ENGLISH

# IN712MEB***0000 Configuration Guide

## 700series Metering

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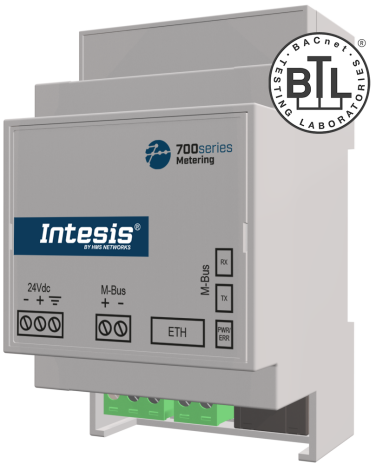


Intesis MAPS

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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.

**NOTE**
Intesis MAPS is compatible with Windows® 7 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 IN712MEB***0000 gateway

    **NOTE**
    *** defines the gateway capacity.

  - Gateway documentation:
    - Installation Guide
    - User Manual
- An Ethernet cable.
- A computer to run the configuration tool Intesis MAPS.

  **NOTE**
  Requirements:

  - Windows 7 or higher
  - 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.

   **NOTE**
   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.

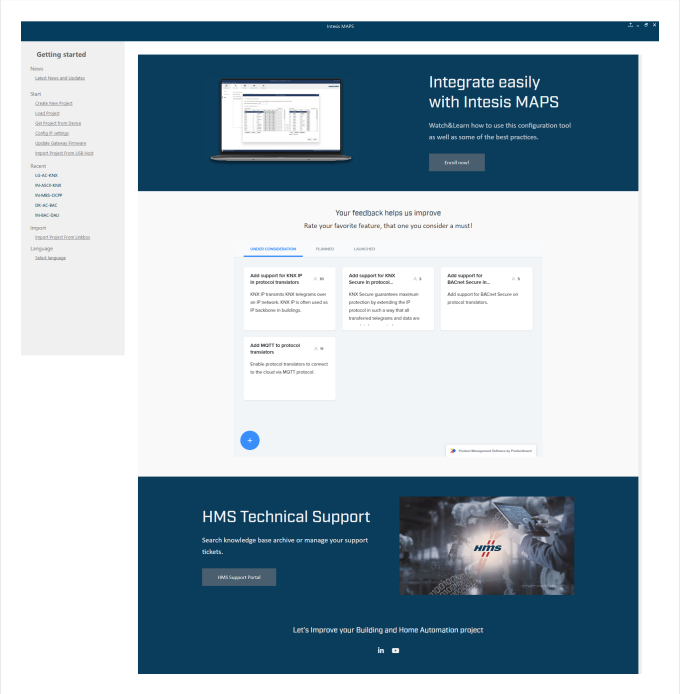
**Installing the software**

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

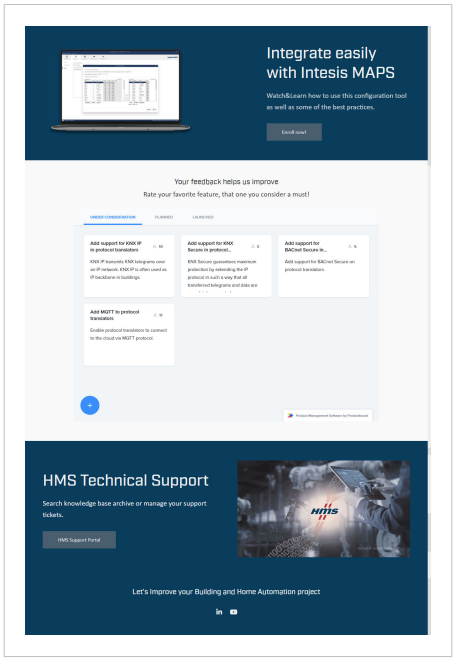
Upon launching Intesis MAPS, you will be greeted with the home screen. This window is divided into two sections: The **Getting Started** column on the left and the **Latest News and Updates** section in the main body.

*Figure 1. Intesis MAPS home screen*




## 4.1. Latest News and Updates

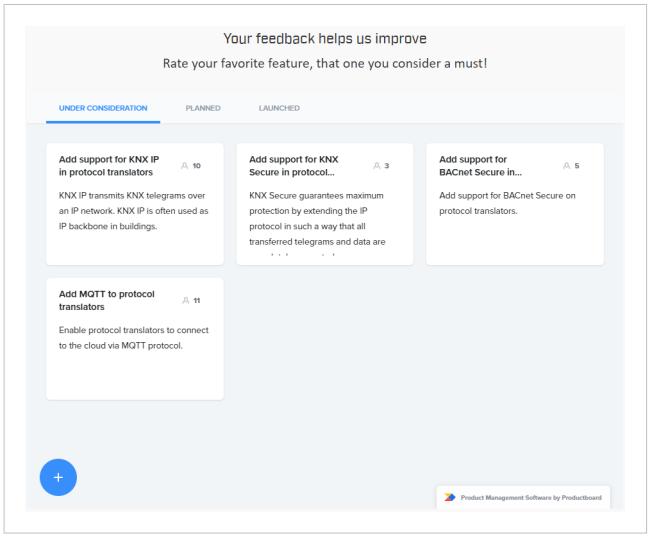
This section contains useful information related to Intesis MAPS.



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.

*Figure 2. Intesis MAPS Features board*

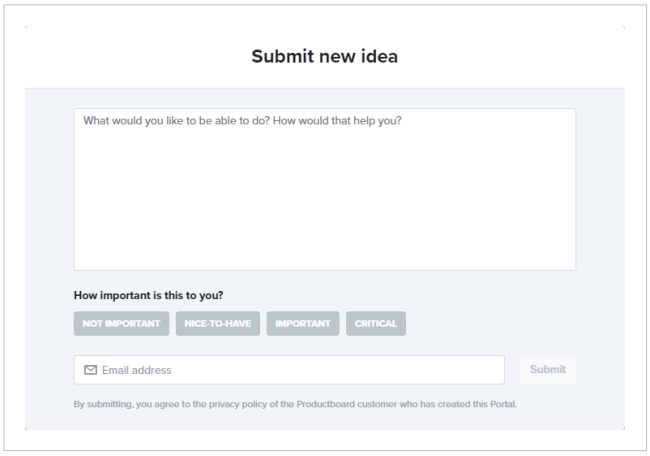



**NOTE**

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.

*Figure 3. Intesis MAPS feedback 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 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 **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 Connection Tab (page 13).

- **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 Connection Tab (page 13).

- **Import Project From USB Host**: Opens a file browser to select an Intesis MAPS project file in USB MAPS Project format (.exmaps) 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 projects loaded is available here. To load one of these last projects, click on its name.

**IMPORT**

- **Import Project From Linkbox.**

**NOTICE**
This option does not apply to the IN712MEB***0000 gateway.

**UPDATES**

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

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. Follow the instructions.

**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, etc. It is recommended to keep the software up to date.

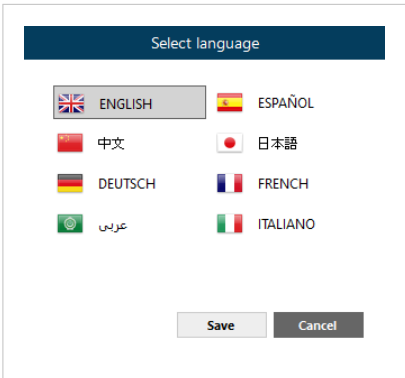
  • **Remind me later**: When clicking this option, a new dialog appears, allowing you to select the time lapse for the reminder or to download the update now.

  • **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.



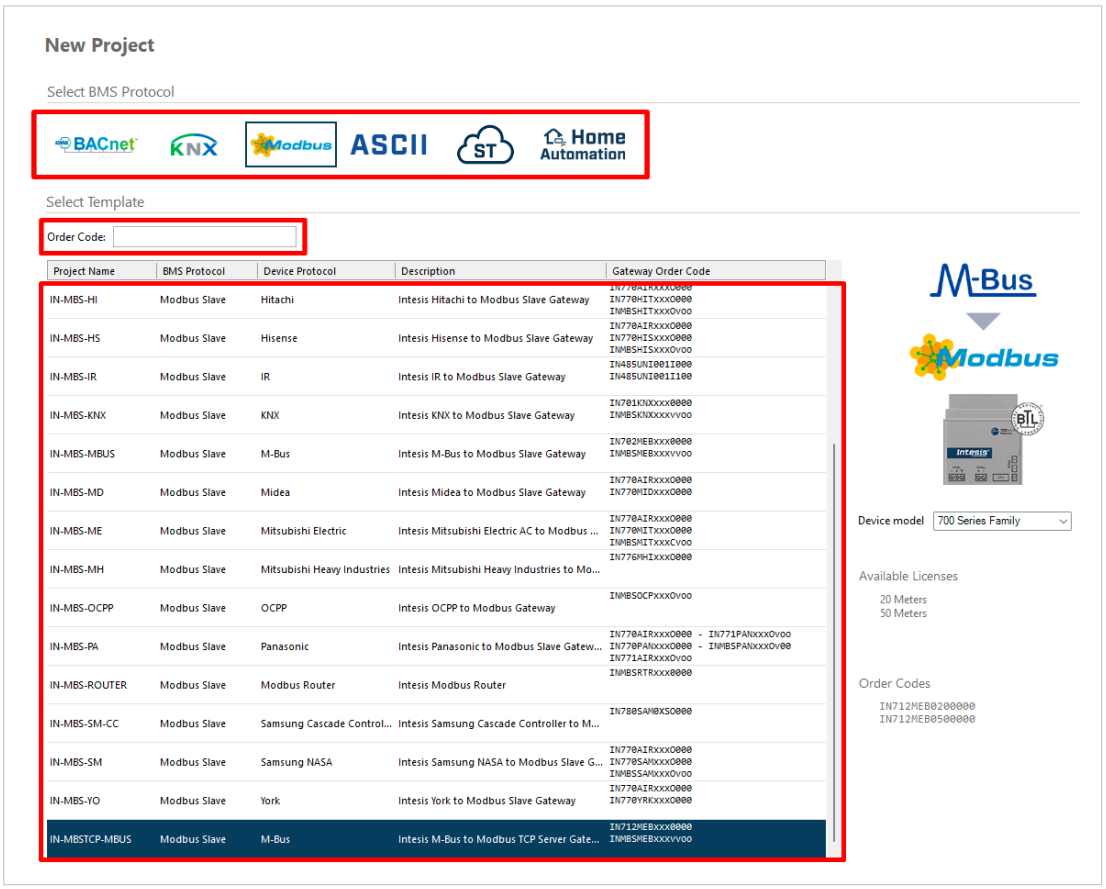
# 5. Create a New Project from a Template

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 BACnet or Modbus 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 placed on the gateway's right side.

   - Looking for the **Project Name** on the list: IN-MBSTCP-MBUS for Modbus or IN-BACIP-MBUS for BACnet.

*Figure 4. Three possibilities for the template selection*

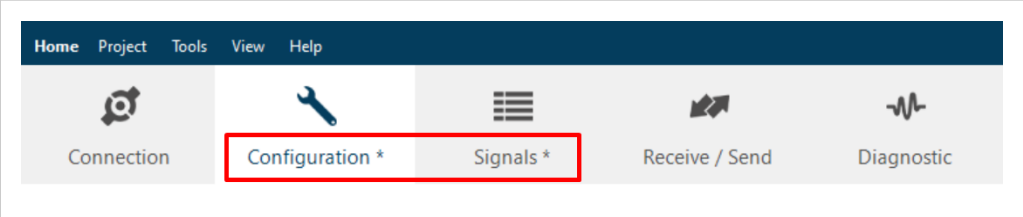



3. Select the desired template.
4. Click **Next** or **double-click the template** on the list.

**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:



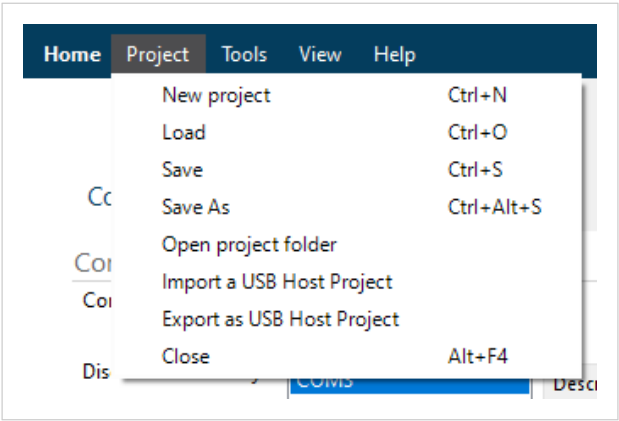

To know how to send your project to the gateway, see Receive/Send Tab (page 57).

- **SAVING YOUR INTESIS MAPS PROJECT**

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

1. Click **Project**.

*Figure 5. Project tab from the top menu*



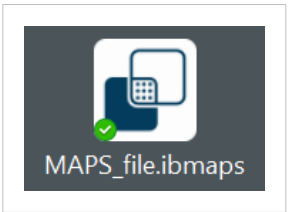

2. Click **Save** or **Save As**.

> **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**.

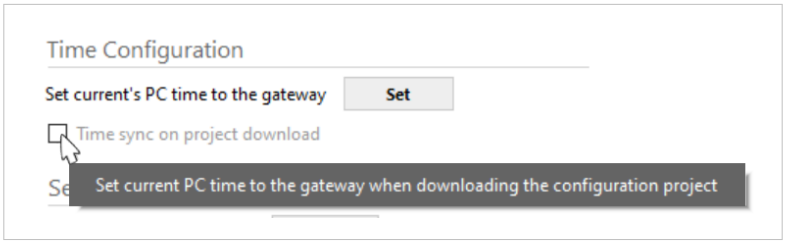
# 7. Main Menu Overview

*Figure 6. Intesis MAPS main menu*

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.

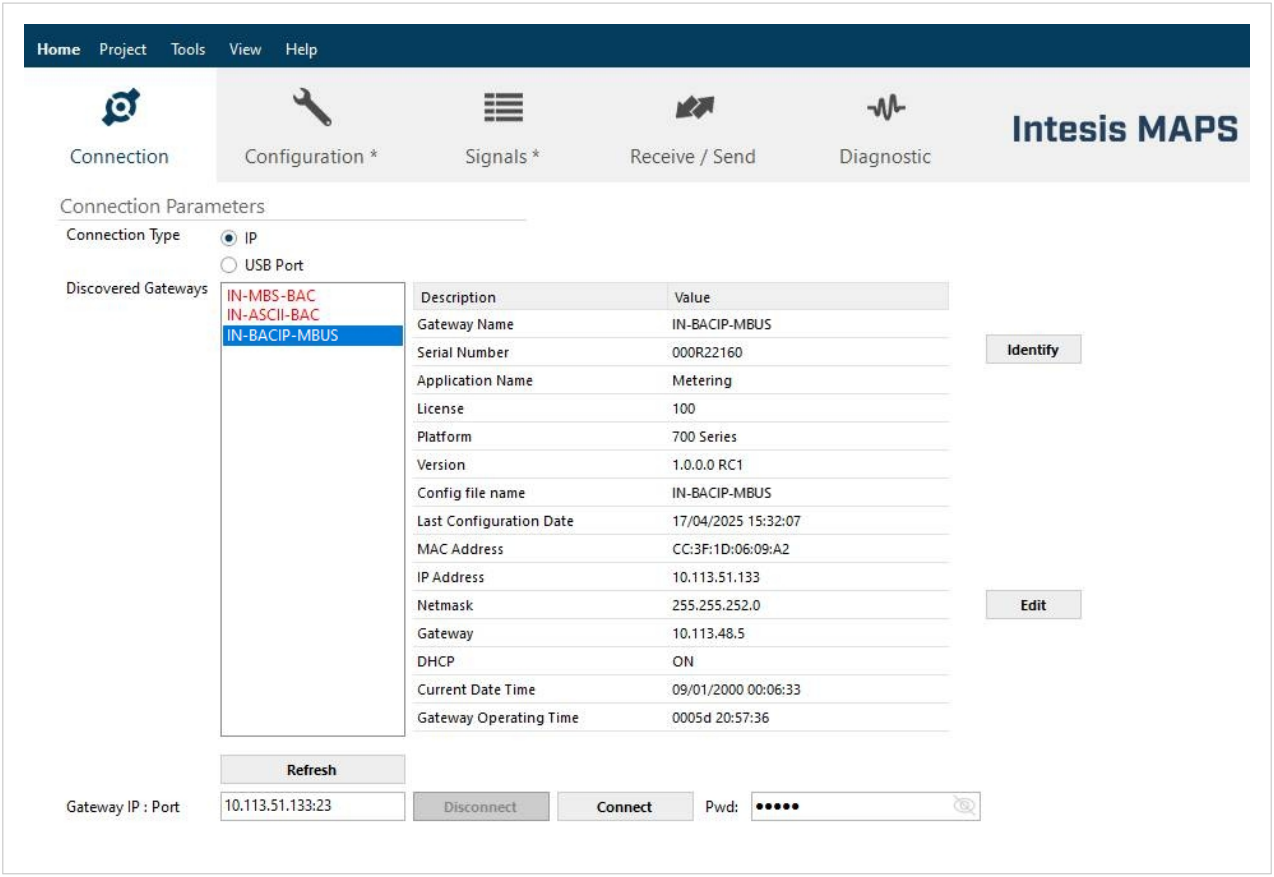
**TIP**
**Tooltip:** Hover the cursor over a field, and a message will appear indicating the purpose of the parameter.

*Figure 7. Example of a tooltip*



# 8. Connection Tab

*Figure 8. Connection tab window*




1. Connect the gateway to your computer through the **Ethernet port**. Use an Ethernet CAT5 or higher cable.
2. On the **Connection Type** parameter, select **IP**.

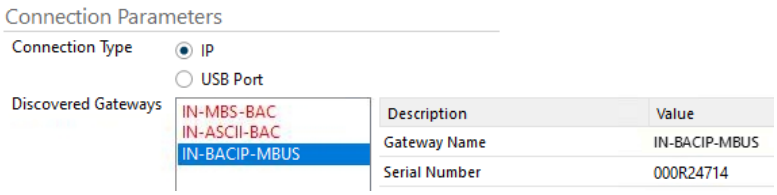
**IMPORTANT**
The default password is **admin**

**IMPORTANT**
Make sure you have an internet connection.

**NOTE**
The gateway's name may appear:

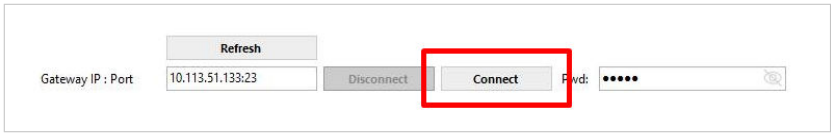
- **In black**: The gateway is compatible with the selected template.
- **In red**: The gateway is not compatible with the selected template.

a. Select your gateway from the **Discovered Gateways** list.



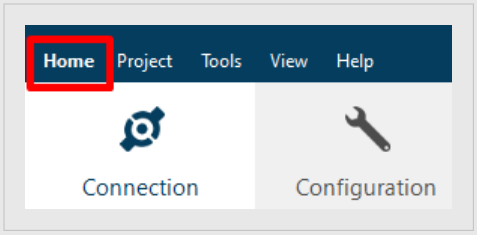

**NOTE**
The **Value** column will autofill when the correct gateway is selected.

b. Click the **Connect** button.




**NOTE**
If your gateway doesn't match the selected template, a warning message will pop up.

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



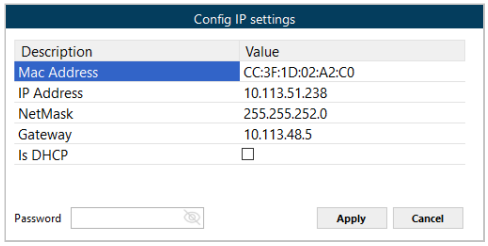

The IN712MEBxxx0000 gateway is compatible with the following templates:

  - For BACnet: IN-BACIP-MBUS
  - For Modbus: IN-MBSTCP-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:

- **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.

**NOTE**
These parameters can also be edited in the **Configuration** tab. See Connection (page 16).

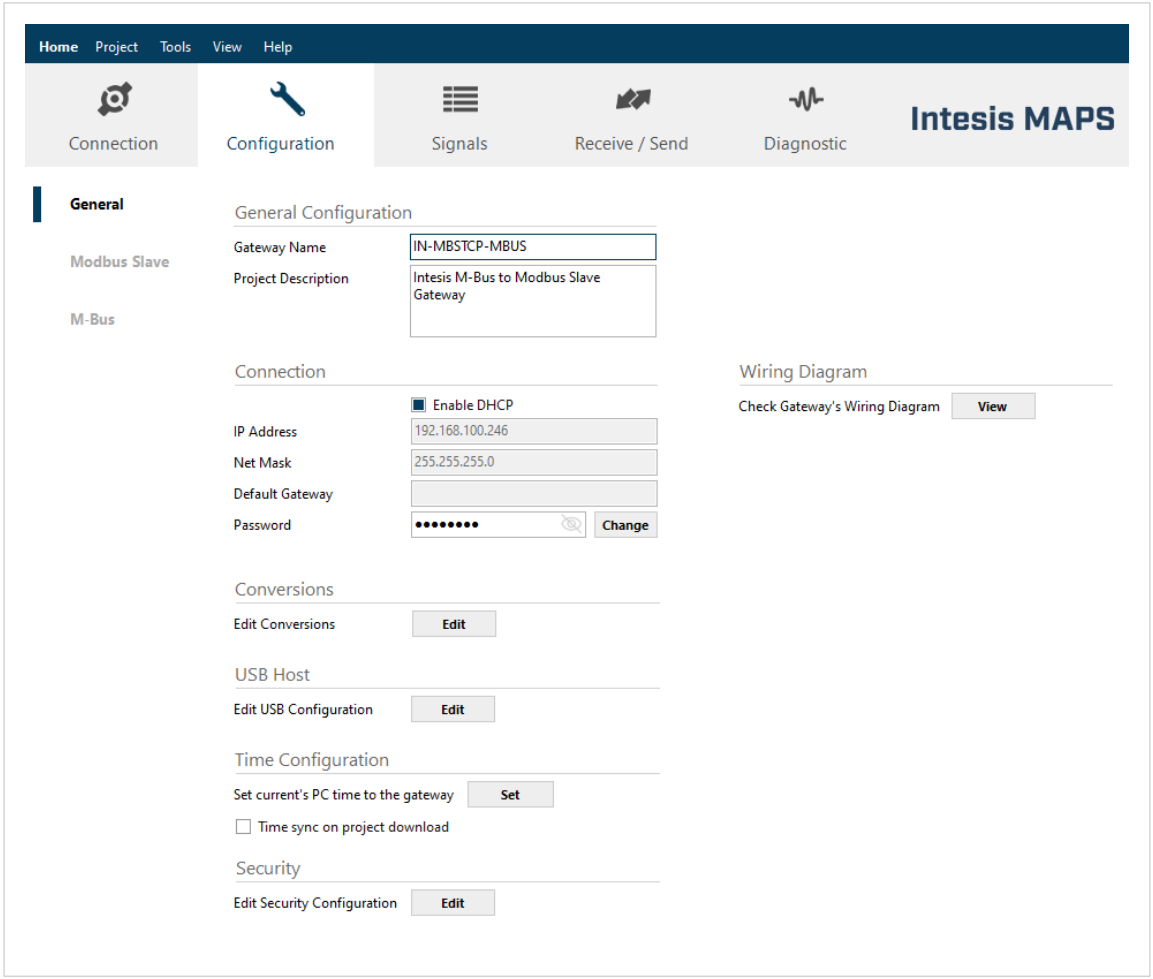
# 9. Configuration Tab

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

- **General**: Configure the general parameters of the gateway.
- **BMS Protocol**: Modbus 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.

## 9.1. General Configuration Menu

*Figure 9. General configuration menu on the Configuration tab*




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

**NOTE**
When commissioning the gateway for the first time, DHCP will be enabled for 30 seconds. During that time, an IP address will be automatically assigned to the gateway if there is a DHCP server. If there is no DHCP, you can type an IP address of your choice. After that time, the default **IP address 192.168.100.246** will be automatically set.

You can find this default IP address written in the installation guide: **Communication ports** table → **Ethernet**.

- **Enable DHCP (selected by default)**: Keep this option selected for networks that have a DHCP server. Deselect this option to edit the following parameters:
  - **IP Address**: Assign a fixed IP address for the gateway.
  - **Net Mask**: Set the gateway IP netmask.
  - **Default Gateway**: Type the IP for the default gateway.

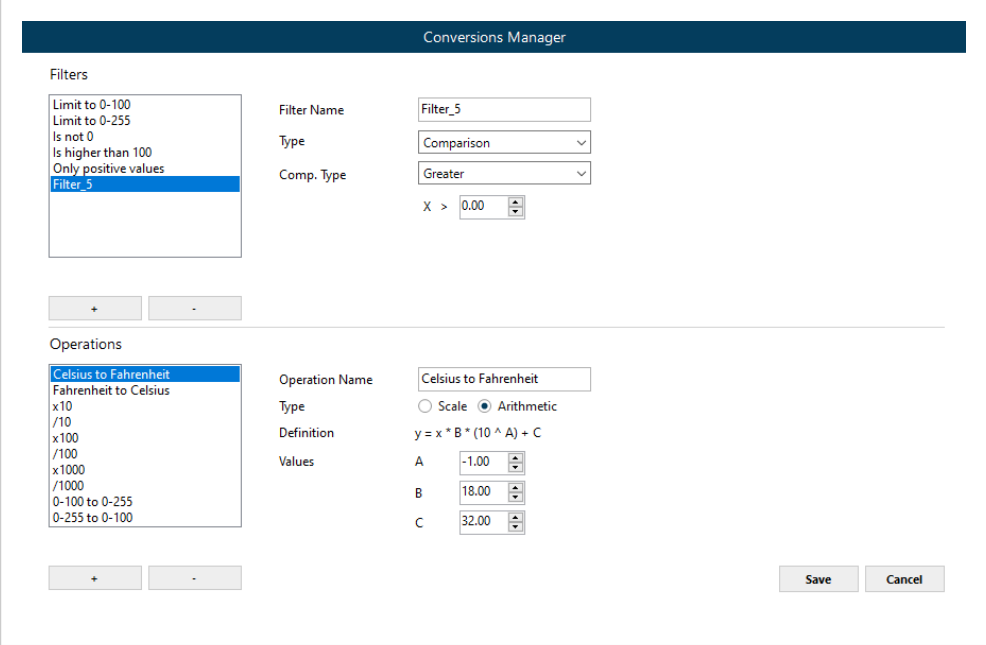
    **NOTE**
    The **Default Gateway** parameter is a networking concept not related to the Intesis gateway. It refers to the IP address of the device (usually a router) that serves as the access point for sending data from the local network to other networks, including the Internet. Therefore, this field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

- **Password**. Follow these instructions to set a new password for the gateway:

  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**

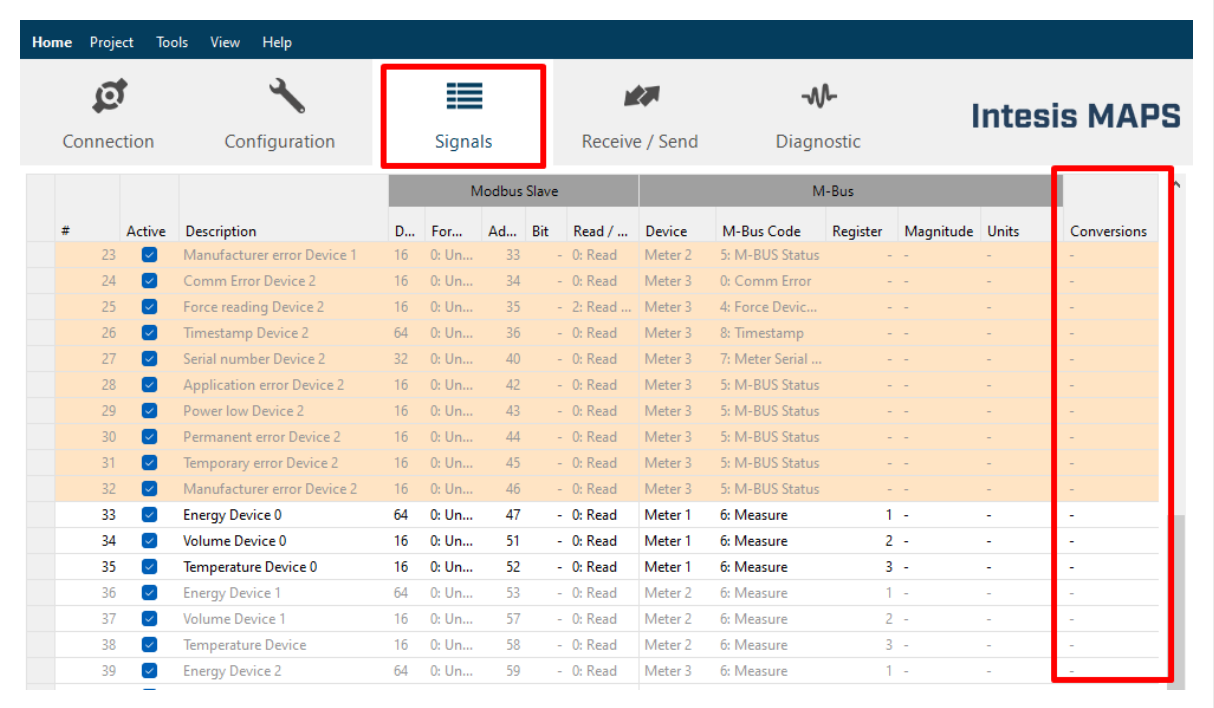
Click **Save** to save the changes.

## 9.1.3.1. Enabling Conversions in a Signal

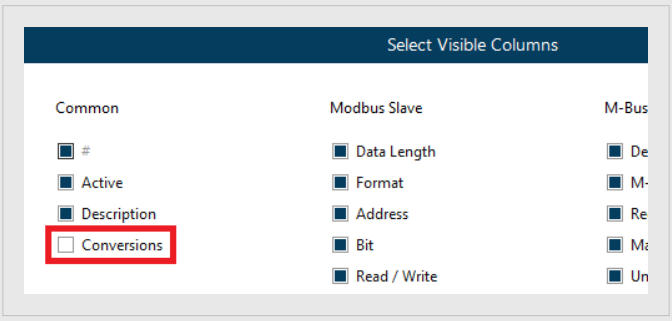
**NOTICE**
To better understand this topic on conversions, we are moving from the **Configuration** tab to the **Signals** tab.

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.

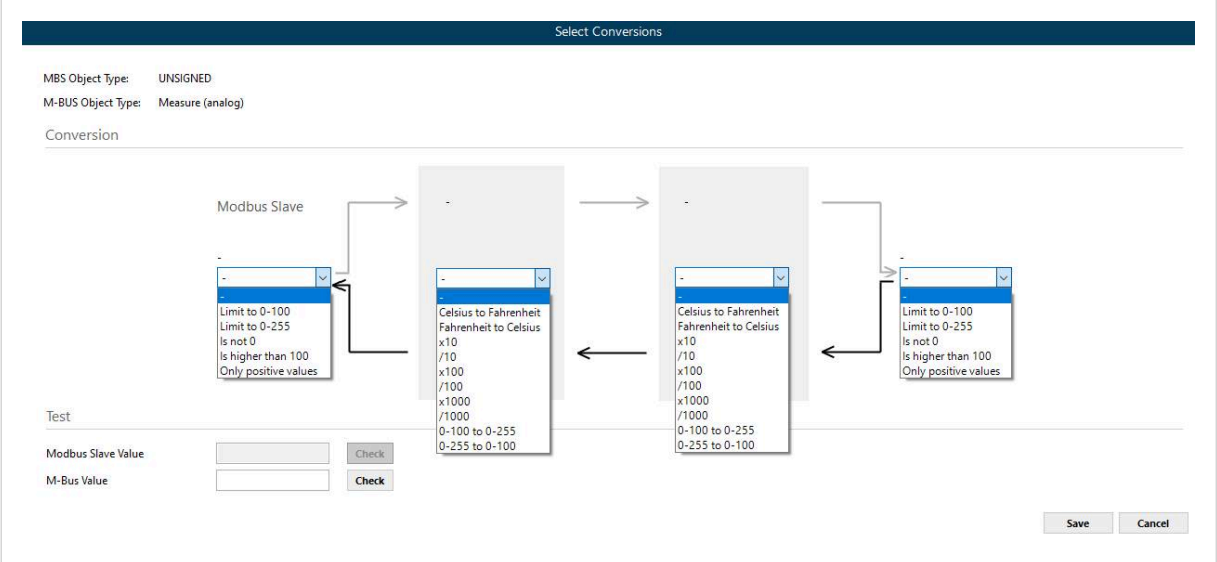



**NOTICE**
If the **Conversions** column does not appear, use the **Edit Columns** button from the bottom menu to enable it.




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.

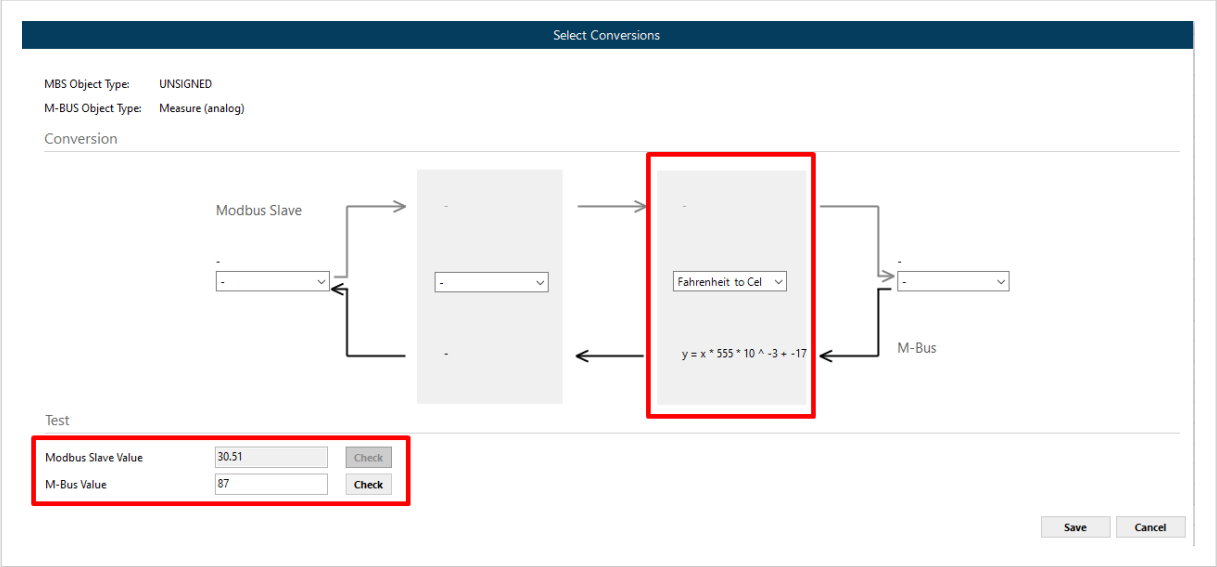



**NOTICE**

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. Time Configuration

- **Set current PC time to the gateway**: Connect the gateway to your computer and click the **Set** button to set the gateway's time to your computer's current time.
- **Time sync on project download** (disabled by default): The gateway's time is set to your computer's time when downloading the project to the gateway.

## 9.1.5. Security

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

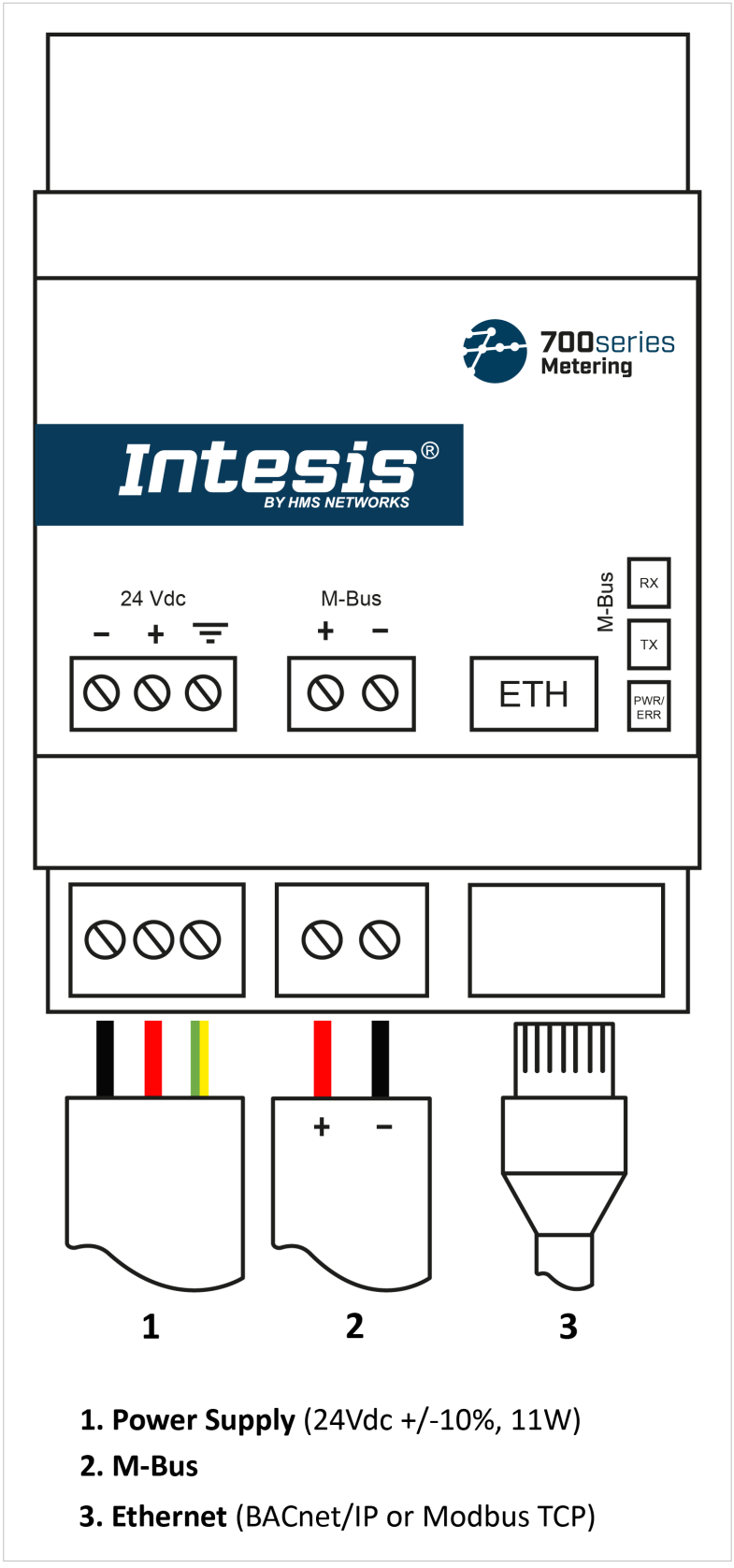
  **IMPORTANT**
  We recommend keeping the predetermined configuration.

  – **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): If selected, you can set the UDP/TCP port through the parameter below.
  – **Disable HTTPS Certificates Auto Update** (enabled by default): If selected, automatic updates for the HTTPS certificates are not allowed. If deselected, you can set the update time period using the parameter below.

Click **Save** to save the changes.

## 9.1.6. Wiring Diagram

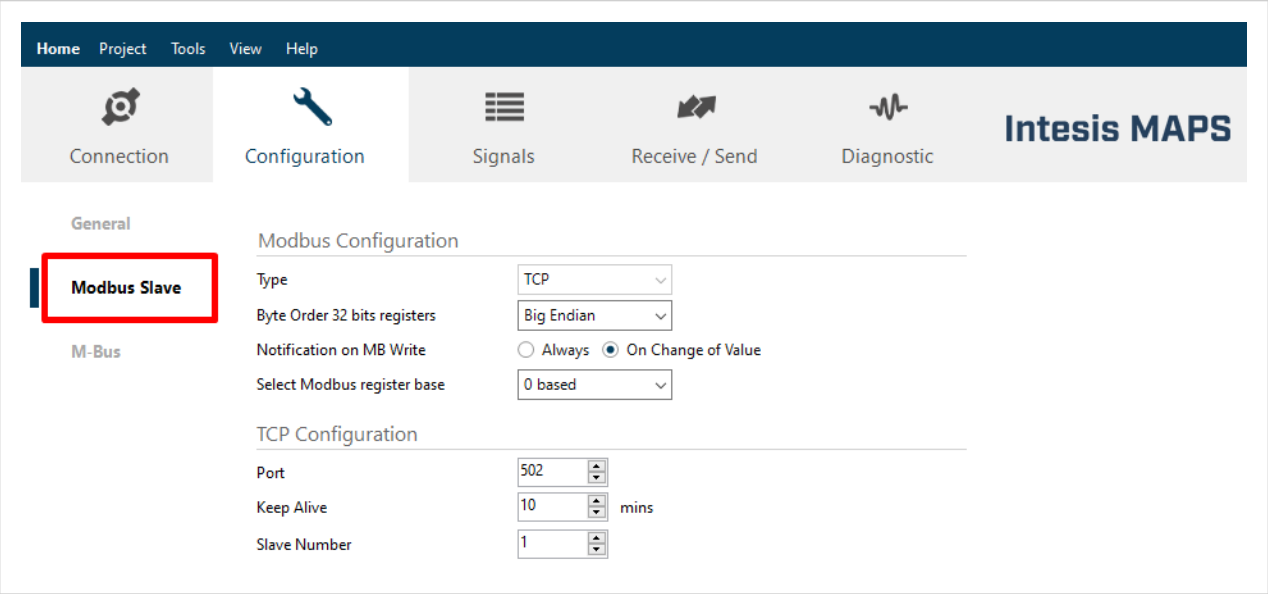
- **Check Gateway's Wiring Diagram**: Click the **View** button to open the schematic image on how to wire the gateway.




1. **Power Supply** (24Vdc +/-10%, 11W)
2. **M-Bus**
3. **Ethernet** (BACnet/IP or Modbus TCP)

# 9.2. BMS Protocol: Modbus

*Figure 10. Modbus configuration parameters*




## 9.2.1. Modbus Configuration

- **Type**: TCP is selected by default.
- **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

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

  **NOTE**
  The default port is 502.

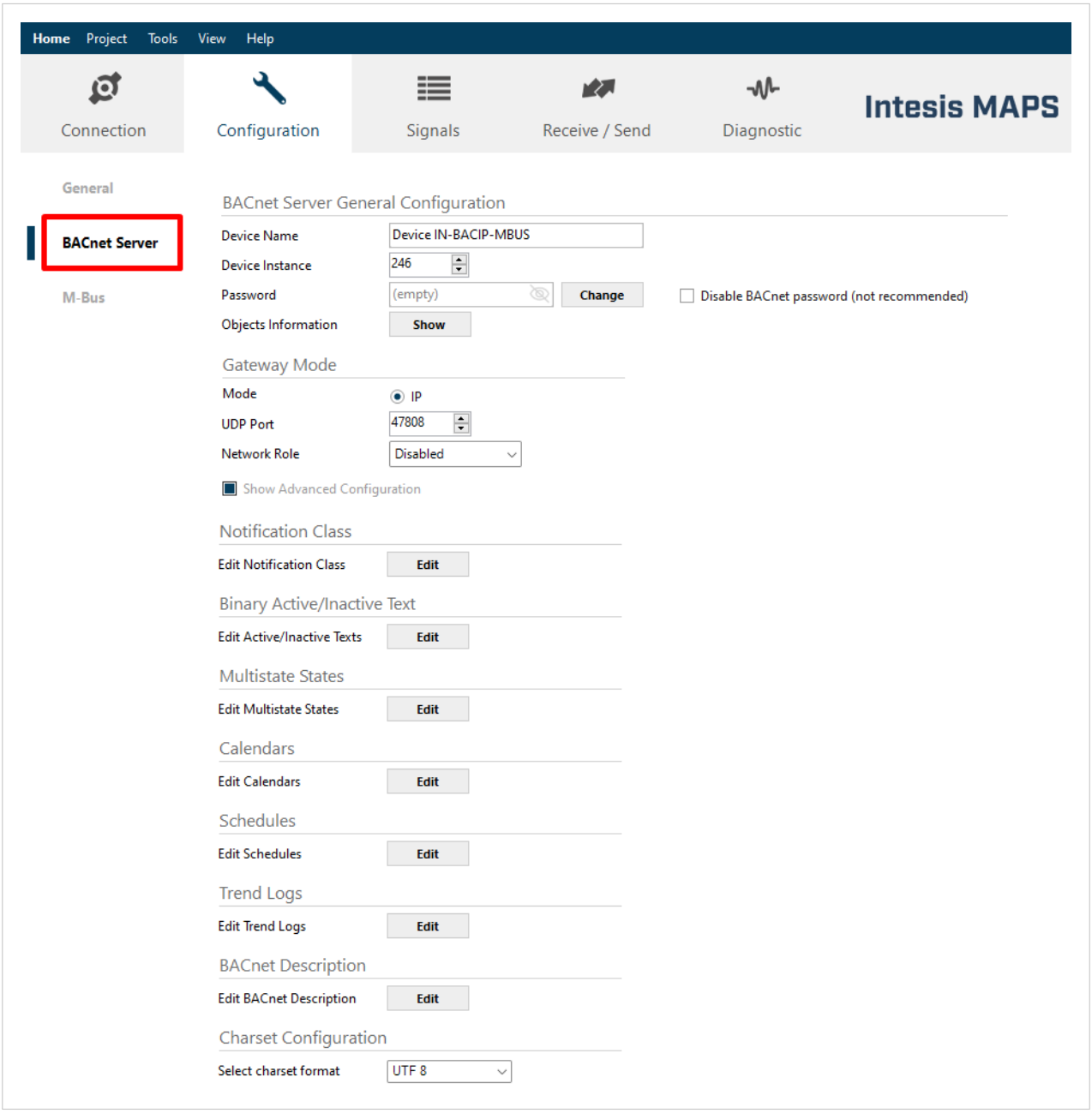
- **Keep Alive**: Set the time in minutes before sending a keep-alive message (1 .. 1440. Default value: **10 minutes**).

  **NOTE**
  Set the parameter to 0 to disable this function.

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

# 9.3. BMS Protocol: BACnet

*Figure 11. BACnet configuration parameters*




## 9.3.1. 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.

## 9.3.2. Gateway Mode

- **Mode**: **IP** mode is selected by default.
- **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**: 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.

## 9.3.3. BACnet Advanced Configuration

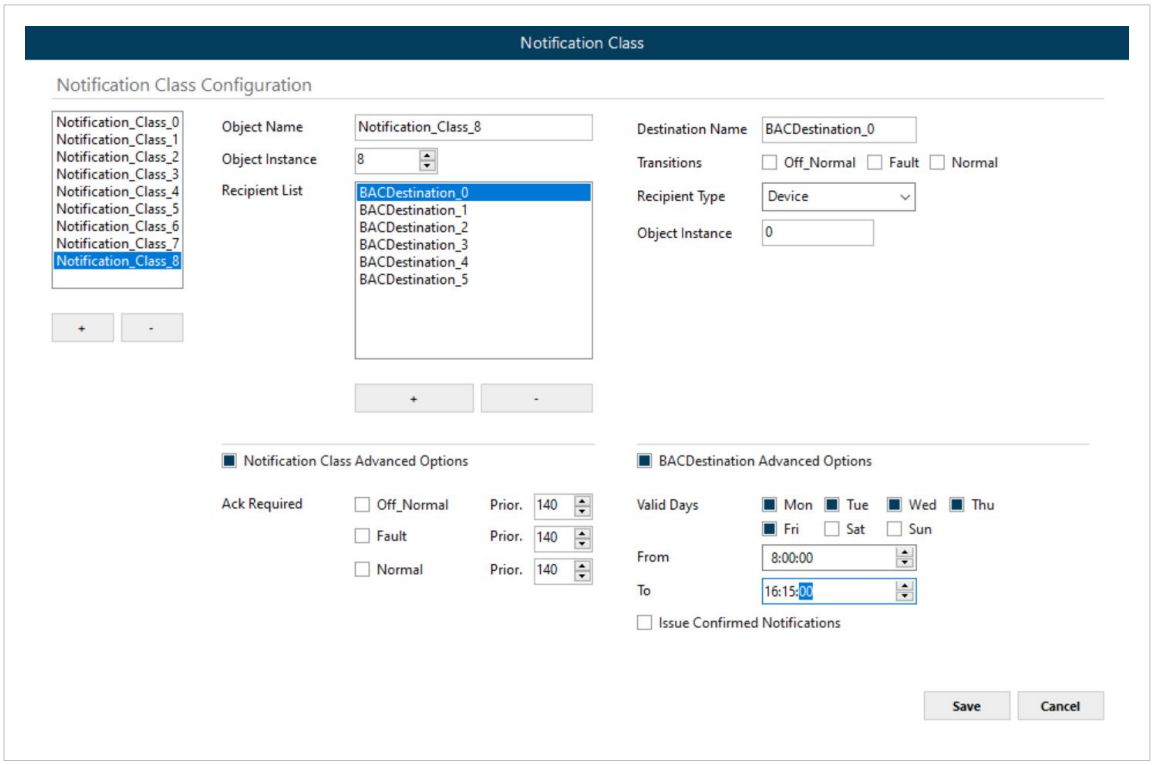
**Show Advanced Configuration**: Open advanced configuration parameters (disabled by default).

> **IMPORTANT**
> These menus provide advanced functionalities intended for expert users.
>
> We recommend keeping these options set to their default values.

## 9.3.3.1. Notification Class

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

*Figure 12. Notification Class Configuration window*




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.

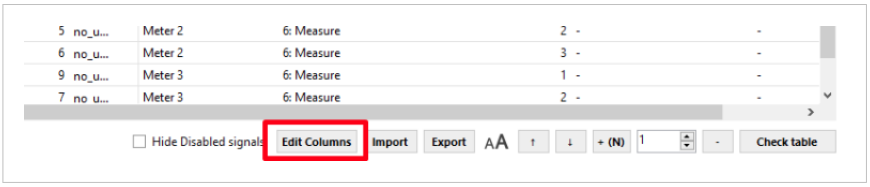
**NOTE**
Set the priority for each parameter (0 .. 255. Default value: **140**).

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

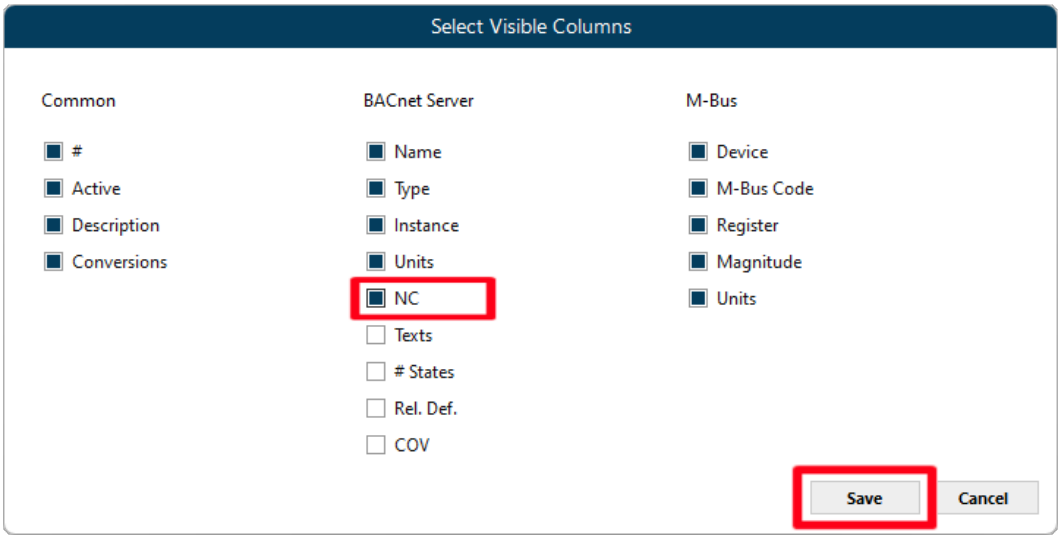
**NOTICE**
To better understand the assignment of Notification_Class objects to signals, we are moving from the **Configuration** tab to the **Signals** tab.

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

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

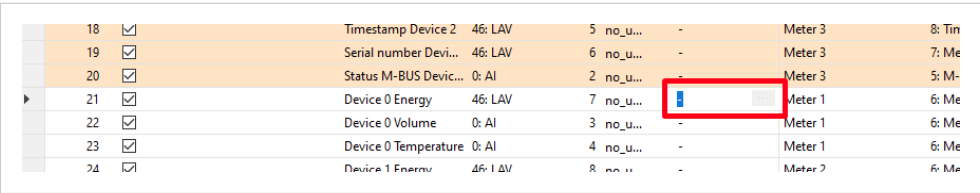



3. In the **Select Visible Columns** window, select **NC**.
4. Click **Save**.

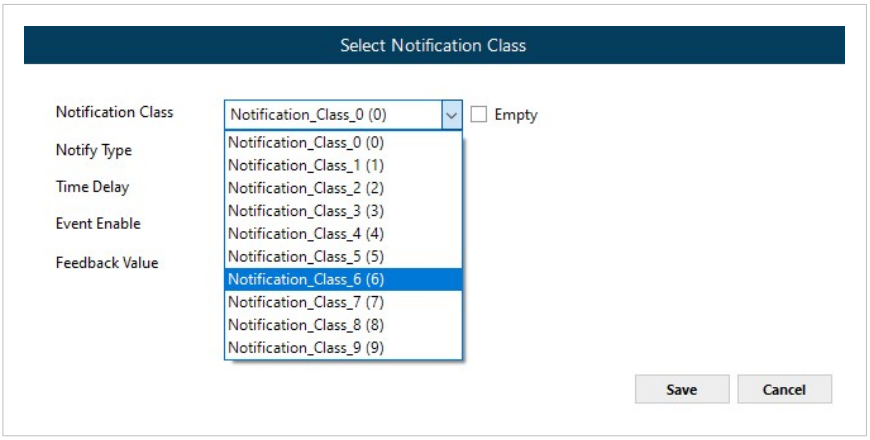



A new column named **NC** is now visible.

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.



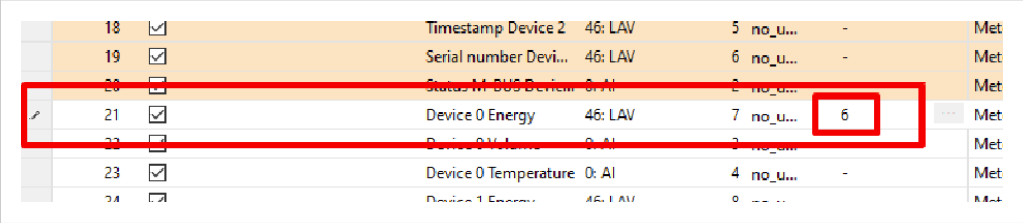
9. Set the rest of the parameters:

> **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 launching the notification (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.




## 9.3.3.2. 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.

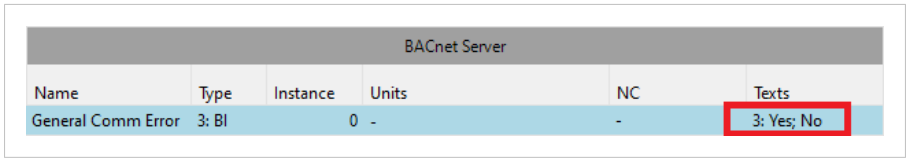
5. —: Delete the selected row from the table.
6. Click **Save** to save the changes.

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 28). In this case, however, select the **Texts** column from the BACnet Server section instead of **NC**.

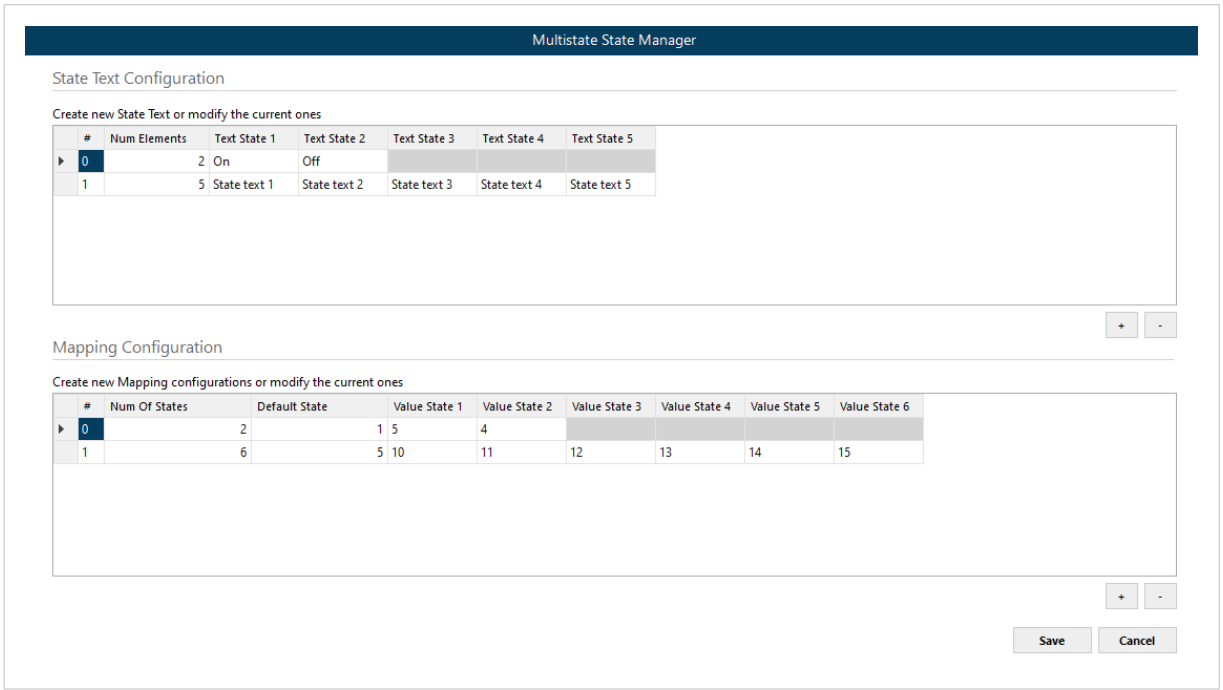
Having done that, click the three-dotted button on the **Texts** cell of any binary object to invoke the **Binary State Selector** window. Select the desired option. Once the assignment is complete, the currently selected text pair appears in the corresponding **Texts** column of the **Signals** tab.




## 9.3.3.3. 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.

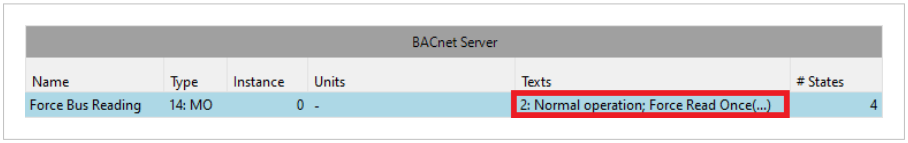
> **NOTE**
> You can add up to 100 lists, each one with a maximum of 100 elements.

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 28). 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.

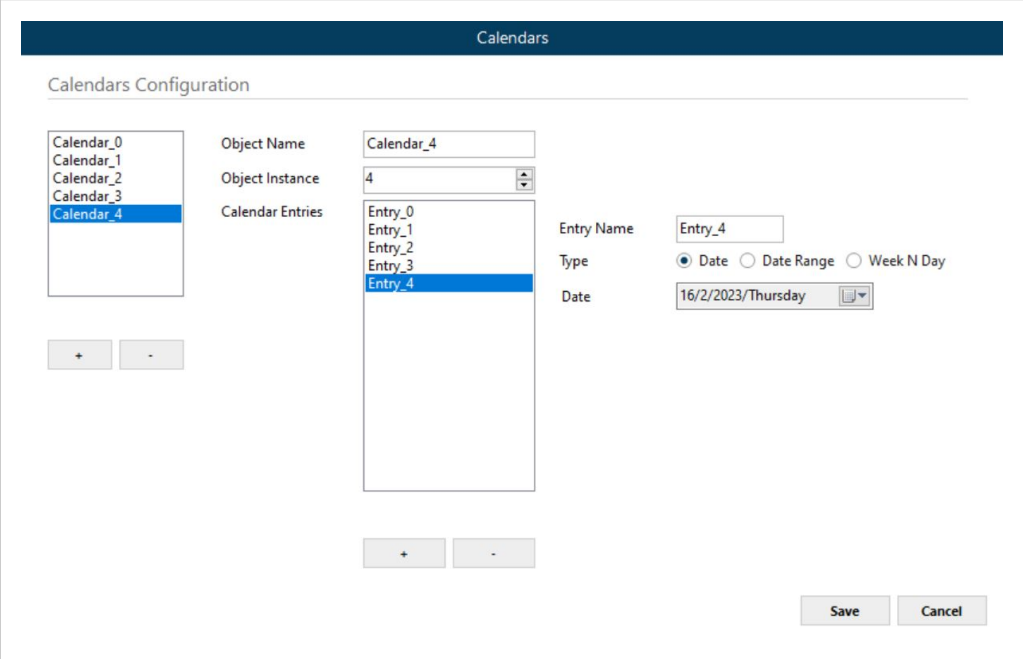



> **NOTICE**
> If the **# States** column is also visible, it will display the number of elements of the currently selected state text. Alternatively, the **# States** column can also be used to enter the number of elements for the currently selected object manually, but only when no state texts are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

## 9.3.3.4. Calendars

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

*Figure 13. Calendars Configuration window*



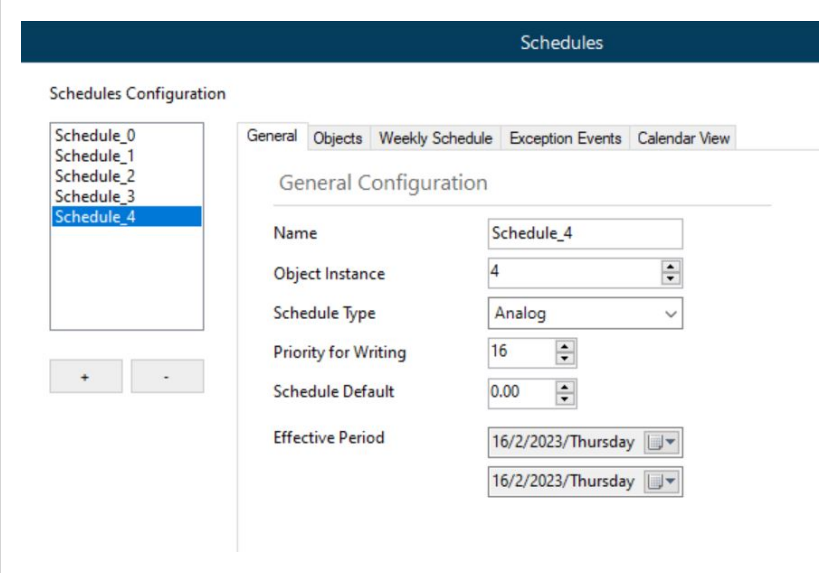

Click the + button to create up to 10 calendars. For each one, you can set:

- **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.

## 9.3.3.5. 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**.

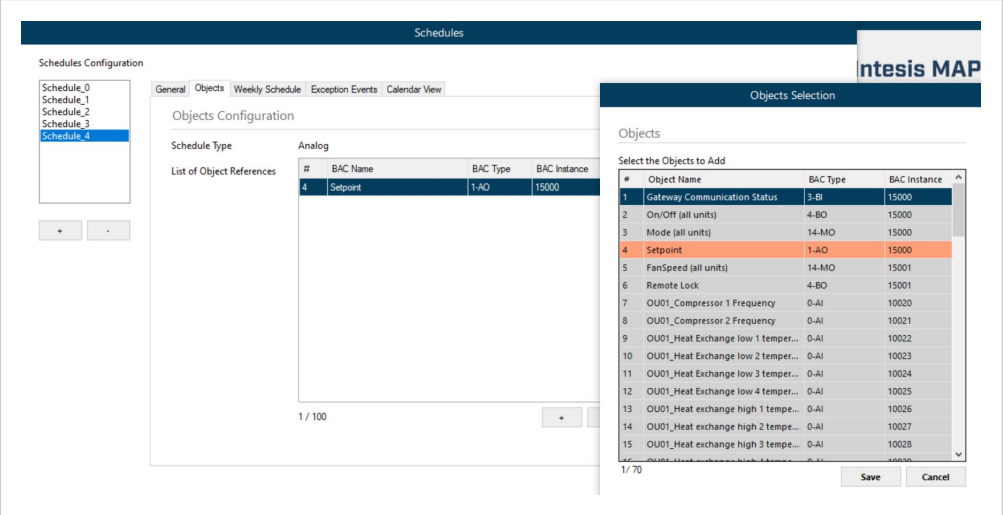
  - **Priority for Writing**: Select the writing priority of the schedule value (1 .. 16. Default value: **16**).
  - **Schedule Default**: Set the default value for the schedule.

    **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

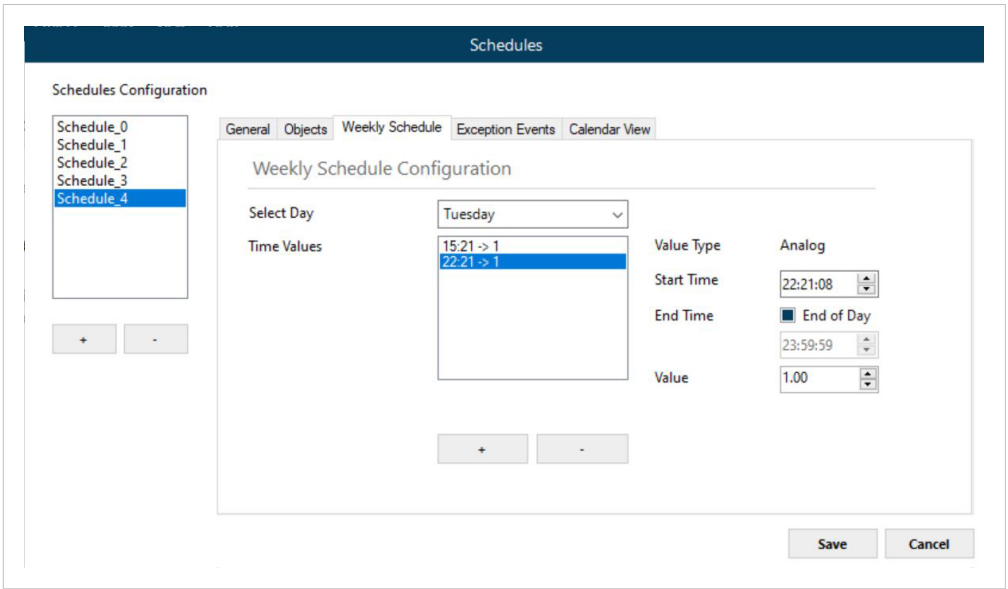
  - **Effective Period**: Set the starting and ending date. The schedule will be in effect during this period.

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



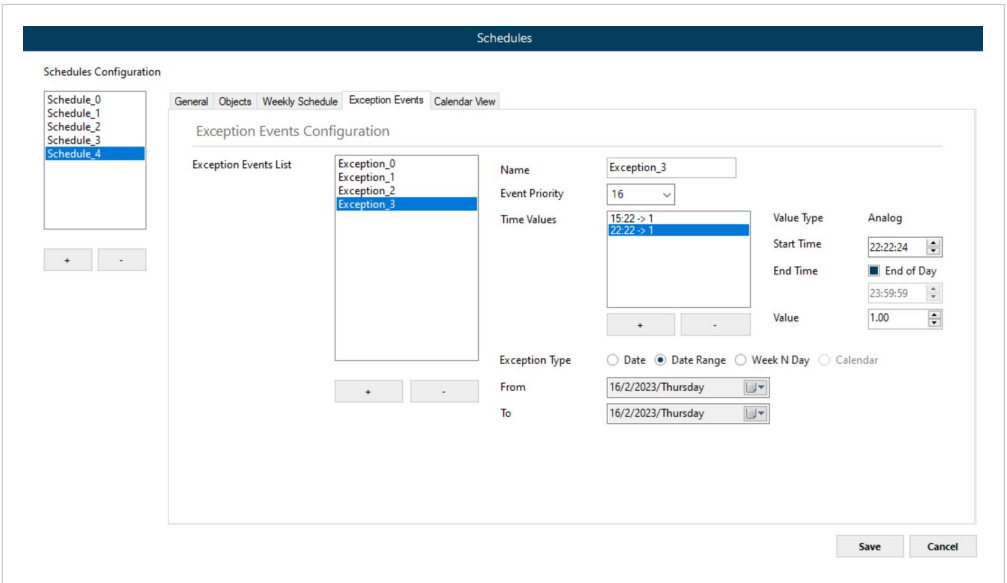

  - **Schedule Type**: It shows the previous **Schedule Type** object you selected: Analog, Binary, Multistate, or Large Analog.
  - **List of Object References**: Click the + button to open the **Objects Selection** dialog. The background color of each object indicates its status as follows:
    - **Grey**: 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:

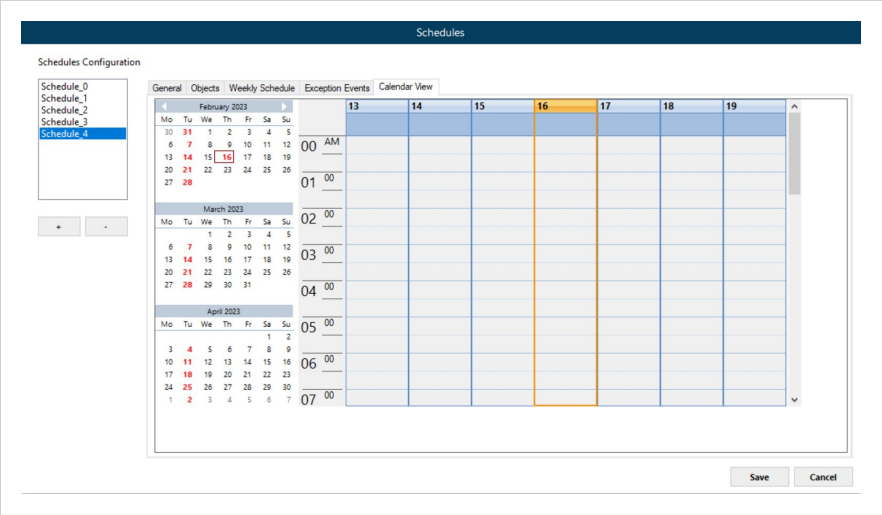
- **Name**: Type a name for the exception.
- **Event Priority**: Set a priority for the exception (1 [maximum priority] .. 16 [minimum priority]. Default value: **16**).
- **Time Values**: Click the + button to create up to six time periods. For each one, set the **Starting Time**, the **End Time**, 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 33).

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



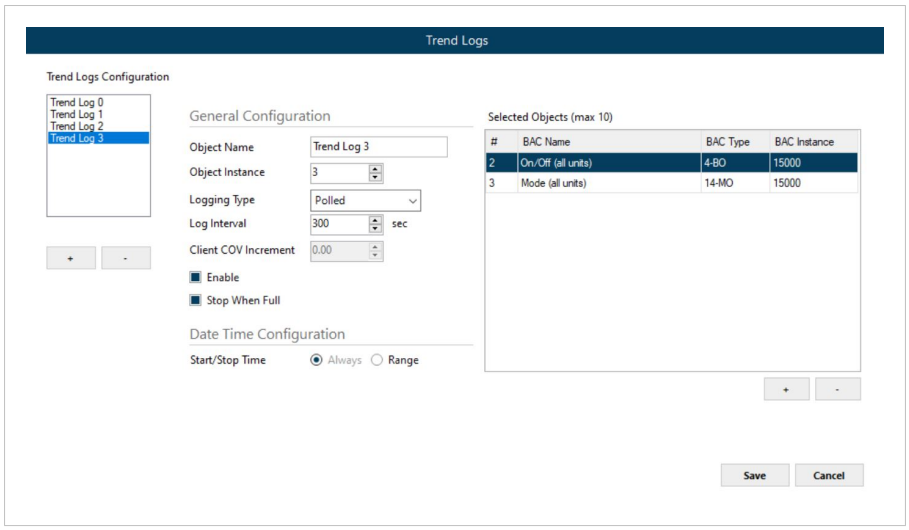

You can also create and modify **Weekly** and **Exception** schedules from this menu:

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.

## 9.3.3.6. Trend Logs

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

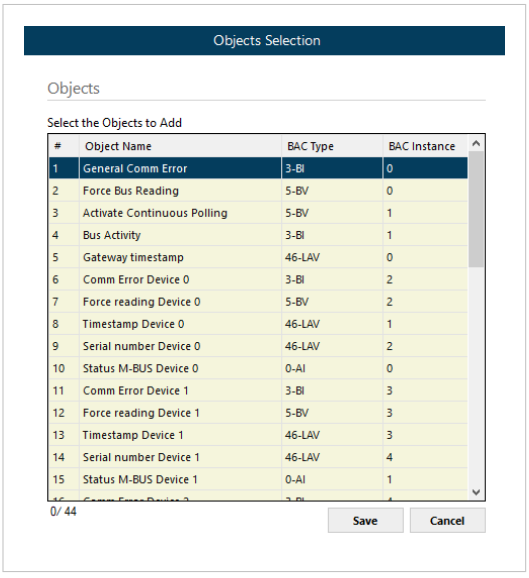
*Figure 14. Trend Logs Configuration window*



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.

*Figure 15. BACnet Objects Selection*




**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.

## 9.3.3.7. 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)**: The Description column is added, allowing a description up to 255 characters long.

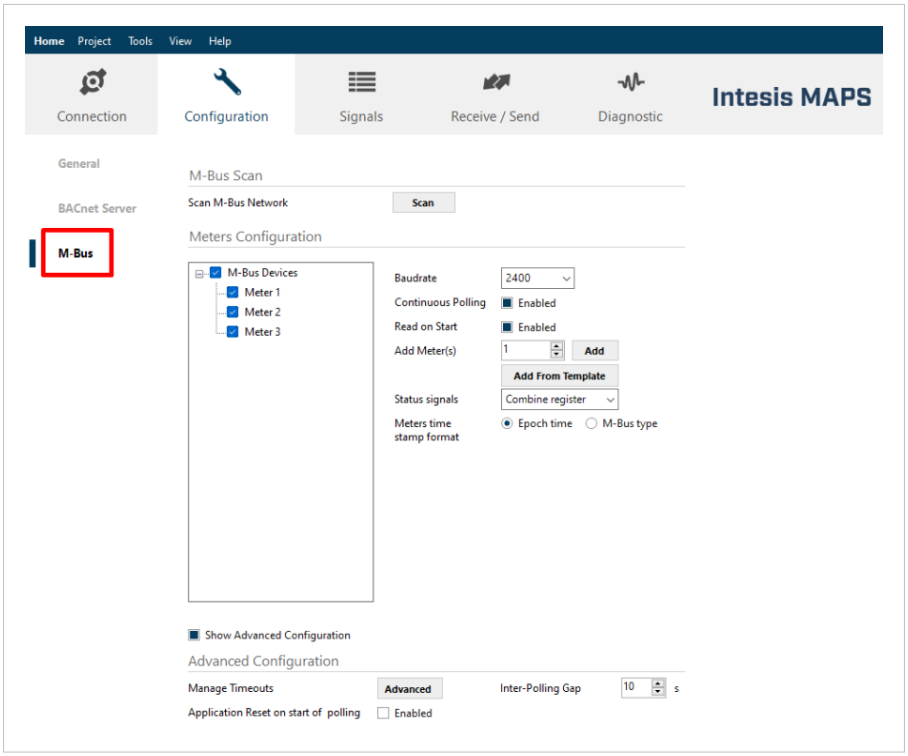
**NOTE**
Some special characters may use three bytes each.

## 9.3.3.8. Charset Configuration

There are four character sets available:

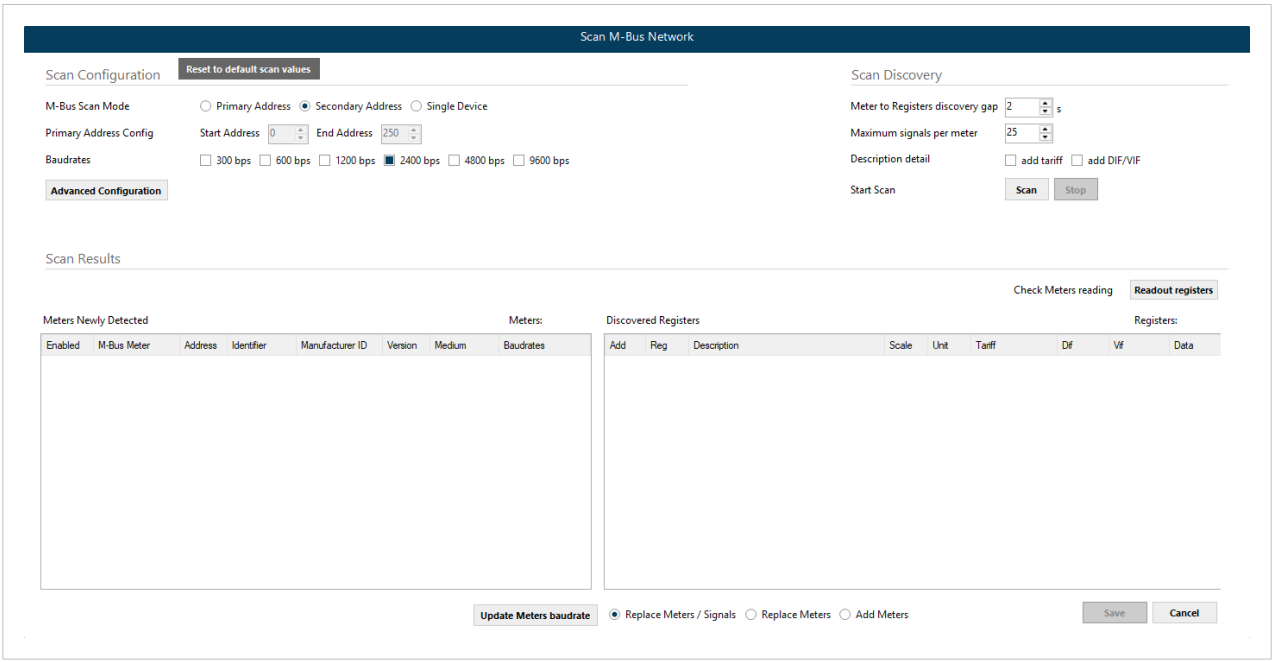
- **UTF 8** (default value)
- **UCS 4**
- **UCS 2**
- **ISO 8859-1**

# 9.4. Device Protocol: M-Bus




## 9.4.1. M-Bus Scan

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



## 9.4.1.1. 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.

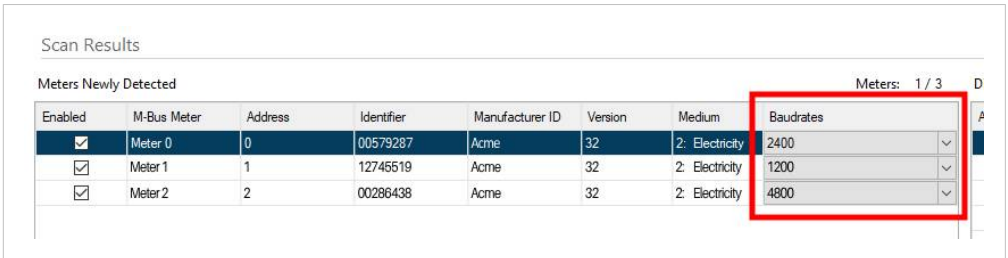
> **NOTE**
> This option is only available if the **M-Bus Scan Mode** option is set to **Primary Address**.

  - **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**:

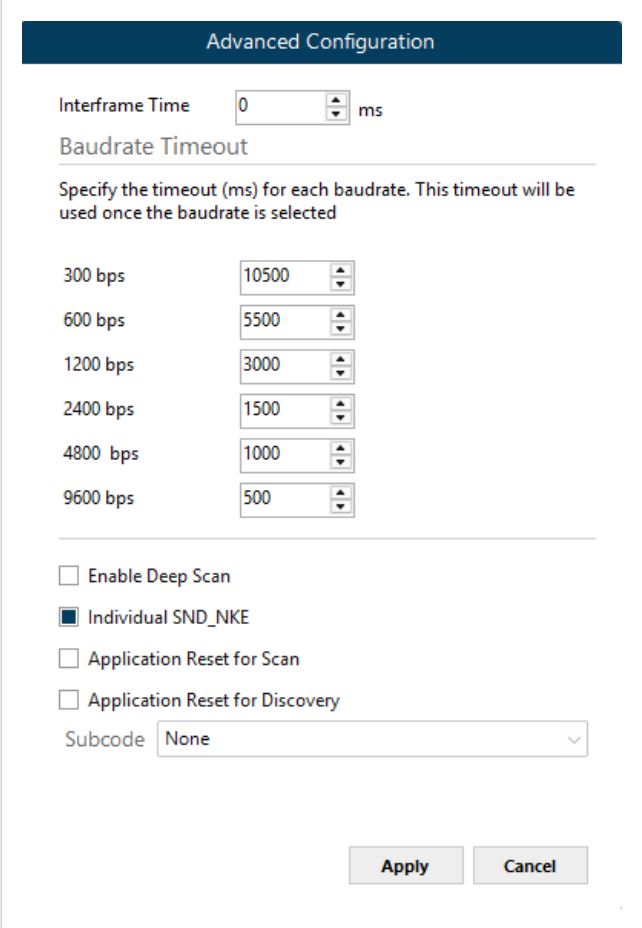



> **NOTICE**
> Selecting several baudrates will make the scanning process take longer.

> **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.

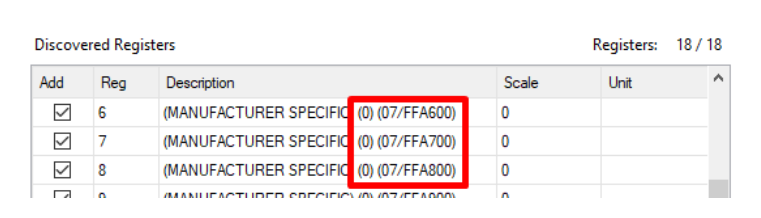
– **Application Reset for Discovery (disabled by default)**: If enabled, this option adds an application reset subcode to all the meters found in the bus before discovering the meters signals. Use the dropdown menu below the option to select the desired subcode.

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

## 9.4.1.2. 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 16. 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.

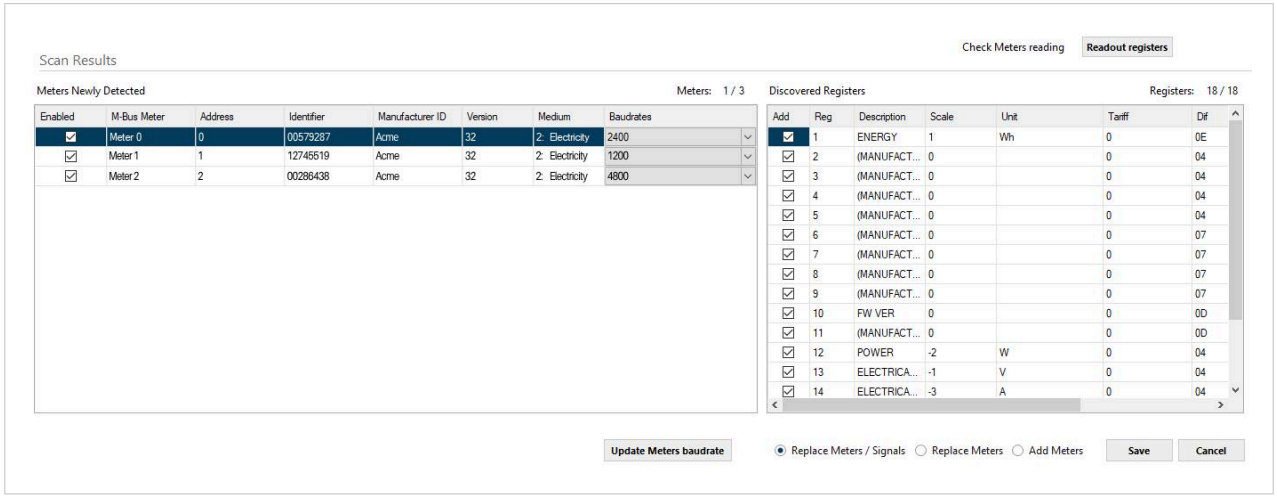
    After scanning the bus, the **Scan Results** tables will populate, showing the **Meters Newly Detected** and the **Discovered Registers** for each meter.

    **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.

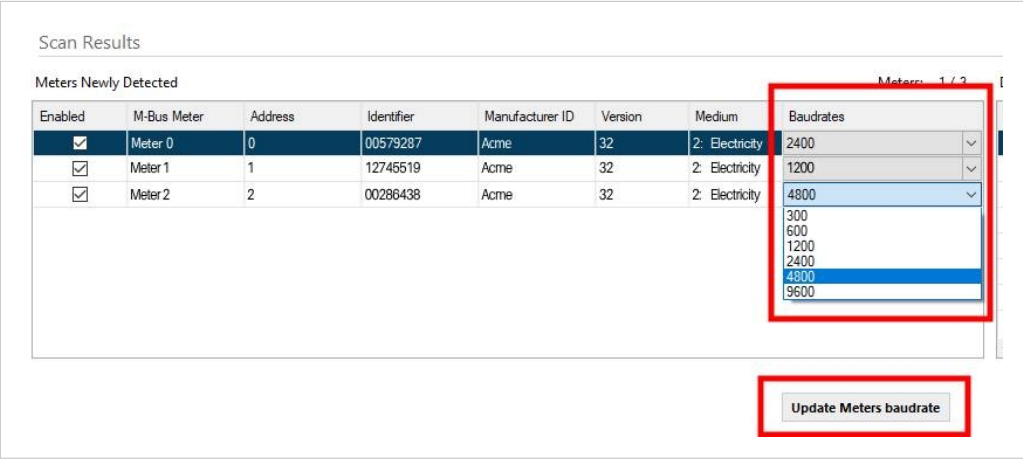
## 9.4.1.3. Scan Results




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**

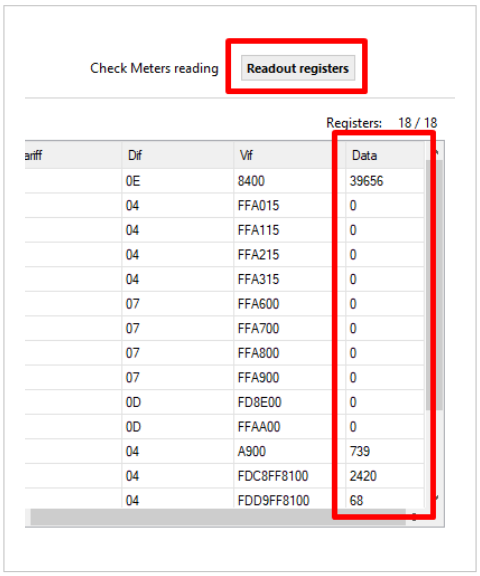
**IMPORTANT**
Once discovered, meters with different baud rates must be configured to use the same baud rate as the gateway.




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.




## 9.4.1.4. 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 52).

**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**.

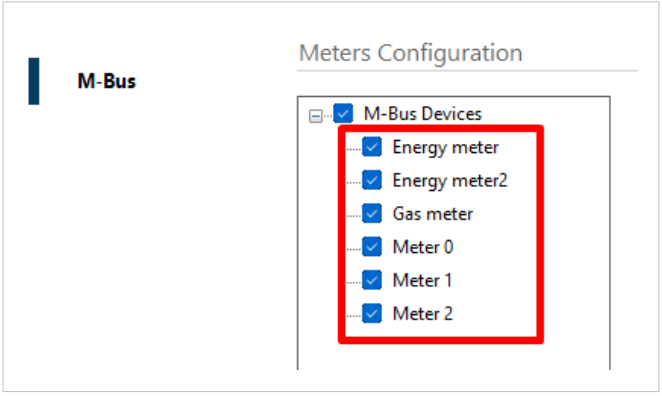
**ADD THE NEWLY DISCOVERED METERS AND THEIR SIGNALS TO YOUR MAPS PROJECT**

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**.

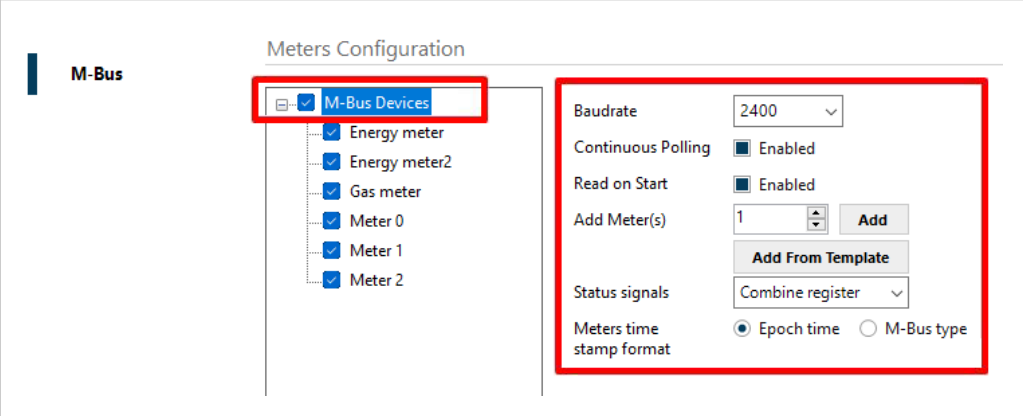
*Figure 17. Newly discovered meters (Meter 0, Meter 1, and Meter 2) are added to the meters already configured in the project (Energy meter, Energy meter2, and Gas meter).*




**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 IN712MEB***0000 User Manual.

## 9.4.2. 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**).

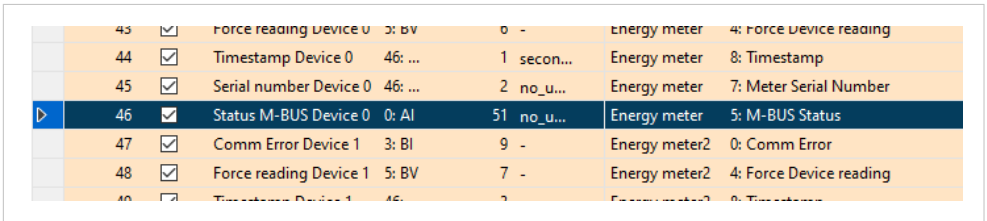
**NOTICE**
The most common baudrate for M-Bus networks is 2400 bps.

- **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.

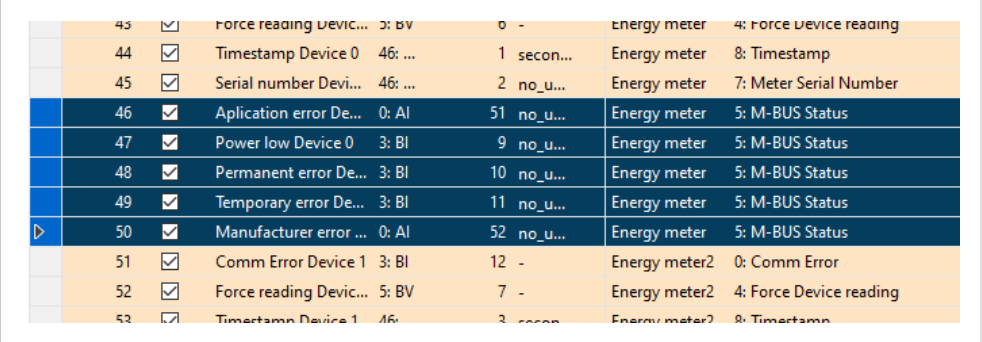
> **IMPORTANT**
> Whatever option you use to add meters to your project, remember that the total number of meters/devices supported by the gateway depends on the purchased license. To know more, consult the sections **Licensing** and **Gateway Capacity** in the IN712MEB***0000 User Manual.

- **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.



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 43 | ☑ | Force reading Device 0 | 3: BV | 6 | - | Energy meter | 4: Force Device reading |
| 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:



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 43 | ☑ | Force reading Devic... | 3: BV | 6 | - | Energy meter | 4: Force Device reading |
| 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 |
| 53 | ☑ | Timestamp Device 1 | 46: | 3 | secon | Energy meter2 | 8: Timestamp |

- **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.

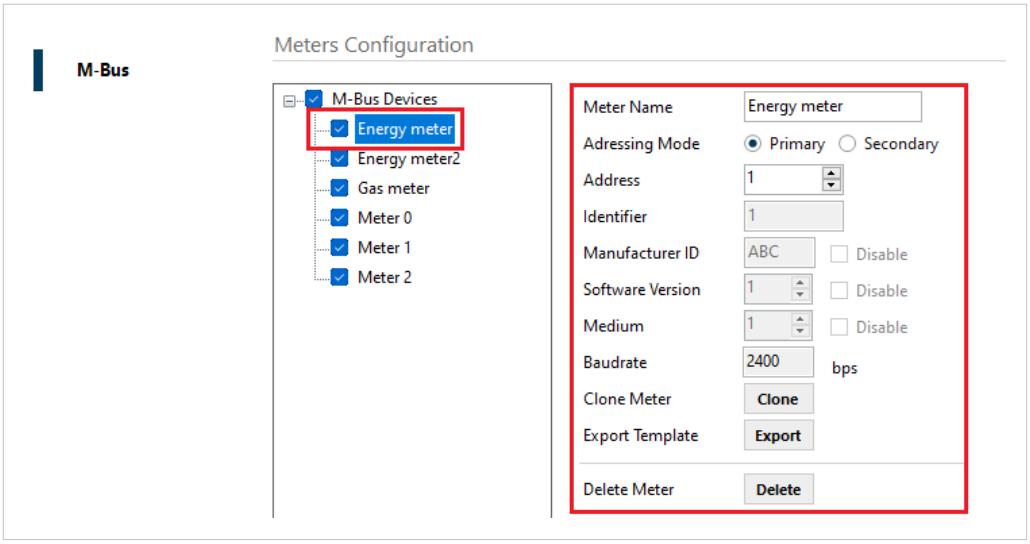
**NOTE**
[1] **Reset Response Timeout**: Timeout after a SND_NKE transmission.

[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. When enabled, another option appears:
- **Application Reset Subcode for polling (disabled by default)**: When enabled, adds a reset subcode to the application reset in each polling cycle. Use the dropdown menu below the option to select the desired subcode.
- **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. This value can be edited from the root of the tree view (**M-Bus Devices**) as explained before.

  **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 44).

- **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 IN712MEB***0000 User Manual.

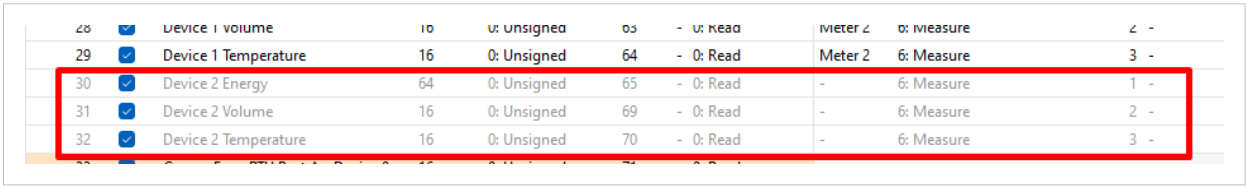
  1. Click **Clone**.
  2. Type or select the number of **Devices to Add**.
  3. Click **Apply**.

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

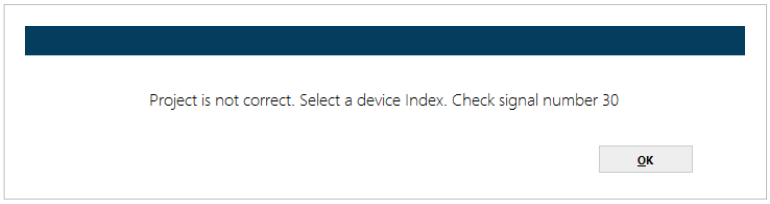
  1. Click **Export**.
  2. Type a **File name**.

3. Select a folder to save the file.
4. Click **Save**.

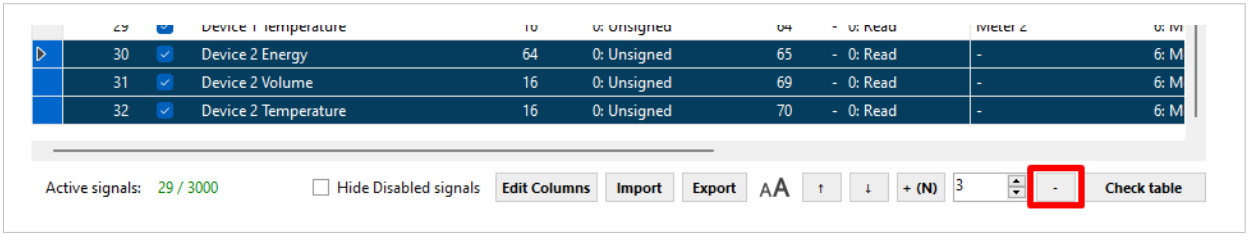
- **Delete Meter**: Click the **Delete** button to delete the meter.
  To avoid losing data by mistake, after deleting a meter, its associated registers remain visible in the **Signals** tab, but their text will appear dimmed, and the **Device** column shows –.




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.

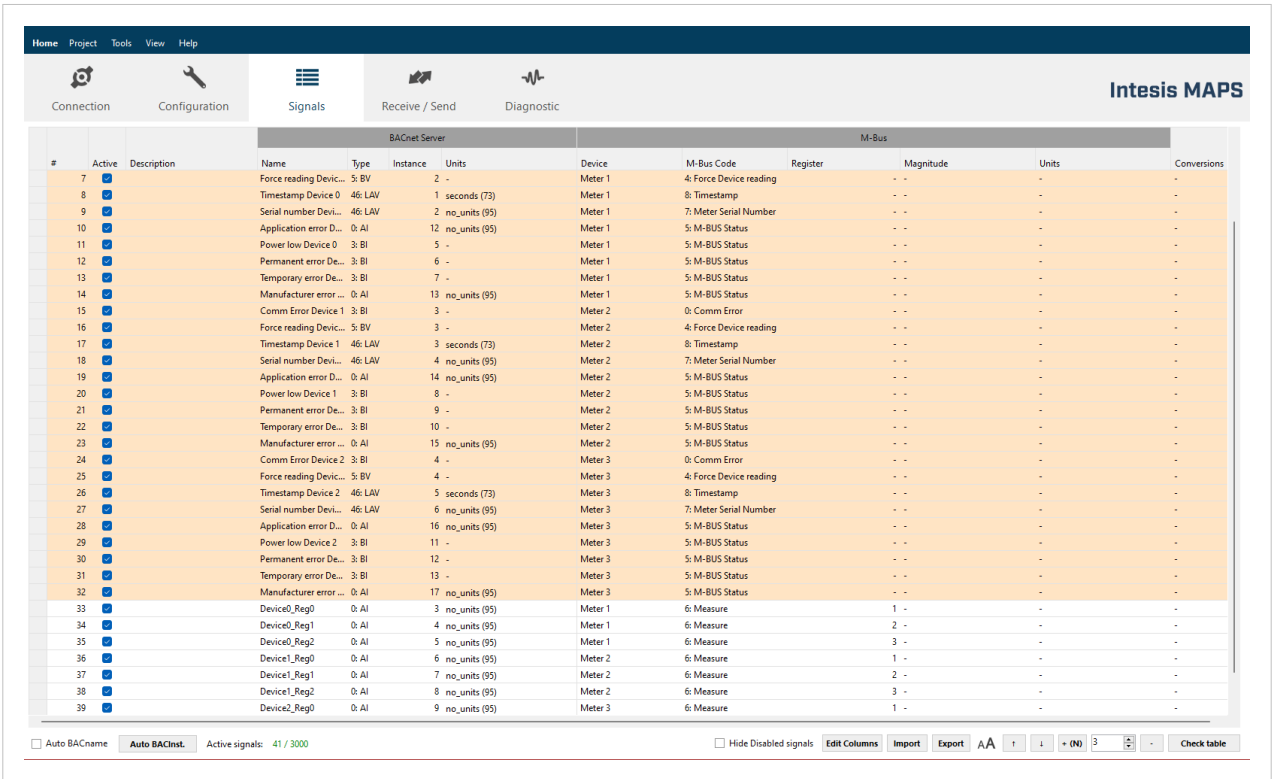
# 10. Signals Tab

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

After three columns displaying the number of the signal (**#**), a checkbox to select if the signal is **Active** or not in the project, and an editable cell for the signal's **Description**, several columns with a dark grey header appear, showing the protocols of your current project:

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

*Figure 18. Signals tab for a BACnet BMS.*




1. Protocol of the control system:
   - Modbus Slave
   - BACnet Server
2. Protocol of the server network:
   - M-Bus

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.
- **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).

- AA: Increases or decreases the font size.
- Click the **Check table** button to review the signals' configuration.

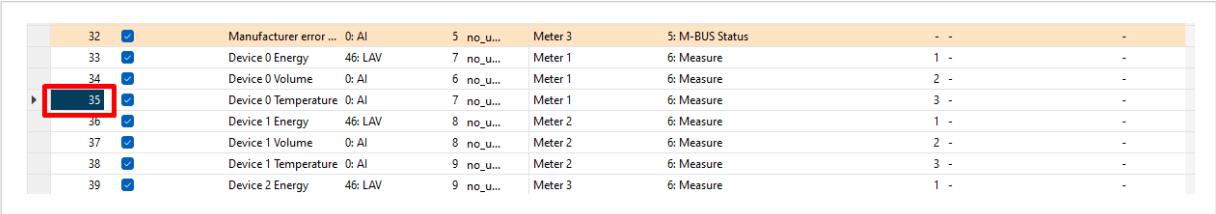
> **NOTE**
> If any parameter on any signal is wrong, a message will emerge with specific information about the error.

## 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:

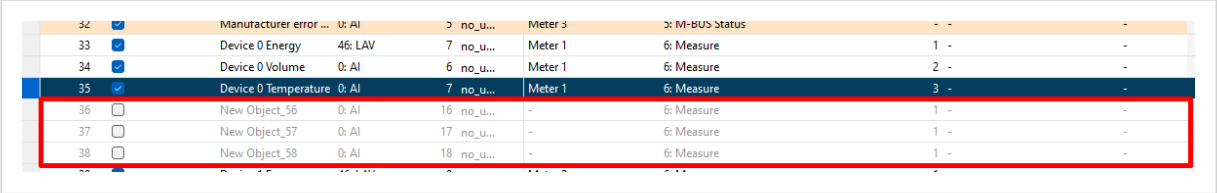


| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | ☑ | Manufacturer error ... | 0: AI | 5 | no_u... | Meter 3 | 5: M-BUS Status | - | - | - |
| 33 | ☑ | Device 0 Energy | 46: LAV | 7 | no_u... | Meter 1 | 6: Measure | 1 | - | - |
| 34 | ☑ | Device 0 Volume | 0: AI | 6 | no_u... | Meter 1 | 6: Measure | 2 | - | - |
| 35 | ☑ | Device 0 Temperature | 0: AI | 7 | no_u... | Meter 1 | 6: Measure | 3 | - | - |
| 36 | ☑ | Device 1 Energy | 46: LAV | 8 | no_u... | Meter 2 | 6: Measure | 1 | - | - |
| 37 | ☑ | Device 1 Volume | 0: AI | 8 | no_u... | Meter 2 | 6: Measure | 2 | - | - |
| 38 | ☑ | Device 1 Temperature | 0: AI | 9 | no_u... | Meter 2 | 6: Measure | 3 | - | - |
| 39 | ☑ | Device 2 Energy | 46: LAV | 9 | no_u... | Meter 3 | 6: Measure | 1 | - | - |

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 + (N) button from the bottom menu to add the needed rows.
   For example, after adding three rows, these appear numbered 36, 37, 38:

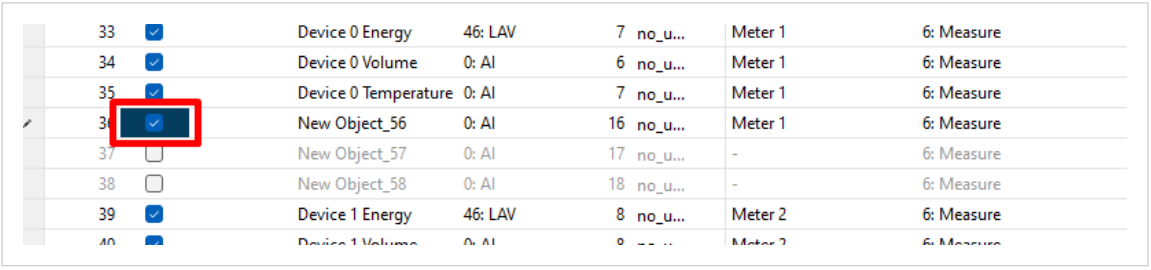



As shown in the image before, once added, new signals appear with dimmed text. Once you assign a device to the new signal, the text turns black.

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 55).

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 55).

# 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.

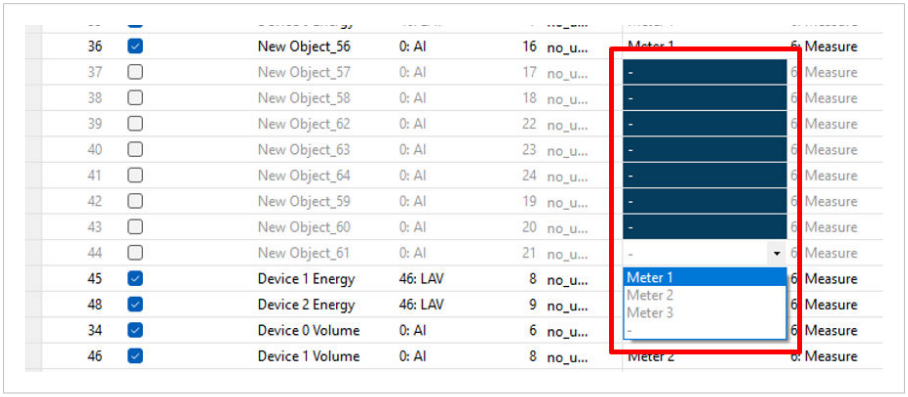
- **Selecting multiple non-contiguous cells**:

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**

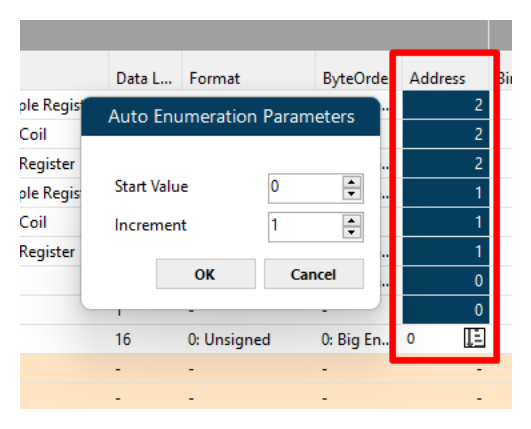
Once you have multiple parameters selected, you can edit them simultaneously:

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:

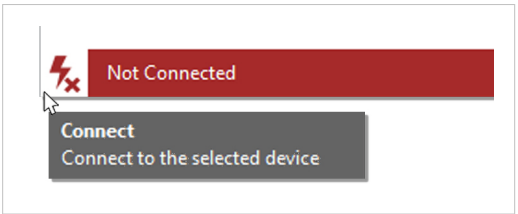


# 11. Receive/Send Tab

**Send**:

Once you have finished setting the parameters, you have to send the configuration to the gateway:

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.

**Receive**:

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

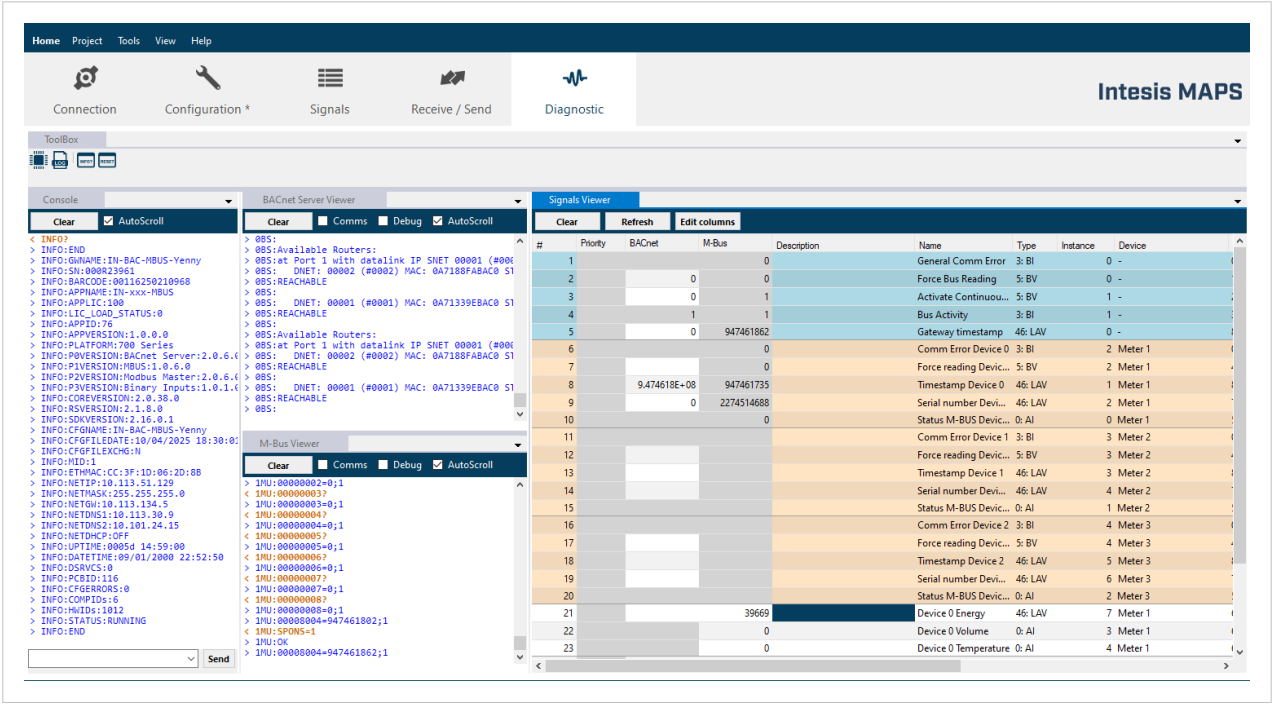
**TIP**
This function may be helpful when you need to change some parameters of an already configured gateway.

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.

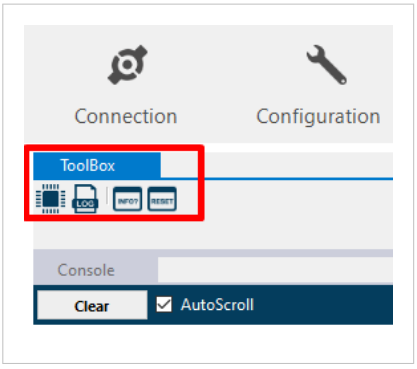
# 12. Diagnostic Tab

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

*Figure 19. 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**




From left to right:

- **Microprocessor icon**: Check the current hardware status of the gateway.
- **LOG**: Set Intesis MAPS in logging mode to record all the information present in the viewers and save it in a .zip file.
- **INFO?**: Get some gateway information.
- **RESET**: Reset the gateway.

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

**VIEWERS**

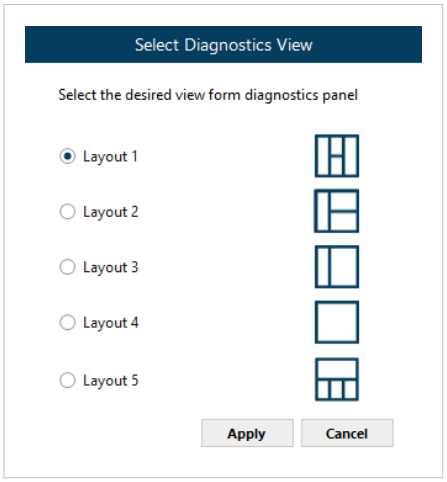
Intesis MAPS provides several viewers:

- 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:

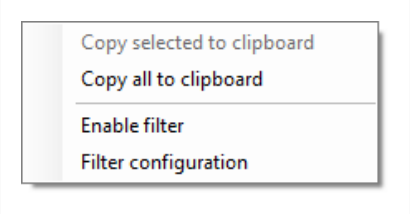
  - Fixed console to the left and tabbed browser for the other viewers
  - Full tabbed browser

- 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.

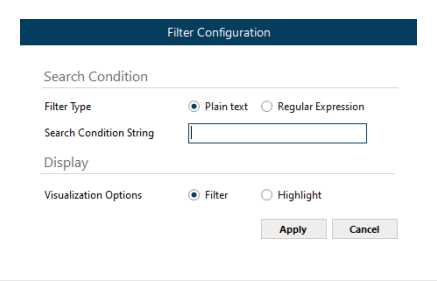
**FILTERING**

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 PC and open the configuration tool 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 ask if you want to save the project that is currently loaded in the gateway.
6. Click **Yes** or **No**, depending on your needs.
7. A new dialog appears showing the **Gateway Current Status** and the **Firmware Update Information**.
8. Click **Send** to load the new firmware into the gateway.
9. In the confirmation dialog, click **Yes**.
10. Once the firmware transfer is completed, click the **Connect** button to connect with the gateway again.
11. Configure the project as usual.