Intesis MAPS

Configuration & Monitoring software of Intesis Modbus series

USER'S MANUAL

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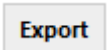
      7.1.3 Export 

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1. Introduction

Intesis MAPS is a Windows compatible software tool developed specifically to monitor and configure the Intesis Modbus Server series (Intesis Modbus Server integrating an *External Protocol*). In this document, its use and how to configure the Intesis is explained.

Following nomenclatures are used in this document:

- *External Protocol:* Protocol that the Intesis integrates besides Modbus. i.e: if using the INMBSKNX***0000, KNX would be the *External Protocol*.
- Intesis or gateway: the words "gateway" or "Intesis" are used instead of the full product name (Intesis BACnet/IP Server integrating an *External Protocol*). Any other use of the word "gateway" not meaning that will be specifically indicated.
- Configuration Tool: Intesis MAPS

2. Installation

The tool is supplied in the shape of a self-extracting setup utility. Supported operating systems are Windows 7 and onwards versions of the Windows OS.

The configuration tool can be downloaded from:

https://www.intesis.com/docs/software/intesis-maps-installer

The web browser will ask for saving the file. Select ***Save File*** and wait for the file to download.

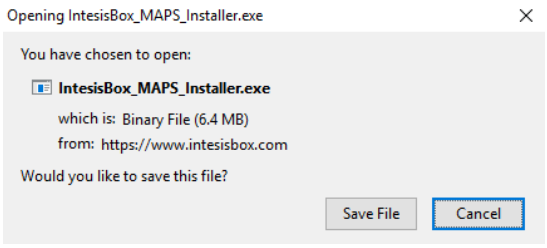

Figure 2.1 Downloading Intesis MAPS

Once downloaded, double click on the ***Intesis_maps_installer.exe*** file and follow instructions provided by the installation wizard.

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3. Welcome page

After starting the Intesis MAPS, by clicking its program entry under Windows Start menu (or any other established link), the welcome page will prompt.

This window is used to show general information, latest news and the project management and creation. All these parts are explained in the detail in the following sections.

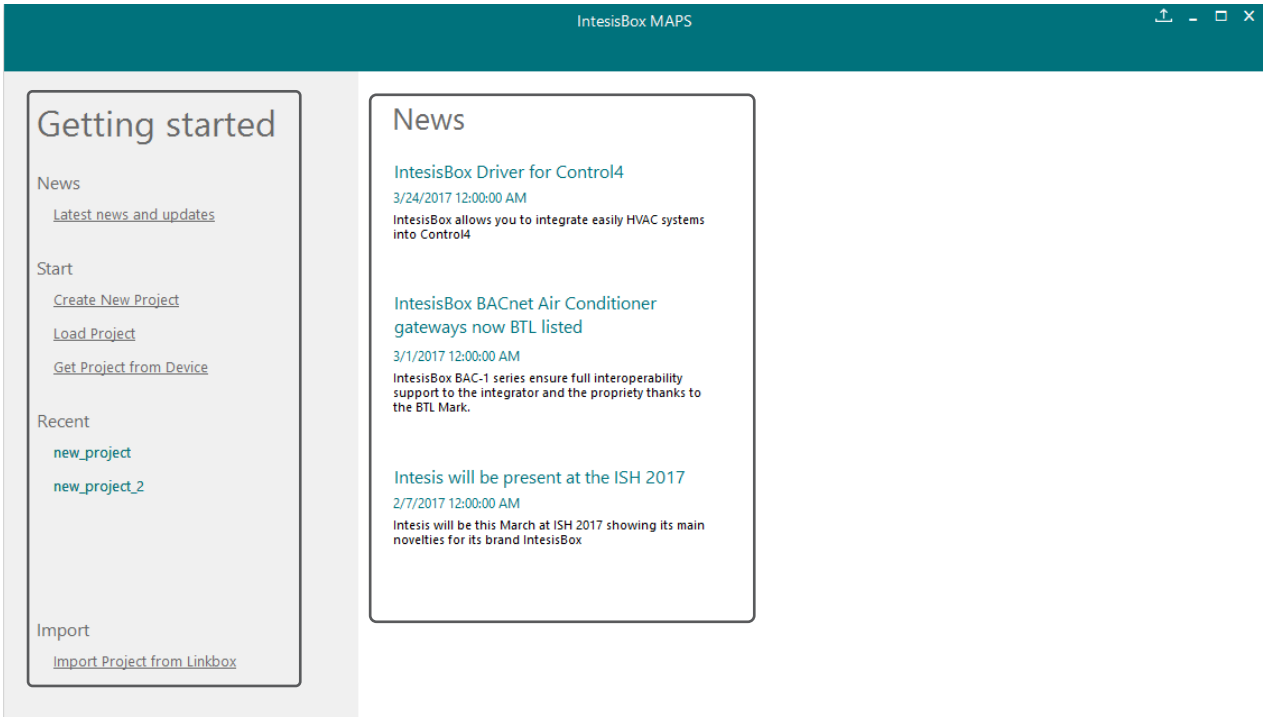

Figure 3.1 Welcome page

3.1 News

This link provides access to the welcome page to check the latest news related to the Intesis gateways and MAPS configuration tool.

Use this section to get the latest information related with our products.

3.2 Create New Project

Create a new project from an existing template. In order to start a specific integration project, simply select one of the available templates from the list.

Note: The template is an example of an integration and may be used under this scope. Depending on the type of integration, some parameters may not be left as by default and shall be modified. Please check your Intesis gateway user manual for more information on some of the specific parameters configuration.

Click on the Modbus logo to list all available project templates for the Modbus Server gateway series.

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Make sure that you select the right template according to the external protocol of the gateway.

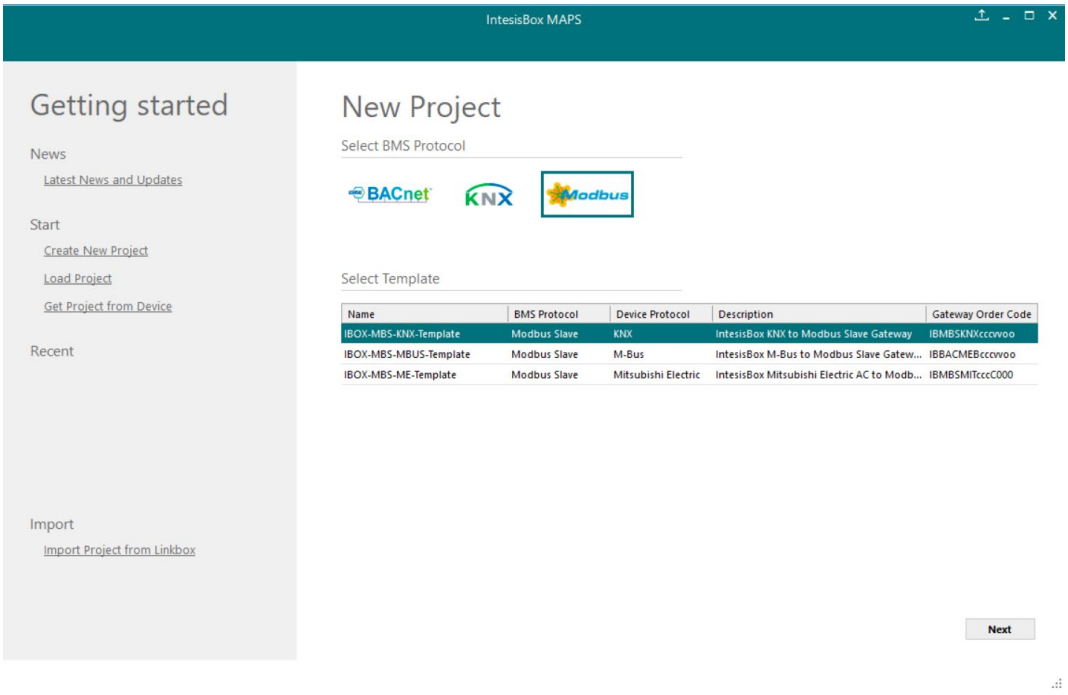

Figure 3.2 Project template selection

3.3 Load Project

Load an already existing project to the configuration tool. In order to import an existing project already programmed, use the ***Load Project*** option and select the project from the PC or external storage device where the project is stored.

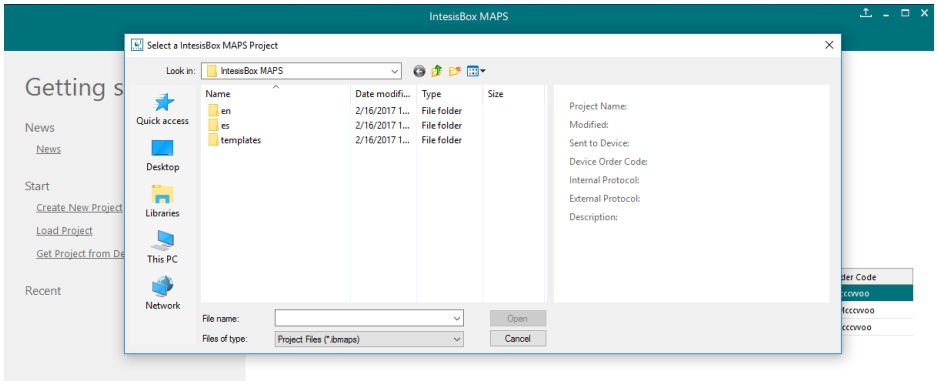

Figure 3.3 Project selection window

After selection, the project will be loaded and configuration can be started as if using a brand-new project, but with all previous work in the project present.

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3.4 Get Project from Device

Use this function to download the current configuration running in the gateway and to import it to the configuration tool. Notice that connection from the configuration tool to the gateway is required.

Depending on your firewall configuration, a warning message like the one below may appear:

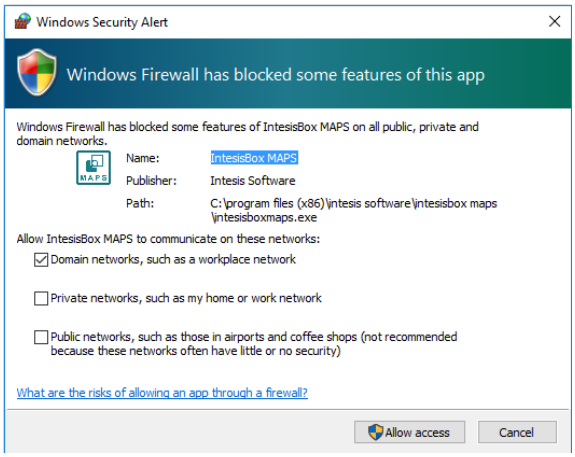

Figure 3.4 Firewall warning message

After that, the tool will ask you where do you want to download the project. Please select the location and press the save button.

3.5 Recent

In this section, the last edited projects in this installation will be shown. It can be used for fast checking of the last projects updated.

3.6 Import Project from LinkBox

This special function allows the use of old LinkBox projects on the configuration tool. To import the project, simply select the folder and click on the "Select Folder" button.

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4. Navigation

To work with the configuration tool, the menu and the tool bar (Figure 4.1) need to be used. In the following lines, a brief explanation and links to the corresponding sections can be found.

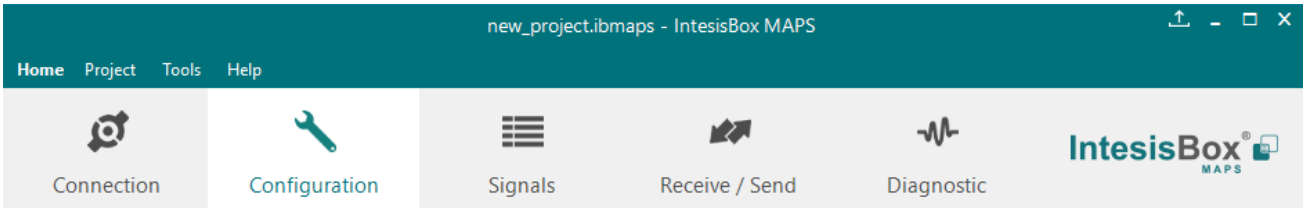

Figure 4.1 Menu and Tool Bar

4.1 Home

This option brings you back to the Welcome page. Check section 3 for more information.

4.2 Project

This option let the user apply basic functions to the project, such as create new projects, load an already existing project, save the project and close the configuration tool.

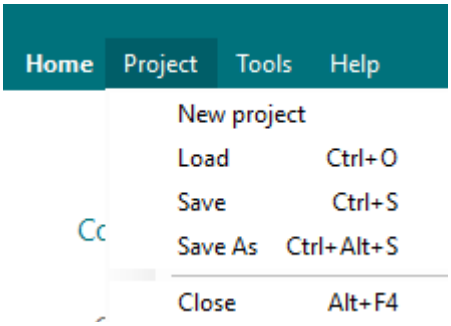

Figure 4.2 Project options

- **New project:** Moves back to the Welcome page and let you select a new project.
- **Load:** Opens a selection window to pick up the project you wanted to load.
- **Save:** Saves the current project changes in the same file. If it is the first time, it will ask for the project location. Otherwise, it will automatically update the current project file.
- **Save As:** Saves the current project into a different location or with a different name from the current one.
- **Close:** Closes the configuration tool.

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4.3 Tools

This option provides access to language settings and Gateway firmware update.

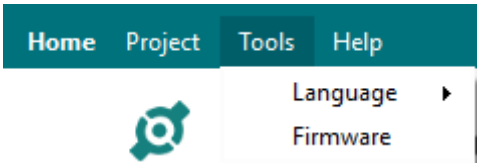

Figure 4.3 Tools options

- **Language**: This option allows the user to select one of the available languages. Once the language is selected, you need to reboot the software for the new language configuration to be applied.

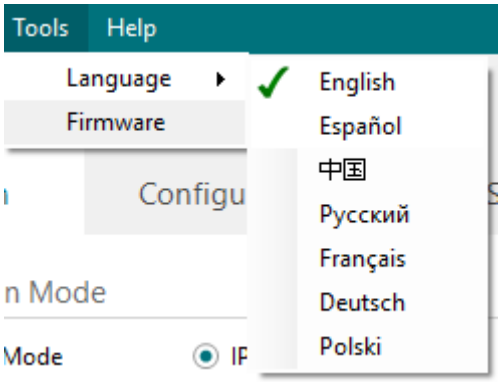

Figure 4.4 Language selection

- **Firmware**: By default, information shown is only the one coming from the current gateway status. In case the user is interested in checking for new firmware updates, the "Check for Update" button needs to be pressed.

  In case there is any update available, a summary for the new update information will be shown in the "Firmware Update Information" side of the window. If the user is interested, the "send" button should be pressed to update the box.

IMPORTANT: Please notice that the firmware update process shall not be interrupted. Make sure that you go for the update process while in a safe location (no risk of power blackouts or similar).

NOTE: If the Gateway is already working as expected, the update may not be advisable. Please, make sure that you update the gateway only when required.

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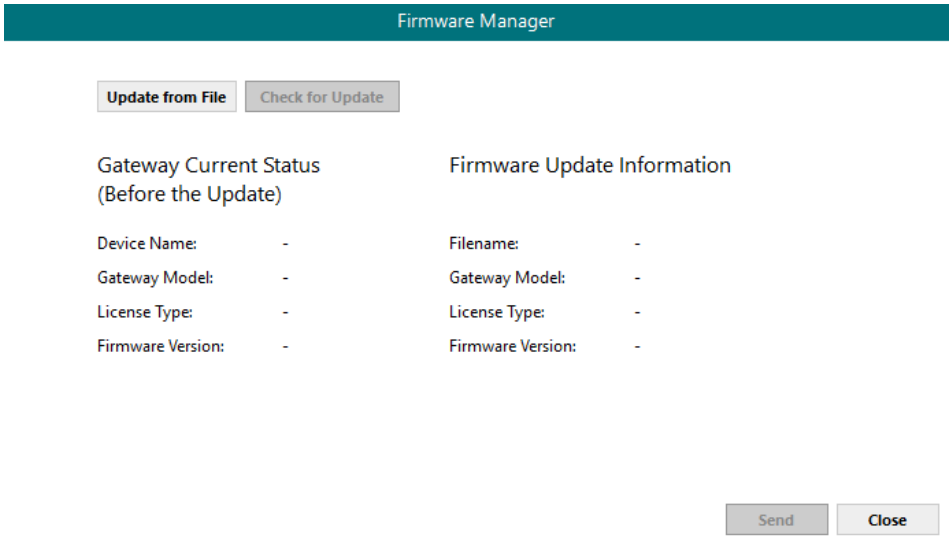

Figure 4.5 Firmware Manager view

4.4 Help

Extra information about the software is shown in this section.

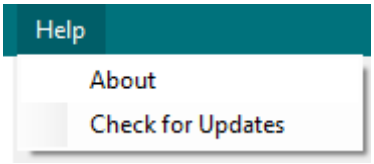

Figure 4.6 Help menu

- **About:**

  It prompts information about the current configuration tool version.

Figure 4.7 About information

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- **Check for Updates**
  Periodically, new free versions of Configuration Tool are released. Those new releases include improvements, fixes, support for new firmware versions of Intesis or support for newer Intesis products.

  This option automatically checks if there is any newer version and in case it exists, it offers the possibility to download and update the software. Notice that this requires Internet connection.

4.5 Footer

In the footer, relevant information about the connection status and protocols used can be found.

Figure 4.8 Footer

- **Connection Status:** It indicates if the Configuration Tool is connected or not with the Gateway.

Figure 4.9 Connection status options

It can also be used to connect or disconnect clicking directly on the icons

- **Internal Protocol:** It indicates the current Internal Protocol (Modbus in this case).

- **External Protocol:** It indicates the current External Protocol (it will depend on the specific Gateway model.

- **Date**: Current time and date.

NOTE: Footer color may change from red to any other when there is connection between the gateway and the configuration tool.

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5. Connection

In this section, it is detailed how to set the communication and monitor the Intesis.

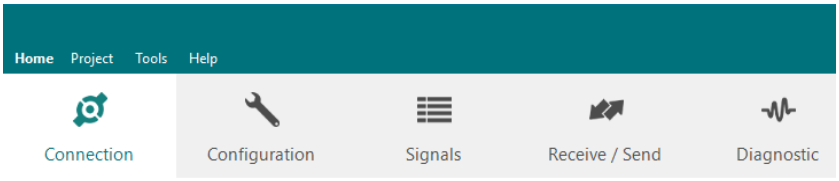

Figure 5.1 Connection section

There are two different ways of communicating the Configuration Tool with the Intesis (check the Connection section in your Intesis User Manual): using the USB port or the Ethernet network. In the following lines, the configuration of both is explained as well as the functionalities of the Configuration Tool when connected or not.

When there is no connection with the Intesis, Intesis MAPS allows the creation and edition of configuration projects. That includes setting the linked signals, protocol parameters …

When the Configuration Tool is connected to the Intesis, it can perform other functionalities such as monitoring the communication and sending the configuration files to the device (sections 9.4 and 8.1 respectively).

5.1 IP connection

If connection with the Gateway shall be done by Ethernet IP network, select IP as the *connection mode*. The software will automatically scan the current network where the PC is connected looking for Intesis gateways.

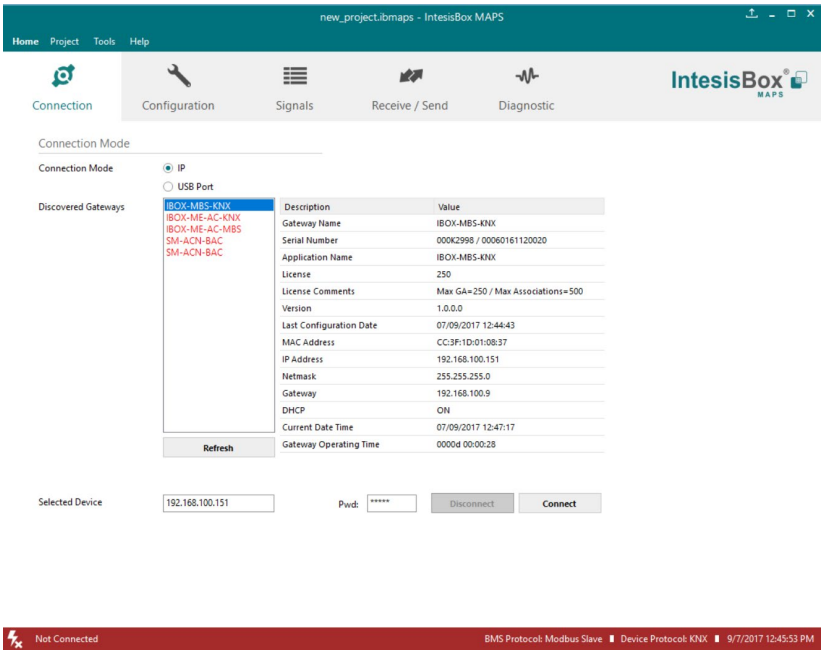

Figure 5.2 IP connection

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In the *Discovered Devices* list, all gateways found will be listed. In black, gateways that match the current project selected. In red, gateways that do not match the current project selected.

If no gateways are shown, please check your network connection parameters and make sure that the gateway is powered and connected.

Notice that relevant information can be checked by clicking on each gateway (Figure 5.3).

Once the device is selected, connection will be started by pressing the connect button , on the bottom left corner, or clicking on the ***Connect*** button.

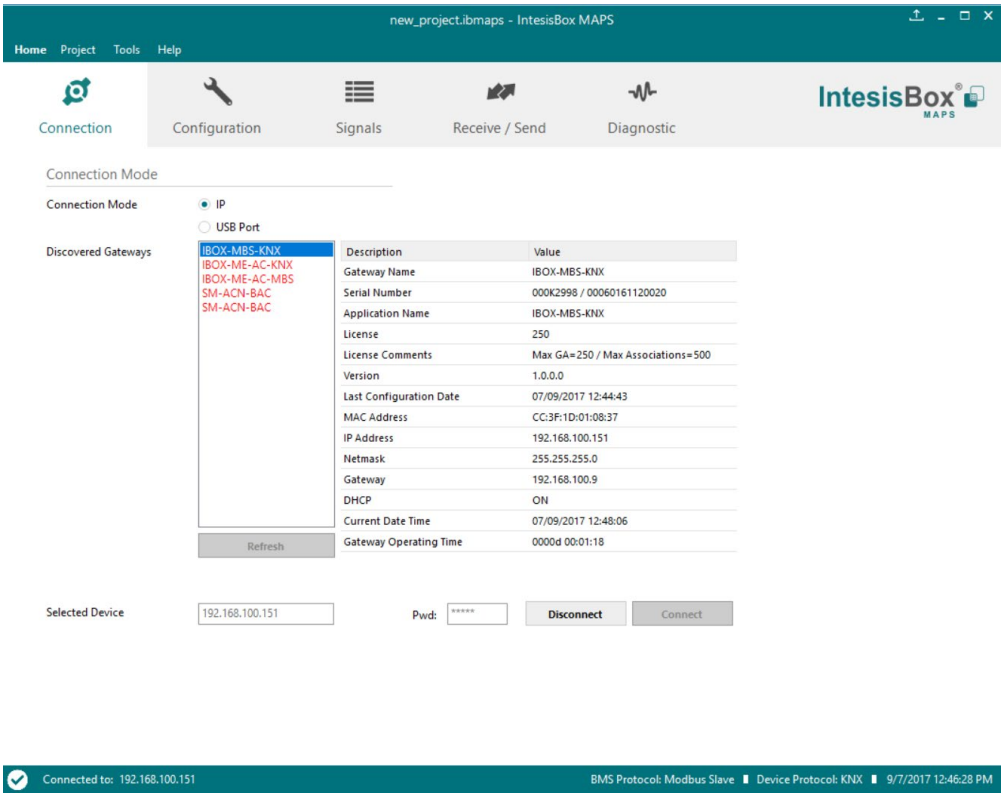

Figure 5.3 IP connection

If connection has been successful, the footer will turn from red to any other color prompting the current IP of the gateway where the configuration tool is connected to.

To disconnect, simply click on the connect button again.

IMPORTANT: Notice that if connecting through IP, a password is required. By default, the password is "admin". Find more information on how to change the password on section 6.

NOTE: By default, the gateway is offered with DHCP enabled. If you want to change this setting, please check section 6.

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5.2 USB connection

If Ethernet IP connection is not possible or if USB is preferred, select USB port in the *Connection Mode*. A list of available COM ports on the PC will be listed. Select the COM port where the USB cable is connected.

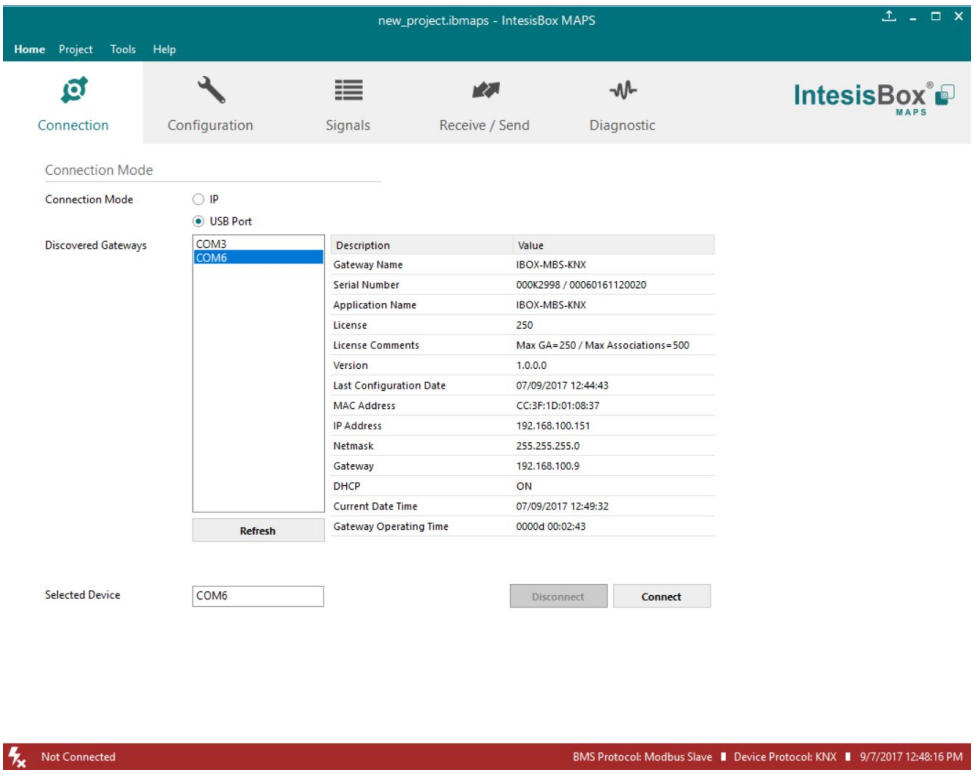

Figure 5.4 USB connection

If the device does not appear or if the COM port list is empty, please check the USB connection on both sides (gateway and PC) and check the Windows Device Manager to check if there is any issue regarding COM ports.

To disconnect simply click on the *Connect* button again.

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6. Configuration

In this section, main configuration parameters for the gateway and both, internal and external protocols, can be modified to match the project requirements.

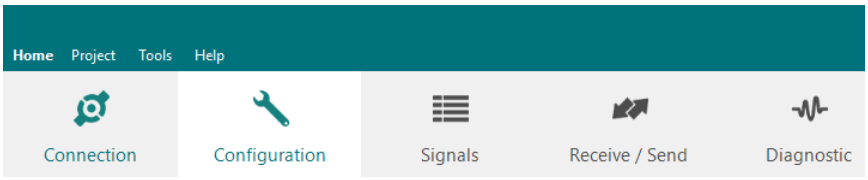

Figure 6.1 Configuration

6.1 General

In the general section, all options related to generic gateway parameters can be defined.

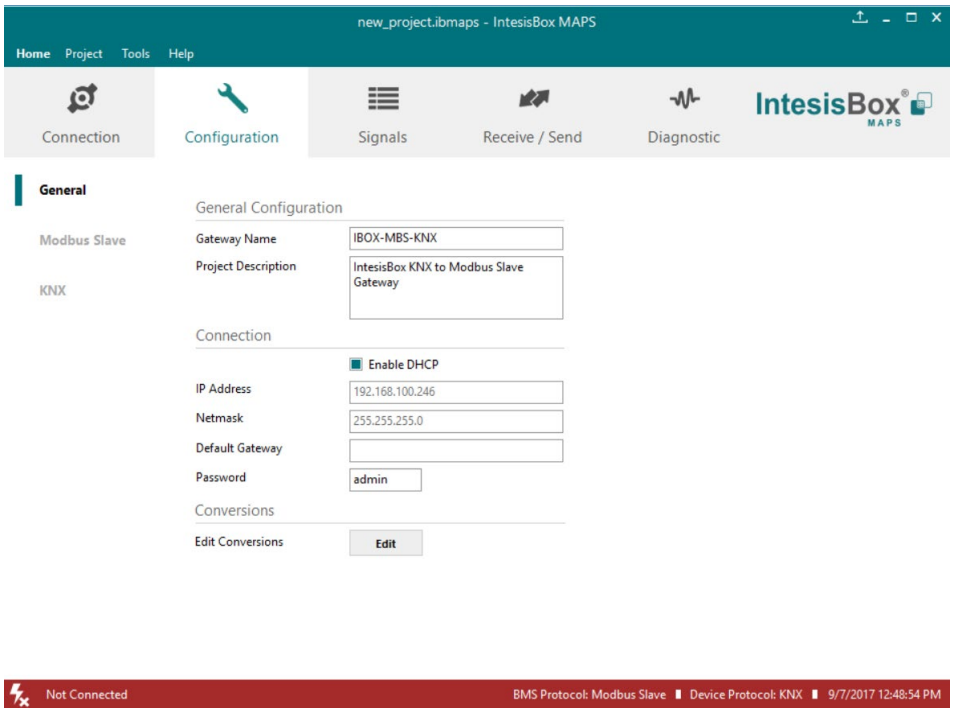

Figure 6.2 General configuration

1. **Gateway name**
   Name of device. It can be modified by the user to simplify its identification inside the project. This name is not related to neither the external or internal protocol.

2. **Project description**
   Short description of the project. It can be modified by the user to simplify its identification inside the project. This name is not related to neither the external or internal protocol.

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3. **IP Address** [1]
   IP address associated to the gateway. It can be modified by the user to match the project requirements. This IP will be the same one to be used on the Modbus/IP side in case of using Modbus/IP communication.

4. **Netmask** [1]
   Network mask to be applied on the IP communication. It can be modified by the user to match the project requirements. This netmask will be the same one to be used on the Modbus/IP side in case of using Modbus/IP communication.

5. **Gateway** [1]
   Default gateway to be applied on the IP communication. It can be modified by the user to match the project requirements. This default gateway will be the same one to be used on the Modbus/IP side in case of using Modbus/IP communication.

6. **Password**
   This is the password to allow connection to the Gateway when using IP connection (see section 5.1). By default, the password is set as "admin", but can be modified by the user at any time.

   In order to change the password, simply set the desired password in this field and download the configuration to the Gateway. You can find more information on how to download the configuration in section 8.1.

   IMPORTANT: Please, in case of changing the default password, please keep it posted or noted in a safe place to be used in the future.

7. **Conversions**
   In this section, different conversions can be defined on the MAPS so values from the Internal to the External protocol or vice versa can be modified to help the integrator matching the project requirements.

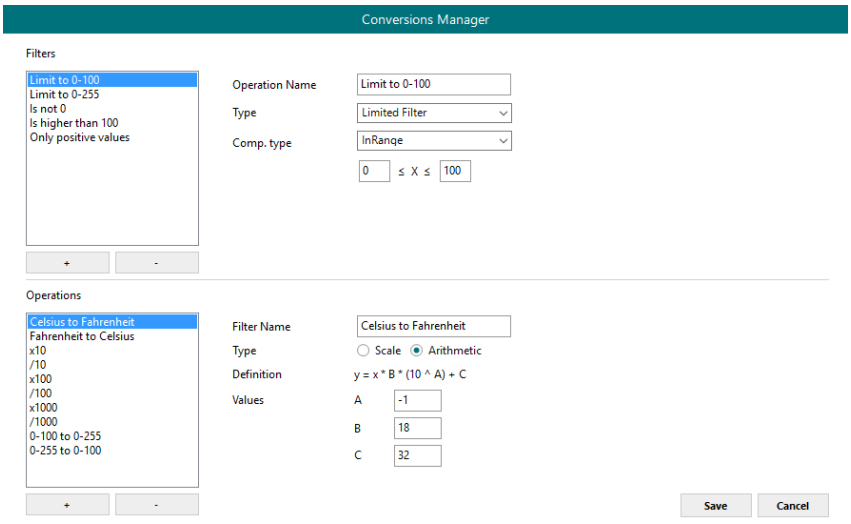

Figure 6.3 Conversions

[1] This setting does not apply if the "Enable DHCP" option is selected. In that case, this parameter will be automatically set by the DHCP server.

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6.2 Modbus Slave

In the Modbus Server section, all parameters related to the Modbus side can be configured.

6.2.1 Modbus Configuration

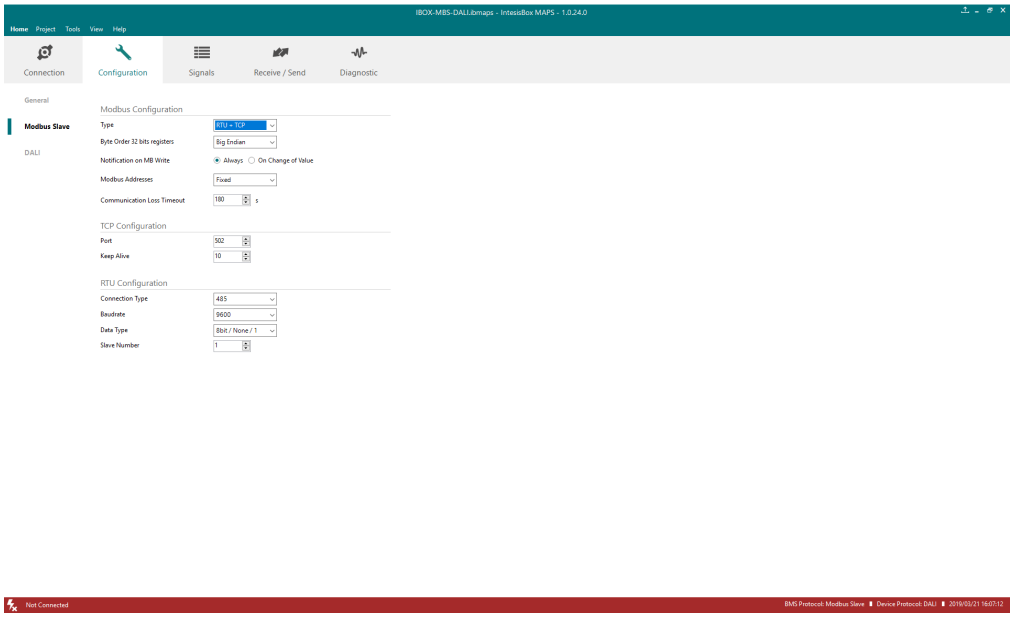

Figure 6.4 Menu and button Bar

1. **Byte Order 32 bits registers**
   Defines the Modbus 32 bits registers byte order. Available options are:

   - Big Endian (MSB..LSB)
   - Little Endian (LSB..MSB)
   - Word Inv BE
   - Word Inv LE

   Example:

Byte order type	HEX raw value	Decimal value
Big Endian	0x00112233	1122867
Little Endian	0x33221100	857870592
Word Inv BE	0x22330011	573767697
Word Inv LE	0x11003322	285225762

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2. **Type** [2]
   Defines the Modbus interfaces available. Available options are:

   - **RTU**
     If this option is selected, the Modbus interface of the gateway will work in Modbus RTU mode (RS232 or RS485 connection, gateway's PortB).

   - **TCP**
     If this option is selected, the Modbus interface of the gateway will work in Modbus TCP mode (Ethernet connection)

   - **RTU + TCP**
     If this option is selected, the Modbus interface of the gateway will work in Modbus TCP and Modbus RTU modes simultaneously.

3. **Notification on MB Write**
   This option regulates the gateway's behavior with respect the writes on the Modbus side from the Modbus master.

   - **Always**
     Every time a Modbus write is received, its value is sent to the External protocol.

   - **On change of value**
     Values received from the Modbus side, will be only sent to the External protocol if they change.

4. **Modbus Addresses (*If available*)**
   Defines type of Modbus register list. Available options are:

   - **Fixed**
     The Modbus addresses has been calculated with a formula explained on the user manual of the specific gateway. Addresses cannot be modified.

   - **Custom**
     The Modbus register list can be freely edited.

   - **V4 compatibility**
     Only Modbus addresses compatible with V4 gateways will be active. Addresses cannot be modified.

   NOTE: Custom configuration takes initial parameters of the previous configuration.

5. **Communication Loss Timeout**
   Defines the time without Modbus messages (read or write messages) to detect a communication lost.

[2] RTU connection is not available for the INMBSDAL1280000

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6.2.2 Modbus Configuration

1. **Modbus RTU**
   This will apply only if Modbus RTU is selected.

   a. **Connection type**
      Select the physical connection type.

      i. **485**
         Physical connection with the Modbus Master is done through standard RS485 connection on PortB

      ii. **232**
         Physical connection with the Modbus Master is done through standard RS485 connection on PortB.

   b. **Baud rate**
      Select the Modbus MSTP communication speed. Possible values are:

      1200 | 2400 | 4800 | 9600 |19200 | 38400 | 57600 | 115200

   c. **Data type**
      Select the corresponding data type. Possible values are:

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

   d. **Slave number**
      Select the corresponding Modbus slave address to be applied to the gateway. Possible values are 1 to 255.

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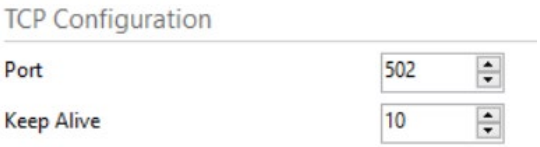
2. **Modbus TCP**
   This will apply only if Modbus TCP is selected.



   a. **Port**
      Select the TCP port to be used for the Modbus TCP communication. By default, it is set to 502.

   b. **Keep Alive**
      Select the time of inactivity before sending a keep alive message. Possible values are 1 to 1440, expressing minutes. If '0' value is set, the keep alive function will be disabled for the Modbus TCP communication.

6.3 External protocol

Please, check the Annex section and your Gateway User Manual for more information on the specific configuration of the external protocol parameters.

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7. Signals

In this section, the main configuration for the signals on both external and internal protocols will be set.

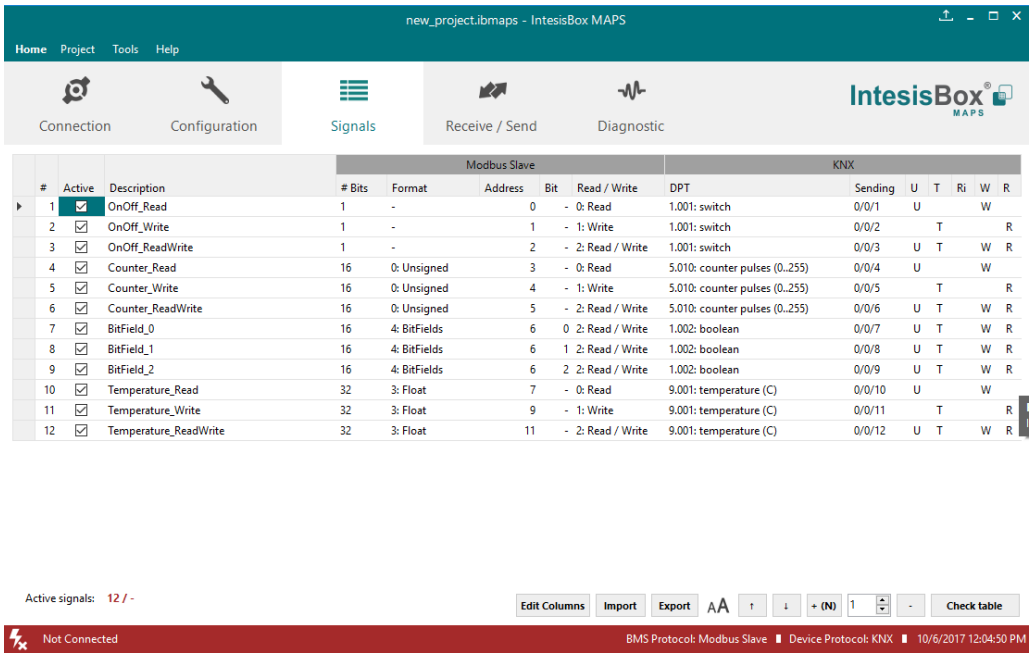

Figure 7.1 Default view

7.1 Extra functions

Find below a list of extra functions or tools available in the Signals view.

7.1.1 Edit Columns

Edit Columns

It shows/hides columns on the Signal table to help the integration tasks.

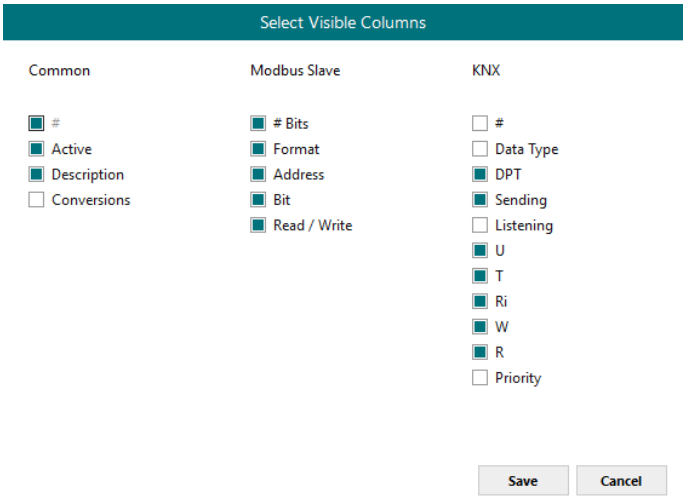

Figure 7.2 Edit Columns view

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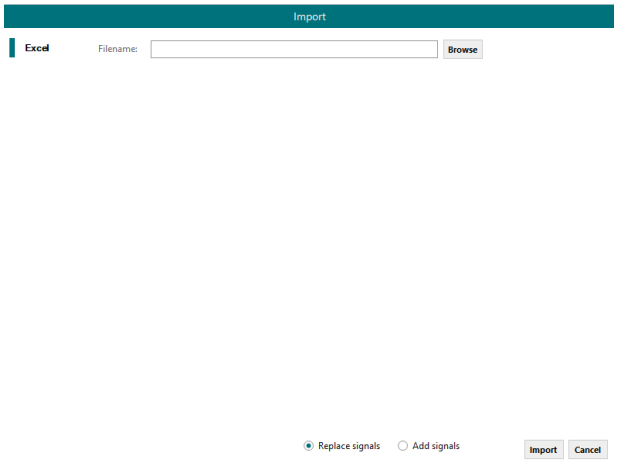
7.1.2 Import

Import

Import previous exported Excel files to the project. This can be useful in case you want to manage some special configuration on Excel to speed up the signals list creation. Notice that this will need to be used in very few scenarios as the Configuration Tool already offers lots of options and tips to create the signal's table in a fast and easy way.



Notice that there are two Import options: ***Replace*** and ***Add Signals***.

- **Replace:** This will replace (overwrite) current signals in the Signal table.
- **Add Signals:** This will add the imported signals to the Signal table without replacing the current ones.

7.1.3 Export

Export

This function will allow configuration exportations into an ***Excel*** file.

- **Excel:** This will export the Signal table into Excel format to allow extra manipulation or consultation from Excel. This may be helpful to share integration information with other integrators that do not have the Configuration Tool.

7.1.4 Font size

AA

It changes the font size to help on the visualization. It is a toggle function: on each click it will change from big to small and vice versa.

7.1.5 Move Up/Down

↑ ↓

It moves one row Up or Down the selected signal inside the Signal table on each click.

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7.1.6 Add Multiple Rows

It adds new signals to the Signal table. The number of new signals can be selected in the text box.

7.1.7 Delete Rows

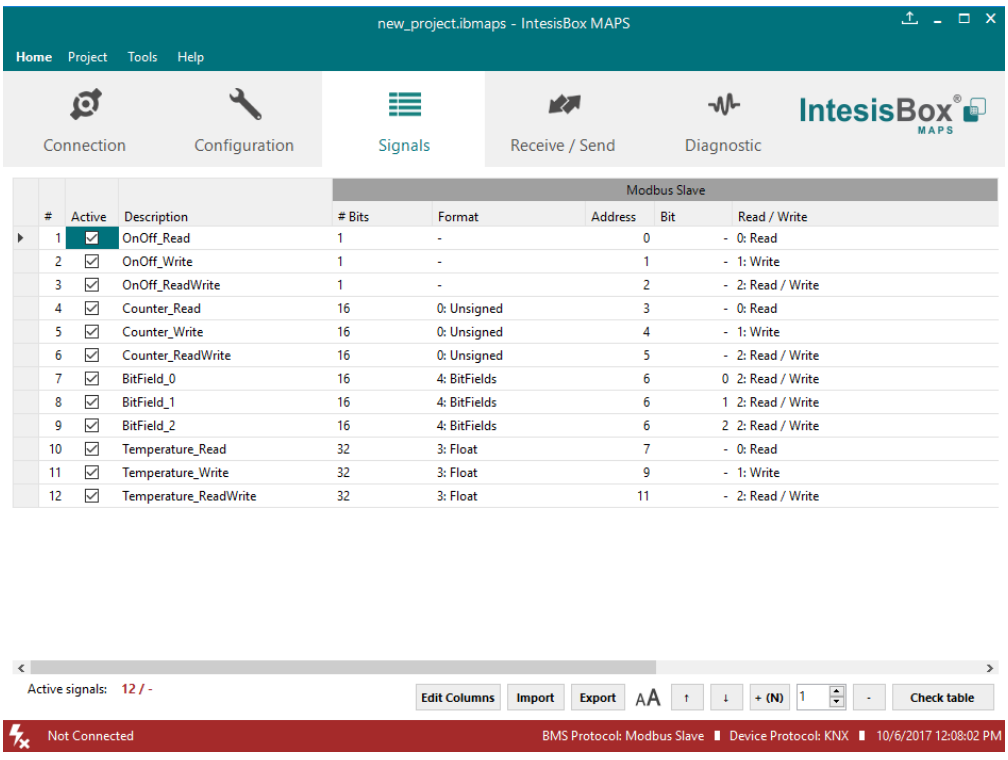
It deletes the selected rows. If it is required to erase more than one signal (row), select them previously and then press the ***Delet Rows*** button to erase all selected rows.

7.1.8 Check Table

This option verifies that the current configuration in the Signal Table is OK from a theoretical point of view. That means that this check will not include integration issues related to bad addresses, mistakes or confusions of the integrators information. It will only check that the standard defined conditions and properties are fulfilled.

7.2 Signals configuration

Next, there is the description for common and Modbus specific parameters to be configured on each signal.



1. **Active**
   If selected, the signal will be considered in the configuration and will be downloaded to the Gateway as active.

2. **Description**
   Signal description to easily identify the Modbus register to communicate with.

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3. **# Bits**
   It indicates the signal size expressed in bits.

4. **Format**
   It indicates the register information format.
   Unsigned, Signed C2, Signed C1, Float and Bit Fields.

5. **Address**
   It indicates the register signal starting address.

6. **Bit**
   If using multiple bit (bit fields), it indicates the bit you want to read.

7. **Read/Write**
   It indicates if the Modbus function is used to read (Modbus functions 1, 2, 3 and 4 supported), if the Modbus function is used to write (Modbus functions 5, 6, 15 and 16 supported) or both.

8. **Conversion**
   It is used to define the conversion that you want to apply. This conversion can be checked or selected as stated in section 6.1.

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7.3 Tips and tricks

7.3.1 Text Edit

On editable cells, click on the cell. The text is going to be highlighted and it can then be modified.

7.3.2 Multiple Values selection

1. Select using the left mouse button (clicking and dragging), the field of all the rows in the list which you want to change the values (must be consecutive rows). In case you want to use non-consecutive rows, use the CTRL+click option.

2. Click in the cell options icon.

3. A contextual menu with the possible values will show up.

4. Select the desired value.

5. All the selected cells are going to be changed to the chosen value

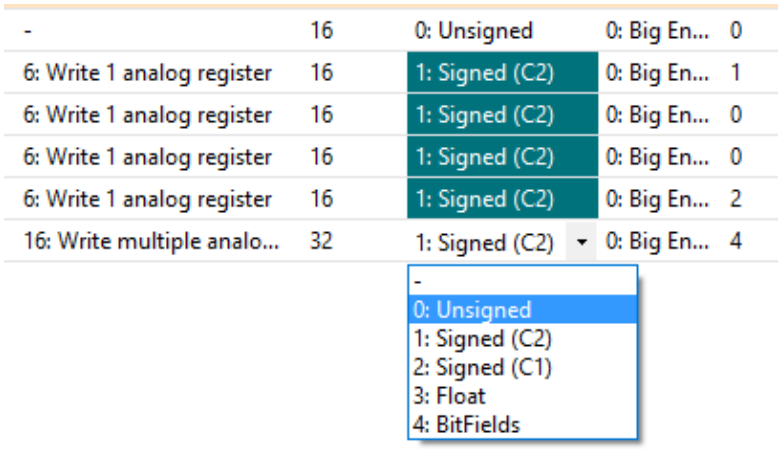

Figure 7.3 Multiple value selection

7.3.3 Auto numeration

In some cells values, can be either modified one by one or auto numerated. To do so follow the steps below:

1. Select using the left mouse button (clicking and dragging), the field of all the rows in the list which you want to automatically assign values (must be consecutive rows). In case you want to use non-consecutive rows, use the CTRL+click option.

2. Click right mouse button over the selected fields and select *Auto Enumeration* option from the pop-up menu that will appear.

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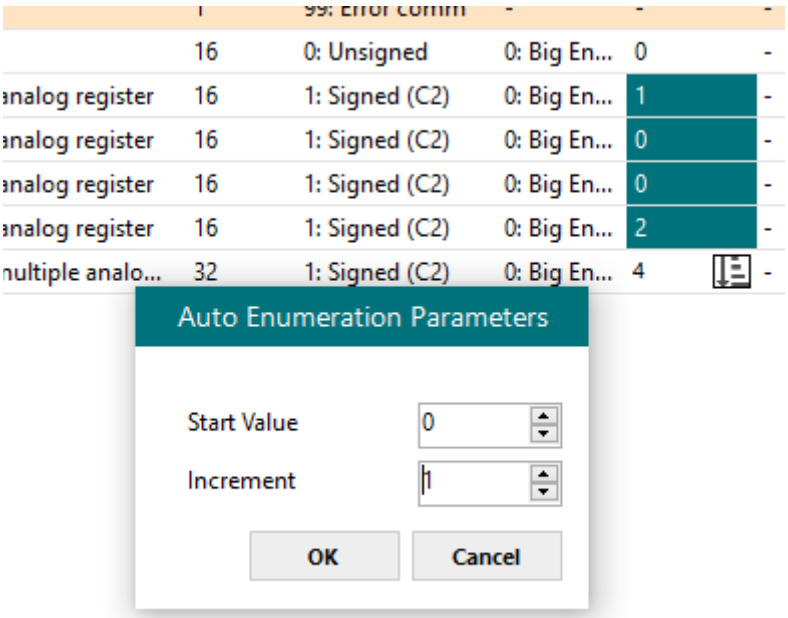

Figure 7.4 Auto numeration selection

3. Enter the Start Value.

4. Enter the increment between consecutive assignments.

   For example selecting 100 for the first value and an increment of 1, the values generated will be 100, 101, 102, 103, 104… and so on. To assign the same value to all the rows (useful to assign the same Device number in the column *Dev* for some consecutive rows) just select the desired value and an increment of 0.

5. The values are changed accordingly.

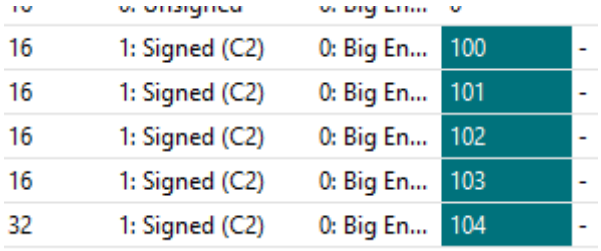

Figure 7.5 Values auto numerated

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8. Send/Receive

8.1 Send

This option will send the current configuration to the Gateway.

If the project was not saved, it will ask you first to save the changes and afterwards starts the download.

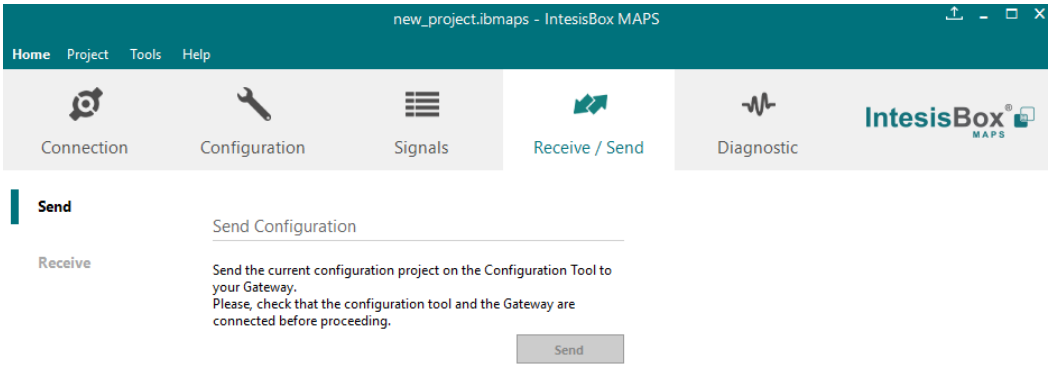

Figure 8.1 Button Bar

8.2 Receive

This option will download the current configuration from the Gateway to be stored in the PC.

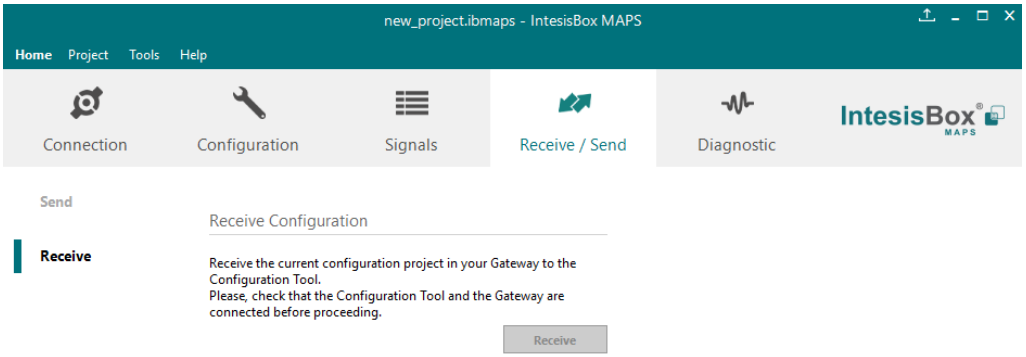

Figure 8.2 Button Bar

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9. Diagnostic

To help integrators in the commissioning tasks and troubleshooting, the Configuration Tool offers some specific tools and viewers.

In order to start using the diagnostic tools, connection with the Gateway is required.

The Diagnostic section is composed by two main parts: Tools and Viewer.

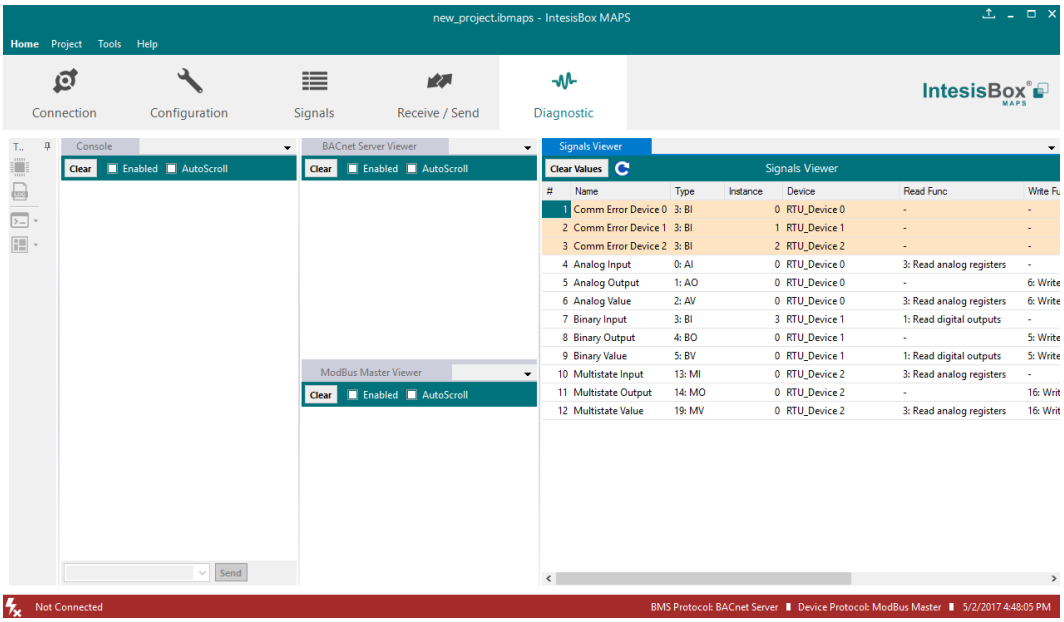

Figure 9.1 Diagnostic

9.3 Tools

The tool bar located in the left side of the window.

Figure 9.2 Tool bar

It offers 4 main tools:

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9.3.1 Hardware Test

It initiates a hardware test on the gateway to identify possible hardware issues. During the hardware test, standard communications with external and internal protocols will stop.

9.3.2 Log

It sets the Configuration Tool into *logging mode*. This will record all information present in all viewers and zip it in a compressed file. This file can be then sent to the support team to help in any issue you may have.

9.3.3 Commands

It is used to send specific commands to the Gateway, such as:

- INFO?: Requests general information from the Gateway
- RESET: Resets the Gateway
- Enable COMMS: Enable communications in all viewers
- Disable COMMS: Disables communications in all viewers

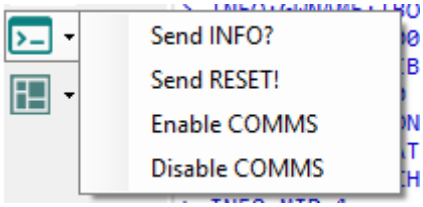

Figure 9.3 Available commands

9.3.4 View preferences

It offers several viewers layouts to help the integrator checking the required information on each moment.

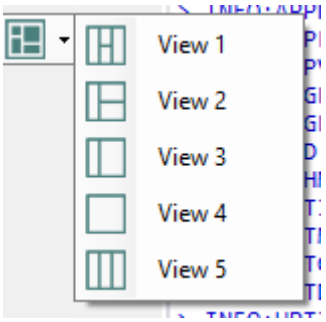

Figure 9.4 View selection

Notice that apart from the predefined options, the user will be able to place the different viewers according to its own needs manually.

9.4 Viewers

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The Configuration Tool offers 3 different viewers to monitor communications: ***Console, Internal Protocol (Modbus Server)*** and ***External Protocol***.

On each viewer, there are some common options:

- **Clear**
  It clears all information in the viewer.

- **Enable**
  It enables/disables the information to be shown in the viewer. It may be helpful if information from a specific viewer is not required and communication payload is required to be reduced to improve the other viewers' performance.

- **Autoscroll**
  It enables/disables auto scroll on the specific viewer so when new information is received the viewer automatically will scroll down to allow last information to be visible.

9.4.1 Console

It is used to display general information of the gateway not related to specific Internal or External protocol communication. Remember that the Gateway

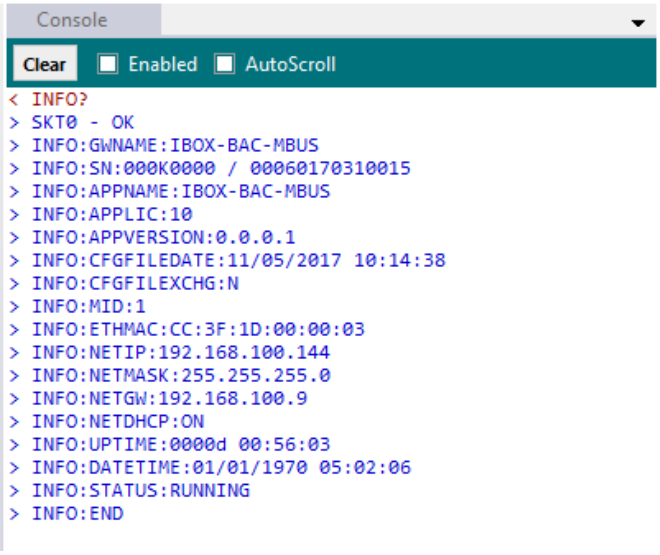

Figure 9.5 Console View

9.4.2 Modbus Server Viewer

To monitor the Modbus bus, the software needs to be connected to the Gateway. It shows frames related to the Modbus communication.

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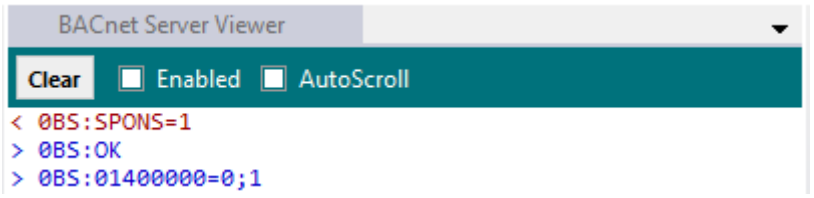


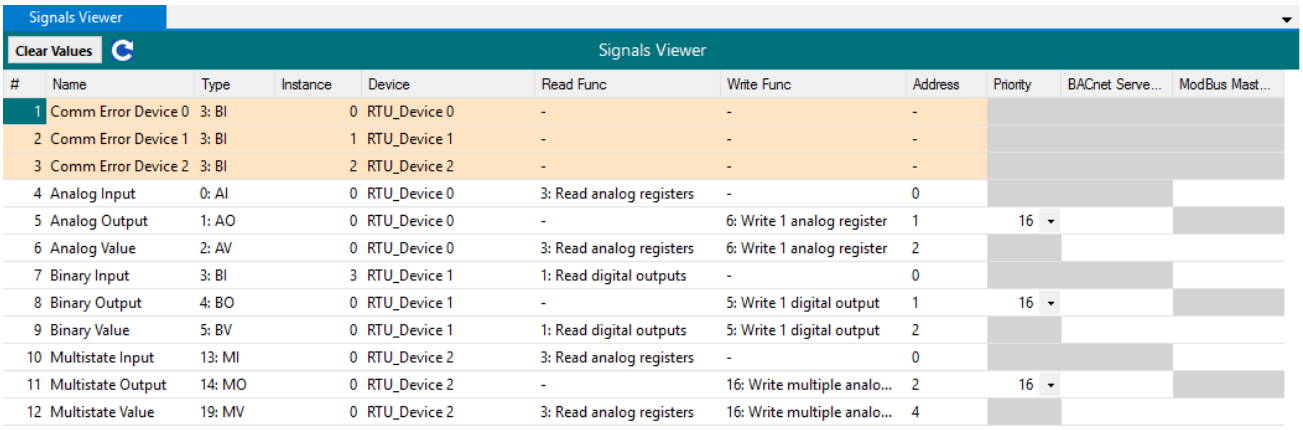
Figure 9.6 Console View

9.4.3 External Protocol Viewer

To monitor the External protocol bus, the software needs to be connected to the Gateway. It shoes frames related to the External protocol communication.

9.4.4 Signals Viewer

To supervise the configured signals, either being connected to the Gateway or not, check the Signals Viewer window. This window shows all active signals within the gateway with its main configuration parameters and its real-time value (if connected to the Gateway).



#	Name	Type	Instance	Device	Read Func	Write Func	Address	Priority	BACnet Serve...	ModBus Mast...
1	Comm Error Device 0	3: BI	0	RTU_Device 0	-	-	-			
2	Comm Error Device 1	3: BI	1	RTU_Device 1	-	-	-			
3	Comm Error Device 2	3: BI	2	RTU_Device 2	-	-	-			
4	Analog Input	0: AI	0	RTU_Device 0	3: Read analog registers	-	0			
5	Analog Output	1: AO	0	RTU_Device 0	-	6: Write 1 analog register	1	16		
6	Analog Value	2: AV	0	RTU_Device 0	3: Read analog registers	6: Write 1 analog register	2			
7	Binary Input	3: BI	3	RTU_Device 1	1: Read digital outputs	-	0			
8	Binary Output	4: BO	0	RTU_Device 1	-	5: Write 1 digital output	1	16		
9	Binary Value	5: BV	0	RTU_Device 1	1: Read digital outputs	5: Write 1 digital output	2			
10	Multistate Input	13: MI	0	RTU_Device 2	3: Read analog registers	-	0			
11	Multistate Output	14: MO	0	RTU_Device 2	-	16: Write multiple analo...	2	16		
12	Multistate Value	19: MV	0	RTU_Device 2	3: Read analog registers	16: Write multiple analo...	4			

Figure 9.7 Signal Viewer

If you connect to the Intesis when it's been running for a certain time, you should press the *Refresh* button to get updated values.

In order to force a specific value to a signal, double-click its *Value* field. This will display a dialog in which the desired value can be entered. This change will be transferred to the internal and External Protocol depending on their configurations (more information in the signals configuration of the User Manual of the Used Intesis.

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9.4.5 Filtering

To improve the visualization in the diagnostic section, a filtering mode is available. This filtering mode is selectable right clicking on the bus viewer.

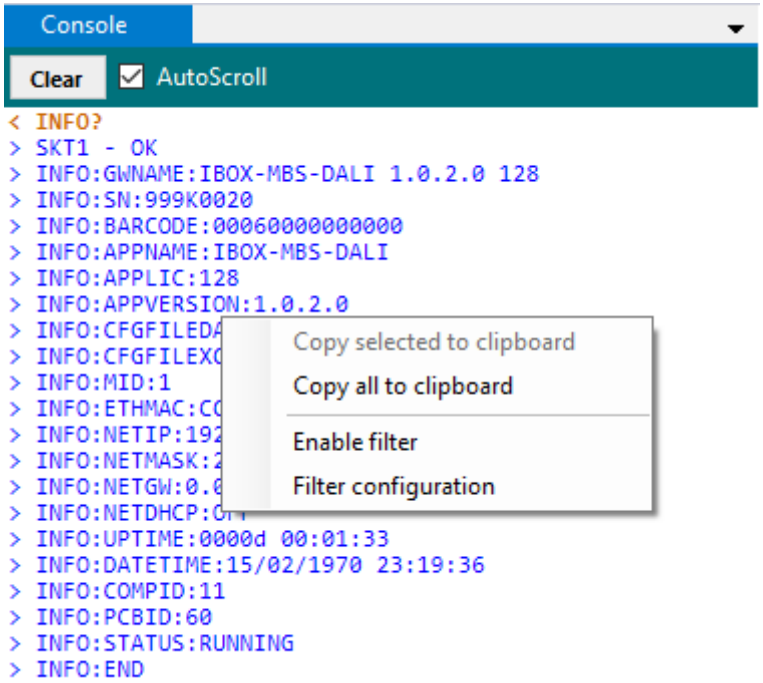

Figure 9.8 Filter contextual menu

- **Copy selected to clipboard**
  It copies to clipboard the selected information.

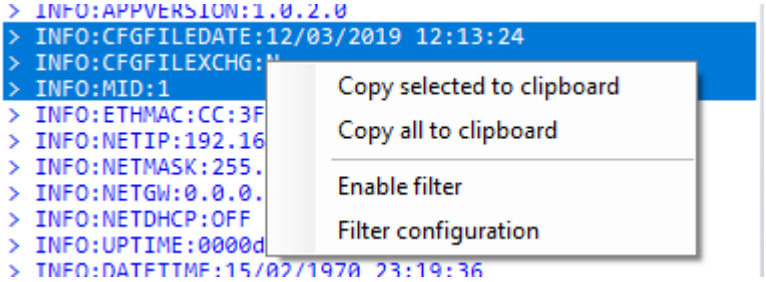

Figure 9.9 Copy selected to clipboard

If no lines are selected, the option ***Copy selected to clipboard*** is grayed out.

- **Copy all to clipboard**
  It copies all information in the bus viewer to the clipboard.

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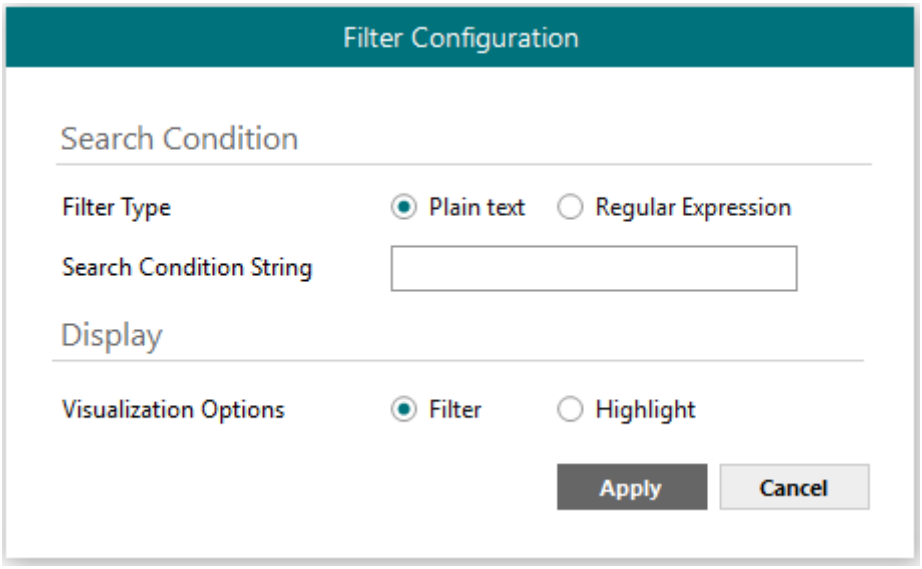
- **Enable filter**
  It enables/disables the configured filters. Click on the ***Filter configuration*** option to properly configure the filter.



- **Search condition**
  The software offers two different types of filter:
  a) **Plain Text**
     It searches all communication frames including the plain text introduced in the *Search Condition String*.

  b) **Regular expressions**
     It searches all communication frames fulfilling the regular expression in the *Search Condition String*. If you are not familiar with regular expressions, we recommend the use of the Plain Text option.

- **Display**
  There are two options regarding on how to show the filtered frames:
  a) **Filter**
     It removes all communication frames that do not fulfills the filter condition selected in the ***Search Condition***.

  b) **Highlight**
     It only highlights the communication frames that fulfils the filter condition selected in the ***Search Condition***.

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10. External protocols

10.1 KNX

10.1.1 Standard configuration

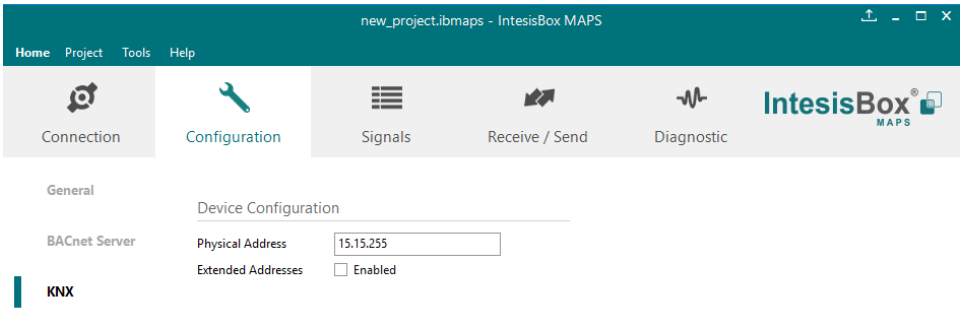

Figure 10.1 KNX configuration

1. **Physical Address**
   This parameter is used to set the KNX Physical Address (Individual Address) to set to the gateway. This is a unique identifier for the gateway inside a single KNX TP-1 segment. Max value is 15.15.255.

2. **Extended Addresses**
   This parameter is used to enable the use of KNX Extended Addresses. By enabling this setting, the range of KNX group addresses available increases from the standard 15/7/255 to 31/7/255.

IMPORTANT: Please, do not enable this feature unless required or under clear control of the integrator.

10.1.2 Signals configuration

Next, there is the description for common and KNX specific parameters to be configured on each signal.

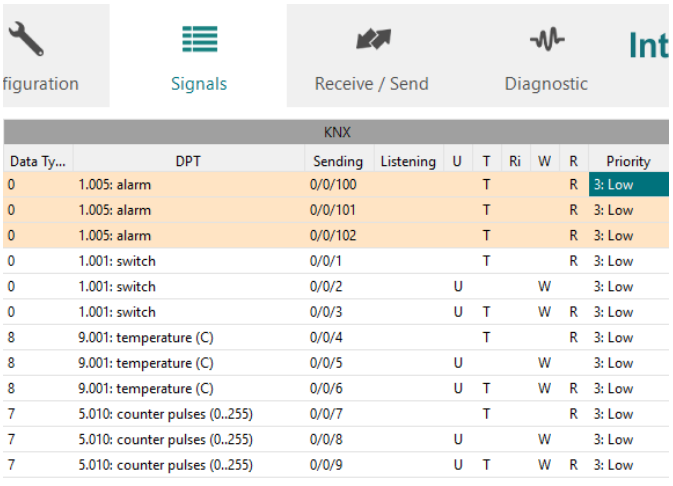

Figure 10.2 KNX signals

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1. **Data Type**
   EIS data type corresponding to the selected DPT column. Not editable, just for information.

2. **DPT**
   Select the KNX Data Point Type (DPT) to be used for each signal or KNX communication object.

3. **Sending**
   KNX sending group address associated to the communication object. 2 (P/S) and 3 (P/I/S) level format is supported.

4. **Listening**
   KNX listening group address associated to the communication object. 2 (P/S) and 3 (P/I/S) level format is supported. More than one group address can be used, comma separated.

5. **U**
   If selected, the KNX Communication Object will be updated after a KNX bus failure.

6. **T**
   If selected, the KNX Communication Object will be updated when a transmit telegrams are sent from KNX.

7. **Ri**
   If selected, the KNX Communication Object will be updated on initialization.

8. **W**
   If selected, the KNX Communication Object is ready to be written from KNX.

9. **R**
   If selected, the KNX Communication Object is ready to be read from KNX.

10. **Priority**
    Define the KNX priority for each KNX Communication Object. Values go from 0 to 3, being the '0' the one with the highest priority and 3 the one with the lowest priority.

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10.2 M-Bus

10.2.1 Standard configuration

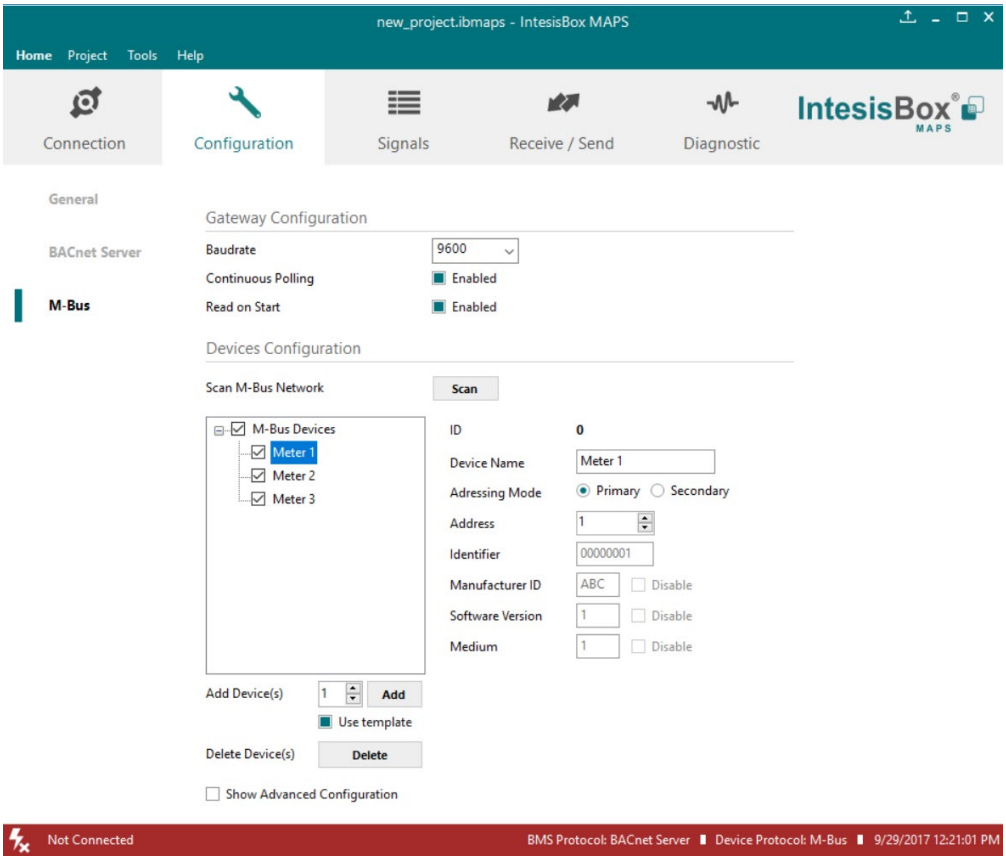

Figure 10.3 M-Bus configuration

1. **Gateway configuration**
   Select the type of M-Bus communication required with the M-Bus meter:

   A. Baud rate
   Determines the baud rate connection for the M-Bus gateway. Values may be set to:
   - 300 bps
   - 600 bps
   - 1200 bps
   - 2400 bps
   - 4800 bps
   - 9600 bps

   B. Continuous Polling
   Enables/Disables continuous polling from the gateway to the connected M-Bus meters and or devices.

   C. Read on Start
   If enabled, it forces the meter to update its M-Bus register to the last valid value on each reading from the gateway.

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2. Devices configuration

A. Scan M-Bus Network

This option forces the box to scan the M-Bus network, searching for devices.

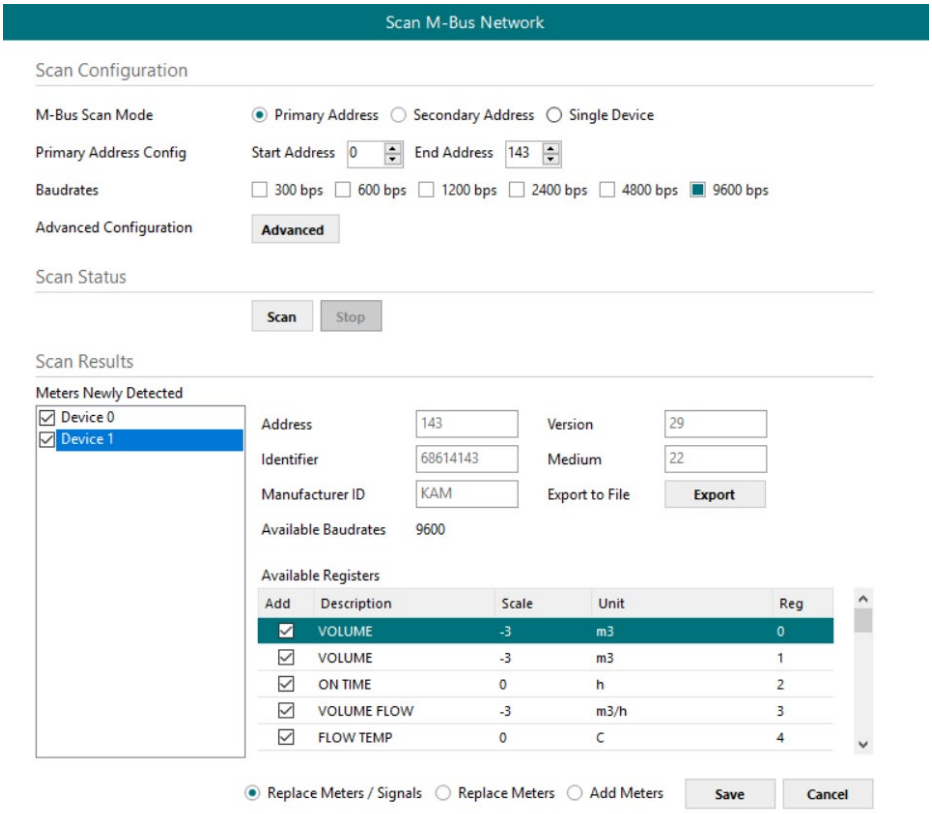

Figure 10.4 M-Bus scan options

- **Scan configuration:**
  - **M-Bus Scan Mode:**

1. **Primary Address**
   If this option is selected, the scan will be done using primary address. ***Start Address*** and the ***End Address*** can be adjusted to minimize the scan period. Value ranges may vary from 0 to 254.

2. **Secondary Address**
   If this option is selected, the scan will be done using the secondary address.

3. **Single Device**
   If this option is selected, the scan will be done using a broadcast message sent to the M-Bus bus. If this option is used, only one single M-Bus device must be connected to the bus.

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- **Primary Address Config:**

  a) **Start Address**
  Indicates the M-Bus meter starting address for the Scan process.

  b) **End Address**
  Indicates the M-Bus meter ending address for the Scan process.

- **Baud rates:**
  It is used to select the different baud rates to be used during the scan process of the M-Bus bus. Multiple selection can be used.

- **Advanced Configuration:**

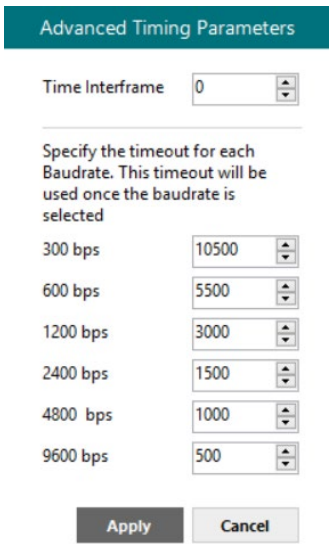

Figure 10.5 M-Bus advanced scan options

Select a general Time Interframe and a specific timeout for each individual baud rate. The Time Interframe is

NOTE: If not sure about these parameters, please let them as by default.

- **Scan status:**

  - **Start scan:**

    a) **Start**
    It initiates the scan process for the M-Bus network.

    b) **Stop**
    It stops the scan process in case it has not finished yet and the user needs to stop it.

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- **Scan results:**
  - **Meters newly detected**
    List of the new meters found after the scan process is finished or stopped by the user.

  - **Address**
    It shows the current M-Bus address of the selected device.

  - **Version**
    It shows the current M-Bus program version of the selected device.

  - **Identifier**
    It shows the current M-Bus identifier of the selected device.

  - **Medium**
    It shows the current M-Bus medium used by the selected device.

  - **Manufacturer ID**
    It shows the current M-Bus Manufacturer ID of the selected device.

  - **Export to file**
    This option exports the M-Bus information from the meter in a file with a pre-defined template format. This file can be imported to add new devices in the configuration easily.

  - **Available Registers**
    List of all the available registers for each M-Bus meter.

  - **Replace Meters/Signals**
    If this option is active, the current meters and signals (registers) present in the configuration will erased and imports the meters and signals (registers) selected in the Scan Results section.

  - **Replace Meters**
    If this option is active, the current meters present in the configuration will erased and imports the meters and signals (registers) selected in the Scan Results section. The current meters signals will be kept in the configuration.

  - **Add Meters**
    If this option is active, the current meters and signals (registers) present in the configuration will be kept and imports the meters and signals (registers) selected in the Scan Results section.

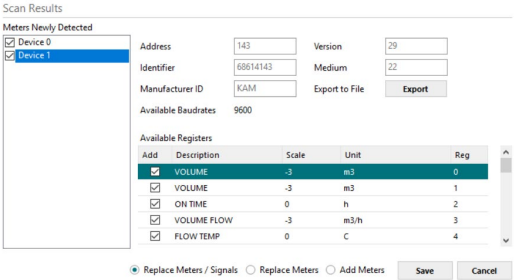

Figure 10.6 Scan Results information

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10.2.2 Advanced configuration

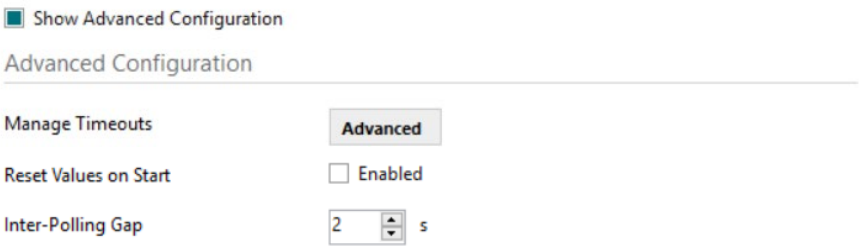

Figure 10.7 Scan Results information

- **Manage Timeouts**
  This section allows specific configurations for each baud rate during standard communication.
  If you are not familiar with these values, please left it as default.

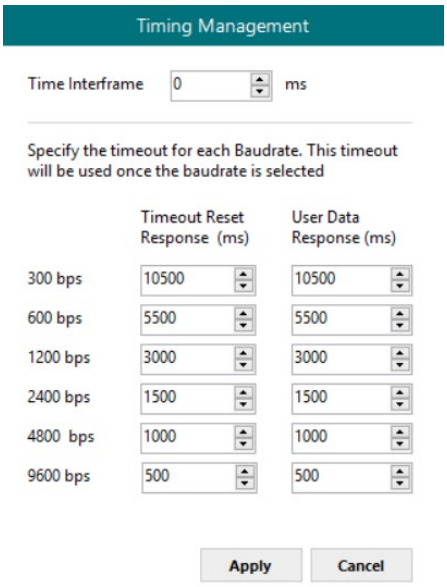

Figure 10.8 Scan Results information

- **Reset Values on read**
  If active, before reading any M-Bus register, the gateway will force the meter to update the register value to its last valid known value. This ensures updated values on the BACnet side.

- **Inter-Polling Gap**
  This parameter is used to determine the time left between the two consecutive polling cycles.

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10.2.3 Signals configuration

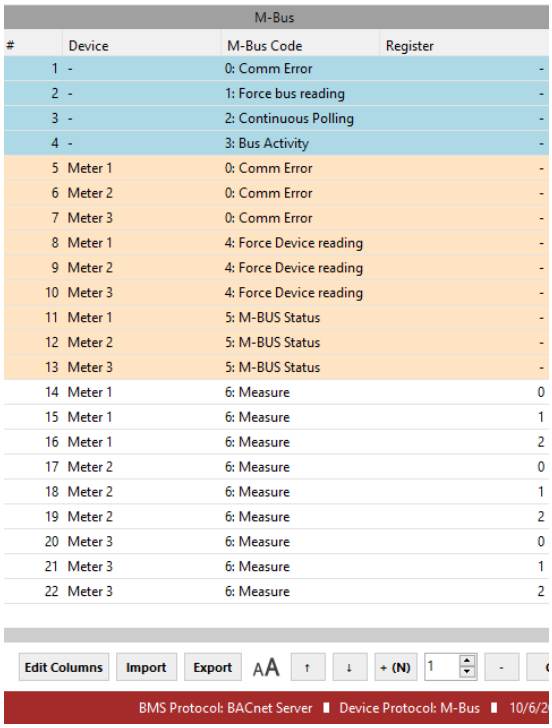

Figure 10.9 Scan Results information

1. **Device**
   Indicates the M-Bus meter or device the signal is referred to.

2. **M-Bus Code**
   Indicates the M-Bus type of signal:

   - **0: Com Error**
     This type only applies for the virtual signal used to indicate a communication error. It may apply to communication errors between the gateway and the M-BUS installation or devices or between the gateway and the BACnet installation.

   - **1: Force bus reading**
     This type indicates that this signal can only be applied to force a bus reading in a single moment.

   - **2: Continuous Polling**
     This type indicates that this signal is used to activate the M-Bus continuous polling. That means that the gateway will poll continuously the M-Bus devices.

     NOTE: Keep in mind that some meters use batteries, so continuous polling may reduce the battery life significantly.

   - **3: Bus Activity**
     This type indicates that this signal is used to show the M-Bus activity.

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- **4: Force Device reading**
  This type indicates that this signal is used to force a device reading in a certain moment.

- **5: M-BUS Status**
  This type indicates that this signal is used to show the current status of the M-Bus device.

- **6: Measure**
  This type indicates that this signal is used to show measures provided by the M-Bus meter or device.

3. **Register**
   Indicates the corresponding register address of the value that's going to be red from the meter.

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10.3 DALI

10.3.1 Standard configuration

In this section, all DALI parameters can be set, stored and sent to the specific ECG included in the project.

The DALI commissioning can be done in this same section as well.

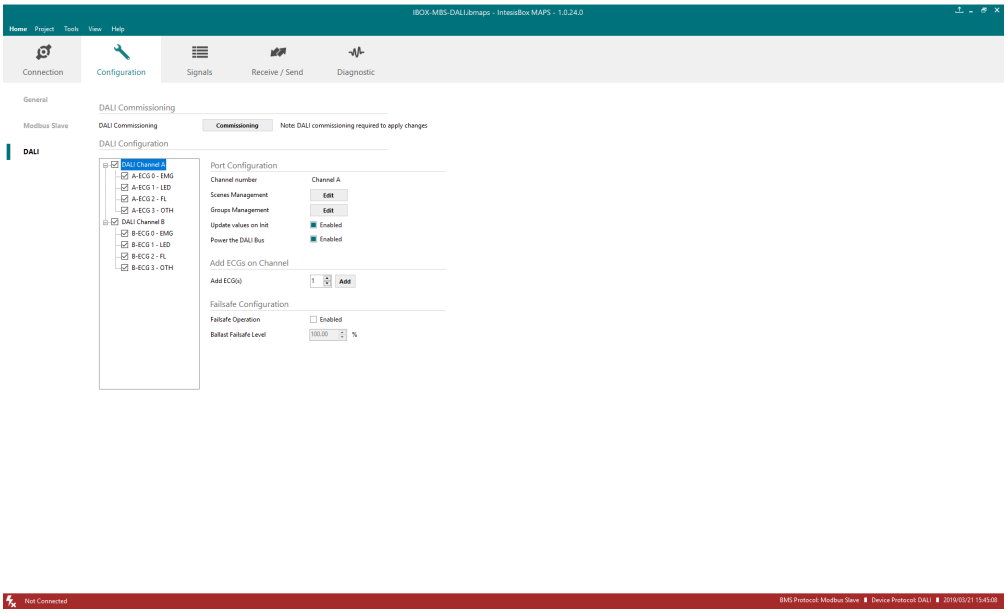

Figure 10.10 DALI configuration

1. **DALI Commissioning**
   This option is used to proceed with the configuration of the DALI ECGs.

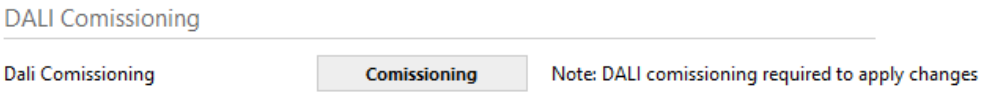

Figure 10.11 **DALI configuration**

Link or unlink configured ECG with the ones found in the DALI bus.

Keep in mind that configuration for the ballast is not only stored in the Gateway but needs to be sent to each ECG as well.

Remember to push the "Apply" button to finish the commissioning accordingly.

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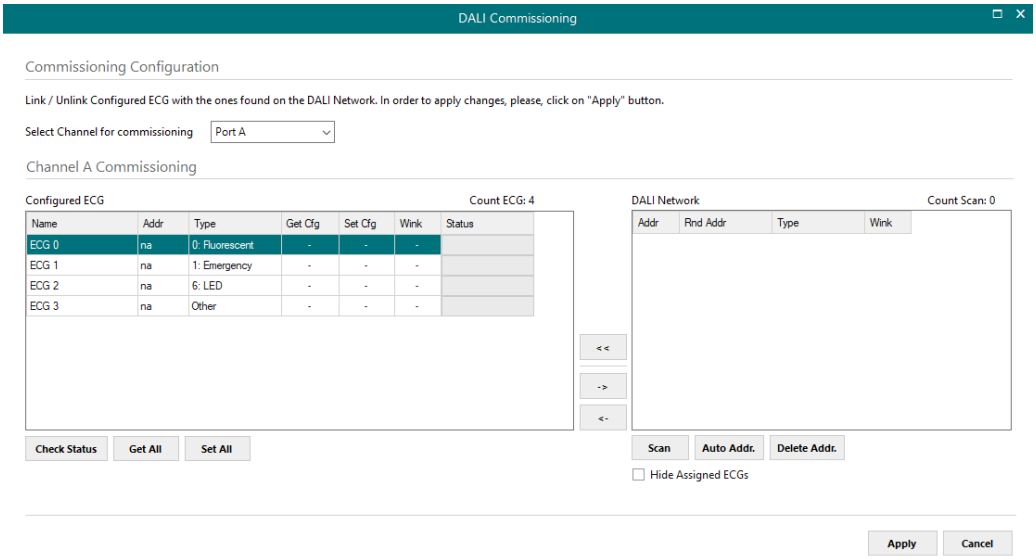

Figure 10.12 DALI commissioning

- **Select Channel for commissioning**
  This dropdown menu it is used to select between Channel A (port A) or Channel B (Port B). This list is only available for the *INMBSDAL1280000* version of the Gateway.

- **Configured ECG**
  Displays information of each ballast currently present in the configuration.

  - **Name:** Descriptive name for the ECG. It can be modified in the general DALI configuration menu.
  - **Addr:** Stands for the short address of the ECG.
  - **Type:** Corresponds with the type of ECG. It can be modified in the general DALI configuration menu.
  - **Get Cfg:** Downloads the current configuration stored in the ECG.
  - **Set Cfg:** Uploads the current configuration stored in MAPS to the ECG.
  - **Wink:** Activates the ECG to help identify it during commissioning.
  - **Status:** Indicates the status of the ECG. Possible values may be:
    - **Not present**
    - **Active**
  - **Check Status:** Checks the status of all ECGs present in the *Configured ECG* table.
  - **Get All:** Downloads the current configuration stored in all the ECGs present in the *Configured ECG* table.
  - **Set All:** Uploads the current configuration stored in MAPS to all the ECGs present in the *Configured ECG* table.

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- **DALI Network**
  Displays information of the ECG discovered in the line connected to the gateway and currently scanned.

  - **Addr:** Stands for the short address of the ECG.
  - **Rnd Addr:** Random address set used to communicate with each ECG individually in case the short address is not known.
  - **Type:** Corresponds with the type of ECG. It can be modified in the general DALI configuration menu.
  - **Wink:** Activates the ECG to help identify it during commissioning.
  - **Scan:** Scans and lists all the elements present in the DALI bus.
  - **Auto Addr.:** Sets an automatic short address for the selected ECGs.
  - **Delete Addr.:** Deletes the current short address for the selected ECGs.
  - **Hide assigned ECGs:** Hides the ECG scanned that are already present in the configuration (*Configured ECG table*).

- **Link/Unlink and Add/Replace ECGs**
  In order to decide which ECGs will be part of the integration project, arrows in between the to main tables (*Configured ECG and DALI network*) will be used.

  - **Add/Replace ECGs**: The selected ECGs from the *DALI Network* list will be added to the *Configured ECGs* list or will replace them (in required)

  - **Unlink ECGs**: Remove the selected ECG from the *Configured ECGs* not to apply in the current integration project.

  - **Link ECGs**: Add the selected ECGs from the *DALI Network* to the *Configured ECGs* list to be part of the current integration project.

More information and some examples on how to proceed with the commissioning can be found in the user's manual.

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2. DALI Configuration

In this part of the configuration, all parameters related to ECG and their DALI configuration be set here.

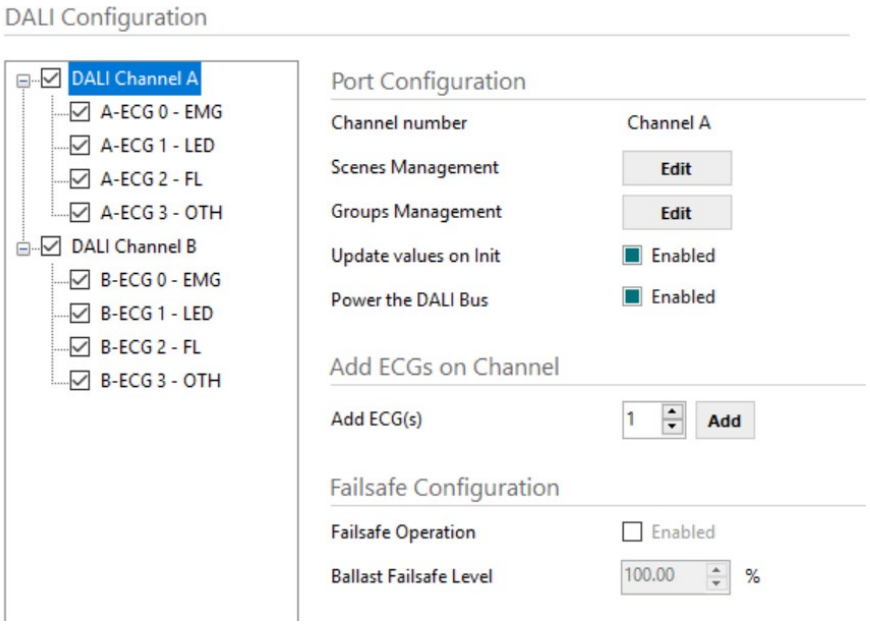

Figure 10.13 DALI configuration window

A. Channel parameters

Configure each channel's scenes, groups and other features.

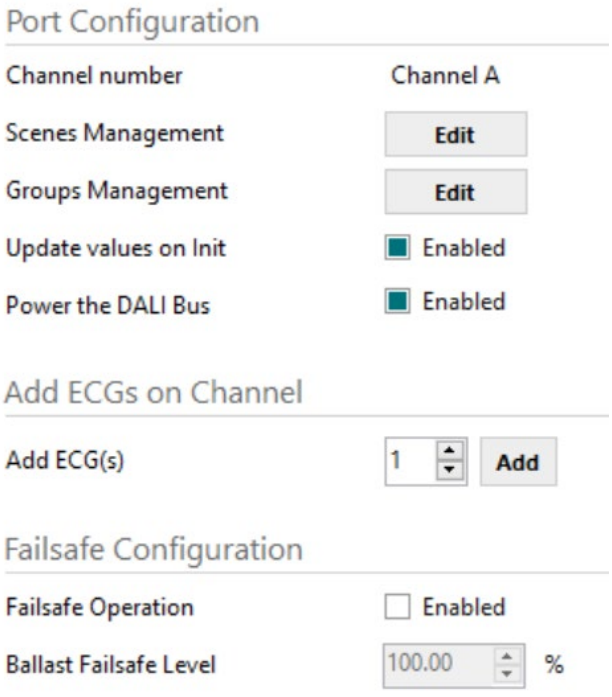

Figure 10.14 Channel parameters

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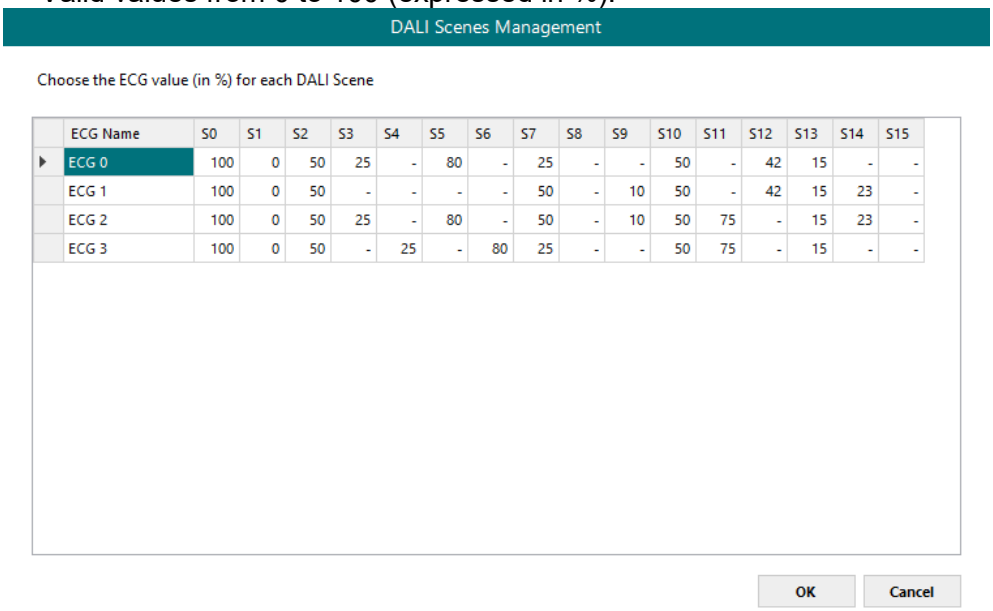
- **Channel number**
  Indicates the current channel being configured.
  Channel B is only available for *INMBSDAL1280000*

- **Scenes management**
  Introduce the values for the ECG to be set on each scene.
  Up to 16 different scenes can be configured.
  Valid values from 0 to 100 (expressed in %).



ECG Name	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
ECG 0	100	0	50	25	-	80	-	25	-	-	50	-	42	15	-	-
ECG 1	100	0	50	-	-	-	-	50	-	10	50	-	42	15	23	-
ECG 2	100	0	50	25	-	80	-	50	-	10	50	75	-	15	23	-
ECG 3	100	0	50	-	25	-	80	25	-	-	50	75	-	15	-	-

Figure 10.15 DALI Scenes Management

- **Groups management**
  Change Group Name
  Define the DALI group name. Up to 8 characters can be used for each name.

- **Enable Group Signals**
  If the checkbox is active, specific signals for DALI groups will be shown in the *Signals* tab of the configuration software.

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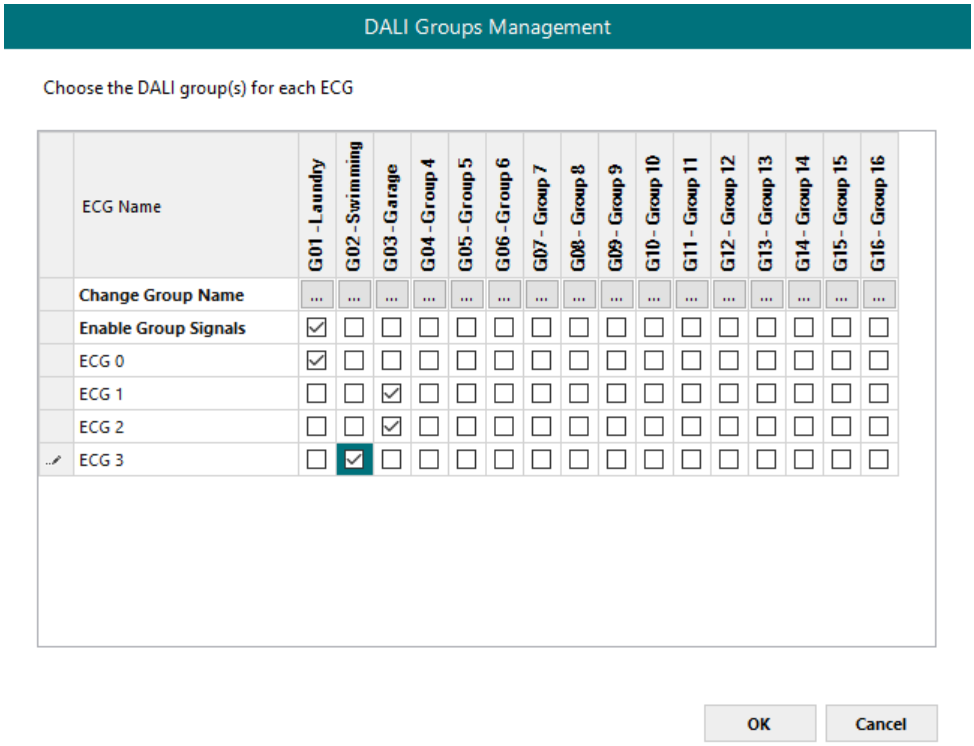

Figure 10.16 DALI Groups Management

- **Update values on init**
  If enabled, when the gateway initializes it updates the status values from the DALI bus.

- **Add ECG**
  Use this option to introduce manually new ECGs in the configuration.

- **Failsafe Configuration (*Only available for Modbus Slave protocol*)**
  If failsafe operation is enabled, when communication lost is detected on the Modbus protocol side (timeout is configured on the Modbus Slave tab), all DALI devices in that channel will set to configured Ballast Failsafe Level.

B. Common ECG Parameters
Include all common parameters for the different ECG.

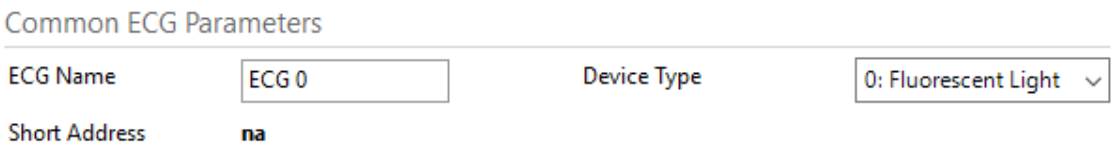

Figure 10.17 Common ECG Parameters

- **ECG Name**
  Descriptive name for the ECG.

- **Short Address**
  It is the Individual address, which stands for an address for individual control.

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- **Device type**
  Select for each ECG the proper type:
  - 0: Fluorescent Light
  - 1: Emergency Light
  - 6: LED module
  - Other

C. Committable ECG Parameters

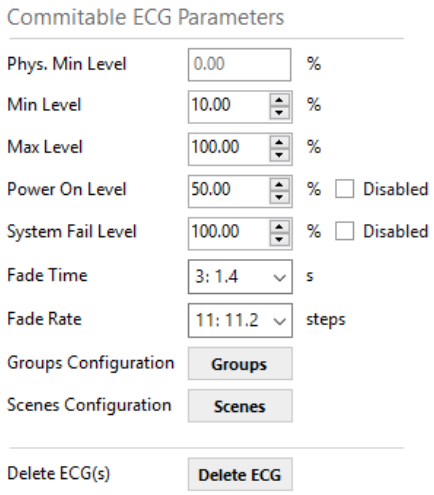

Figure 10.18 Committable ECG parameters

a) Physical Min Level
Minimum physical brightness value accepted for the ECG to by applied according to the manufacturer specs. This is a read only value as it is defined by the ballast at factory.

b) Min level
Minimum brightness level to be set from the DALI control. Please consider the Physical Min level provided by the ECG manufacturer.

c) Max Level
Maximum brightness level to be set from the DALI control. Please consider the Physical Min level provided by the ECG manufacturer.

d) Power On Level
It determines the brightness level of the ECG when the power supply is switched on. This parameter can be disabled using the checkbox next to it.

e) System Fail Level
It determines the brightness value to which the DALI ballast switches when the power supply is switched on level of the ECG when a system Fail is detected. This parameter can be disabled using the checkbox next to it.

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f) Fade Time
Time in seconds for fading from the current brightness value to the new brightness value (for DAP commands and scene calls).

g) Fade Rate
Fade steps per second that are performed in response to an indirect fade command (Up and Down commands).

h) Groups Configuration
Select the parent groups where the ECG is included.

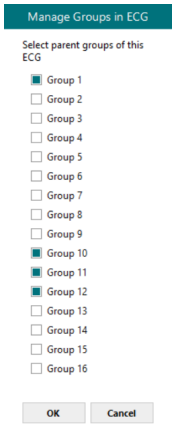

Figure 10.19 DALI Groups Configuration

i) Scenes Configuration
Select the scenes for the current ECG. A percent value (%) needs to be set in case the ECG is included in a specific Scene.

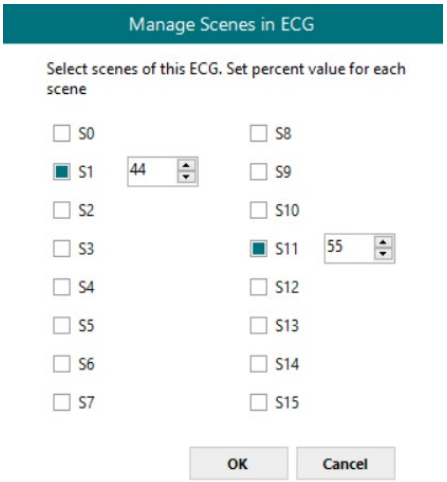

Figure 10.20 DALI Scenes Configuration

j) Delete ECG(s)
It deletes the current ECGs selected from the list.

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D. Specific Emergency Light parameters.
For the Emergency Light type, there are some extra parameters that can be configured on the DALI side.

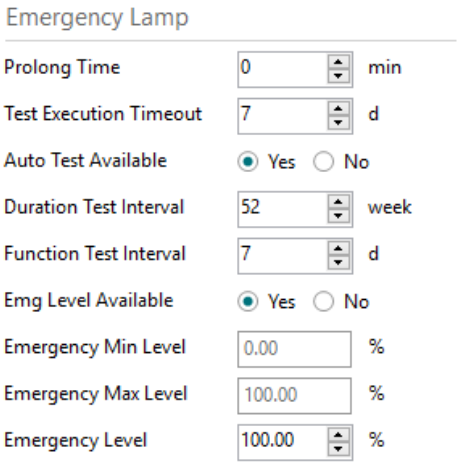

Figure 10.21 Emergency Light parameters

a) Prolong Time
Valid values from 0 to 127,5 minutes.

b) Test Execution Timeout
Valid values from 0 to 255 days.

c) Auto Test Available
It determines if Auto Test is available or not for this ballast.

d) Duration Test Interval
Valid values from 1 to 97 weeks.

e) Function Test Interval
Valid values from 0 to 255 days.

f) Emg Level Available
It determines if the Emergency Level is adjustable or not for this ECG.

g) Emergency Min Level
It shows the minimum level of brightness for this ECG.

h) Emergency Max Level
It shows the maximum level of brightness for this ECG.

i) Emergency Level
It determines the current emergency level for the ECG. Keep in mind that this value must be enclosed between the Emergency Min Level and the Emergency Max Level. Valid values from 0 to 100 %.

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E. Specific LED Light parameters.

For the LED Light type, there are some extra parameters that can be configured on the DALI side.

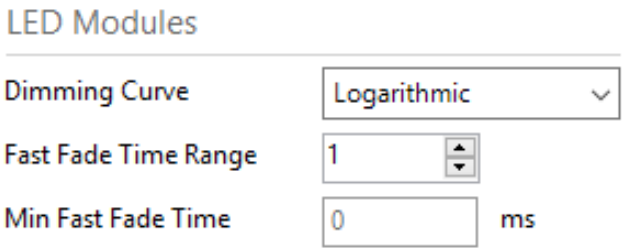

Figure 10.22 LED Light parameters

a) Dimming Curve

It determines the desired curve to be applied on the ECG when dimming is performed. Possible options are *Linear* and *Logarithmic*.

b) Fast Fade Time Range

It determines the Fast Fade Time for the ECG. Valid vales from 0 to 27, please check the table below for more information:

#	Fade Time	#	Fade Time	#	Fade Time	#	Fade Time
0	<25 msec	**7**	175 msec	**14**	350 msec	**21**	525 msec
1	25 msec	**8**	200 msec	**15**	375 msec	**22**	550 msec
2	50 msec	**9**	225 msec	**16**	400 msec	**23**	575 msec
3	75 msec	**10**	250 msec	**17**	425 msec	**24**	600 msec
4	100 msec	**11**	275 msec	**18**	450 msec	**25**	625 msec
5	125 msec	**12**	300 msec	**19**	475 msec	**26**	650 msec
6	150 msec	**13**	325 msec	**20**	500 msec	**27**	675 msec

c) Min Fast Fade Time

It indicates the minimum Fast Fade Time the ballast can offer.

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10.3.2 Signals configuration

DALI			
#	Channel	Unit ID	Trig. / Poll
1	A	ECG 0	T/P
2	A	ECG 0	-
3	A	ECG 0	T/P
4	A	ECG 0	T/P
5	A	ECG 0	T
6	A	ECG 0	T
7	A	ECG 0	T
8	A	ECG 0	T
9	A	ECG 0	T
10	A	ECG 0	T
11	A	ECG 0	T
12	A	ECG 0	T
13	A	ECG 0	-
14	A	ECG 0	-
15	A	ECG 0	-
16	A	ECG 0	-
17	A	ECG 0	-
18	A	ECG 0	-
19	A	ECG 0	-

Figure 10.23 Signal's list

1. **#**
   It indicates the signal index. This is just for reference during project definition. It has no effect on the configuration.

2. **Channel**
   Indicates whether the signal is from the A or B channel. Notice that B channel will be only available for the *INMBSDAL1280000* version of the Gateway.

3. **Unit ID**
   It indicates the unit index according to the DALI configuration tab information.

4. **Trig. / Poll**
   It defines the mode for the signal to be polled or triggered. Possible values are **T** (for Trigger) and **P** (for Polling).

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10.4 BACnet

10.4.1 General configuration

Configure general BACnet parameters regarding the Intesis BACnet Client point of view.

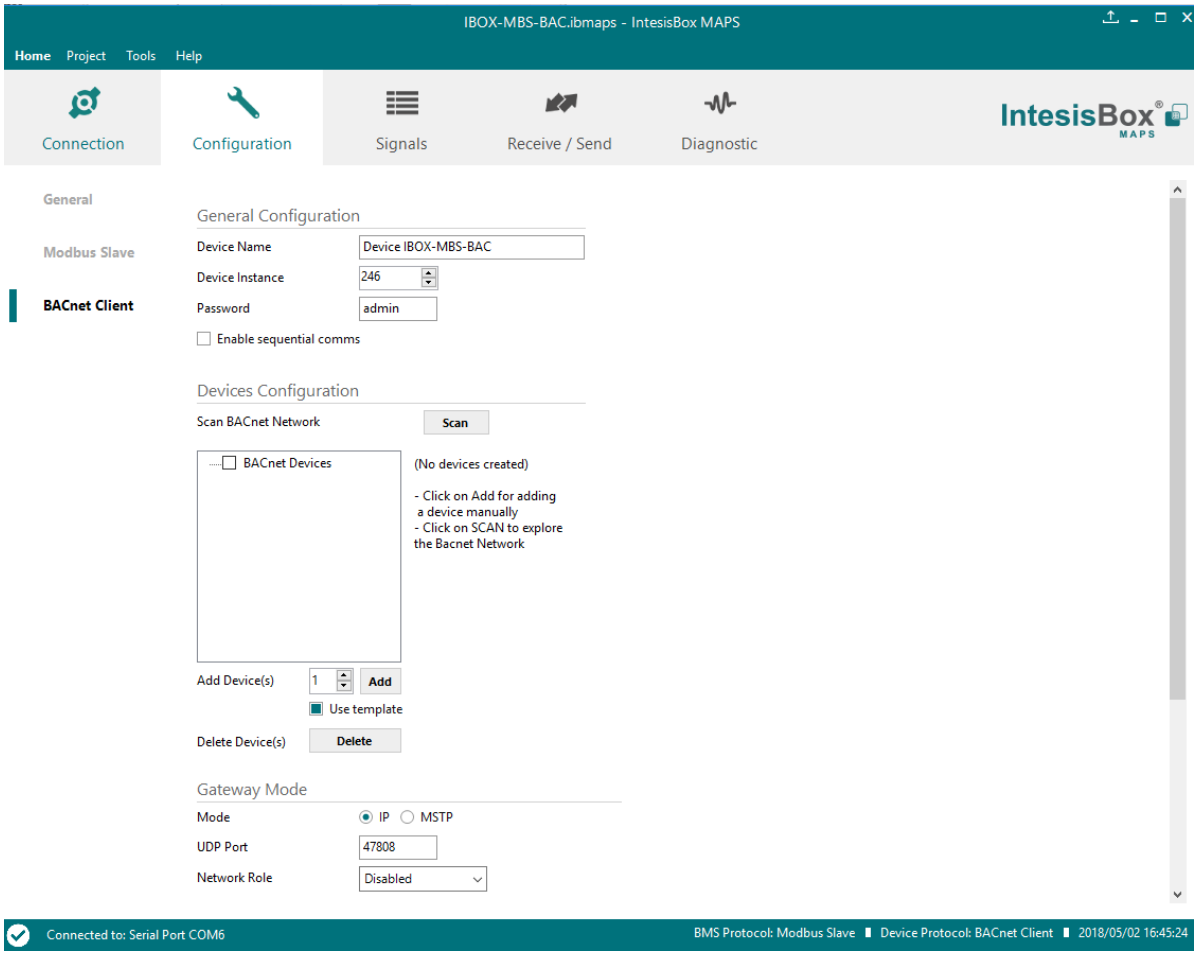

Figure 10.24 BACnet Client configuration

A. Device Name
BACnet Object corresponding with the Device Name Instance for the Intesis.

B. Device Instance
Definition of the Device Object Instance. Valid values from 1 to 4194302.

C. Password
Corresponds to the BACnet password to interconnect other devices in the same BACnet installation and prevent non-desired access to configuration and special parameters.

D. Enable sequential comms
If active, communications from the BACnet IP side are sequential. This is specially recommended to be used when there is communicating with MSTP devices and router/devices.

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10.4.2 Devices configuration

A. Scan BACnet Network

This option forces the box to scan the BACnet network, searching for devices in the same way as a BACnet explorer.

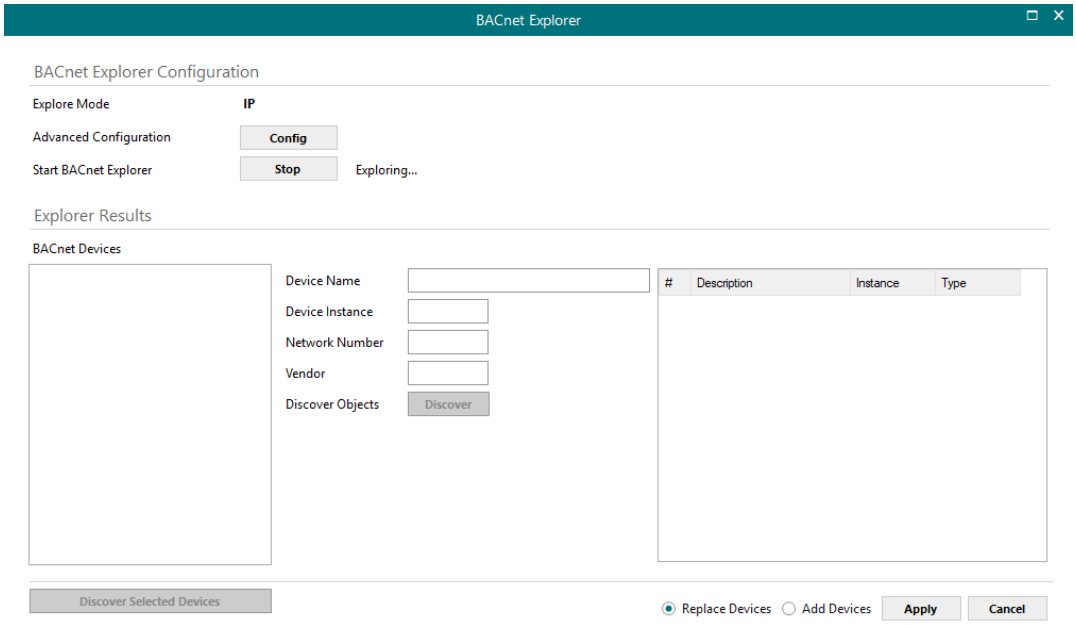

Figure 10.25 BACnet interface configuration options

- **BACnet Explorer configuration:**
  - **Explore Mode**
    It can be either IP or MSTP, depending on last configuration downloaded to Intesis.

> **NOTE:** BACnet Explorer function will use or BACnet exploration actual parameters for BACnet configured in Intesis. This is, values for Link layer (IP or MSTP), Device Object Instance, MAC & baud rate or IP address, etc. Therefore, it might be necessary to download a basic BACnet configuration parameters to the Intesis before proceeding with the scan of the BACnet network

  - **Advanced Configuration**
    In this section the way the scan is performed is configured. Following parameters can be setup:

    1. **Start and End Instance**: Search will be based on Device object instance number of present devices in the network. Search can be done on all possible Instances (0 to 4194302) or narrowed down (until even a single device) if the Device instance is known a priori, or within a certain range. Narrowing the value between start and end instance will speed up the search for BACnet devices

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2. **Step**: Number of BACnet devices queried at once.

3. **Scan timeout**: Timeout that will wait for answer after request from a BACnet device.

4. **Discover MSTP slaves** (only when Explore Mode is MSTP): Will enable scan of MSTP slave nodes (by default, only MSTP master nodes will be discovered). If enabled, **Start MAC**, **End MAC** and **Timeout** (in ms) for the scan can be adjusted.

5. **MSTP Slaves through IP** (only when Explore Mode is IP): In case that BACnet IP to MSTP routers are present in the BACnet/IP network, will enable scan of MSTP slaves through the corresponding BACnet/IP router (note that MSTP master nodes under a BACnet/IP router will always be scanned). If enabled, **Net Number**, **Start MAC**, **End MAC** and **Timeout** (in ms) for the scan can be adjusted.

- **Start BACnet Explorer**
  Exploration of the BACnet network will start once the window **BACnet Explorer** itself is open. You can Stop and restart it (button **Stop** becomes **Start**), in order to stop scanning traffic in the BACnet network. BACnet devices found in the network will appear in **Explorer Results** section as they respond.

- **Explorer Results:**

  - **BACnet Devices**
    List of available BACnet devices found during the scan.

  - **Device Name**
    Device Name Instance of the selected device in the BACnet devices results.

  - **Device instance**
    Device Instance of the selected device in the BACnet devices results.

  - **Network Number**
    Network number of the selected device in the BACnet devices results.

  - **Vendor**
    Vendor Id of the selected device in the BACnet devices results.

  - **Discover Objects**
    This button is used to obtain the list of objects hosted in selected device. Objects will appear in the objects list, at the right-hand side of the explore results.

- **Discover checked devices**
  Reads the list of objects hosted in all checked devices. This must be used with care when many devices are checked at once. Resulting scan time can become very large.

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- **Apply**
  Adds to the project all checked devices and objects and close scan window.

- **Cancel**
  Closes scan window.

B. BACnet Devices List

This option forces the box to scan the BACnet network, searching for devices in the same way as a BACnet explorer.

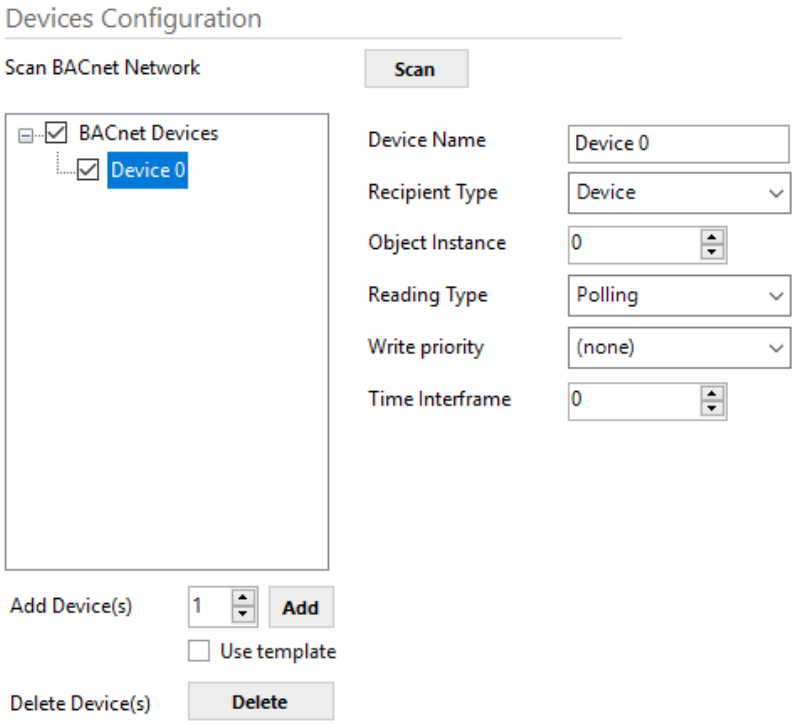

Figure 10.26 BACnet interface configuration options

- **Device Name**
  Device identifier within MAPS. It will be used to reference the device from the signals table

- **Recipient type**
  Select the type of recipient from:

  - **Device:** The recipient is a device. The Device Instance Number for this device needs to be selected in the ***Object Instance*** text box.
  - **Address (IP):** The recipient is set using the specific address on BACnet/IP.
  - **Address (MSTP):** The recipient is set using the specific address on BACnet MSTP.
  - **Address (Other):** The recipient is set using the specific address (in HEX) with length from 1 to 6 bytes.

- **Object Instance**
  This stands for the BACnet Device Object Instance property related to this specific device

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- **Reading Type**
  Select the reading mode for this device from:
  - **Polling:** Gateway will poll continuously the device to get point values.
  - **COV:** Gateway will subscribe to point values of the device. Then the device will notify change of values to gateway.
  - **COV-unconf:** Gateway will subscribe to point values of the device. Then the device will notify change of values to gateway. COV notifications won't need acknowledge message.
  - **Polling Multiple:** Gateway will poll continuously the device asking for multiple objects in each poll, using *read property multiple* service.

- **Write priority**
  Defines the priority to be used in this device on write commands. Default is (none) (no priority), can be chosen from 1 (highest) to 16 (lowest) and none.

- **Time Interframe:**
  Time that gateway will wait before sending a new request, after last response has been received, while polling the same slave.

C. **Add Device(s)**
Adds as many devices as the ones set in the combo box. With "Use template" checkbox active, selecting a template, this will add in signals table all signals specified in template for each device added.

D. **Delete Device(s)**
Deletes the selected devices.

10.4.3 Gateway Mode

In the Gateway Mode section, all parameters related to the BACnet Client interface can be configured.

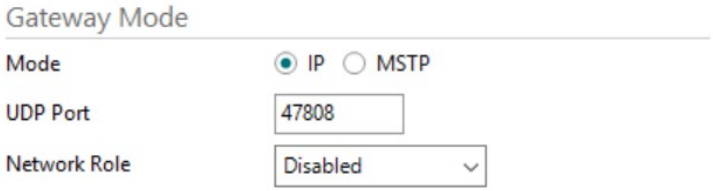

Figure 10.27 Gateway Mode section

Mode
Select the type of BACnet communication to be used: BACnet/IP or BACnet MSTP.

- **BACnet/IP**
  - **UDP Port**
    Select the UDP port for the BACnet/IP communications. By default, it is set to 47808 (BAC in HEX notation).

  - **Network Role**
    Define how the gateway will act regarding network elements.

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- **Disabled:** The gateway will not provide any special service regarding network communications or settings.
- **Foreign Device:** The gateway will act as a foreign device from the BACnet network point of view.

Figure 10.28 Foreign Device configuration

- **BBMD:** The gateway will act as a BBMD in the BACnet network.

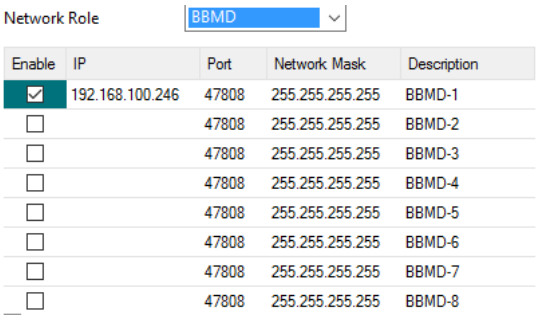

Figure 10.29 BBMD configuration

IMPORTANT: If not familiar with these options, please left the parameter as **Disabled** to avoid issues on the BACnet communication.

- **BACnet MSTP**
  - **Max. Masters**
    Define the maximum number of BACnet MSTP masters supported.
  - **Max. Info Frames**
    Define the maximum number of Info frames.
  - **Baud Rate**
    Select the BACnet MSTP communication speed. Possible values are:

    Auto | 9600 | 19200 | 38400 | 57600 | 76800 | 115200
  - **MAC address**
    Define the gateway MAC address for BACnet MSTP communication.

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10.4.4 Signals configuration

BACnet Client		
Device Name	Type	Instance
Device 0	3: BI	-
Device 1	3: BI	-
Device 2	3: BI	-
Device 0	0: AI	0
Device 0	0: AI	1
Device 0	0: AI	2
Device 0	0: AI	3
Device 0	0: AI	4
Device 1	0: AI	10
Device 1	0: AI	11
Device 1	0: AI	12
Device 1	0: AI	13
Device 1	0: AI	14
Device 2	0: AI	20
Device 2	0: AI	21
Device 2	0: AI	22
Device 2	0: AI	23
Device 2	0: AI	24

Figure 10.30 Signals' list

1. **Device Name**
   Indicates the device the signal is referred to.

2. **Type**
   Indicates the BACnet object type of signal. Following BACnet object types are available:

   1. AI
   2. AO
   3. AV
   4. BI
   5. BO
   6. BV
   7. MI
   8. MO
   9. MV
   10. LOOP
   11. ACCUM

3. **Instance**
   Indicates the object instance of the signal.

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