



Intesis MAPS

Configuration & Monitoring software of Intesis Cloud Control

USER'S MANUAL

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HMS Industrial Networks S.L.U

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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. i.e: if using the INSTCMBG***0000, MBG would be the *External Protocol*.
- Intesis or gateway: the words "gateway" or "Intesis" are used instead of the full product name. 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.

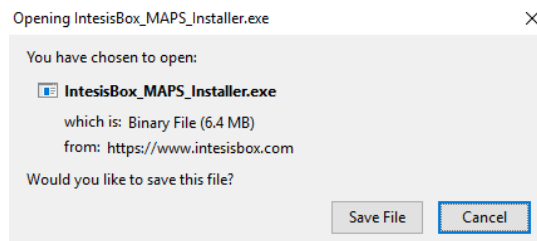


Figure 2.1 Downloading Intesis MAPS

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

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 ST logo to list all available project templates for the ST Cloud gateway series.

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

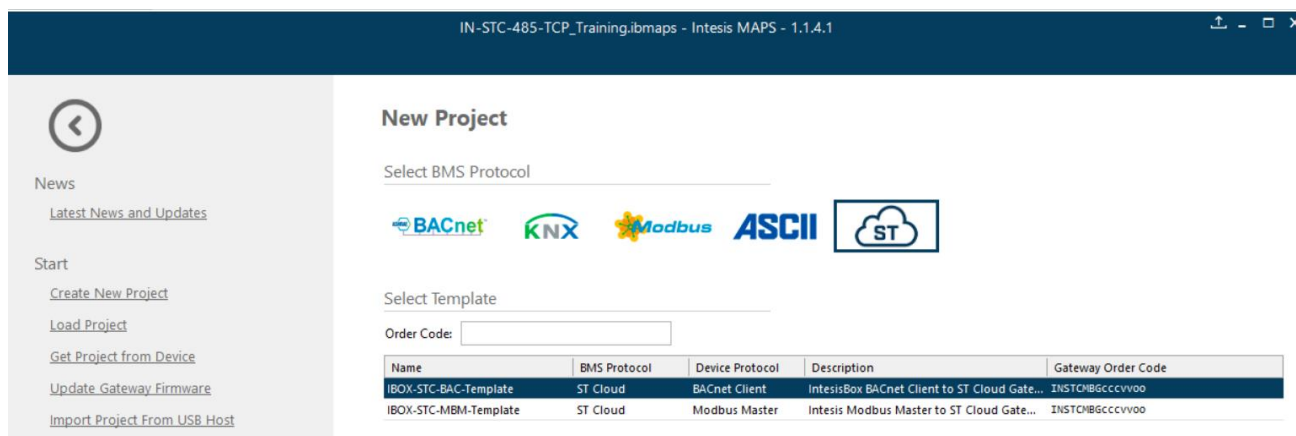


Figure 3.2 Project template selection

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.

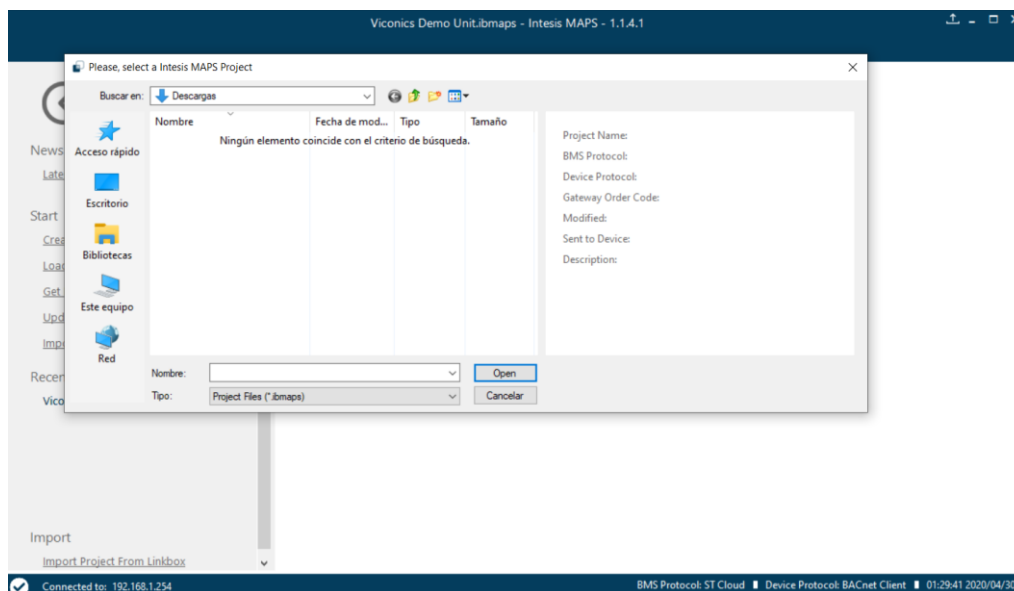


Figure 3.3 Project selection window

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.

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:

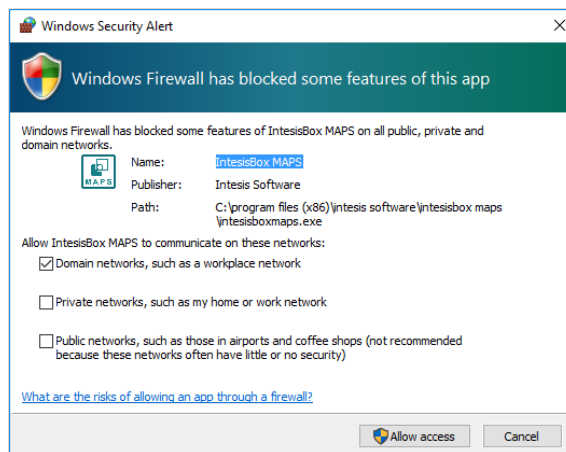


Figure 3.4 Firewall warning message

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. Notice that in this case, we did not have any product running on LinkBox, so this feature may not be available for you.

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.

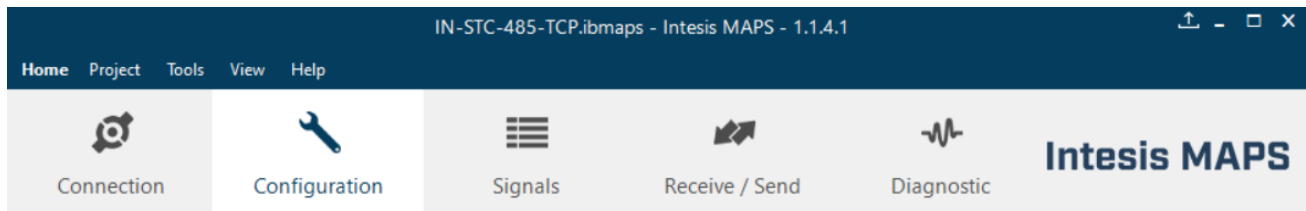


Figure 4.1 Menu and Tool Bar

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.

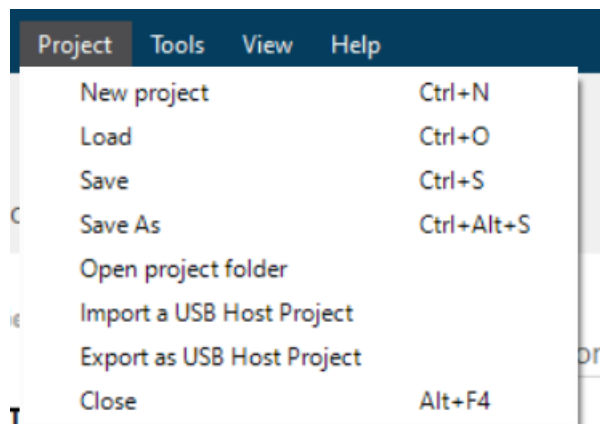


Figure 4.2 Project options

- **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.

- **Open project folder:** Opens the folder where the current project is stored. It may be useful if you need to search information from the products you need to integrate, usually in the same folder.
- **Import a USB Host Project:** Imports a project created using the USB Host functionality.
- **Export a USB Host Project:** Exports a project in a format so it can be used with the USB Host functionality.
- **Close:** Closes the configuration tool.

4.3 Tools

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

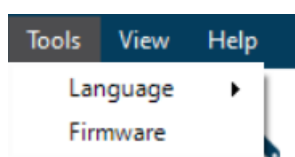


Figure 4.3 Tools options

- **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.

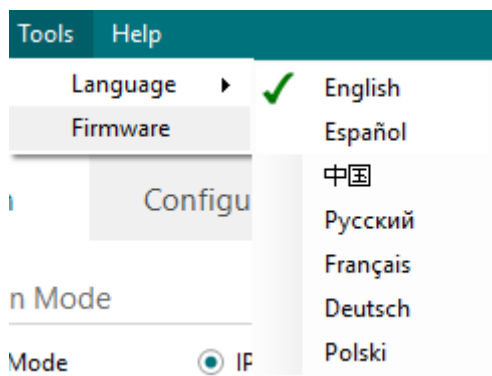


Figure 4.4 Language selection

Note: English is the default language and in some versions of the software other languages may not appear.

- **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.

Gateway Current Status (Before the Update)		Firmware Update Information	
Gateway Name:	IN-STC-485-TCP	Firmware Filename:	-
Gateway Model:	IN-STC-485/TCP	Gateway Model:	-
License Type:	32	License Type:	-
Firmware Version:	1.0.0.0	Firmware Version:	-

Figure 4.5 Firmware Manager view

4.4 View preferences

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

Select the desired view form diagnostics panel

- Layout 1
- Layout 2
- Layout 3
- Layout 4
- Layout 5

Apply Cancel

Figure 4.6 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.

4.5 Help

Extra information about the software is shown in this section.

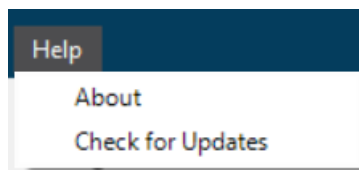


Figure 4.7 Help menu

- **About:**
It prompts information about the current configuration tool version.



Figure 4.8 About information

- **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.

4.6 Footer

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



Figure 4.9 Footer

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



Figure 4.10 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 (ST Cloud 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.

5. Connection

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

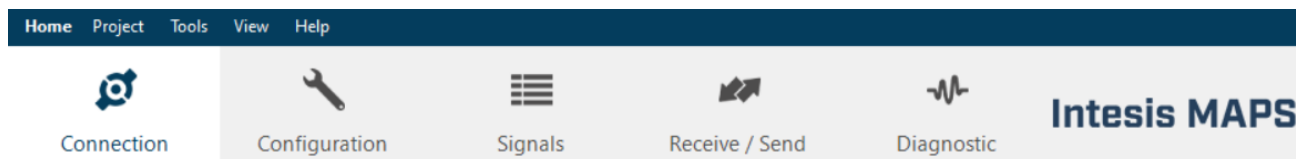


Figure 5.1 Connection section

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 9.2 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.

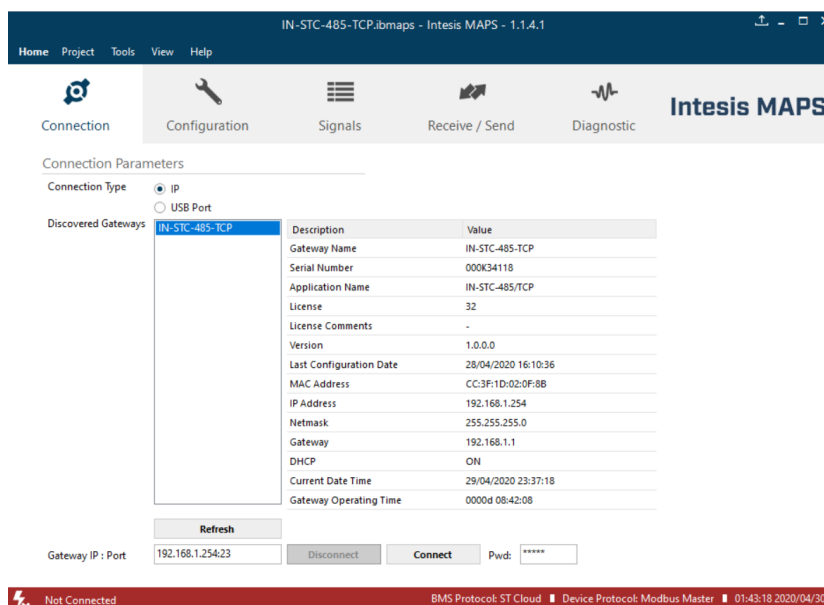



Figure 5.2 IP connection

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.

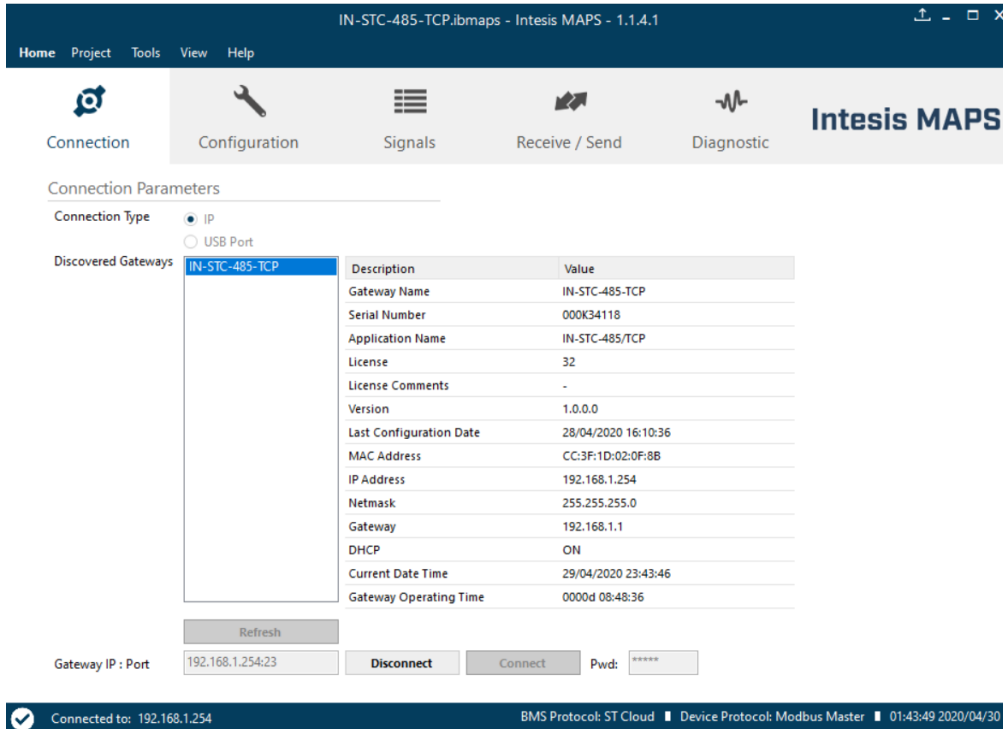


Figure 5.3 IP connection

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.

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.

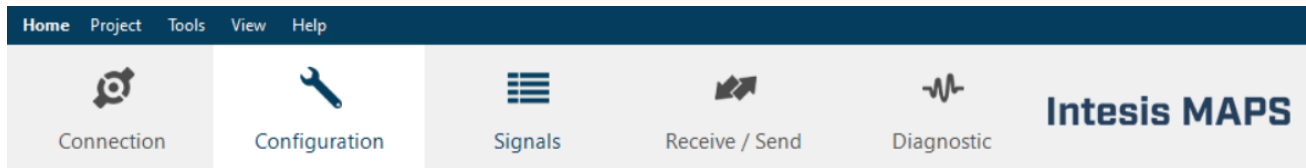


Figure 6.1 Configuration

6.1 General

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

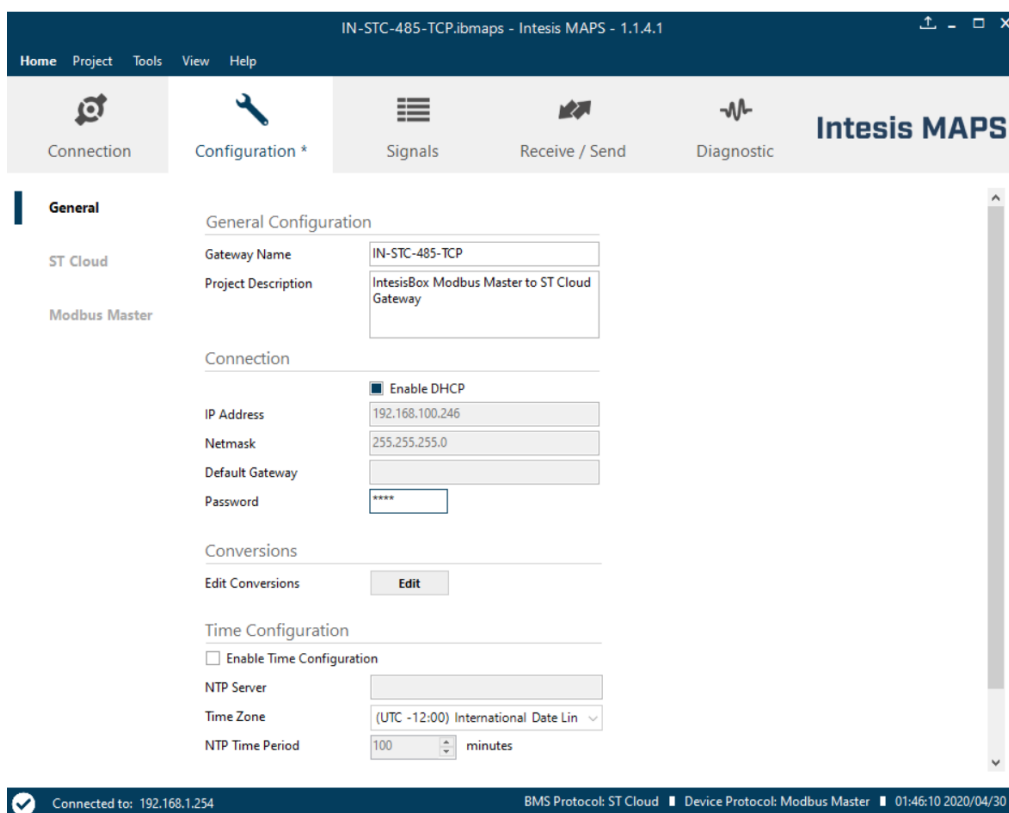


Figure 6.2 General configuration

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.

3. IP Address¹

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 TCP and BACnet IP side in case of using Modbus TCP or BACnet IP communication.

4. Netmask¹

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 and BACnet IP side in case of using Modbus TCP or BACnet IP communication.

5. Gateway¹

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 and BACnet IP side in case of using Modbus TCP or BACnet IP communication.

6. DNS¹

This parameter will only appear if static IP (non DHCP) is selected. Notice that as per the nature of the gateway, it requires a DNS to be able to connect and resolve some domain names.

7. 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.

8. 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.

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.

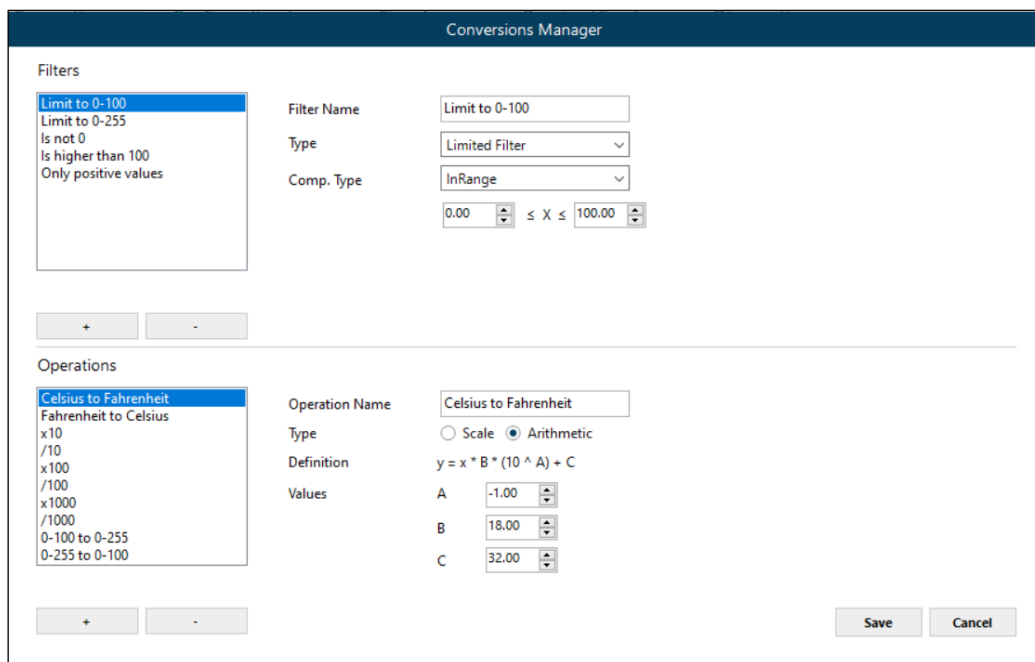


Figure 6.3 Conversions

9. Time Configuration

In this section, you can select the time zone as well as the use, if required of an NTP server.

6.2 ST Cloud

In the ST Cloud section, all parameters related to the cloud side can be configured: Devices, Widgets and items. Moreover, you can test the connection of the gateway with the cloud.

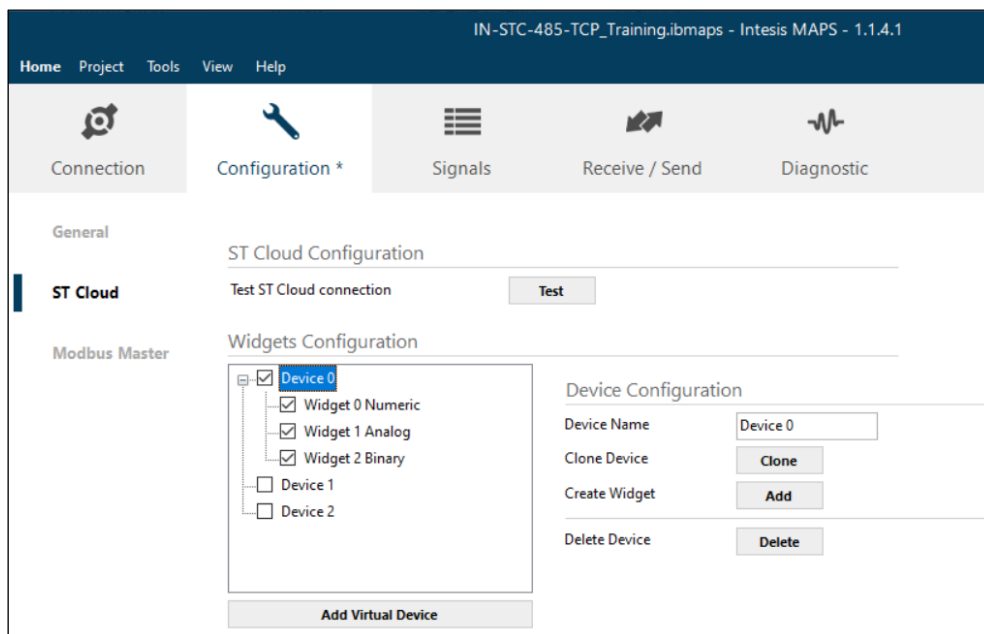


Figure 6.4 ST Cloud Configuration

6.2.1 Test ST Cloud connection

This function enables a complete test for the connection of the gateway to the cloud. It can be run fully for all the checkpoints or individually for each one.

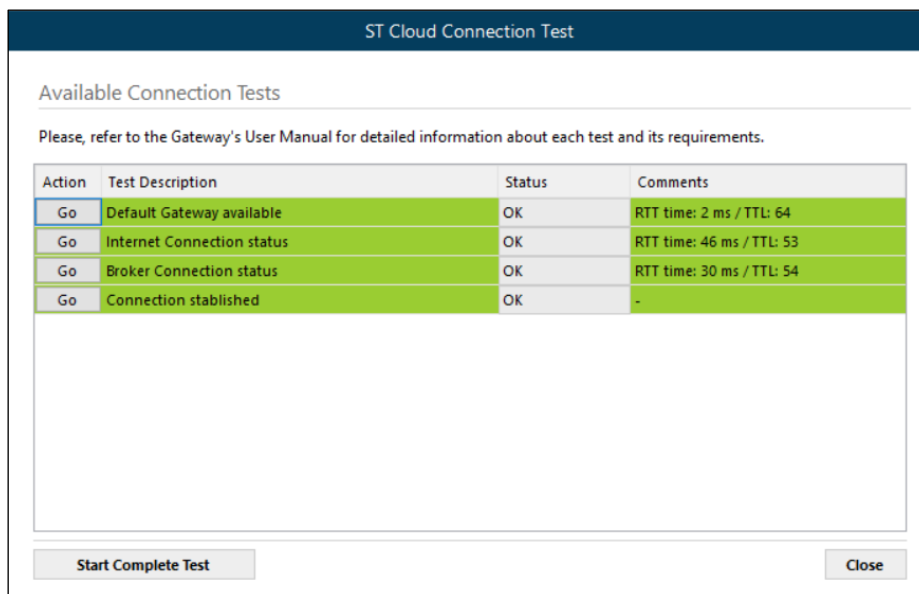


Figure 6.5 ST Cloud connection test

6.2.2 Devices configuration

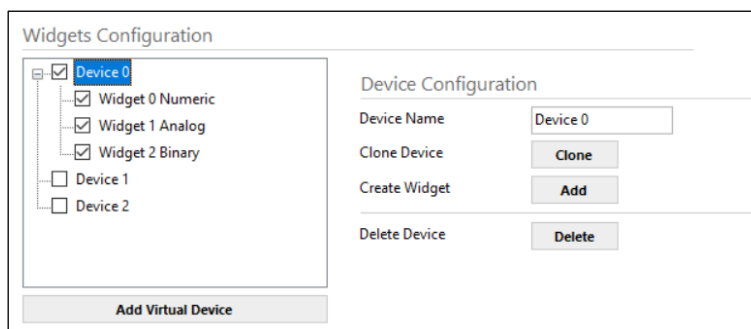
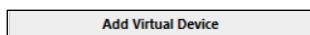


Figure 6.6 Devices and Widgets configuration

1. Add Virtual Device

It will create a new Virtual Device. Notice that a Virtual Device is the device concept in the cloud. The number of devices is limited to your Intesis gateway version.



2. Device configuration

a. Device Name

This is the device name and is the one to be used in the cloud and in the app/web interface.

b. Clone Device

This allows to clone this device in case you have an installation with several devices that are repeated or similar. This will help you speed up the configuration process.

c. Create Widget

It will allow you to create up to 12 different widgets per virtual device.

d. Delete Device

This will erase the current device or all the devices selected.

6.2.3 Widget configuration

1. General configuration

These are common parameters for all widgets.



Widget General Configuration			
Widget Name	Widget 0 Numeric	Widget Type	Enumeration
Read / Write Mode	Read		
Clone Widget	Clone		

Figure 6.7 Widgets configuration

a. Widget Name

Corresponds to the widget name and is the one that will be visible in the cloud.

b. Read / Write Mode

Determines how the widget will behave. There are 4 different options:

- I. **Read:** The widget will be read only
- II. **Write:** The widget will be write only
- III. **Read/Write:** The widget will be Read and Write without differentiation between data points of the external protocol for reading or writing.
- IV. **Read & Write:** The widget will be Read and Write and there will be a differentiation between data points of the external protocol for reading and for writing. Notice that in this case, you will need to specify the function (read or write) in the signal tab.

c. Clone Widget

This will clone the widget in case you have similar or equal widgets you need to replicate.

d. Widget Type

This will allow you to select between the three type of widgets: Enumeration, Analog and Binary.

2. Enumeration type widget

Use this widget type for signals that correspond to enumerations (texts) which are related to values. On BACnet can be closely related with Multistate Objects. Some signal examples may be: Modes for an AC unit, Status of elements or Alert messages.

Widget General Configuration

Widget Name	<input type="text" value="System Mode"/>	Widget Type	<input type="text" value="Enumeration"/>
Read / Write Mode	<input type="text" value="ReadWrite"/>		
Clone Widget	<input type="button" value="Clone"/>		

Enumeration Configuration

Text	Value	Init Value	Disable W
▶ Off	1	<input type="checkbox"/>	<input type="checkbox"/>
Auto	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cool	3	<input type="checkbox"/>	<input type="checkbox"/>
Heat	4	<input type="checkbox"/>	<input type="checkbox"/>
-	-	-	-

Delete Widget

Figure 6.8 Enumeration Widgets configuration

- I. **Text:** This is the text displayed in the App or web dashboard
- II. **Value:** This is the value on the external protocol related with the text
- III. **Init Value:** This is the value that the widget will get on start up
- IV. **Disable W:** This allows write disablement just in case you need to block some values

3. Analog type widget

Use this widget type for signals that correspond to direct values or measurements. On BACnet can be closely related with Analog Objects. Some signal examples may be: temperatures, consumptions or volumes.

Widget General Configuration

Widget Name: Widget Type:

Read / Write Mode:

Clone Widget:

Analogue Configuration

Min Value: Units:

Max Value: Units Code:

Step: Default Value:

Delete Widget:

Figure 6.9 Analog Widgets configuration

- I. **Min Value:** This is the minimum value allowed.
- II. **Max Value:** This is the maximum value allowed.
- III. **Step:** This is the step to move between values.
- IV. **Units:** This is the type of units related to the value of the widget.
- V. **Units Code:** This is the unit code according to the Units selected. If no unit is selected, you can introduce yours. Notice that this Units Code will appear in the App/web dashboard too.
- VI. **Default Value:** This is the default value on start up.

4. Binary type widget

Use this widget type for signals that have a binary nature. On BACnet can be closely related to Binary Objects. On Modbus can be closely related with bitfield formats or coils. Some signal examples may be: On/Off, modes, or fan speeds.

Widget General Configuration

Widget Name: Widget Type:

Read / Write Mode:

Clone Widget:

Binary Configuration

Number of Bits:

Text	Init Value	Disable W
▶ Low	<input type="checkbox"/>	<input type="checkbox"/>
Medium	<input type="checkbox"/>	<input type="checkbox"/>
High	<input type="checkbox"/>	<input type="checkbox"/>
Off	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	-	-

Figure 6.10 Binary Widgets configuration

- I. **Number of bits:** This determines the number of possible status the signal may have. It will generate bit fields to bind with the signals of the external protocol.

Number of Bits

Text	BR0	Init Value	Disable W
▶ No Motion	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Motion	1	<input type="checkbox"/>	<input type="checkbox"/>
	-	-	-

- II. **Text:** This is the text displayed in the App or web dashboard
- III. **BRx:** This is the value on the external protocol related with the text
- IV. **Init Value:** This is the value that the widget will get on start up
- V. **Disable W:** This allows write disablement just in case you need to block some values

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.

7. Signals

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

The screenshot shows the Intesis MAPS interface with the 'Signals' tab selected. The main content is a table listing various signals. The table is divided into two sections: 'ST Cloud' and 'BACnet Client'. The 'ST Cloud' section lists signals like 'Occupancy Command', 'System Mode', 'Fan Mode', etc. The 'BACnet Client' section lists signals like 'SE8650U5Bxx-2' with various types and instances. At the bottom, there is a status bar showing 'Active signals: 12 / 3000', 'Hide Disabled signals', and 'Not Connected'.

#	Active	Description	ST Cloud				BACnet Client			
			Device	Widget	R/W	Bit	Device Name	Type	Instance	Conversions
32	<input checked="" type="checkbox"/>	Occupancy Command	Viconics - SE	Occupancy	Read/Write	-	SE8650U5Bxx-2	19: MV	10	-
37	<input checked="" type="checkbox"/>	System Mode	Viconics - SE	System Mode	Read/Write	-	SE8650U5Bxx-2	19: MV	16	-
38	<input checked="" type="checkbox"/>	Fan Mode	Viconics - SE	Fan Mode	Read/Write	-	SE8650U5Bxx-2	19: MV	17	-
62	<input checked="" type="checkbox"/>	PIR Local Motion	Viconics - SE	Local Motion	Read	B0	SE8650U5Bxx-2	5: BV	32	-
73	<input checked="" type="checkbox"/>	Occupied Heat Setpoint	Viconics - SE	Occ Heat	Read/Write	-	SE8650U5Bxx-2	2: AV	39	-
75	<input checked="" type="checkbox"/>	Occupied Cool Setpoint	Viconics - SE	Occ Cool	Read/Write	-	SE8650U5Bxx-2	2: AV	40	-
81	<input checked="" type="checkbox"/>	Unoccupied Heat Setpoint	Viconics - SE	Unocc Heat	Read/Write	-	SE8650U5Bxx-2	2: AV	43	-
83	<input checked="" type="checkbox"/>	Unoccupied Cool Setpoint	Viconics - SE	Unocc Cool	Read/Write	-	SE8650U5Bxx-2	2: AV	44	-
108	<input checked="" type="checkbox"/>	Dehumidification Setpoint	Viconics - SE	Dehumidification S...	Read/Write	-	SE8650U5Bxx-2	2: AV	71	-
133	<input checked="" type="checkbox"/>	Room Temperature	Viconics - SE	Room Temperature	Read/Write	-	SE8650U5Bxx-2	2: AV	100	-
135	<input checked="" type="checkbox"/>	Room Humidity	Viconics - SE	Room Humidity	Read	-	SE8650U5Bxx-2	2: AV	103	-

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

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

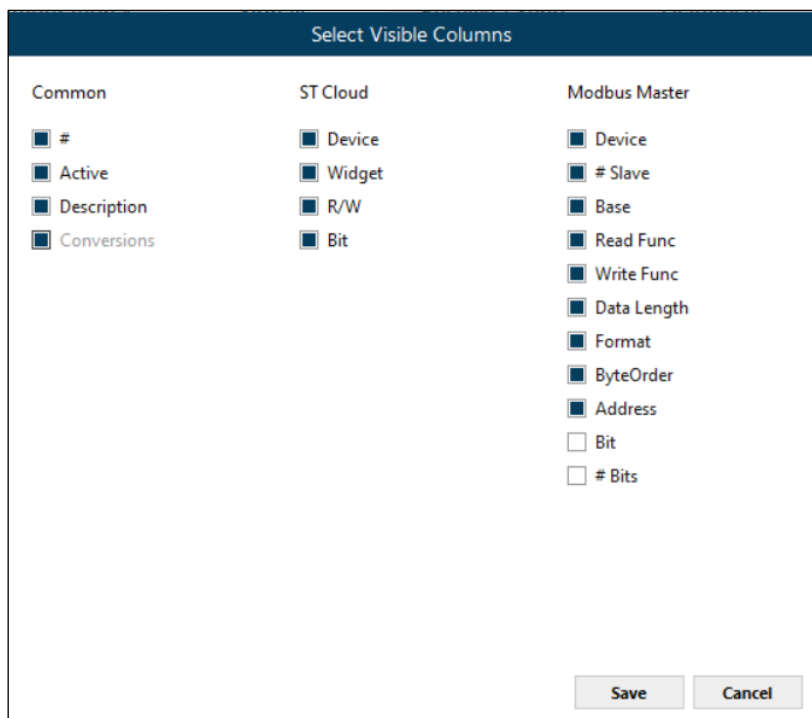
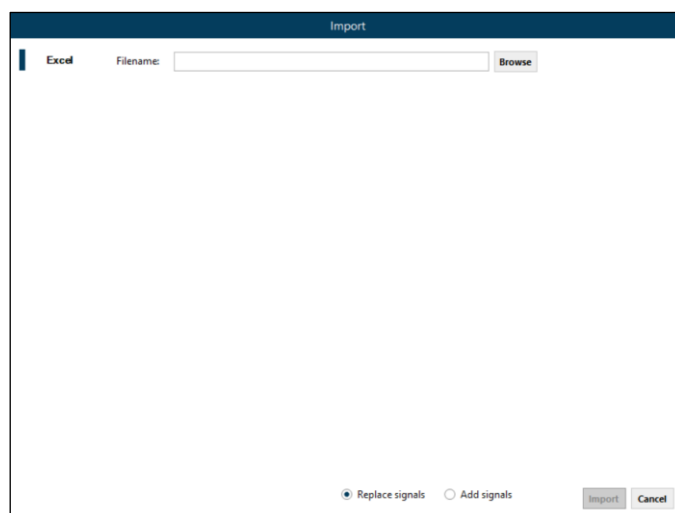


Figure 7.2 Edit Columns view

7.1.2 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

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

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.

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 **Delete 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 ST Cloud specific parameters to be configured on each signal.


Viconics Demo Unit.ibmmaps - Intesis MAPS - 1.1.4.1

Home Project Tools View Help

Connection Configuration Signals Receive / Send Diagnostic

ST Cloud						
#	Active	Description	Device	Widget	R/W	Bit
32	<input checked="" type="checkbox"/>	Occupancy Command	Viconics - SE	Occupancy	Read/Write	-
37	<input checked="" type="checkbox"/>	System Mode	Viconics - SE	System Mode	Read/Write	-
38	<input checked="" type="checkbox"/>	Fan Mode	Viconics - SE	Fan Mode	Read/Write	-
62	<input checked="" type="checkbox"/>	PIR Local Motion	Viconics - SE	Local Motion	Read	B0
73	<input checked="" type="checkbox"/>	Occupied Heat Setpoint	Viconics - SE	Occ Heat	Read/Write	-
75	<input checked="" type="checkbox"/>	Occupied Cool Setpoint	Viconics - SE	Occ Cool	Read/Write	-
81	<input checked="" type="checkbox"/>	Unoccupied Heat Setpoint	Viconics - SE	Unocc Heat	Read/Write	-
83	<input checked="" type="checkbox"/>	Unoccupied Cool Setpoint	Viconics - SE	Unocc Cool	Read/Write	-
108	<input checked="" type="checkbox"/>	Dehumidification Setpoint	Viconics - SE	Dehumidification S...	Read/Write	-
133	<input checked="" type="checkbox"/>	Room Temperature	Viconics - SE	Room Temperature	Read/Write	-
135	<input checked="" type="checkbox"/>	Room Humidity	Viconics - SE	Room Humidity	Read	-

Active signals: 12 / 3000 Hide Disabled signals [Edit Columns](#) [Import](#) [Export](#) A/

 Not Connected BMS Protocol: ST Clo

1. Device

It indicates the device we are configuring. You will be able to select between the devices previously configured in the configuration tab.

2. Widget

It indicates the widget we are configuring. You will be able to select between the widgets previously configured in the configuration tab.

3. R/W

It indicates the type of widget selected. Notice that you will need to specify if this signal is read or write if the widget is a “Read & Write” type. For the rest, this will be a non-editable cell.

4. Bit

It is used to select the bit of the “Binary” type widget that has bits enabled. For other scenarios, this cell does not apply.

5. 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.

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

-	16	0: Unsigned	0: Big En...	0
6: Write 1 analog register	16	1: Signed (C2)	0: Big En...	1
6: Write 1 analog register	16	1: Signed (C2)	0: Big En...	0
6: Write 1 analog register	16	1: Signed (C2)	0: Big En...	0
6: Write 1 analog register	16	1: Signed (C2)	0: Big En...	2
16: Write multiple analo...	32	1: Signed (C2) ▾	0: Big En...	4

-

0: Unsigned

1: Signed (C2)

2: Signed (C1)

3: Float

4: BitFields

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.

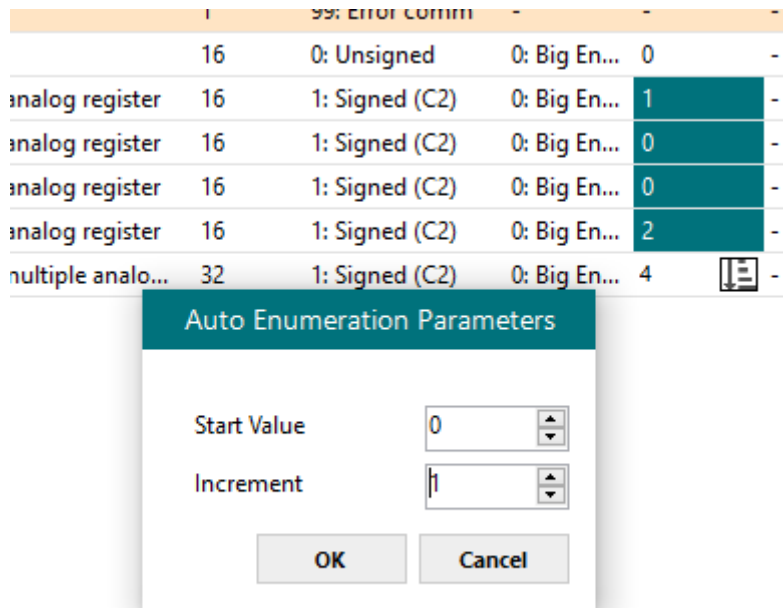


Figure 7.4 Auto numeration selection

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.

16	0: Unsigned	0: Big En...	0	-
analog register	16	1: Signed (C2)	0: Big En...	1
analog register	16	1: Signed (C2)	0: Big En...	0
analog register	16	1: Signed (C2)	0: Big En...	0
analog register	16	1: Signed (C2)	0: Big En...	2
multiple analo...	32	1: Signed (C2)	0: Big En...	4

16	1: Signed (C2)	0: Big En...	100	-
16	1: Signed (C2)	0: Big En...	101	-
16	1: Signed (C2)	0: Big En...	102	-
16	1: Signed (C2)	0: Big En...	103	-
32	1: Signed (C2)	0: Big En...	104	-

Figure 7.5 Values auto numerated

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.

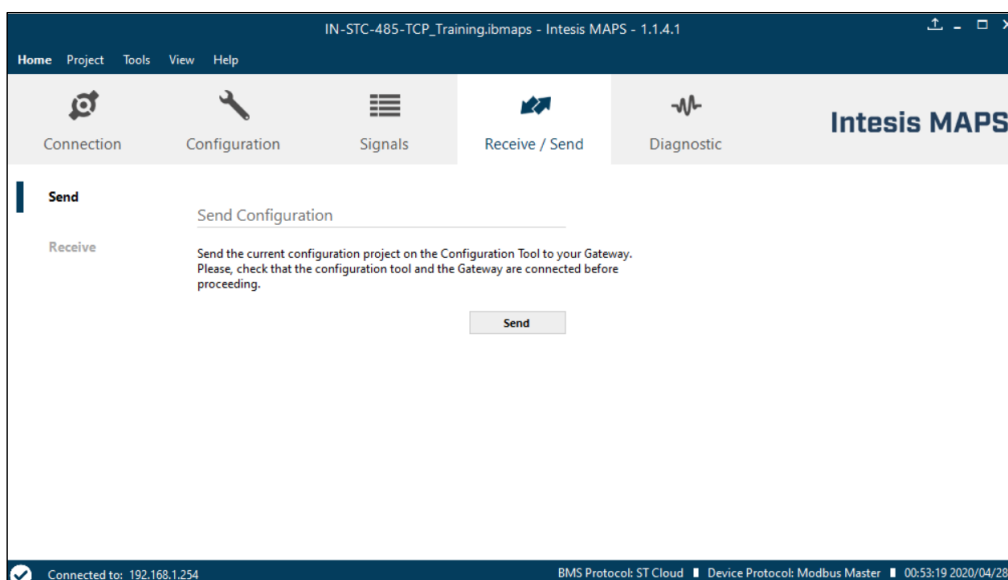


Figure 8.1 Send project

8.2 Receive

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

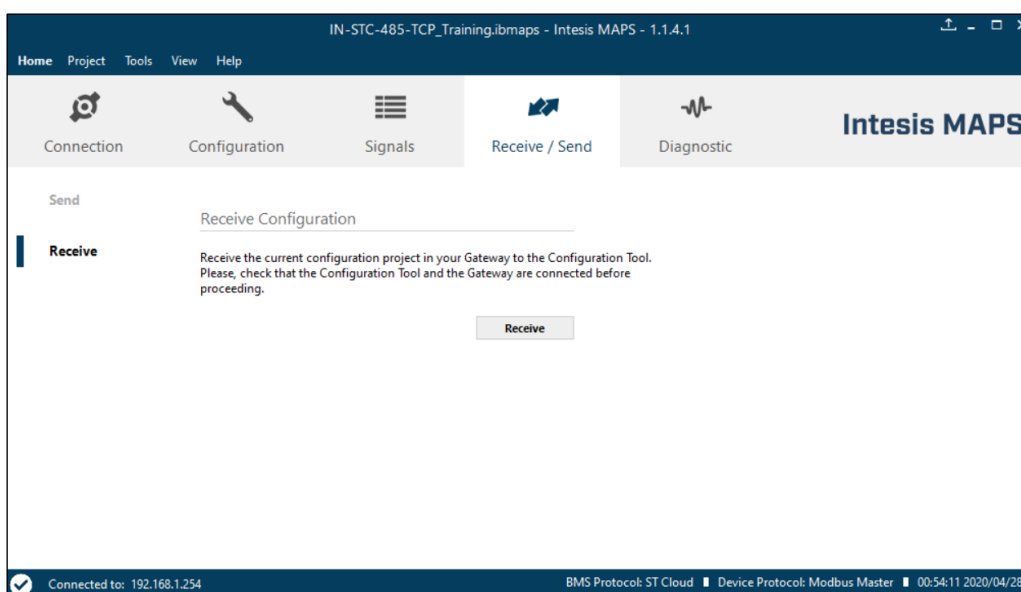


Figure 8.2 Receive project

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.

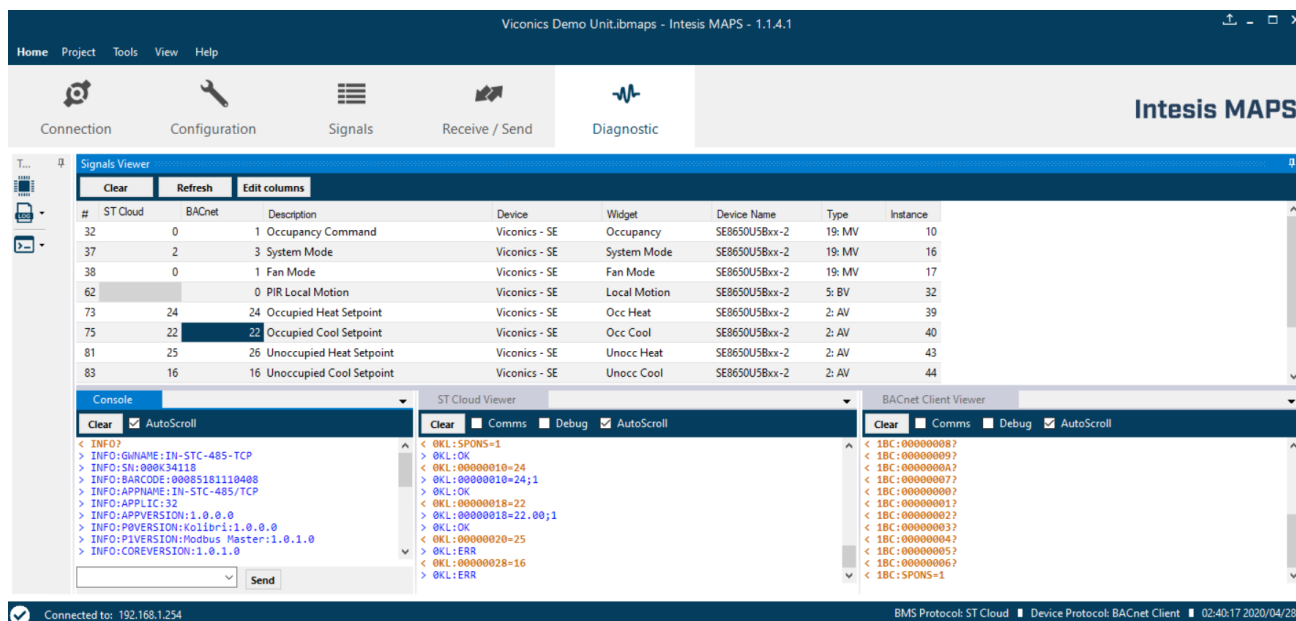


Figure 9.1 Diagnostic

9.1 Tools

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



Figure 9.2 Tool bar

It offers 3 main tools:

9.1.1 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.

9.1.2 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.

9.1.3 Commands

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

- INFO?: Requests general information from the Gateway
- RESET: Resets the Gateway

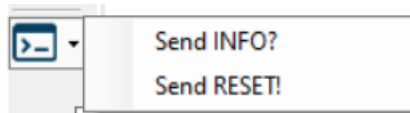


Figure 9.3 Available commands

9.2 Viewers

The Configuration Tool offers 3 different viewers to monitor communications: **Console**, **Internal Protocol (ST Cloud)** 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.

9.2.1 Console

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

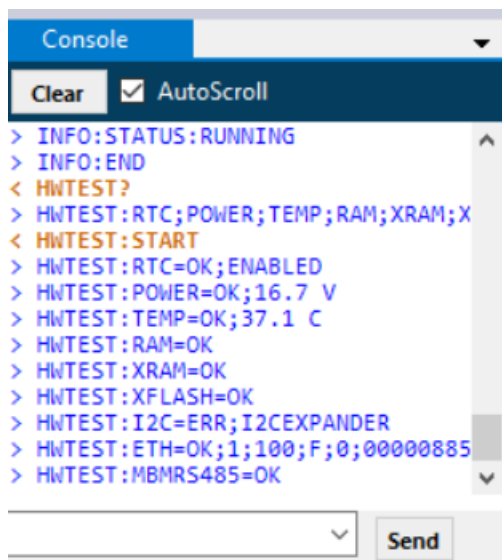


Figure 9.4 Console View

9.2.2 ST Cloud Viewer

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

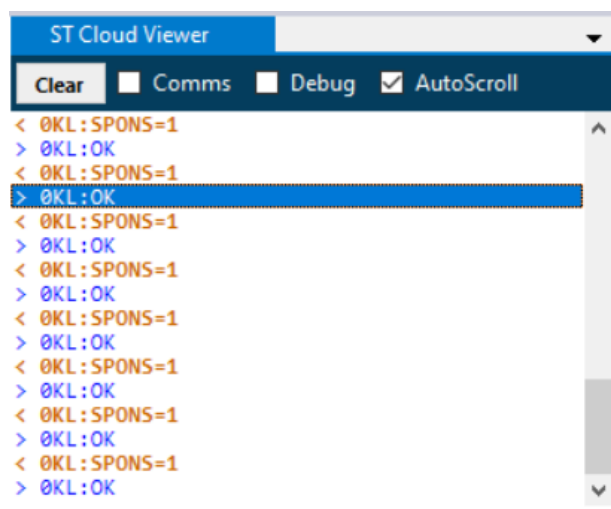


Figure 9.5 ST Cloud View

9.2.3 External Protocol Viewer

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

9.2.4 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).

Signals Viewer									
Clear Refresh Edit columns									
#	ST Cloud	Modbus	Description	Device	Widget	Device	Read Func	Write Func	Address
2	0	0	On/Off	Device 1	On/Off	Node 0_Bedroom AC I...	3: Read Holding Registers	6: Write Single Register	0
3	2	2	Mode	Device 1	Mode	Node 0_Bedroom AC I...	3: Read Holding Registers	6: Write Single Register	1
4	0	1	Fan Speed	Device 1	Fan Speed	Node 0_Bedroom AC I...	3: Read Holding Registers	6: Write Single Register	2
5	21	21	Set Point	Device 1	Set Point	Node 0_Bedroom AC I...	3: Read Holding Registers	6: Write Single Register	3
6	25	25	Ambient Temp	Device 1	Ambient Temp	Node 0_Bedroom AC I...	3: Read Holding Registers	6: Write Single Register	4
7	0	0	Filter Sign	Device 1	Filter Sign	Node 0_Bedroom AC I...	3: Read Holding Registers	6: Write Single Register	5
8	0	0	Filter Reset	Device 1	Filter Reset	Node 0_Bedroom AC I...	3: Read Holding Registers	6: Write Single Register	6
9	0	0	Error Code	Device 1	Error Code	Node 0_Bedroom AC I...	3: Read Holding Registers	6: Write Single Register	7

Figure 9.6 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).

9.2.5 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.

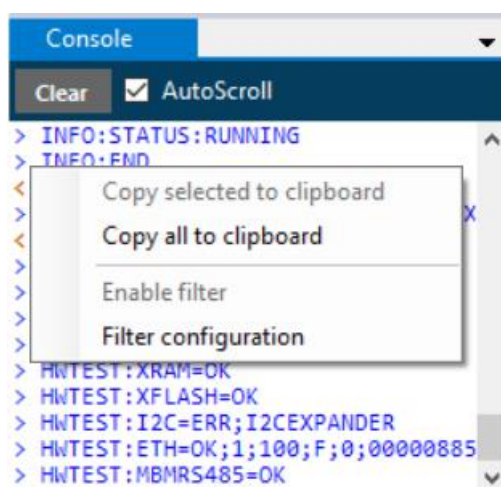


Figure 9.7 Filter contextual menu

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

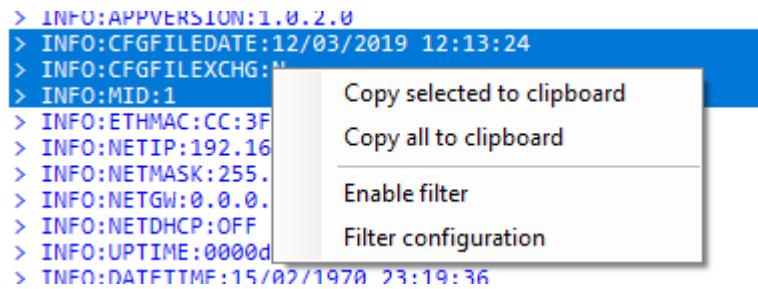


Figure 9.8 Copy selected to clipboard

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

Filter Configuration

Search Condition

Filter Type Plain text Regular Expression

Search Condition String

Display

Visualization Options Filter Highlight

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

- b) **Highlight**

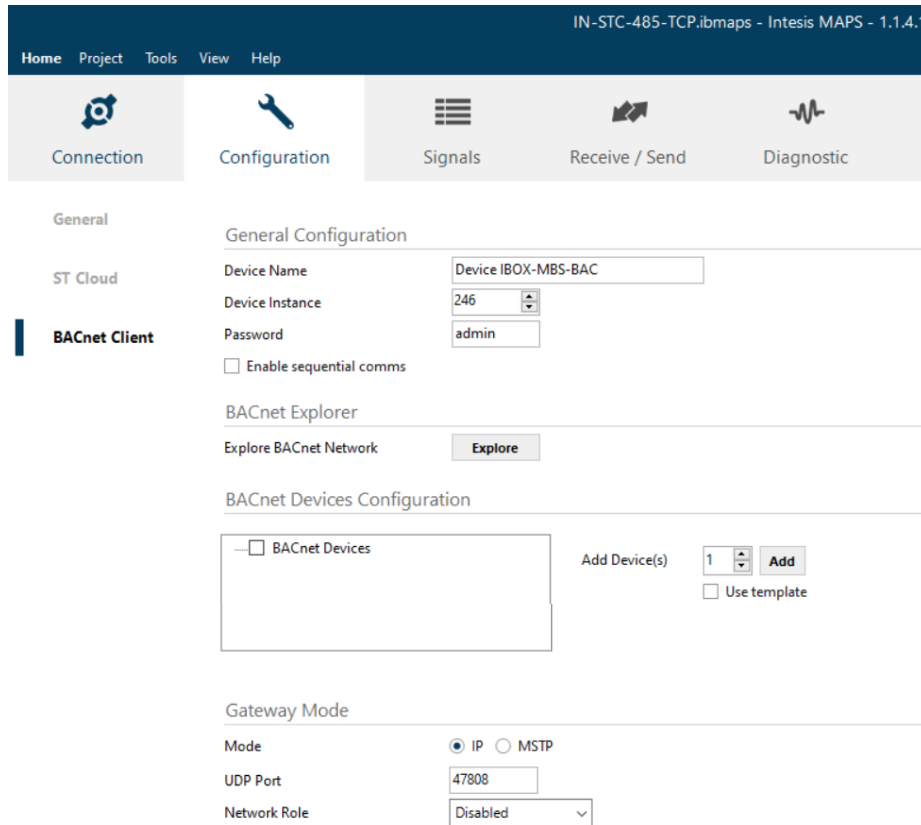
It only highlights the communication frames that fulfill the filter condition selected in the **Search Condition**.

10. External protocols

10.1 BACnet

10.1.1 General configuration

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



IN-STC-485-TCP.ibmaps - Intesis MAPS - 1.1.4.1

Home Project Tools View Help

Connection Configuration Signals Receive / Send Diagnostic

General

ST Cloud

BACnet Client

General Configuration

Device Name

Device Instance

Password

Enable sequential comms

BACnet Explorer

Explore BACnet Network

BACnet Devices Configuration

BACnet Devices

Add Device(s)

Use template

Gateway Mode

Mode IP MSTP

UDP Port

Network Role

Figure 10.1 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.

10.1.2 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.

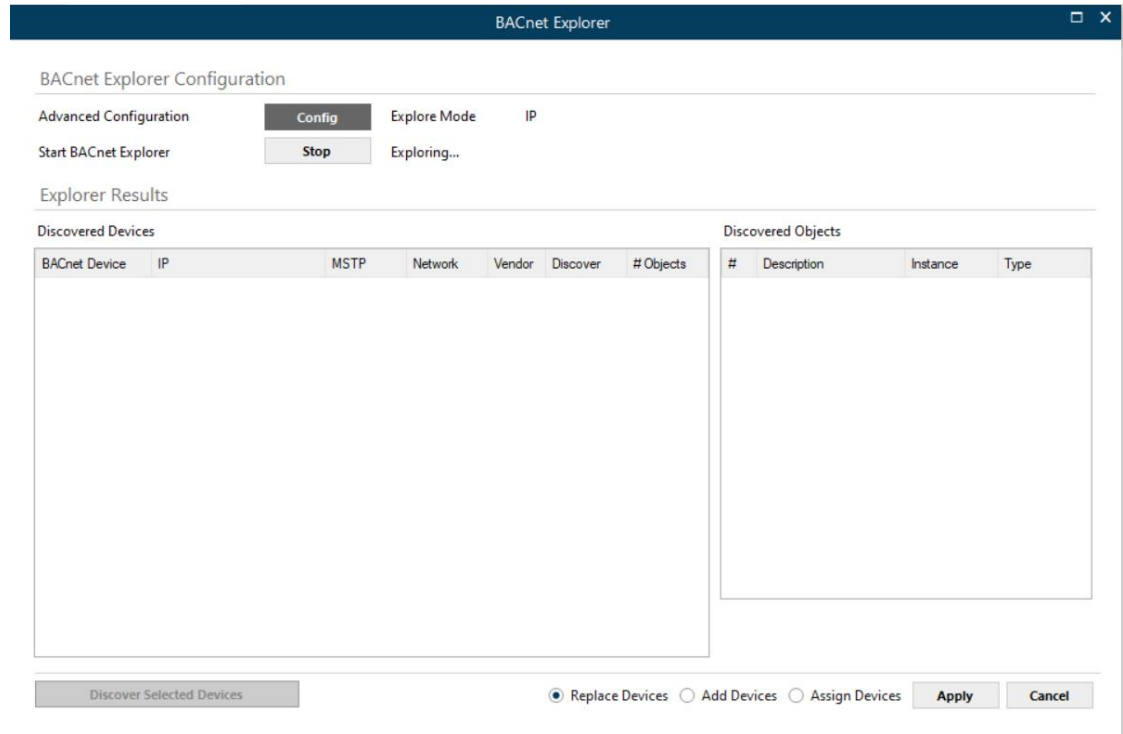


Figure 10.2 BACnet interface configuration options

- **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.

BACnet Explorer Parameters

BACnet MSTP Parameters

Start Instance End Instance Discover MSTP slaves

Step

Scan timeout

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
 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.
- **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.

Devices Configuration

Scan BACnet Network Scan

BACnet Devices

Device 0

Device Name:

Recipient Type:

Object Instance:

Reading Type:

Write priority:

Time Interframe:

Add Device(s)

Use template

Delete Device(s)

Figure 10.3 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
 - **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.

10.1.3 Gateway Mode

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

Gateway Mode

Mode IP MSTP

UDP Port

Network Role

Figure 10.4 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.
 - **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.

Network Role

BBMD IP

TTL Registration

Figure 10.5 Foreign Device configuration

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

Network Role

Enable	IP	Port	Network Mask	Description
<input checked="" type="checkbox"/>	192.168.100.246	47808	255.255.255.255	BBMD-1
<input type="checkbox"/>		47808	255.255.255.255	BBMD-2
<input type="checkbox"/>		47808	255.255.255.255	BBMD-3
<input type="checkbox"/>		47808	255.255.255.255	BBMD-4
<input type="checkbox"/>		47808	255.255.255.255	BBMD-5
<input type="checkbox"/>		47808	255.255.255.255	BBMD-6
<input type="checkbox"/>		47808	255.255.255.255	BBMD-7
<input type="checkbox"/>		47808	255.255.255.255	BBMD-8

Figure 10.6 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.

10.1.4 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 10.7 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.

10.2 Modbus Master

10.2.1 Standard Configuration

IN-STC-485-TCP_Training.ibmaps - Intesis MAPS -

Home Project Tools View Help

Connection Configuration * Signals Receive / Send Diagnostic

General

ST Cloud

Modbus Master

Gateway Configuration

Modbus Type RTU TCP Both

Slave/Server Devices Configuration

RTU Node
 Node 0 (192.168.100.10:502)
 Device 1 (1)

TCP Node Name: Node 0
 TCP Node IP: 192.168.100.10
 TCP Node Port: 502
 Add Device: 1 **Add**
 Add Device(s): **Add From Template**

Advanced Configuration

Time InterFrame: 10 ms
 Retry Timeout: 5000 ms
 Conn. Timeout: 10000 ms
 Rx Timeout: 5000 ms
 Time Slave Chg: 100 ms

Modbus Poll Records

Enable Poll Records: Enabled
 Poll Records Configuration: **View**

Deadband

Deadband to send to Internal System: 0.00

Add Node **Delete Node**

Figure 10.8 Modbus Master configuration

1. Modbus Type

Select the type of Modbus communication required with the Modbus Slave devices:

1. Modbus RTU

Modbus connection through EIA485.

2. Modbus TCP

Modbus connection through Ethernet. More than one Modbus master device allowed.

3. Both

Modbus RTU and Modbus TCP connections active and allowed simultaneously.

2. RTU devices configuration

Depending on selection made on Modbus type parameter, different options will be available.

1. Modbus RTU

There are two main sections to configure: the node and the device itself.

For the node, the user can configure the following parameters:

- Baud rate**
 Defines the communication speed for the RTU communication.
 Values from 2400 to 115200 bps
- Data Type**
 8 bits of data / Parity / Stop bits
- Time Interframe**
 Minimum time between received frame and sent frame.
 Values from 0 to 2000 ms.
- Add Device**
 Creates new devices to be included in the configuration.

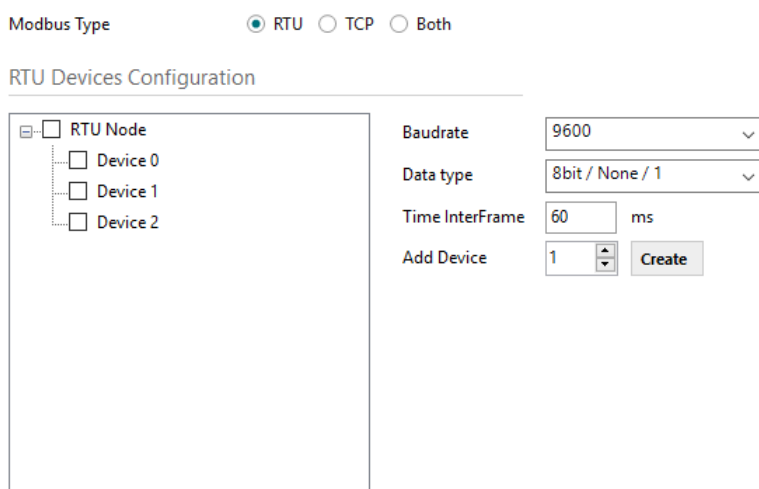


Figure 10.9 Modbus RTU node configuration

For each slave device, the user can configure the following parameters:

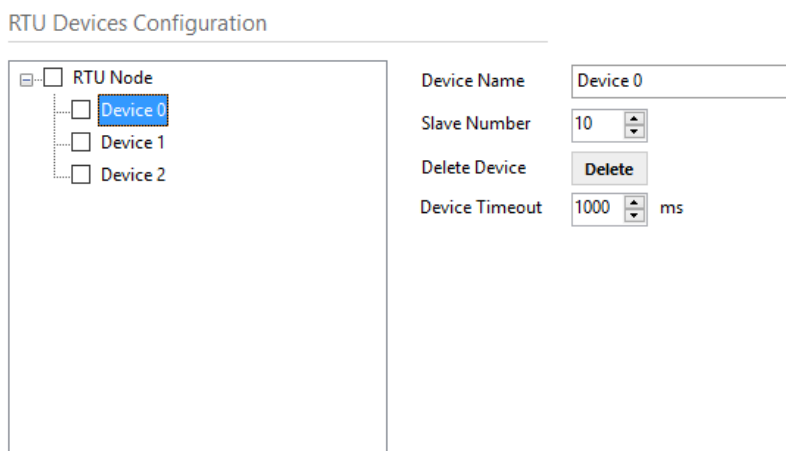


Figure 10.10 Modbus RTU device configuration

- **Device Name**
Descriptive name for the Modbus RTU slave device
- **Slave Number**
Modbus slave address
- **Delete Device**
This option deletes the current selected device
- **Device Timeout**
Time to wait before sending a timeout message if there is no response from the slave device.

2. Modbus TCP

For the Modbus TCP, the following standard parameters can be configured:

- **Name**
Descriptive device name
- **IP**
IP for the Modbus TCP server to connect
- **Port**
Port for the Modbus TCP server to connect. By default, it is 502 (standard)
- **Add Device**
Adds as many devices as the ones set in the combo box.

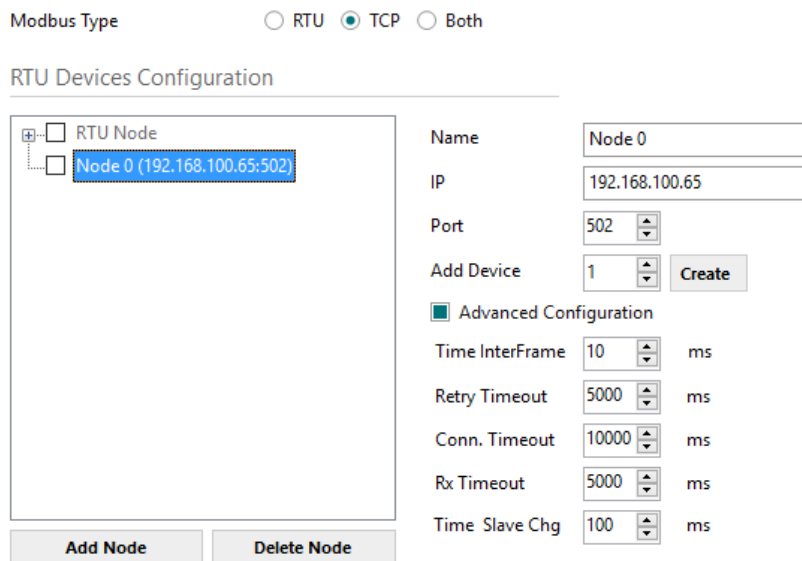


Figure 10.11 Modbus TCP node configuration

Moreover, the following advanced settings can be configured too:

- **Time Interframe**
Minimum time between received frame and sent frame.
Values from 0 to 10000 ms.
- **Retry Timeout**
Minimum time before launching a retry frame after no response on the TCP connection.
Values from 0 to 30000 ms
- **Conn. Timeout**
Minimum time before launching an error message after no TCP connection.
Values from 0 to 30000 ms
- **Rx. Timeout**
Minimum time before launching an error message after no TCP frames received, but TCP connection is OK.
Values from 0 to 30000 ms
- **Time Slave Chg**
Minimum time of silence when changing from one slave device to another.
Values from 0 to 10000 ms

3. Both

In this case, simply both options are active and enabled.

Modbus Type RTU TCP Both

RTU Devices Configuration

RTU Node

- Device 0
- Device 1
- Device 2
- Node 0 (192.168.100.65:502)

Name: Node 0

IP: 192.168.100.65

Port: 502

Add Device: 1

Advanced Configuration

Time InterFrame: 10 ms

Retry Timeout: 5000 ms

Conn. Timeout: 10000 ms

Rx Timeout: 5000 ms

Time Slave Chg: 100 ms

Figure 10.12 Modbus TCP node configuration

3. Modbus Poll Records

The gateway allows the use of Modbus Poll Records.

Available options for poll records will be shown in the Poll Records window according to the current Modbus configuration.

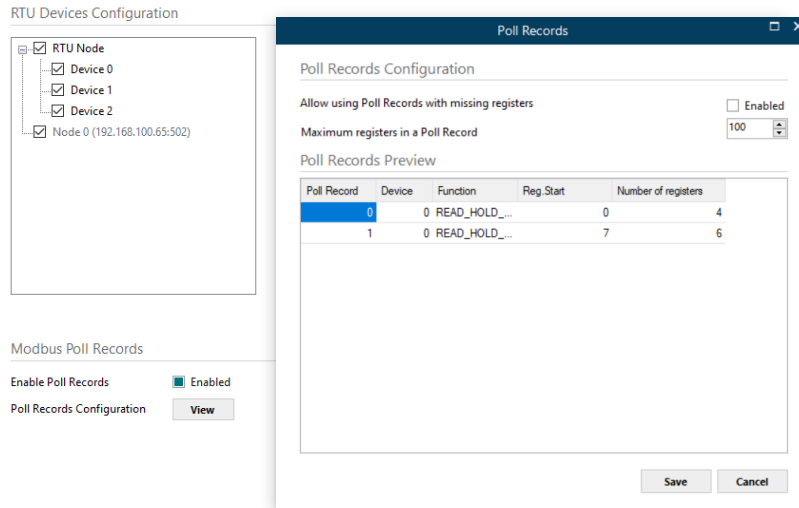


Figure 10.13 Modbus Poll Records configuration

1. Allow using polling records with missing registers

If enabled, it allows nonconsecutive registers to be grouped in the same Poll Record.

2. Maximum registers in a Polling Record

Max number of registers to be grouped in a single Poll Record.

3. Poll Records Preview

Summary of the Poll Records to be used according to the current configuration present in the Signals table.

10.2.2 Signals configuration

For the Modbus configuration as an external protocol, the following parameters need to be considered:

1. **Device**
Indicates the Modbus device.
2. **Read Function**
Indicate the Modbus function used to read, if allowed or required. Modbus functions 1, 2, 3 and 4 supported.
3. **Write Function**
Indicate the Modbus function used to write, if allowed or required. Modbus functions 5, 6, 15 and 16 supported.
4. **#bit**
Indicate the signal size expressed in bits.
5. **Format**
Indicate the register information format. Unsigned, Signed C2, Signed C1 and
6. **ByteOrder**
Indicate the byte order
7. **Address**
Indicate the register signal starting address
8. **Bit**
If using multiple bit (bit fields), indicate the bit you want to read

The screenshot shows the Intesis MAPS software interface. At the top, there is a navigation bar with 'Home', 'Project', 'Tools', 'View', and 'Help'. Below this is a toolbar with icons for 'Connection', 'Configuration *', 'Signals *', 'Receive / Send', and 'Diagnostic'. The main area displays a table titled 'Modbus Master' with columns for 'ST Cloud', 'Bit', 'Device', '# Slave', 'Base', 'Read Func', 'Write Func', 'Data L...', 'Format', 'ByteOrder', 'Address', 'Bit', and '# ...'. The table contains 12 rows of configuration data for RTU_Device 1.

ST Cloud	Bit	Device	# Slave	Base	Read Func	Write Func	Data L...	Format	ByteOrder	Address	Bit	# ...
-	-	RTU_Device 1	1	0-based	-	-	-	-	-	-	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	0	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	1	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	2	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	3	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	7	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	8	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	9	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	10	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	11	-	-
-	-	RTU_Device 1	1	0-based	3: Read Holding Registers	6: Write Single Register	16	0: Unsigned	0: Big En...	12	-	-

Figure 10.14 Modbus signals configuration