragging the border of a viewer. To do so, place the cursor over the edge of a viewer. On the vertical edges, the cursor changes to ↔ to adjust the width, and on the horizontal edges, the cursor changes to ↕ to adjust the height.

Viewers can also be arranged manually by clicking and dragging them from their title bar, to use them as independent windows or to position them in relation to other viewers.

FILTERING

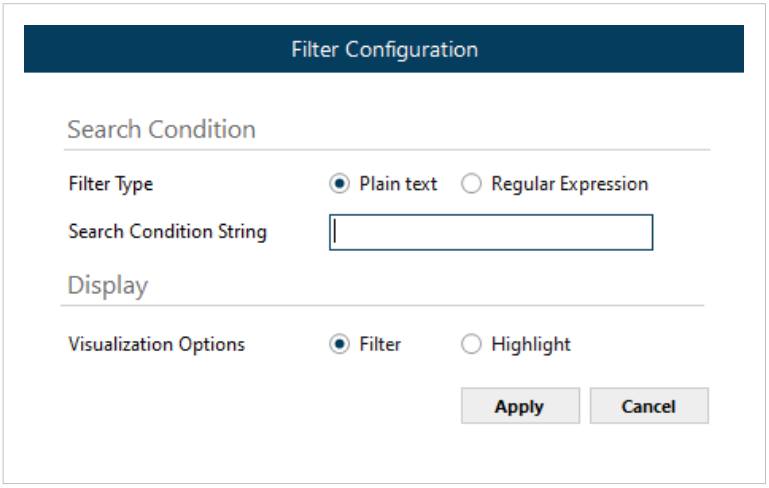
A filtering tool is available for the console and the bus viewers to find the desired information more efficiently. To use this tool, right-click on the viewer.



The options available for this tool are:

- **Copy selected to clipboard**: It copies the selected text into the clipboard. If no text is selected, this option is disabled.
- **Copy all to clipboard**: It copies all the information from the viewer to the clipboard.

- **Enable filter**: This option enables or disables the configured filter. To use this option, a filter must be defined beforehand under Filter configuration.



- **Filter configuration**: The filter itself is defined here, using some additional options:
  - **Search Condition**:
    - **Filter Type**:
      - **Plain text**: It searches all the communication frames that include the text specified in the **Search Condition String** below.
      - **Regular Expression**: It searches all the communication frames that match the regular expression specified in the **Search Condition String** below.

        NOTE
        A regular expression is a sequence of characters that specifies a match pattern in text. If you are not familiar with regular expressions, use the **Plain text** option instead.

  - **Display**:
    - **Visualization Options**:
      - **Filter**: It removes all the communication frames that do not fulfill the filter condition specified in the **Search Condition String**.
      - **Highlight**: It highlights the communication frames that fulfill the filter condition specified in the **Search Condition String**.

13. Late Configuration: Change the Gateway's Protocol

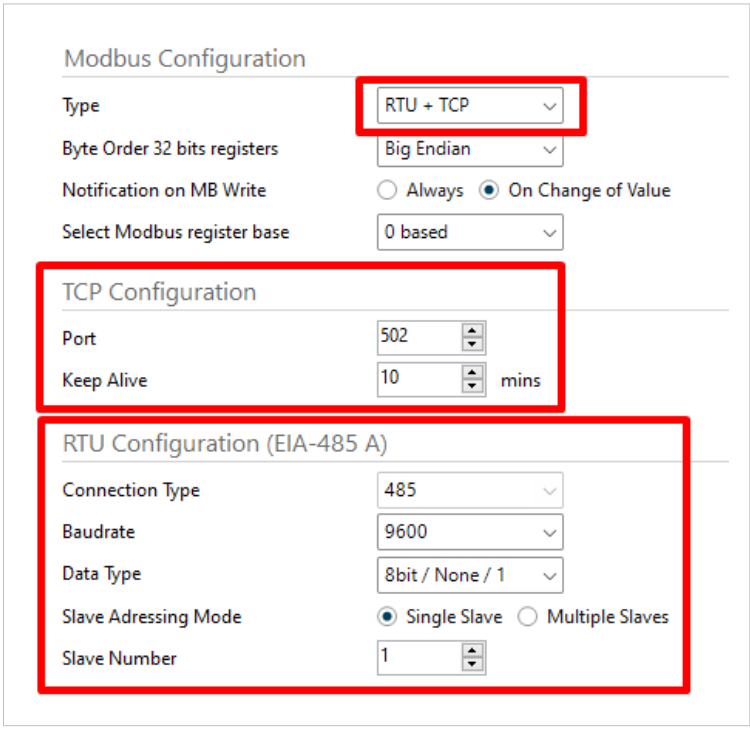
Reconfiguring the gateway with a different protocol is very easy:

1. Connect the gateway to the computer and open Intesis MAPS.
2. Select the new template you need.
3. Click **Next** or double-click the template in the list.
4. Enter the **Connection** tab, select the gateway, and click the **Connect** button.
5. A dialog will inform you that the gateway has a different firmware version from the one required for the selected template, asking if you want to update the gateway's firmware.
6. Click **Yes**.
7. A dialog will ask if you want to save the project that is currently loaded in the gateway.
8. Click **Yes** or **No**, depending on your needs.
9. A new dialog appears showing the **Gateway Current Status** and the **Firmware Update Information**.
10. Click **Send** to load the new firmware into the gateway.
11. In the confirmation dialog, click **Yes**.
12. Once the firmware transfer is complete, click the **Connect** button to connect with the gateway again.
13. Configure the project as usual.

14. FAQ and Troubleshooting

14.1. Troubleshooting - General Questions

- **Can I configure the gateway with two different BMS protocols at the same time?**
  - No, except for Modbus, where communication over both Modbus TCP and RTU is possible simultaneously on the BMS side.



- **What is the best approach for configuring multiple gateways?**
  - If your project involves several gateways with the same configuration, you only need to create your project once and load it to each gateway by following the procedure explained just next.
- **Can I configure my project in Intesis MAPS if I don't have the gateway yet?**
  - Yes, you can create and complete your project with Intesis MAPS even without the gateway. Just proceed as follows:

    1. Create your project with Intesis MAPS.
    2. Save your project on your computer.

    > **NOTE**
    > The project will be saved in a file with the .ibmaps extension.

    3. Once you have the gateway, connect it to your computer.
    4. Open Intesis MAPS.
    5. On the home screen, click the **Load Project** option from the **Getting started** menu placed on the left side of the window.
    6. Select and open the .ibmaps file of your project.

7. Once your project is loaded in Intesis MAPS, go to the **Connection** tab.
8. Establish the connection with the gateway as explained in Connection Tab (page 13).
9. Go to the **Receive / Send** tab.
10. Click the **Send** button to load your Intesis MAPS project into the gateway.

- **What's the default password for the gateway?**
  - admin

> **NOTICE**
> This password is only necessary when connecting the computer to the gateway through an Ethernet connection.

> **IMPORTANT**
> Change the default password before sending the project to the gateway.

- **How do I change the gateway's password?**

1. Go to the **Configuration** tab.
2. In the **Connection** section, click the **Change** button next to the **Password** parameter.
3. Type a new password.
4. Go to the **Receive/Send** tab.
5. In the **Send** menu, click the **Send** button.
6. Go to the **Connection** tab.
7. Select the gateway from the **Discovered Gateways** window.
8. Click **Connect**.

- **I forgot the gateway's password.**

> **TIP**
> If possible, connect the gateway to your computer using the USB connection. This way, the password won’t be required.

  - If you need to connect to the gateway over Ethernet and you have forgotten the password, a factory reset is required. (The procedure is explained below). The default password after a factory reset is **admin**.

> **NOTICE**
> If you exhaust all the attempts to write the correct password, after waiting for one minute, you will have three more attempts. If you exhaust these three new attempts, you'll need to wait another minute before having one more attempt. If you enter a wrong password again during this attempt, you’ll have to wait ten minutes. After these ten minutes, the sequence starts anew.

- **How do I perform a factory reset?**

> **IMPORTANT**
> This action will restore the gateway to its original state, erasing all project data and settings.

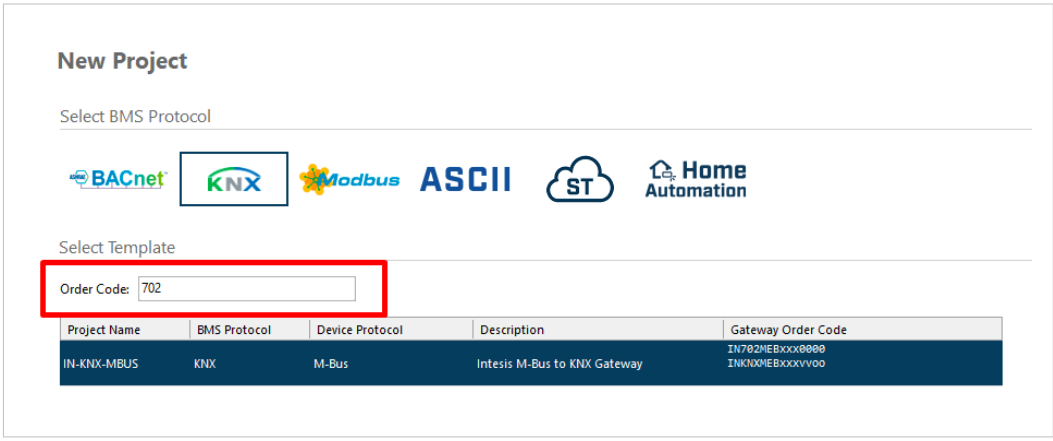
1. Power off the gateway.

2. Locate the gateway's push button on the top side, between the KNX and the Ethernet connectors.

> **NOTICE**
> The button is hidden and only accessible using a thin object like a paper clip.

3. Push the button.
4. Power on the gateway.
5. Wait four seconds.
6. Release the button.

- **I can't find the template for the IN702MEB***0000 in the Intesis MAPS New Project menu.**
  - Make sure your Intesis MAPS version is 1.2.24.0 or higher. If you are running an older version, update the software as explained in Getting Started → UPDATES → Software Update (page 5).
  - If you are running the correct version of Intesis MAPS, follow these instructions:
    1. Select the BMS protocol.
    2. Type the gateway's order code, or part of it, in the **Order Code** option.



    3. The template will be highlighted in blue.

14.2. Troubleshooting - Connection Tab

When establishing the connection between Intesis MAPS and the gateway using Ethernet, several considerations related to the presence of a DHCP server and the computer's Ethernet settings must be taken into account, as explained in the following sections.

> **TIP**
> If possible, connect the gateway to the computer through the USB-C console port instead.

14.2.1. Connecting the Gateway to the Computer through Ethernet

The method for connecting the gateway via Ethernet depends on whether a Dynamic Host Configuration Protocol (DHCP) server is being used.

IMPORTANT

The following topics apply whether the gateway still has its factory settings or has been factory reset.

NOTE

The gateway includes a temporary DHCP mode that activates for 30 seconds each time an Ethernet link is detected[1]. If the gateway is connected to a DHCP-enabled network, the server will assign it a dynamic IP address. If no DHCP server is available, the default IP address **192.168.100.246** will be automatically assigned after 30 seconds.

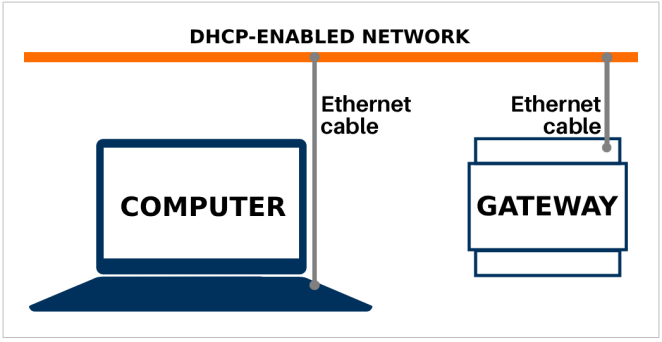
[1] In practice, the temporary DHCP mode activates when:

- The Ethernet cable is unplugged and plugged back in.
- The gateway is powered off and then powered on.
- The gateway is reset.

NOTE

If the gateway has already been programmed (i.e., a project has been sent from Intesis MAPS to the gateway), the temporary DHCP mode will be deactivated. However, a permanent DHCP mode can be enabled using the **Enable DHCP** parameter, as explained in the section Configuration Tab → Connection (page 19).

14.2.1.1. Connecting the Gateway and the Computer through a DHCP-enabled Network



TIP

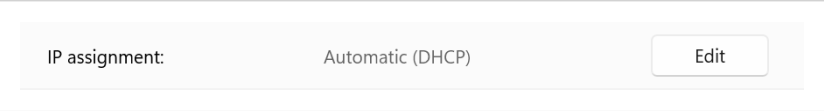
Since most network cards support the auto MDI-X feature, which detects the cable type and automatically configures the connection, you can use either a straight-through or a crossover Ethernet cable. However, if the network card lacks this feature, you must use a straight-through cable to establish proper communication between the gateway and the computer.

1. Connect the gateway to the DHCP-enabled network that your computer is also connected to.
2. Power on the gateway.

3. Set your computer's Ethernet configuration to **Automatic (DHCP)**. To do so, proceed as follows:
   a. Open the Ethernet settings on your computer.

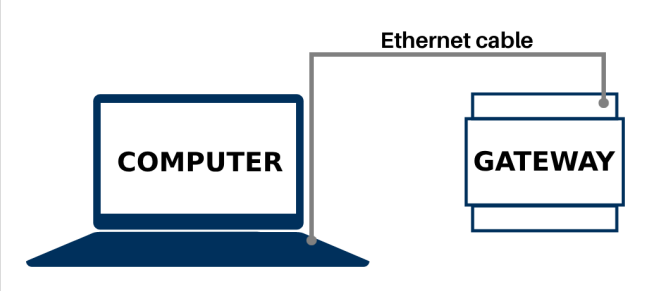
   TIP
   These settings can usually be found in the **Network & Internet** menu.

   b. Set the **IP assignment** to **Automatic (DHCP)**.



At this point, you should be able to establish a connection between Intesis MAPS and the gateway as explained in Connection Tab (page 13).

14.2.1.2. Connecting the Gateway Directly to the Computer



TIP
Since most computers are equipped with network cards that support the auto MDI-X feature, which detects the cable type and automatically configures the connection, you can use either a straight-through or a crossover Ethernet cable. However, if your computer lacks this feature, you must use a crossover cable to establish proper communication between the gateway and the computer.

1. Connect the gateway and your computer through their Ethernet ports.
2. Power on the gateway.
3. Open the Ethernet settings on your computer.

   TIP
   These settings can usually be found in the **Network & Internet** menu.

4. Set the **IP assignment** to **Manual**.
5. For the IP version, select **IPv4**.
6. Type an IP address within the range of the gateway.

   NOTE
   The gateway's default IP address is **192.168.100.246**

7. In the subnet mask parameter, type **255.255.255.0**, which is the gateway's default netmask.

Figure 6. Example of a computer's Ethernet configuration considering the gateway's default IP address and subnet mask.

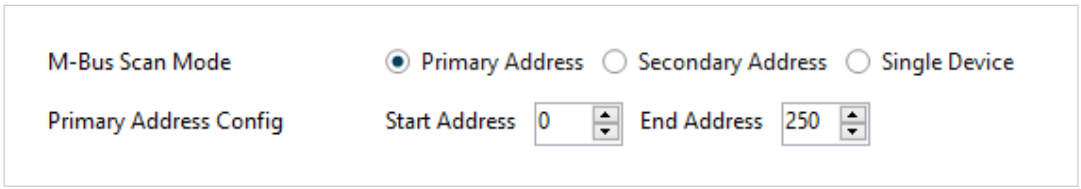
At this point, you should be able to establish a connection between Intesis MAPS and the gateway as explained in Connection Tab (page 13).

14.3. Troubleshooting - Configuration Tab

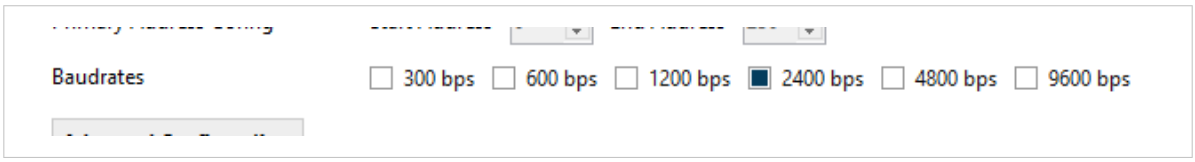
- **The Scan M-Bus Network function is not finding all the M-Bus meters present on the network.**
  - Check the M-Bus meters:
    - Check the physical connections.

      TIP
      Pay special attention to the ground connection of the power supply, the gateway, the meters, and the cable shield, if applicable.

    - Make sure they are receiving the correct voltage and sufficient power.
    - Check their configuration.
  - Check the scan configuration:
    - If you are using the **Primary Address**, set the **Start Address** to 0 and the **End Address** to 250.

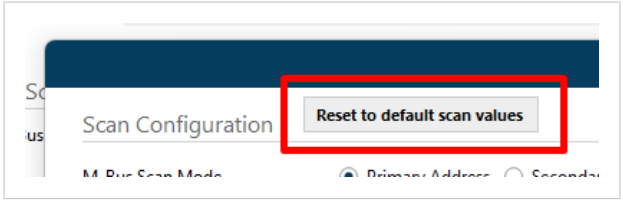


    - Make sure the meters not found yet are set at the same baudrate(s) you have selected.



      NOTE
      You can select multiple baudrates simultaneously. However, the scanning time will increase.

    - Open the **Advanced Configuration**, select the **Enable Deep Scan** option, and select **Deeper scan**.
    - Try resetting the scan values by clicking the **Reset to default scan values** button.

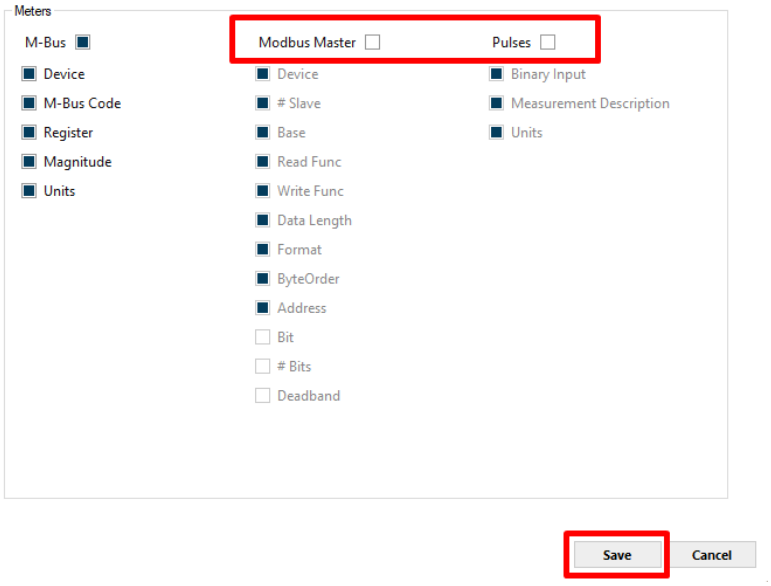


- **Can I set the M-Bus devices to a different baud rate than the one set for the Modbus devices?**
  - Yes, that's perfectly fine. They are independent buses and protocols that communicate separately.

14.4. Troubleshooting - Signals Tab

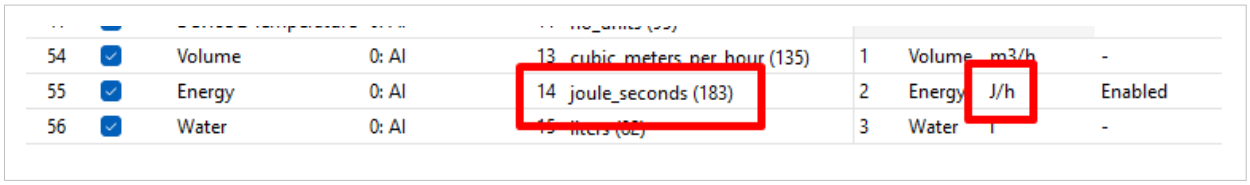
- **Can I modify the Signals tab view to make it cleaner?**
  - Yes. When working on a project involving multiple protocols on the device side, you can hide the columns related to the protocols you are not currently using:

    1. Click the **Edit Columns** button from the lower menu.
    2. Deselect the protocols you are not currently configuring. For example, here we disable Modbus Master and Pulses to focus on the M-Bus meters configuration.

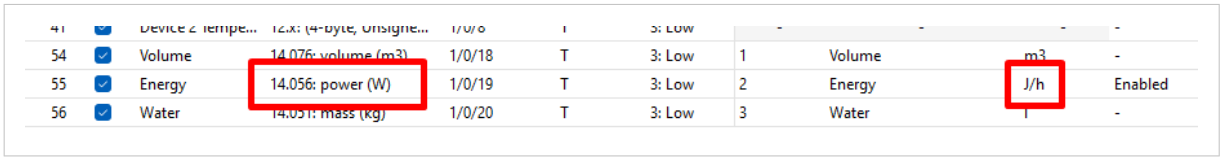


    3. Click **Save**.

- **The type of unit I set for the pulse meters is different from the unit shown in the Signals tab.**



  - If your project is based on KNX or BACnet, the type of unit you set in the **Configuration** tab may have been converted to a different unit type, depending on the BMS protocol. If so, the column **Conversions** will show the word **Enabled**, meaning that a conversion has been enabled for that unit.
  - For example, as shown in the image above, for the signal number 55 called Energy, the setting **J/h** (joules per hour) has been automatically converted to **Joule_seconds** in BACnet. If the project were based on KNX, the unit would be converted to **W** instead.



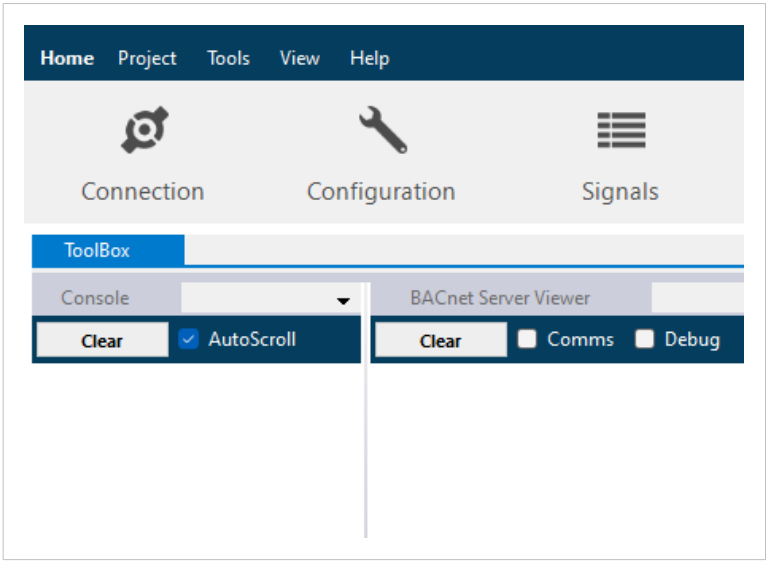
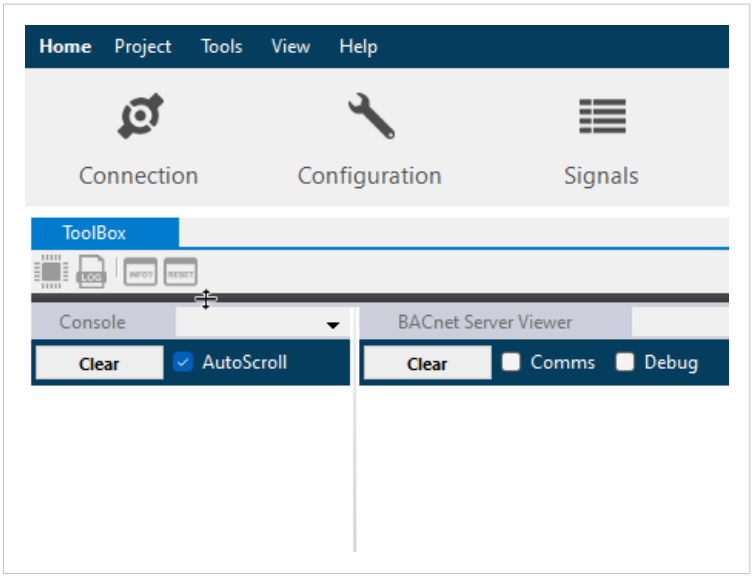
14.5. Troubleshooting - Receive / Send Tab

- **When should I send the MAPS project to the gateway?**
  - At a minimum, you should send the project once after completing the configuration. However, you can send the project to the gateway as many times as needed.

> **TIP**
> A good practice and time-saving approach is to save your project frequently and send it to the gateway only once it is complete. However, if you modify any parameter after completing the project, you must send it to the gateway again.

14.6. Troubleshooting - Diagnostic Tab

- **The ToolBox menu shows no buttons.**



  - Depending on your screen resolution, the Console view may hide the Toolbox buttons. Just place the cursor between both views until its shape changes to a drag icon ✣. Click and drag the Console view down until the Toolbox menu buttons appear.