SIM

Smart Interface Module

Installation Guide

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Schneider Electric

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product.

For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of Contents

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book

At a Glance

Document Scope
This document provides instructions for installing, setting up and starting the SIM modules and associated electrical equipment.

The instructions are presented in the order in which they are to be carried out. They supplement the assembly or installation documents supplied with the equipment and the specific installation guides for each product.

The installation guide includes four chapters:
- architectures: an example of a typical architecture with SIM modules
- presentation:
  - Smart interface Modules (SIMs)
  - EGX105Z Ethernet / ZigBee gateway
  - REP100Z ZigBee router
  - RDT100Z ZigBee radio test tool
- connection
- configuration.

This guide is intended for the electrical contractor or integrator in charge of installing and setting the energy management solution.

Product Related Information

Documentation Title	Documentation Reference
SIM Smart Interface Module	ISSIM10Z10M6BZ
EGX105Z Gateway	ISEGX105Z
RDT100Z Radio Test Tool	ISRDT100Z
REP100Z Router	ISREP100Z

Architecture

Smart Interface Modules (SIM10M, SIM10Z and SIM6BZ) provide local physical interfaces with buildings pulse output meters (water, gas, electricity, …), logic and analog inputs.The data acquired by the SIMs are collected through wired or wireless networks:

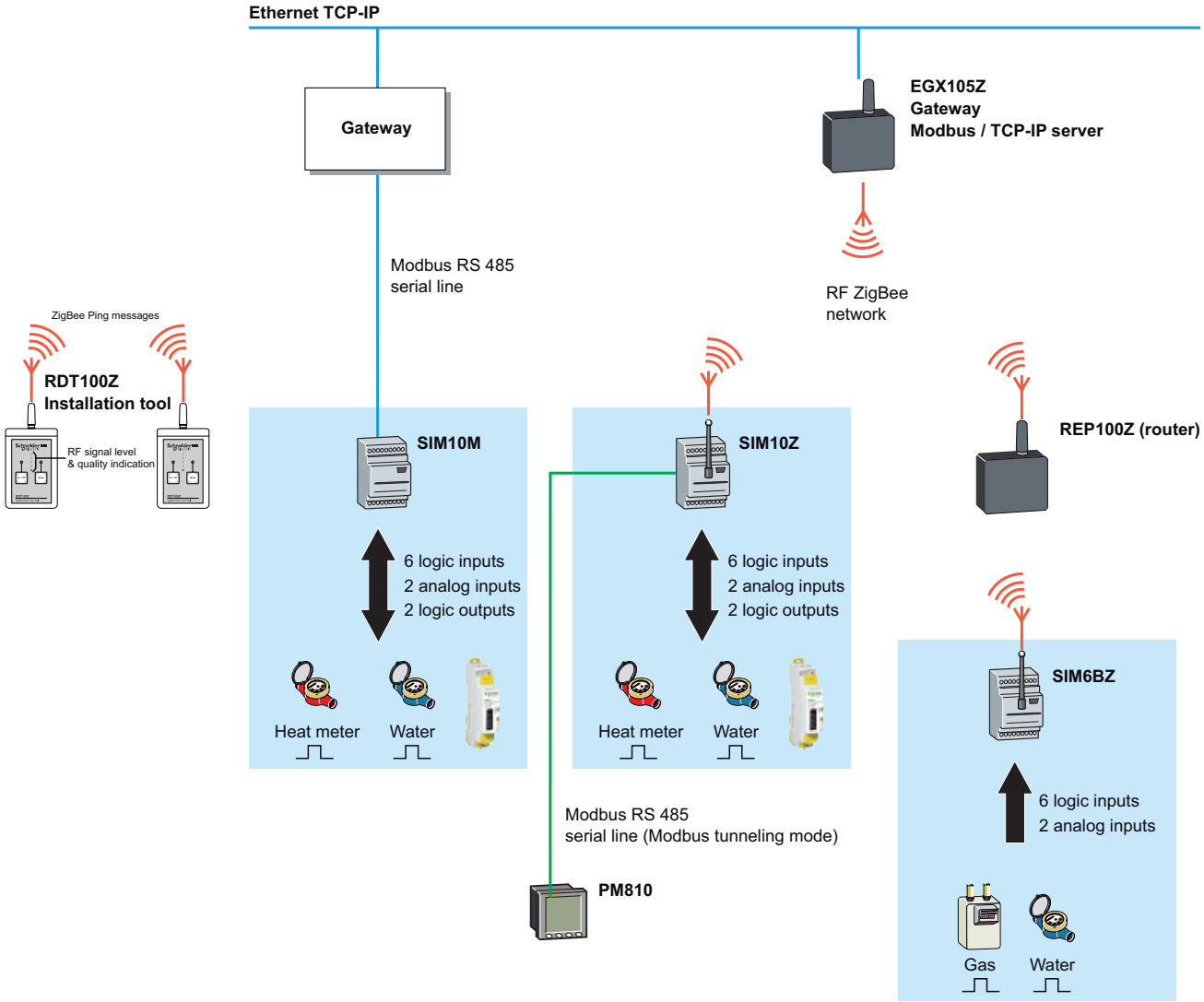
■ In simple-to-access locations, the SIM are connected directly to the system via the Modbus network.

■ In difficult-to-access locations, specially in existing buildings, wireless operation is available via the easy-to-use ZigBee wireless communication protocol and a gateway Ethernet/ZigBee EGX105Z.

The routers REP100Z use ZigBee mesh technology to allow RF network extension and robustness.

The architecture can be easily implemented thanks to a point to point installer radio test tool, the RDT100Z, to validate Radio Frequency transmission quality between 2 ZigBee nodes physic allocation

Example of a typical architecture with SIM modules



Smart Interface Modules (SIMs)
Presentation

SIM

Smart Interface Modules (SIMs) are intelligent electronic devices used in energy efficiency applications which provide local physical interfaces with building dispersed WAGES (Water Air Gas Electricity Steam) meters, sensors and actuators and communicate through wired or wireless networks with remote monitoring and control systems.

SIMs communicate with gateways using:

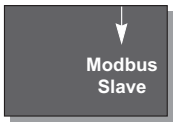
- wired protocol: Modbus RS 485 SIM modules are connected, using a shielded twisted pair, to Ethernet / RS 485 gateways
- wireless protocol: ZigBee - commonly used for RF (Radio Frequency) WPANs (Wireless Personal Area Networks). SIM modules and routers (depending on distances) are connected, using an RF ZigBee network, to a specific Ethernet / ZigBee gateway.

SIM versions

- Three versions are available:
  - SIM10M
  - SIM10Z
  - SIM6BZ.

Smart Interface Modules (SIMs)
SIM10M: Modbus slave SIM

SIM10M



Symbol used

SIM10M Modbus slave version: wired Modbus RS 485 connection to gateway, in slave mode.

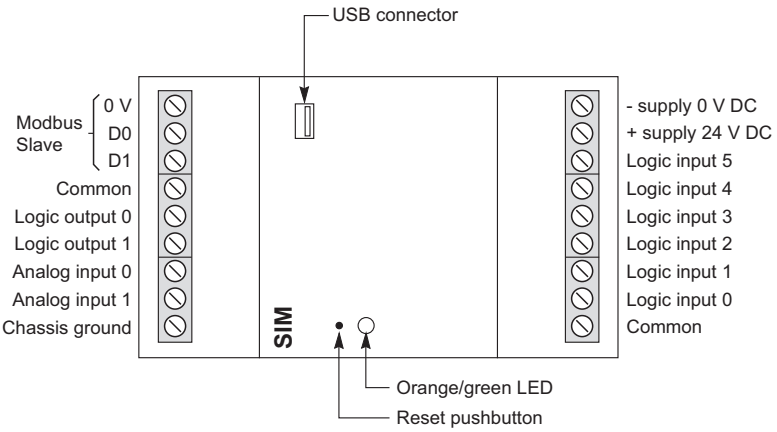
Functions

- Multiplexed acquisition of meter pulses and circuit breaker tripped or On/Off status.
- Acquisition of analog inputs such as temperature.
- Control of logic outputs.
- Storage of cumulated values.

Characteristics

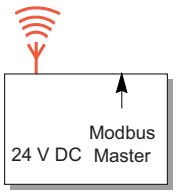
- DIN rail / 54 mm width.
- 24 V DC supply.
- 6 logic inputs (pulse acquisition and On/Off detection by internal 3.6 V DC power and pull-up resistors).
- 2 logic outputs (by internal 24 V DC power - 50 mA).
- 2 analog inputs (0-10 V DC externally powered).
- 1 RS 485 Modbus slave link (up to 38400 bits/s).
- LEDs indicate the following information:
  - orange indicates: a USB cable is connected to the SIM
  - green indicates a configured unit
  - yellow indicates an unconfigured unit.
- 1 reset button (reboots the SIM if pressed less than 3 seconds or reset the SIM to unconfigured mode if pressed more than 3 seconds).

The external connectors of the Modbus slave SIM have the following layout.



Smart Interface Modules (SIMs)
SIM10Z: ZigBee Modbus master SIM

SIM10Z



Symbol used

SIM10Z ZigBee Modbus master version: RF ZigBee connection to gateway and 1 RS 485 Modbus Master link.

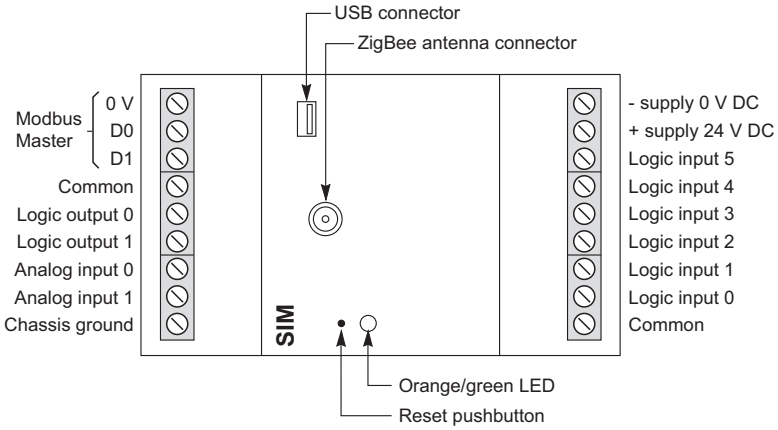
Functions

- Multiplexed acquisition of meter pulses and circuit breaker tripped or On/Off status.
- Acquisition of analog inputs such as temperature.
- Control of logic outputs.
- Storage of cumulated values.
- Modbus master.

Characteristics

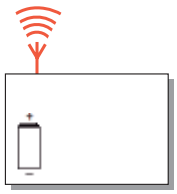
- DIN rail / 54 mm width.
- 24 V DC supply.
- 6 logic inputs (pulse acquisition and On/Off detection by internal 3.6 V DC power and pull-up resistors).
- 2 logic outputs (by internal 24 V DC power 50 mA).
- 2 analog inputs (0-10 V DC externally powered).
- 1 RS 485 Modbus master link (up to 38400 bits/s).
- 1 RF antenna.
- LEDs indicate the following information:
  - orange indicates: a USB cable is connected to the SIM
  - green indicates a configured unit
  - yellow indicates an unconfigured unit.
- 1 reset button (reboots the SIM if pressed less than 3 seconds or puts the SIM in auto-detection mode if pressed more than 3 seconds).

The external connectors of the ZigBee Modbus master SIM have the following layout.



Smart Interface Modules (SIMs)
SIM6BZ: ZigBee battery-powered SIM

SIM6BZ



Symbol used

SIM6BZ ZigBee battery powered version: RF ZigBee connection to gateway.

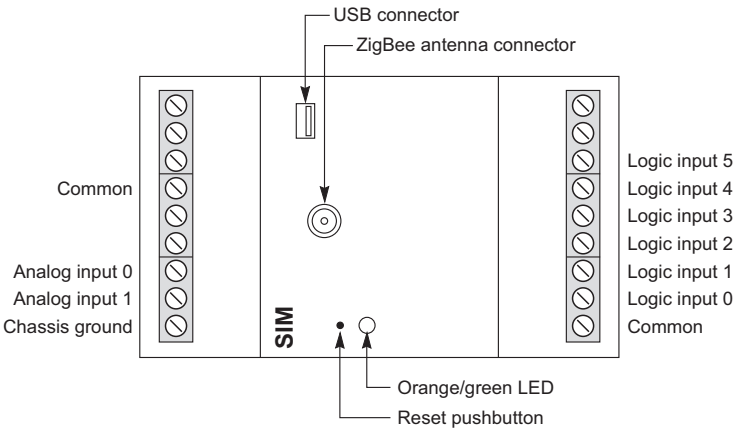
Functions

■ Multiplexed acquisition of meter pulses and circuit breaker tripped or On/Off status.
■ Acquisition of analog inputs such as temperature.
■ Storage of cumulated values.

Characteristics

■ DIN rail / 54 mm width.
■ 3.6 V DC battery powered (2 x 1500 mAh).
■ 6 logic inputs (pulse acquisition and On/Off detection by internal 3.6 V DC power and pull-up resistors).
■ 2 analog inputs (0-10 V DC externally powered).
■ 1 RF antenna.
■ flashing LEDs indicate the following information:
□ flashing orange indicates: a USB cable is connected to the SIM
□ flashing green indicates a configured unit
□ flashing yellow indicates an unconfigured unit.
■ 1 reset button (reboots the SIM if pressed less than 3 seconds or puts the SIM in auto-detection mode if pressed more than 3 seconds).

The external connectors of the ZigBee battery-powered SIM have the following layout.



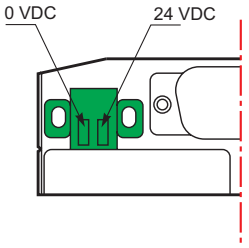
Smart Interface Modules (SIMs)
ZigBee gateway, router, radio test tool

EGX105Z

Functions

The EGX105Z Ethernet / ZigBee gateway is a Modbus / TCP/IP Web server.
It allows:
- remote access to the local I/Os of each ZigBee master or battery-powered SIM module (Modbus emulation mode)
- routing of Modbus frames exchanged with upper level monitoring and control software (Modbus tunnelling mode).

Characteristics



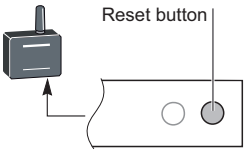
- IP20-classed plastic housing.
- Easily accessed mounting holes.
- Detachable rubber feet.
- Height x Width x Depth = 63 x 80 x 26 mm.
- 85 g (without batteries).
- DIN rail support option.
- 24 V DC power socket (100 mA).
- 1 power connector for supply in the 9-30 V DC range.
- 1 Ethernet RJ45 connector.
- 1 RS 232 D-Sub (not used).

REP100Z

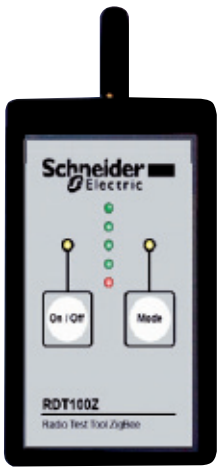
Functions

The transmission range between two ZigBee nodes is around 100 meters (line of sight) outside buildings, but often much less inside, typically 15-30 meters, dues to concrete or metallic obstacles, walls, floors…
REP100Z Ethernet / ZigBee router allows:
- reemission of the RF signal with a normal level of power
- automatic routing from tuned SIM to the gateway.

Characteristics



- IP20-classed plastic housing.
- Easily accessed mounting holes.
- Detachable rubber feet.
- Height x Width x Depth = 63 x 80 x 26 mm.
- 85 g (without batteries).
- 5 V DC power socket (round connector).
- Reset button to put the RDT100Z in auto-detection mode
- LED: green indicates product detection and orange indicates auto-detection mode.



RDT100Z

Functions

A key issue to ensure optimal operational conditions of a ZigBee communication infrastructure is the quality of its RF transmission between each of its nodes.
Transmission range is around 100 meters (line of sight) outside buildings, but often much less inside, typically 15-30 meters, due to concrete or metal obstacles, walls, floors, etc.
A point to point RF testing tool is available to validate the RF signal level between two ZigBee nodes. Its use is recommended at the early stage of a project to optimise the number of nodes and routers.
The ZigBee RDT100Z radio test tool allows:
- RF signal level and quality evaluation between two ZigBee nodes.
- quality indication based on a five point scale by LEDs.

Characteristics

- Plastic housing.
- Height (including antenna) x Width x Depth of each box = 132 x 65 x 24 mm/120 g.

Connection
DIP switch settings

Each SIM is equipped with a sliding DIP (Dual In-line Package) switch located at the rear side of the main carrier board. There are four contacts that have the following functions and that must be set as indicated below:

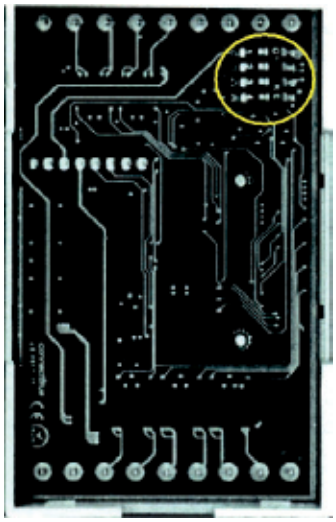
Switch contact	Function	Remark
1	RS 485 termination	Must be ON for SIM10Z or for the last node in the RS 485 daisy chain for SIM10M; otherwise OFF (1)
2	RS 485 negative bias (-)	Must be ON for SIM10Z, otherwise OFF
3	RS 485 positive bias (+)	Must be ON for SIM10Z, otherwise OFF
4	Power On/Off	Switches SIM power On or Off. **IMPORTANT:** ■ ON means that the power is Off. ■ OFF means that the power is On.

(1) For SIM10M, the termination resistance is necessary for good communication. Therefore make sure that switch # 1 is ON if it is at the end of the daisy chain.

DIP switch functions

SIM	Contact 1	Contact 2	Contact 3	Contact 4	Remark
SIM10M	ON/OFF	OFF	OFF	OFF	Switch 1 controls termination (see table above)
SIM10Z	ON	ON	ON	OFF	
SIM6BZ	OFF	OFF	OFF	OFF	

DIP switch contact settings for different SIM units.



The 4-contact DIP switch is located on the internal PCB (Printed Circuit Board) of the SIM which is accessed after removing the back plane of the SIM module.

Connection
SIM power supply

24 V DC for SIM10M and SIM10Z

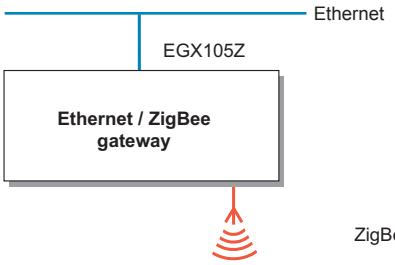
The SIM10M and SIM10Z are powered by a 24 V DC supply.
This safety extra low voltage can be provided by an LV/LV transformer connected to any earthed domestic phase to neutral outlet.

Battery power for SIM6BZ

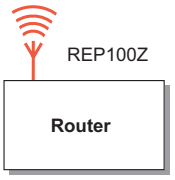
The SIM6BZ is powered by two 2/3 length AA batteries of 1500 mAh capacity each. The SIM batteries can be replaced through the front hatch, without opening the entire module.

Communication network physical constraints

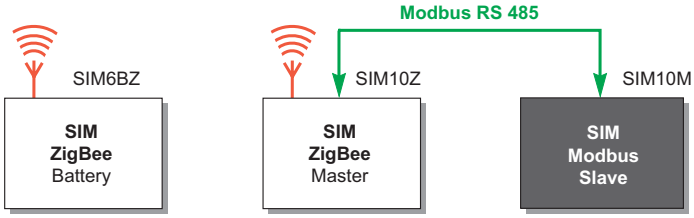
■ Multiple Ethernet / ZigBee gateways can be used to form many ZigBee zones connected to the Ethernet backbone of the building.
■ Limits to consider are the traffic on this Ethernet backbone and the need to use different ZigBee RF channels on adjacent ZigBee zones (16 possible RF channels).



■ Although theoretically unlimited, the number of router/repeaters used within a ZigBee zone should not introduce too many hops between the gateway and the end nodes (ZigBee basic throughput is 250 kb/s to be shared by all nodes belonging to a same zone).

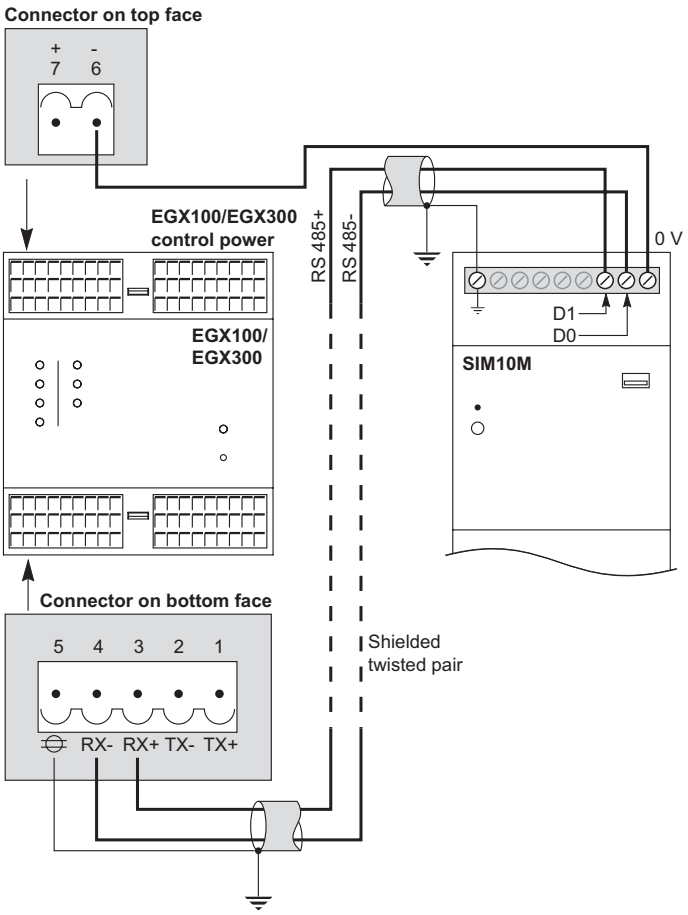


■ The total number of nodes seen as Modbus slaves through one ZigBee zone should be kept within reason (typically no more than 64 nodes including router/repeaters, ZigBee SIM nodes and RS 485 Modbus slaves).



Connection
SIM10M Modbus connection
Connection of SIM10M to SIM10Z

Example: connection to EGX100 and EGX300 gateway Modbus/TCP-IP



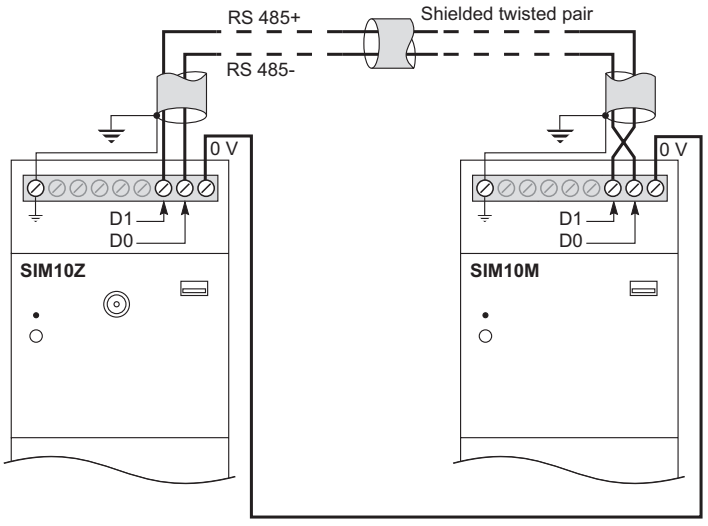
RS 485 interface

The RS 485 interface has three connection terminals with the following functions:

Terminal	Function	Remark
D1	TxD+ / RxD+	Non inverting pin
D0	TxD- / RxD-	Inverting pin
0 V	SC	Reference pin

Example: connection of SIM10M to SIM10Z with Modbus

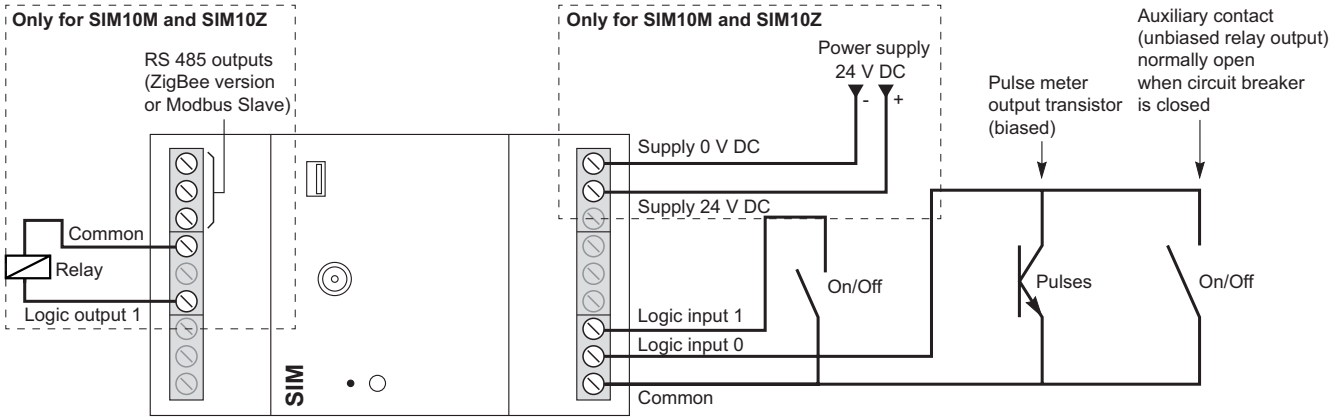
The SIM10Z communicates by RF with the upper level Ethernet/ZigBee gateway. It can also be wired to SIM10M.



Connection
Logic inputs/outputs

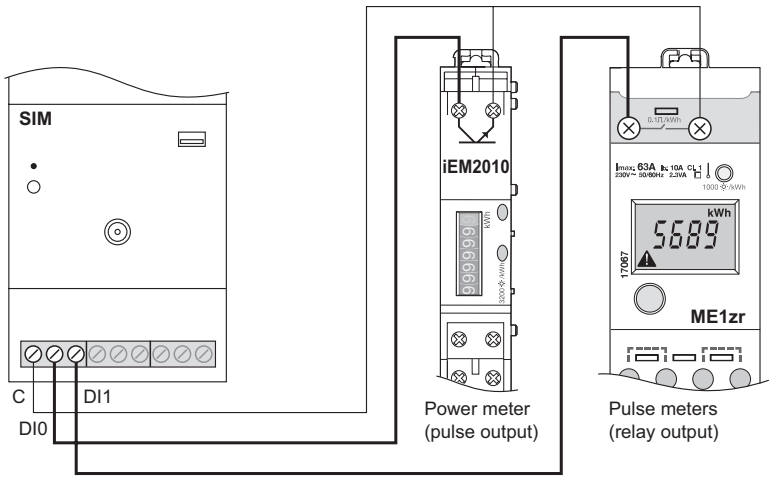
SIM10M and SIM10Z modules have logic outputs for connection to 24 V DC relays (max. 50 mA).
All three SIM versions have the same 6 logic inputs (DI0). They are connected to pulse meters and status indication auxiliary contacts of circuit breakers as follows:

Multiplexed acquisition of meter pulses and circuit breaker tripped or ON/OFF status



Examples:

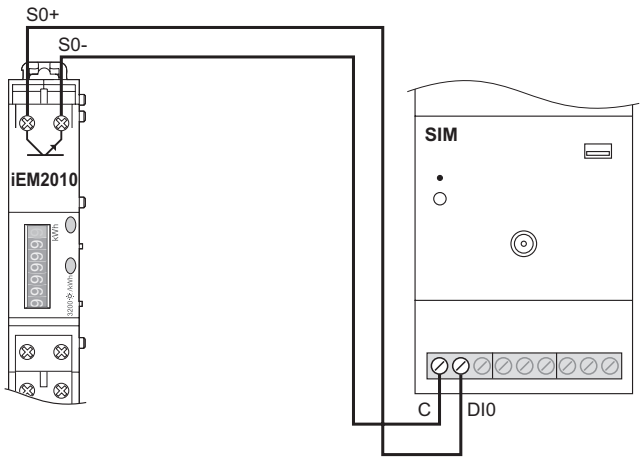
- for a pulse output, the transistor works as a switch. When it is "On" (closed, i.e. when a pulse current is flowing), the current loop must go from the logic input 1 (connected to output S0+) to the common (connected to S0-)
- the relay output can be biased or unbiased
- up to 6 devices can be connected to the 6 logic inputs. All the currents loops close to the ground.



Connection
Logic inputs/outputs

Simple acquisition of pulses or status

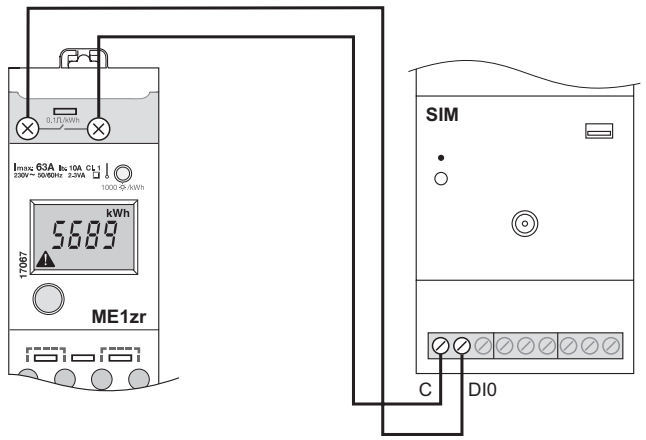
Example: iEM2010 electrical wiring to SIM



iEM2010 front face:
S0+ and S0- pulse output for remote transfer.

SIM logic input DI0.

Example: ME1zr electrical wiring to SIM



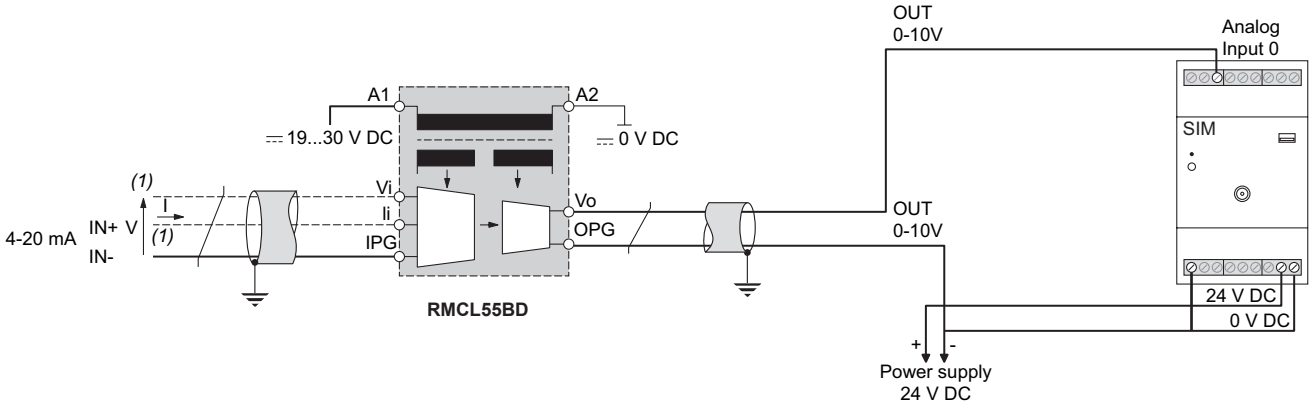
ME1zr front face:
pulse output for remote transfer.

SIM logic input DI0.

Connection
Logic inputs/outputs

Zelio Analog RMCL55BD.

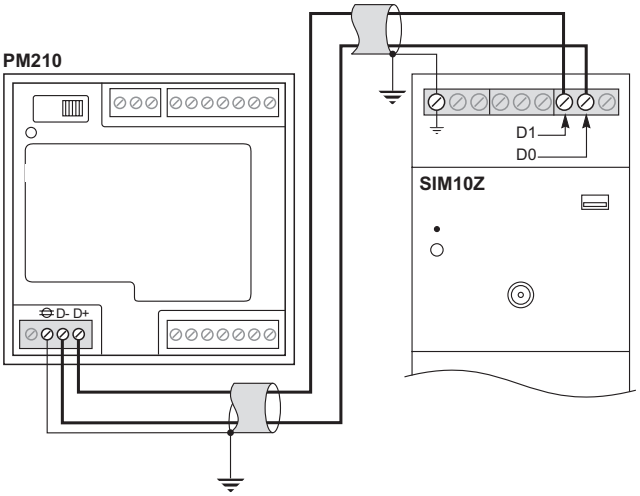
Example: Zelio Analog RMCL55BD universal voltage/current converter wiring to SIM



Connection
SIM10Z Modbus connection

PM210.

Example: PM210 electrical wiring to SIM10Z

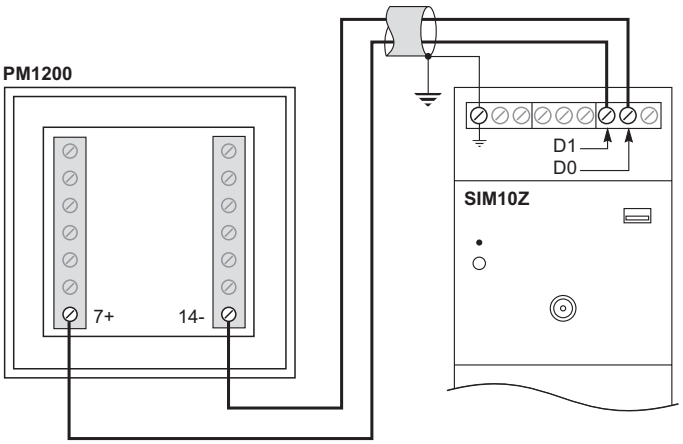


PM210 rear face: RS 485 connection terminals.

SIM10Z RS 485 port.

PM1000 Series.

Example: PM1200 electrical wiring to SIM10Z



PM1200 rear face:
7+ and 14- RS 485 connection terminals.

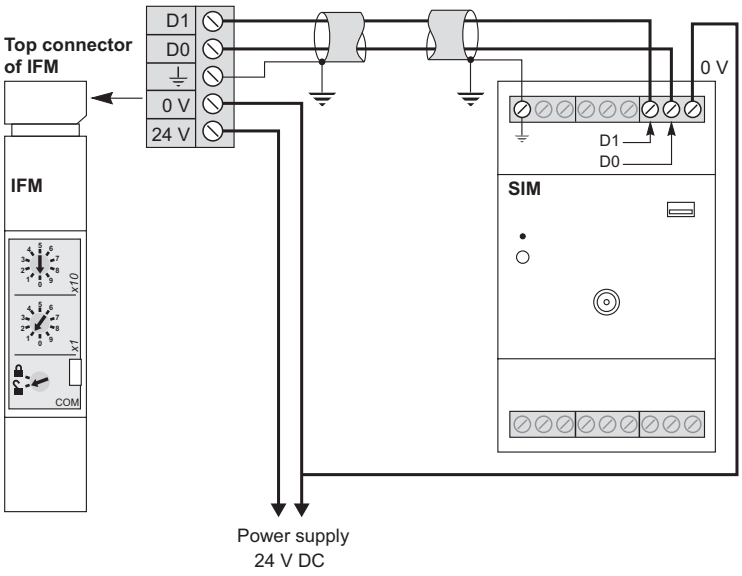
SIM10Z RS 485 port.

Connection
SIM10Z Modbus connection

Compact NSX400/630.

Modbus interface module (IFM).

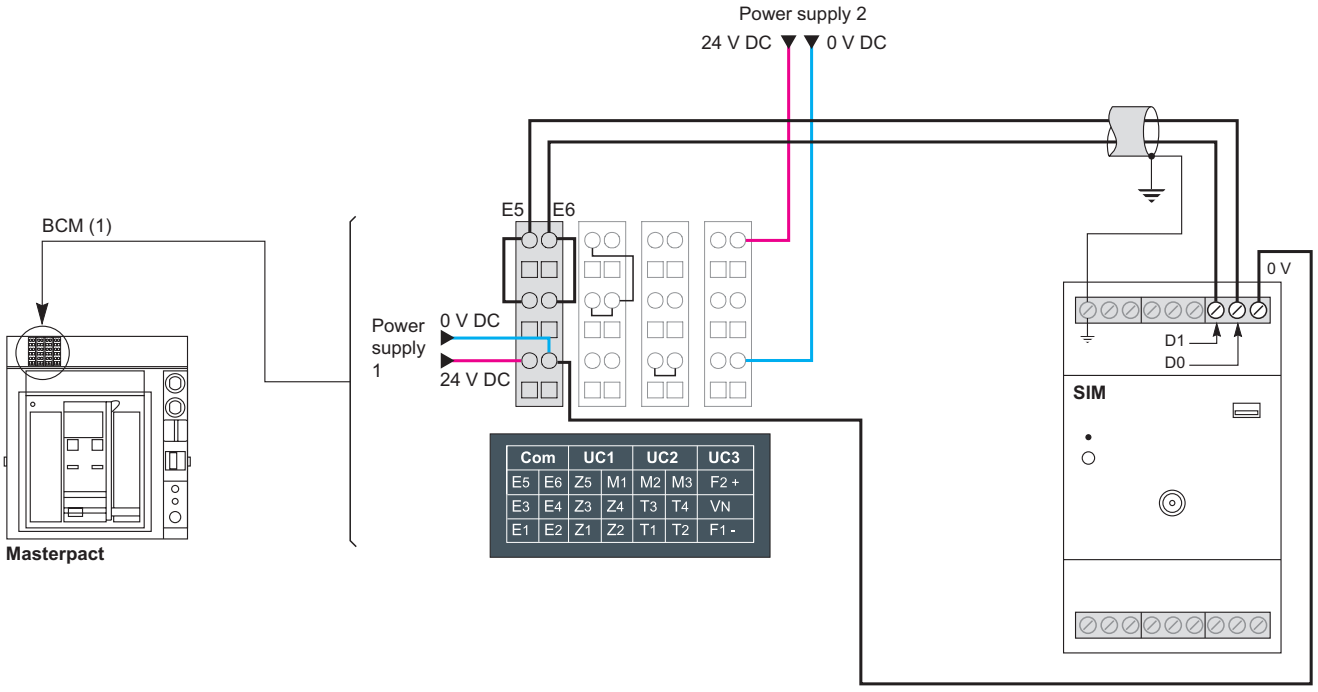
Example: Compact NSX electrical wiring to SIM10Z



Compact NSX :
top of Modbus interface module (IFM).

SIM10Z RS 485 port.

Example: Masterpact BCM module electrical wiring to SIM10Z

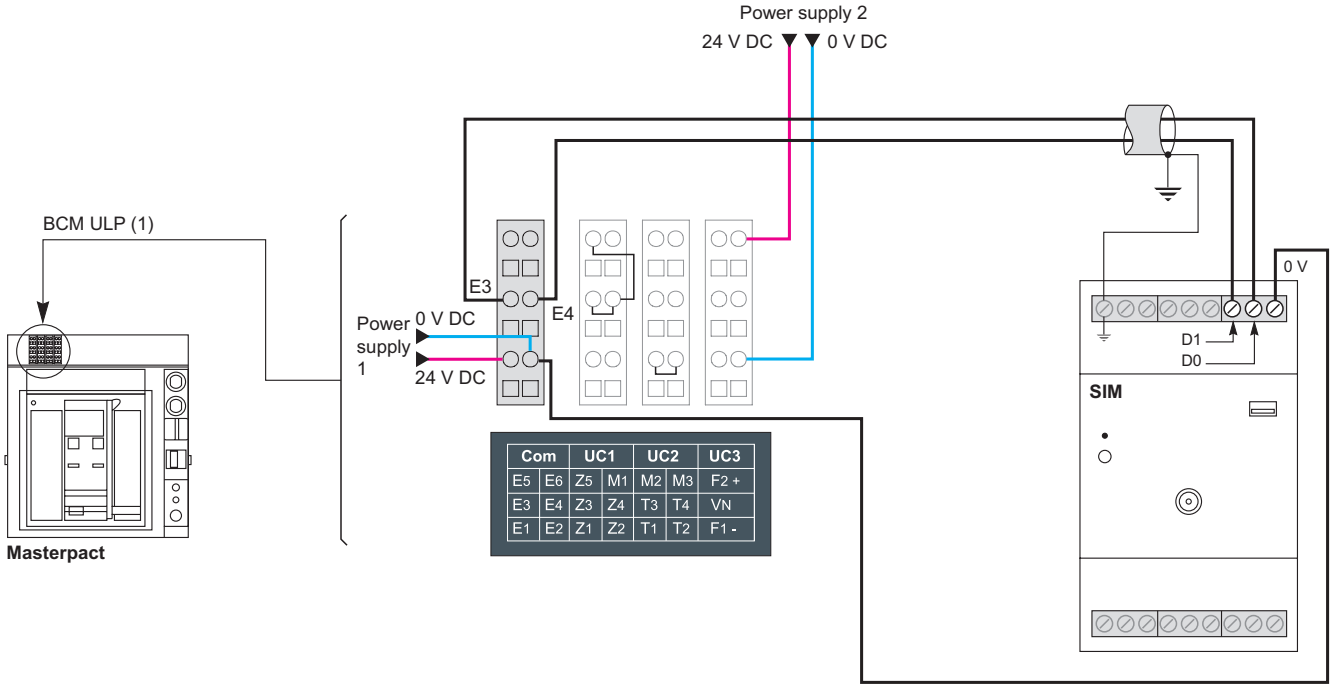


Com		UC1		UC2		UC3
E5	E6	Z5	M1	M2	M3	F2 +
E3	E4	Z3	Z4	T3	T4	VN
E1	E2	Z1	Z2	T1	T2	F1 -

(1) BCM applicable only for Micrologic P and H control units.

Connection
SIM10Z Modbus connection

Example: Masterpact BCM module electrical wiring to SIM10Z.



(1) BCM-ULP applicable for Micrologic E, P and H control units.

Configuration
Introduction
SIM10M configuration tool

Introduction

The SIM products are configured by a web server configuration tool.
Once the SIMs have been connected as described in the previous pages, the SIM nodes have to be configured. There are two main types of network architectures using SIMs:

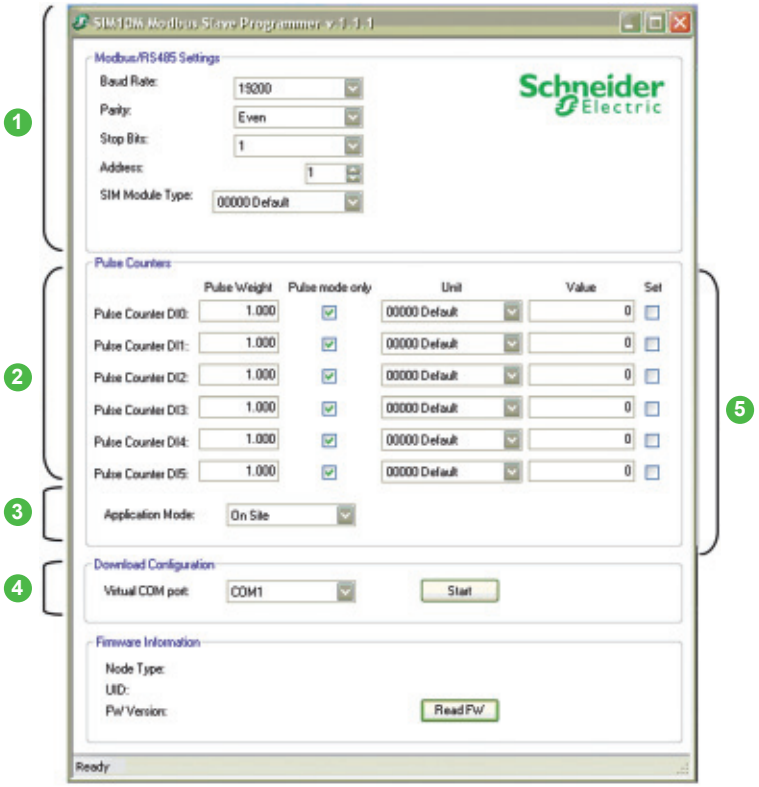
- network using SIM10M and RS 485
- network using ZigBee: SIM10Z and SIM6BZ

Note: *please download the configuration software from the following link: http://www2.schneider-electric.com/corporate/en/products-services/products-services-landing.page?f=NNM1:Software~!NNM2:Configuration+Software&p_function_id=11&p_family_id=151*

Note: *while installing SIM range configuration tool on Windows 7.0, ensure Windows installer is installed which is available on Microsoft web site.*

SIM10M configuration tool

SIM10M can be configured using the SIM10M configuration tool and the USB connection.
Launch the "SIM10M Modbus Slave Programmer" and follow this procedure:



1 Step 1: Modbus/RS 485 Settings

- Enter each parameter for the SIM10M Modbus port:
  - Modbus **Baud rate, Parity and Address** (keep **Stop bits = 1** for EGX300 and iRIO).
  - SIM module type is an optional parameter.

2 Step 2: Pulse counters

- Pulse mode only:
  - checkbox enabled: Whatever the pulse width, the input always counts and reports the number of pulses in the Wx registers (see registers W0, W1, W2, W3, W4, W5).
  - checkbox disabled: In this case, the input counts the number of pulses (see registers W0, W1, W2, W3, W4, W5) for pulses with a maximum width of 500 ms. Above 500 ms, the input does not count and report that the input is closed as for a status contact (see registers CB0, CB1, CB2, CB3, CB4 and CB5).

- Pulse weight: for simple Energy Management Solution leave the default setting: 1.000.

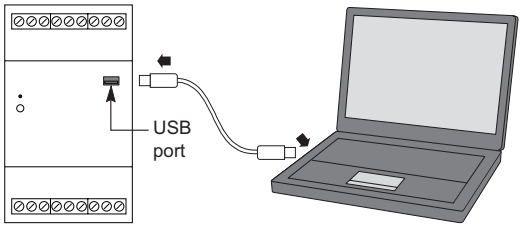
- Units: for simple Energy Management Solution leave this setting at its default value.

3 Step 3: Application mode

“On Site” means
The number of pulses is multiplied by the pulse weight entered.
For example: W1 register = Number of DI1 pulses x Pulse weight DI1.

“Remote” means
The SIM returns only the number of pulses and the pulse weight is not taken into account.
For example: W1 register = number of DI1 pulses.

4 Step 4: Download Configuration



■ Virtual COM port:
□ select the COM port of your computer where your USB cable is connected and click on “Start” to download your configuration to the SIM10M.

Note: To find the COM port assigned to your USB connection you have to go into your computer's “Start” Menu and select Control Panel/System/Hardware/Peripheral Manager/COM port.

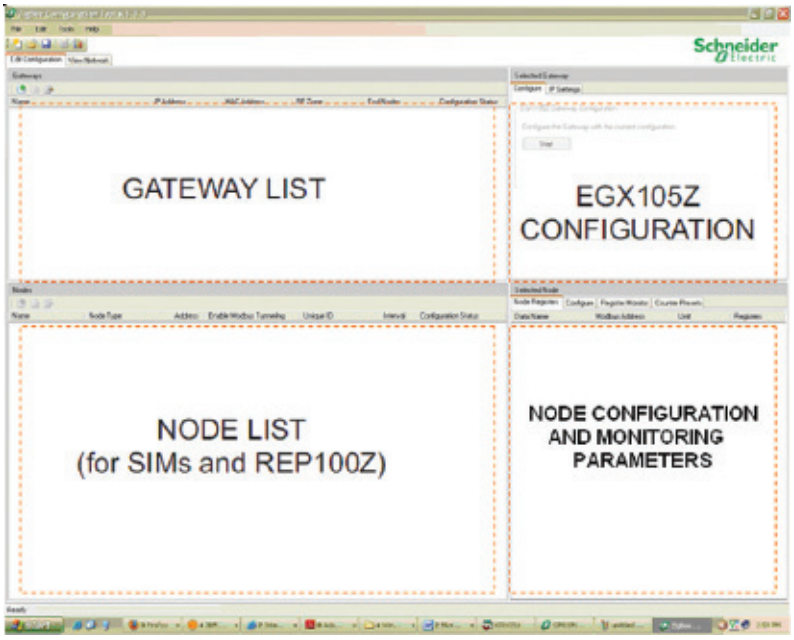
5 Step 5: Preset Values

The last two columns in the Pulse Counters section can be used to enter preset values for each counter registered. The **Set** check boxes enables or disables the preset values.
■ Check box enabled: the entered values are transferred when the Node is configured.

Configuration
ZigBee configuration tool

ZigBee networks, using only SIMs with ZigBee protocol, can be configured using the "ZigBee configuration tool" software on a PC.

Navigation overview for ZigBee configuration tool

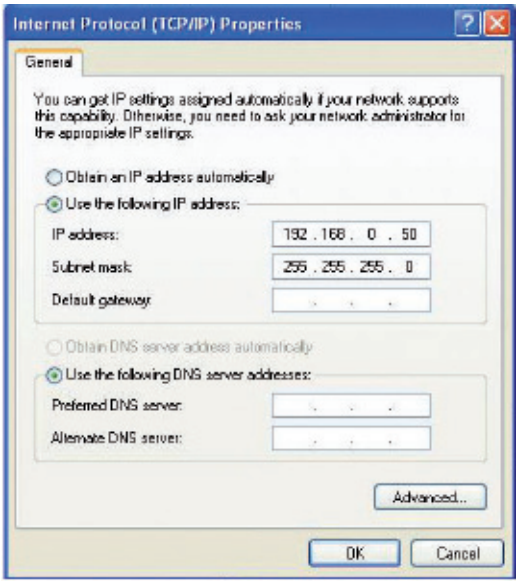


Configuration Status
A red flag will be displayed if there is a difference between the configuration on your laptop and the last configuration loaded in the EGX105Z or the SIMs.
To be able to communicate with SIMs, the EG105Z and your laptop, all these flags have to be green.
They will be green if the last modification carried out on the laptop has been loaded in the EGX105Z or the SIMs (click on the "Start" button in the EGX105Z configuration zone for an EGX105Z or, for a SIM, in the window displayed when you click on the "configure" tab in the configuration zone for the SIMs).

Setting the gateway parameters

By default, the EGX105Z has the IP address: 192.168.0.100 with sub net mask 255.255.255.0. Configure your laptop IP settings to an IP address compliant with the default EGX105Z IP address:

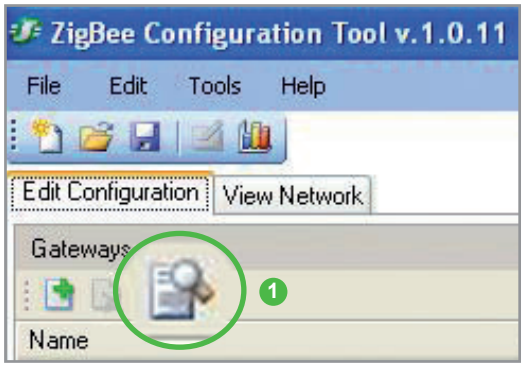
1. Go into the "**Start**" menu of your laptop.
2. Select "**Control Panel**".
3. Click "**Network Connections**".
4. Select the LAN network to which the EGX105Z is connected.
5. Select "**Properties**" and **Internet Protocol** (TCP/IP).
6. Enter a compliant IP address for your laptop (for example : 192.168.0.50).



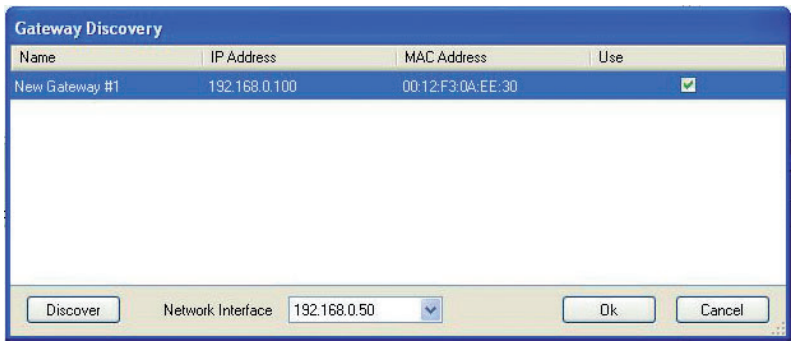
7. Validate Save the new settings by clicking on "**OK**".

Now your laptop is on the same Ethernet network as your EGX105Z.

8. Open the ZigBee configuration tool and select "**Auto Discover gateway**" (1).



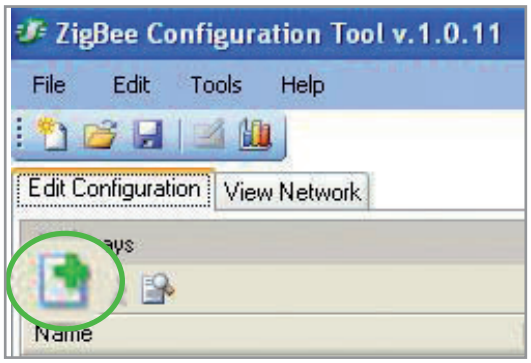
9. In the window displayed, select the gateway detected and tick the "use" box.



Note: *if you do not see the gateway, select the network interface and click on the "Discover" button.*

10. Click on "**OK**" to validate the selection.

Note: if you cannot auto-discover the gateway you can add it manually by selecting "Add a new gateway".



11. Once the gateway is added in the gateway window, you can modify its default IP address. In the EGX105Z configuration window, select the "IP settings" sub menu.

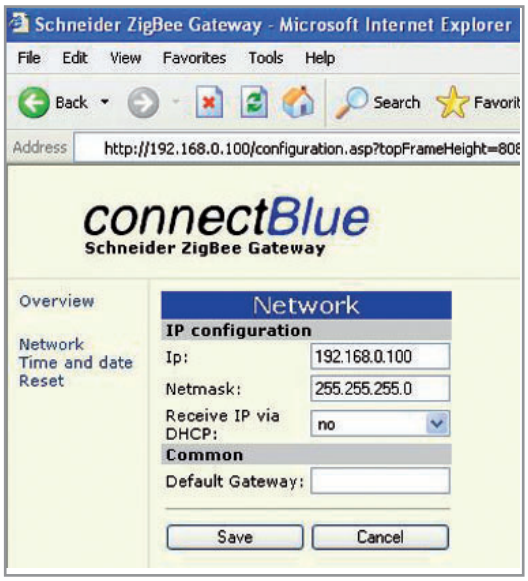
12. Enter the new "IP address", "Netmask" and "Default gateway" required.

Note: note that the "Default gateway" parameter is not the EGX105Z gateway IP address. "Default gateway" is the IP address of the Ethernet router of your building if communication to the EGX105Z passes through a router. If your EGX105Z is not connected to an Ethernet router, leave this area blank.

Note: leave "Received IP address by DHCP" set to "No" if you do not want to automatically assign an IP address to the EGX105Z.

13. Do not forget to re configure your laptop IP settings (as described in point 6) to use the same sub net network as your EGX105Z if the new IP address configured is not compliant with 192.168.0.X.

Note: you can also change EGX105Z IP settings by accessing the web page of the gateway. For this, open a web browser and enter the IP address: 192.168.0.100. Then select "Network" and enter Login=super and password=admin1234 (see picture below).

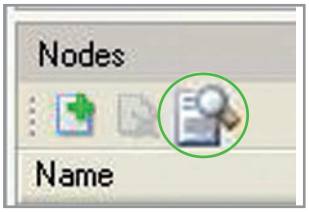


Setting SIM6BZ parameters

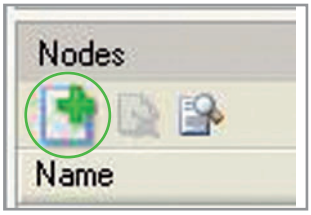
Before launching auto-detection of the SIM6BZ SIMs, make sure they are not already linked to another EGX105Z.

Note: if you are not sure for a given SIM, you can press more than 3 seconds the SIM6BZ reset button more than 3 seconds and the product will be free to be added on to your EGX105Z.

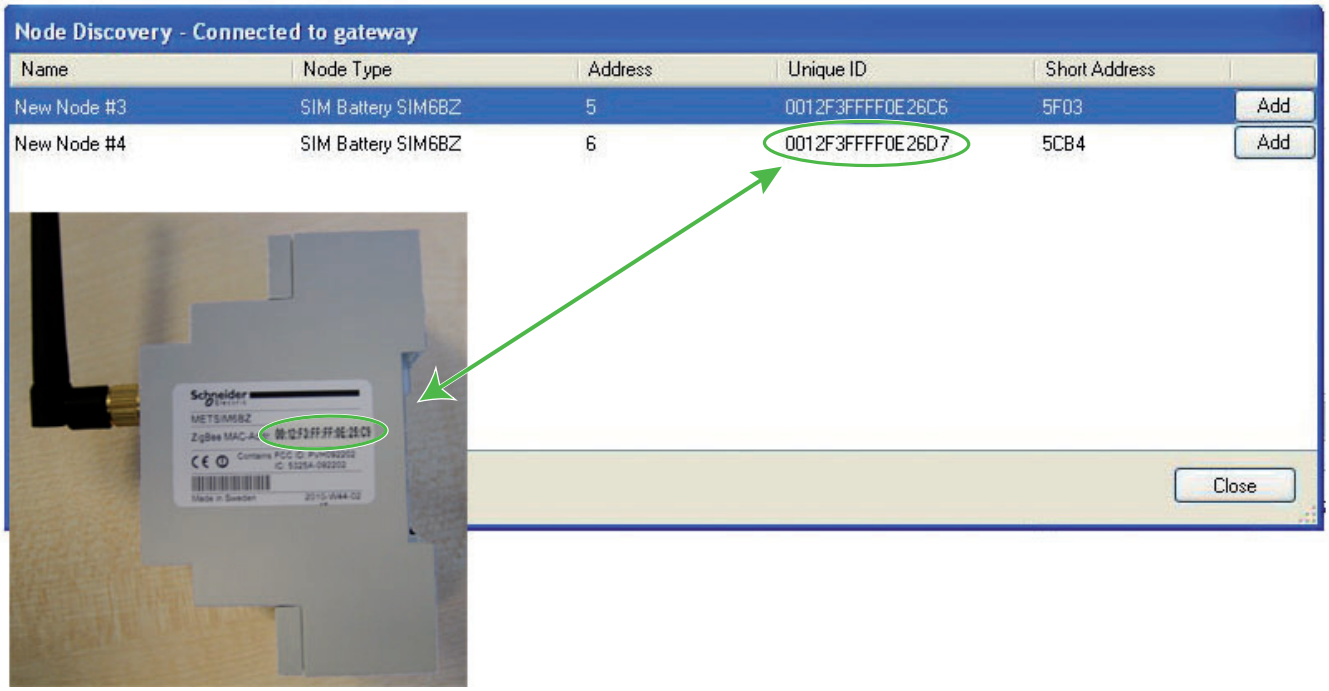
1. Go in to the SIM list area.
2. Select "**Discover new nodes**".



Note: you can add the SIM manually by selecting "add a new node"(see picture below).



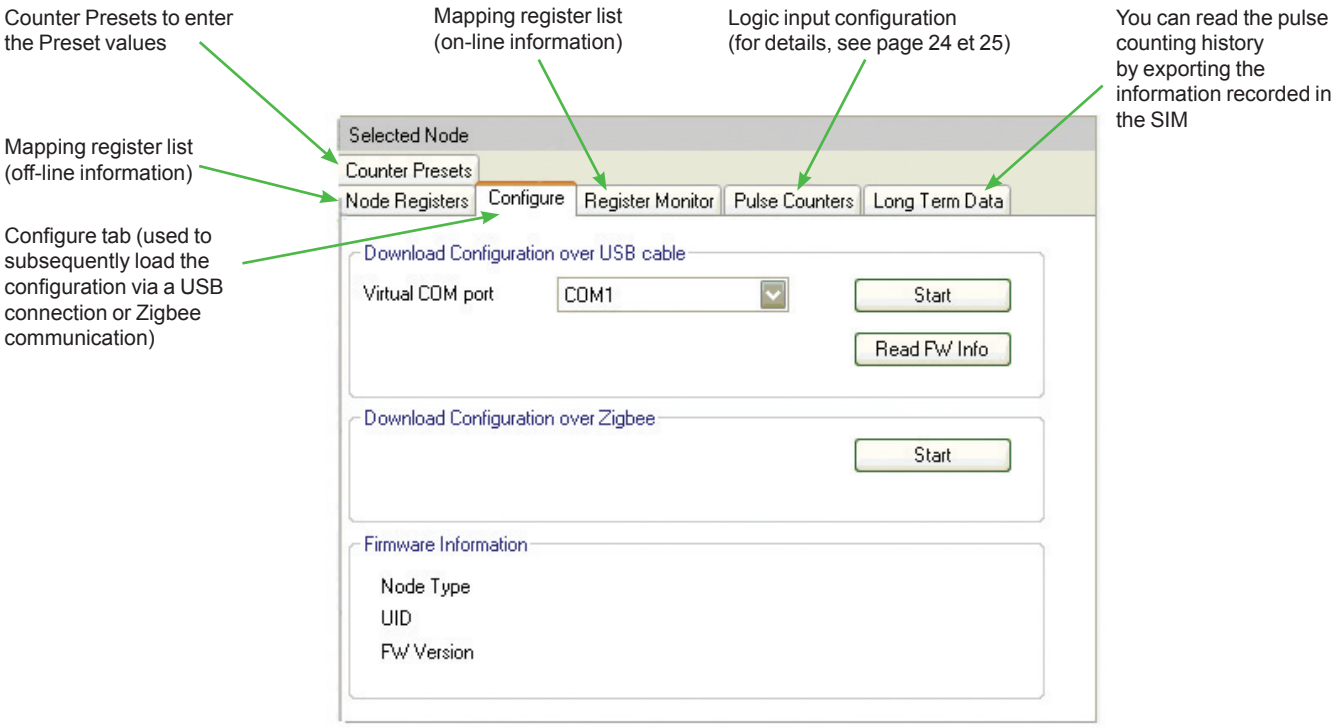
3. Once auto-discovery has begun, the Zigbee products detected by the EGX105Z will appear in the discovery window (sometimes detection can take a few minutes because SIM6BZ SIMs only communicates once a minute to extend battery life). To determine which product you has been detected, you can compare the MAC address written on the SIM sticker with the MAC address displayed in the discovery window.



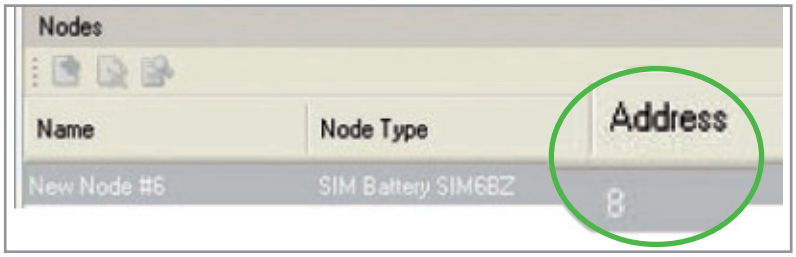
4. If you want to read the information concerning a given node, click on the corresponding "**Add**" button.

Configuration
ZigBee configuration tool

5. The corresponding SIM6BZ is added to the node list area of the main window, you can read information and make the necessary configuration settings in the window on the right side of the node list area:

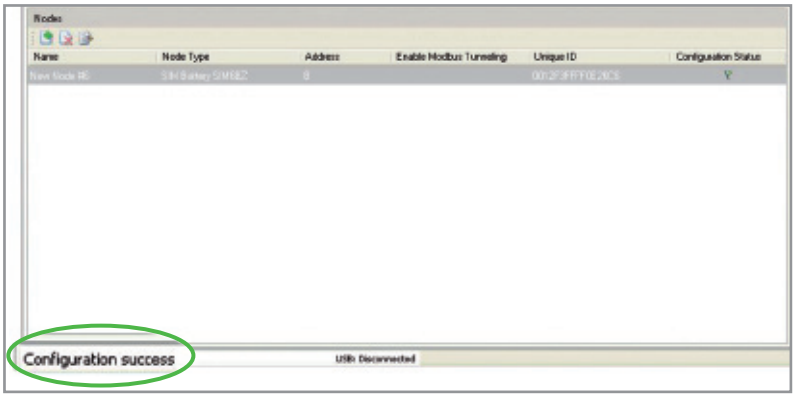


If you want to modify a SIM6BZ address, double click on the corresponding SIM6BZ in the node list area and change the address as required:



6. Once the SIM settings have been made, you can load the configuration into the SIM. Click on the "**Configure**" tab and select "**Start**" for beside "Download Configuration over Zigbee".
   The SIM6BZ "configuration status" flag should change from red to green:

   A message is displayed to confirm that the configuration has been loaded:



Note: If you cannot reach the product via Zigbee communication, you can load the configuration via a USB connection by clicking on "Start" beside "Download Configuration over USB cable". Repeat steps 1 to 6 for each new SIM6BZ that you want to add to the gateway.

7. Transmission interval
   The transmission interval determines the rate of at which the SIM6BZ sends data to the coordinator. The following values can be selected:
   - 30 seconds
   - 60 seconds
   - 120 seconds (2 minutes)
   - 240 seconds (4 minutes)
   - 480 seconds (8 minutes).

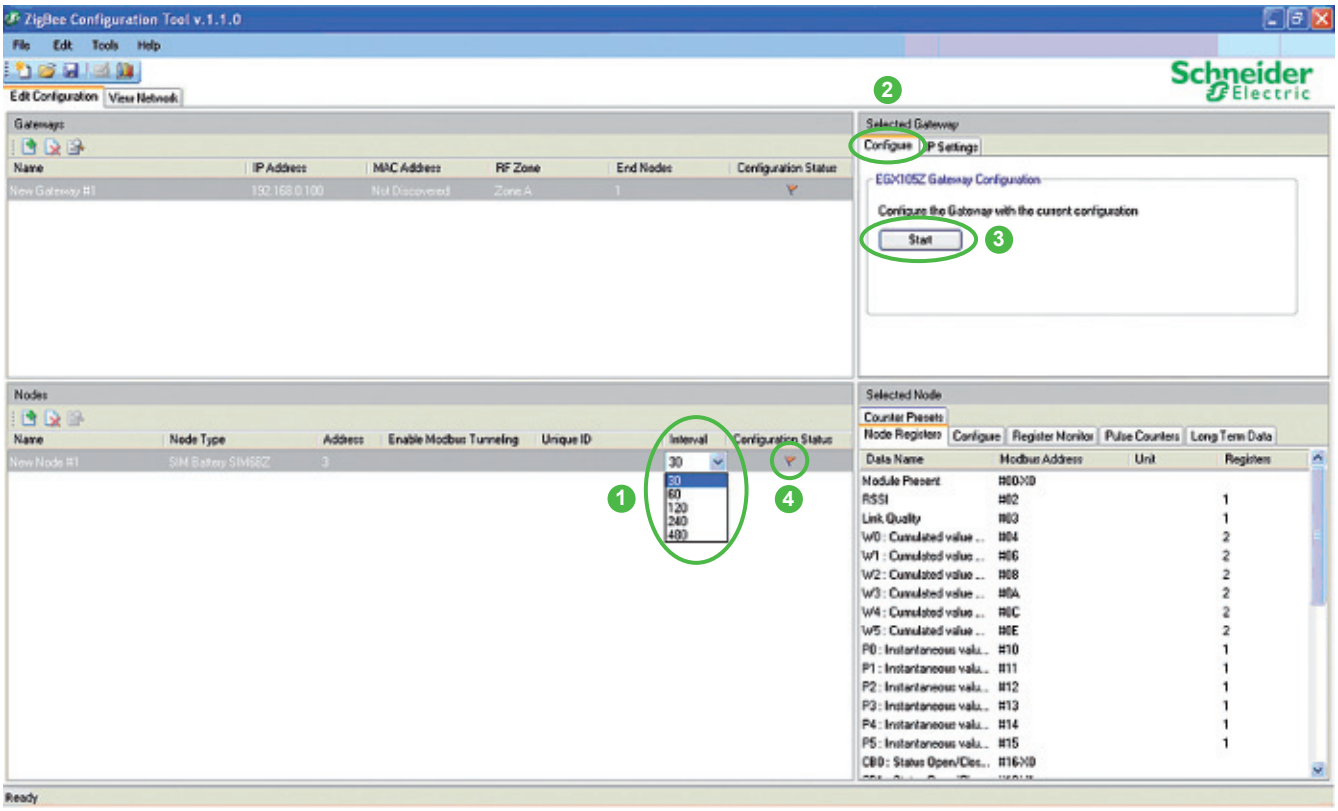
SIM battery life depends on the Transmission interval, Pulse frequency, Pulse length, and Number of inputs connected.
Therefore the higher the value of the transmission interval, the longer the battery lifetime of the SIM. The default value of 30 seconds can be modified in the Nodes menu shown below.

The table below shows the SIM6BZ battery life expectancy for various pulse frequencies & transmission intervals.

Transmission interval	Pulse Frequency on inputs(Hz)	Years
30 seconds	3	2.51
30 seconds	8	2.09
480 seconds	1	18.84
480 seconds	3	12.56
480 seconds	8	7.53

Note: the above results are for a pulse length of 25 ms on all measurements on 3 SIM6BZ counters.

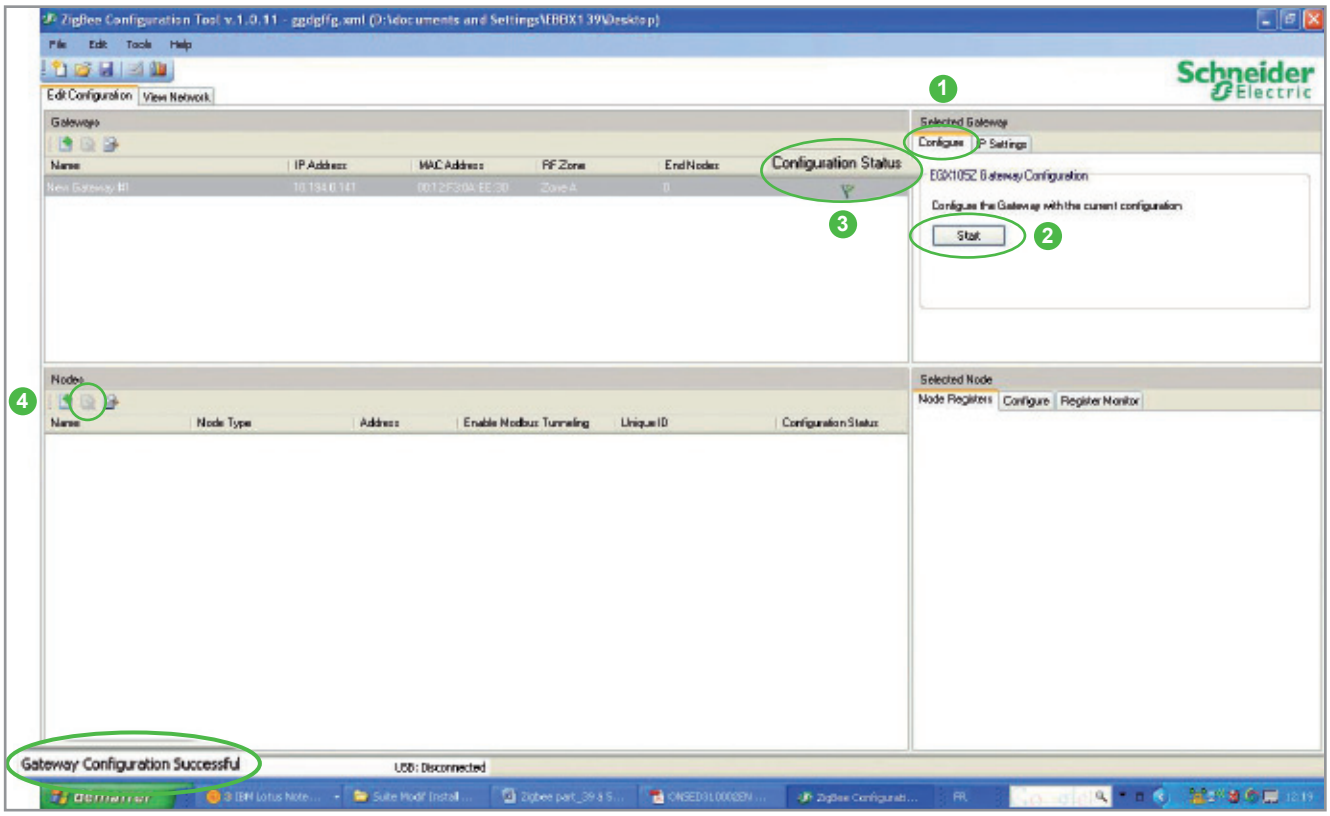
Configuration
ZigBee configuration tool



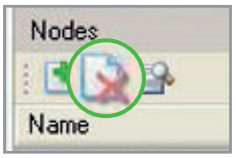
After setting the transmission "**Interval** 1", go to the "**Configure** 2" tab and select "**Start** 3" beside **Download Configuration over Zigbee**. When the message box **One or more Counters will be transferred to node, please confirm** is displayed, click **OK** to configure the node.
The SIM6BZ "**Configuration Status** 4" flag should change from red to **green**.

Configuration
ZigBee configuration tool

8. Once all the products required are added to the gateway, check that the configuration status flag of the EGX105Z is green. If it is still red, open the "**Configure** 1" tab for the EGX105Z and click on "**Start** 2" in order to indicate to the EGX105Z which modifications you have carried out on the SIMs. If the configuration is has been loaded properly in the EGX105Z, the message below should be displayed:

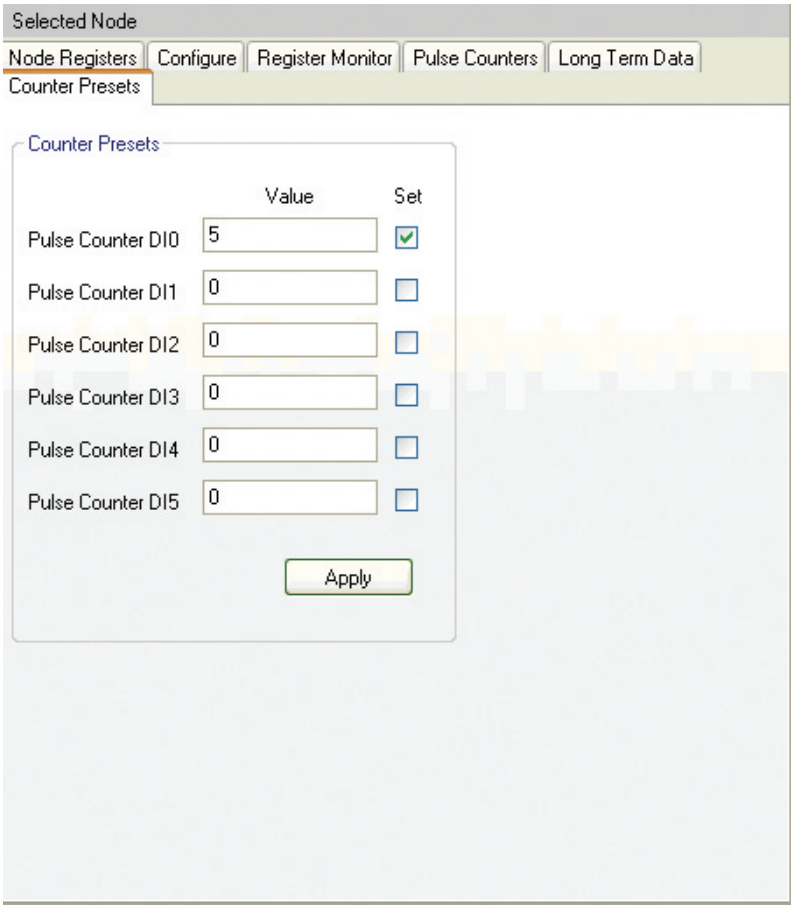


Other information:
You can remove a SIM connected to an EGX105Z by clicking icon with the red **x** 4:



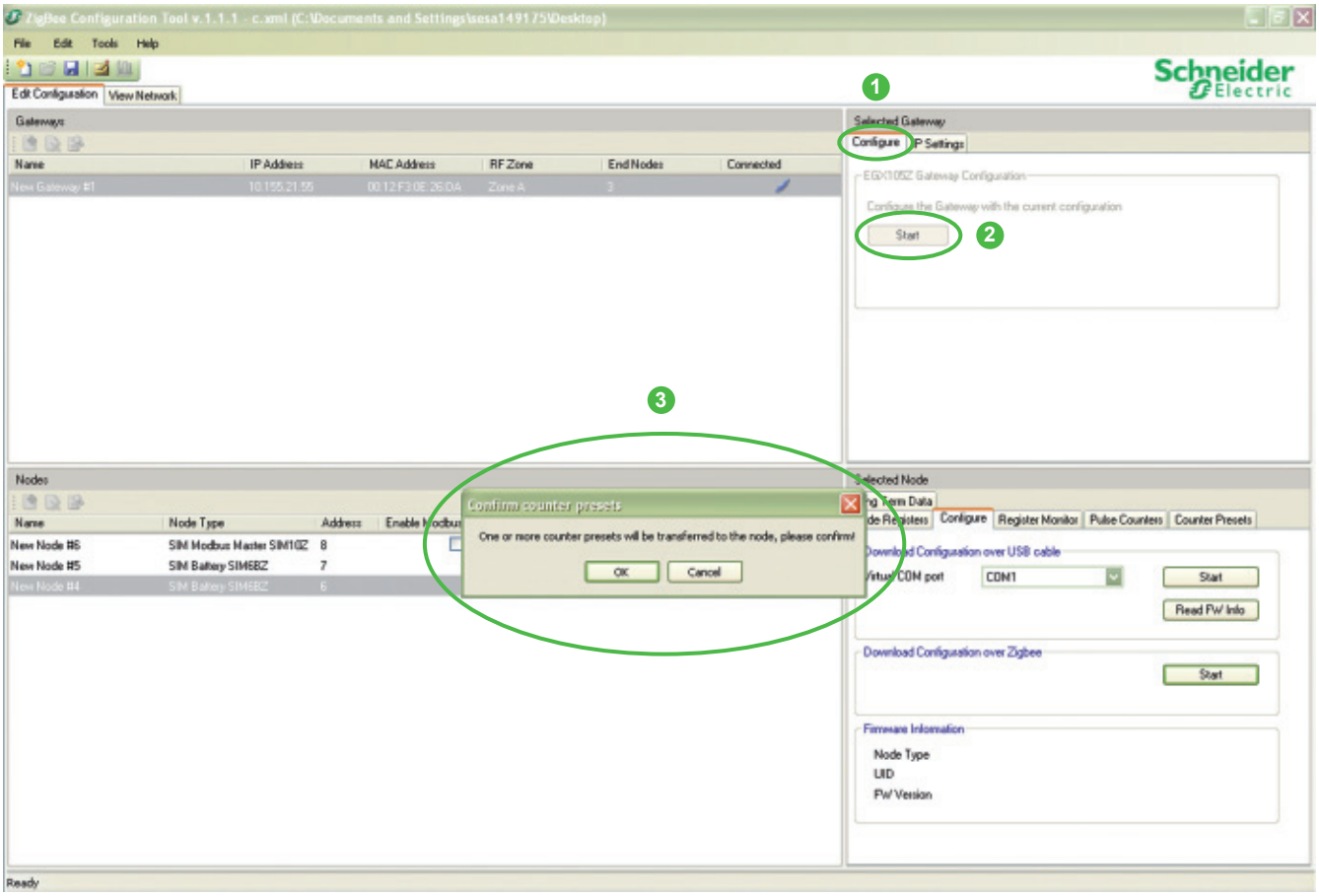
When a SIM is removed from the node area list, the "**Configuration Status** 3" flag for the EGX105Z turns red. You therefore have to reload the configuration to the EGX105Z to notify it that a product has been removed. After the SIM is removed, it is available for a new auto-detection. Also youYou can also press the SIM's reset button more than 3 seconds to force it into auto detection status.

9. The Counter Presets tab provides an interface for entering preset values for each counter register. The values are transferred when the Node is configured. A check box enables or disables preset values.



Configuration
ZigBee configuration tool

After enabling the check boxes and entering Preset values, click on Apply at the bottom of window and save the configuration file.
Go to the "**Configure** 1" tab and select "**Start** 2" beside "**Download Configuration over Zigbee**". When the message box **One or more Counters will be transferred to node, please confirm** 3 is displayed, click **OK** to configure the node.
The SIM6BZ "**Configuration Status**" flag should change from red to green.

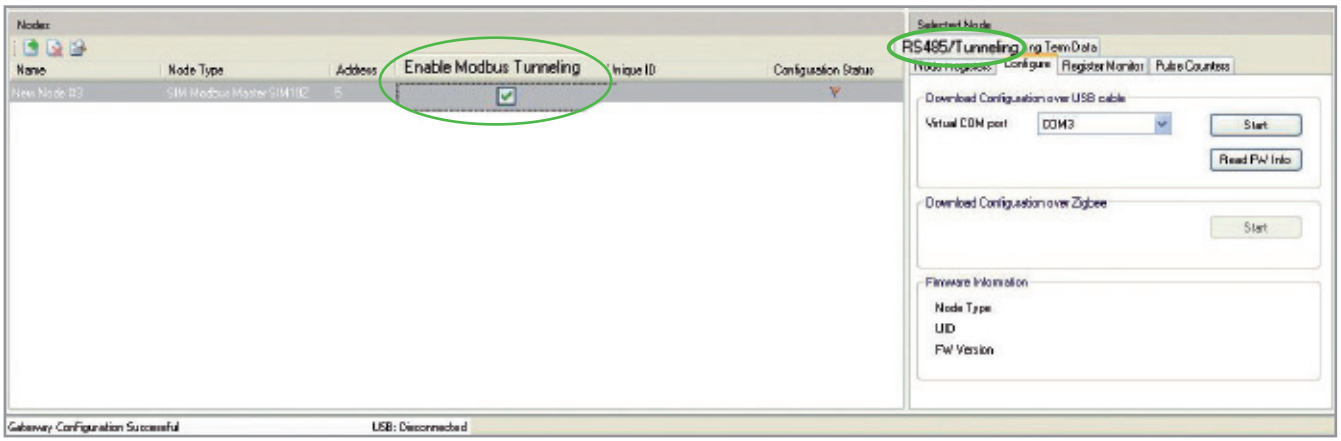


Setting SIM10Z parameters

For SIM10Z SIMs, the auto-detection and configuration procedure is the same as for the SIM6BZ SIMs (described previously). We explain here only the new functionalities related to the SIM10Z SIMs.

The SIM10Z has a Modbus master port embedded to which you can connect Modbus slaves (maximum of 5 devices). Follow the steps below to configure it:

1. Tick the "**Enable Modbus Tunneling**" box.
2. A new tab (**RS485/Tunneling**) appears in the SIM10Z configuration area.



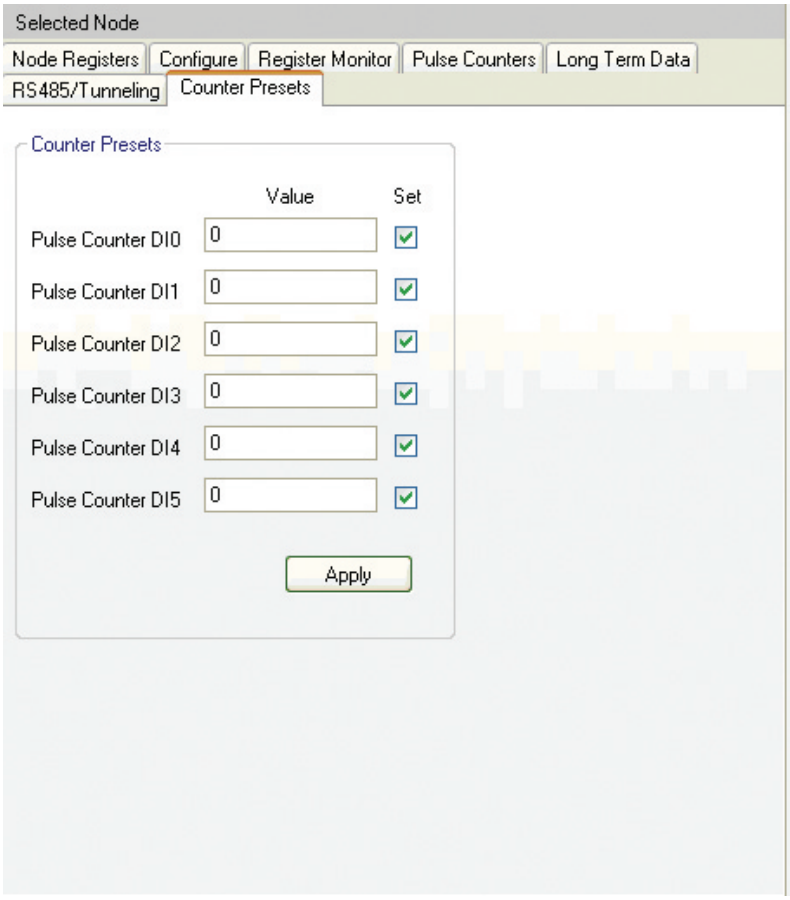
3. Make the Modbus master settings described below and then click on "**Apply**" beside the Stop Bits parameter.
   - Baud rate: select the value that you set for your Modbus devices
   - Parity: select the parity that you set for your Mmdbus devices
   - Stop bits: keep "1"

Note: the Modbus address is the address set in the SIM10Z node list.

4. Click on "**Add**" to define the Modbus address range configured in the different Modbus meters connected to tunnelling port. You can double click on the value for the "**Start**" and "**End**" address to adjust the Modbus address range.

5. Click on "**Apply**" at the bottom of the window to save these settings.

6. As for SIM6BZ SIMs, do not forget to load these new settings into the SIM10Z SIM and then go to the EGX105Z configuration area to load these SIM modifications into the gateway.

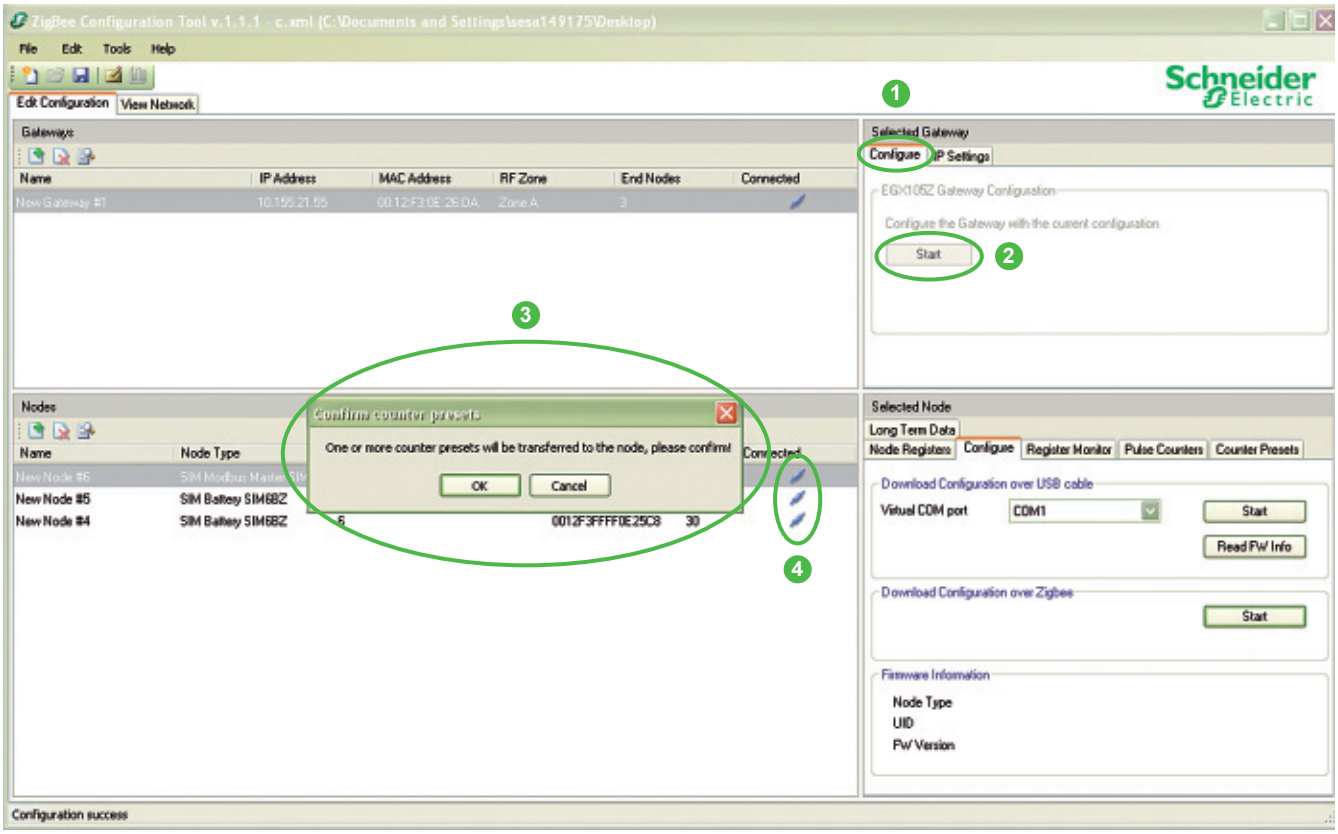


7. The Counter Presets tab provides an interface for entering preset values for each counter register. The values are transferred when the Node is configured. A check box enables or disables preset values.

Configuration
ZigBee configuration tool

After enabling the check boxes and entering Preset values, click on Apply at the bottom of window and save the configuration file.

Go to the "**Configure** 1" tab and select "**Start** 2" beside **Download Configuration over Zigbee**. When the message box **One or more Counters will be transferred to node, please confirm** 3 is displayed, click **OK** to configure the node.
The SIM10Z "**Configuration Status** 4" flag should change from red to green.



Setting REP100Z parameters

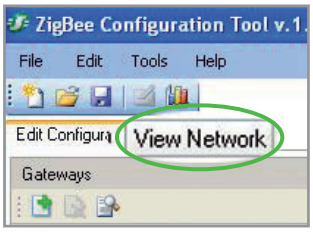
The procedure to auto-detect and add a REP100Z router is the same as for a SIM6BZ or SIM10Z SIM. There are no specific configuration settings for this product. You can only modify the default Modbus address assigned by the Configuration tool if necessary.

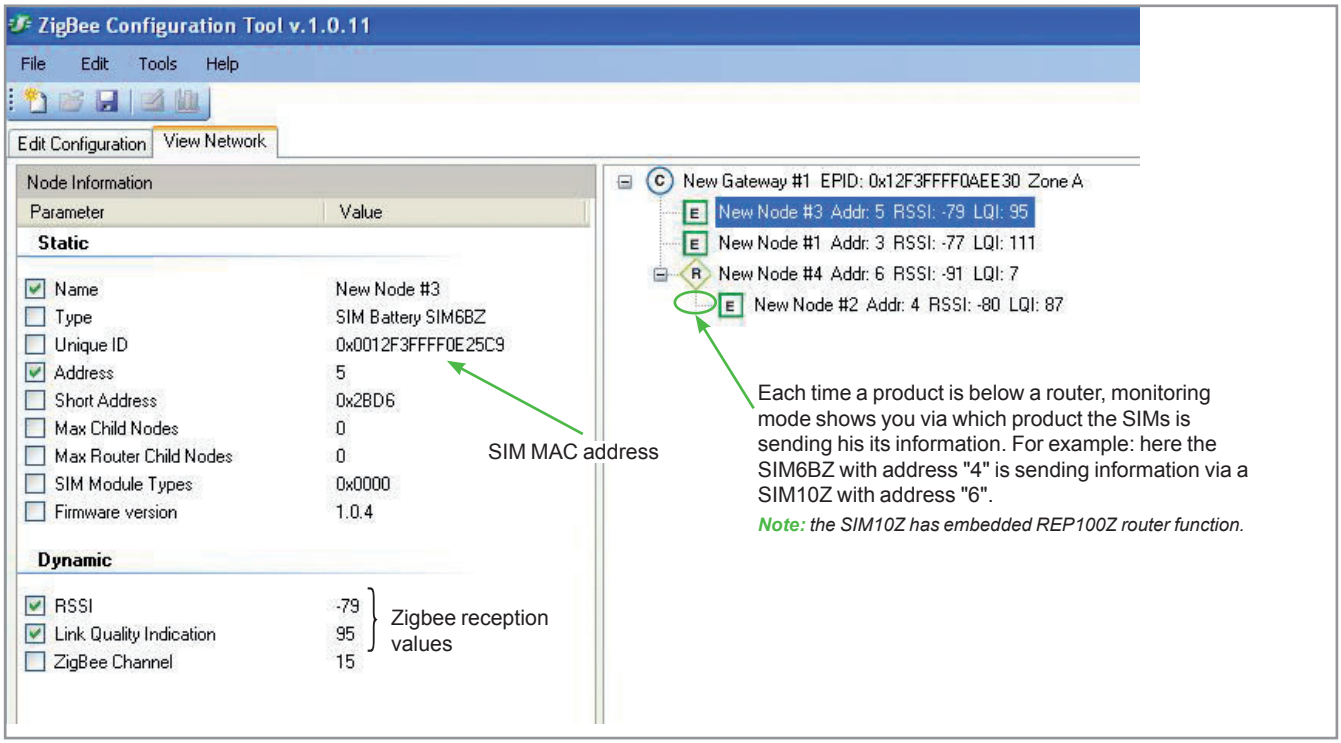
Note: use the RDT100Z radio test tool to make sure that the REP100Z is installed in a suitable location in your building.

Zigbee monitoring functions

Monitoring mode allows you to read information on concerning the SIMs and control Zigbee reception:

1. Click on the Monitoring icon.
2. Select the "**View network**" tab.





Legend:

: EGX105Z

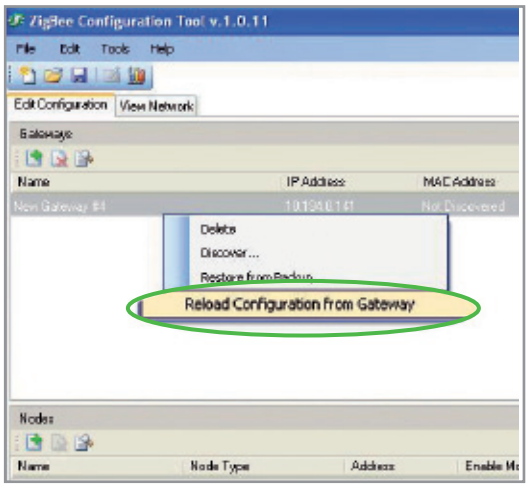
: SIM6BZ

: REP100Z or SIM10Z

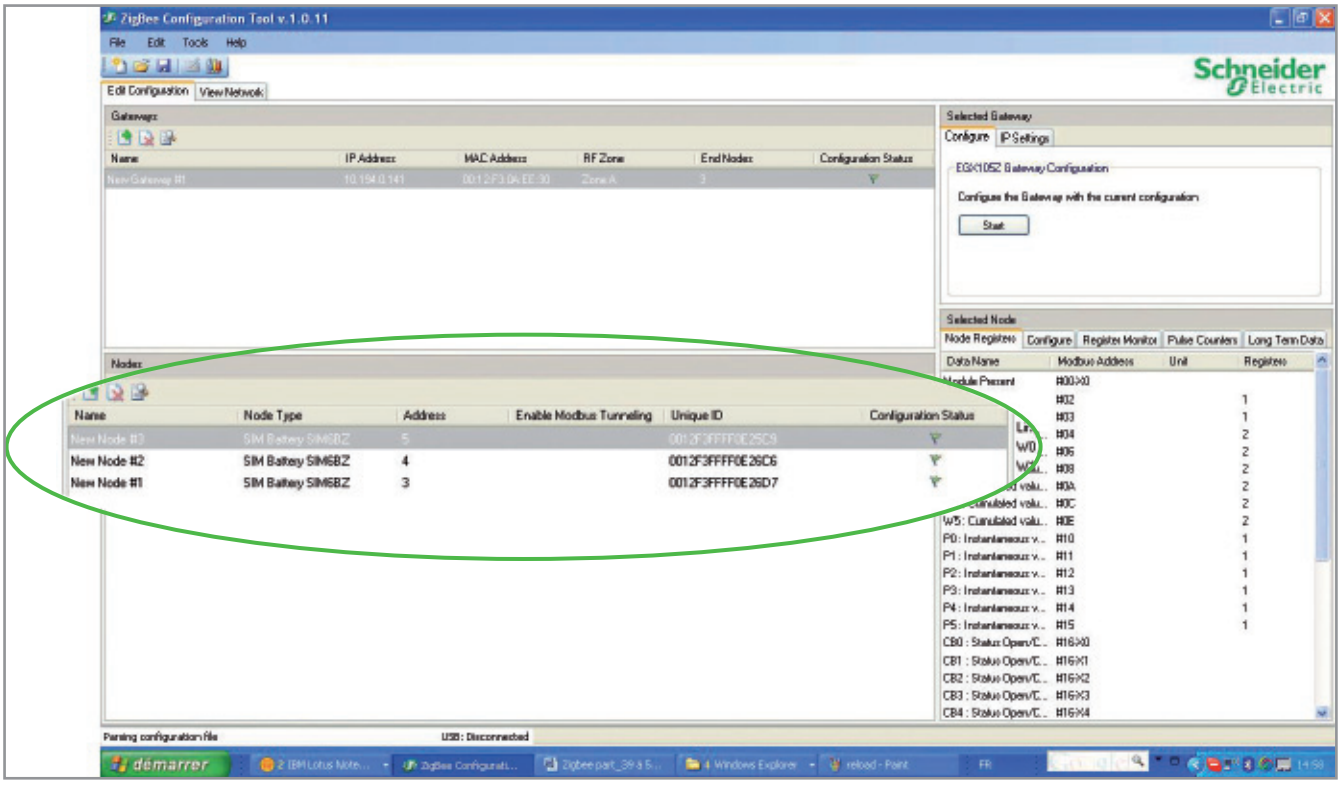
Special operations concerning the EGX105Z and SIMs

■ How to load an existing configuration already created in an EGX105Z to a laptop (if you do not have the *.xml: configuration file):

1. Add manually or by auto-detection the gateway that you use.
2. Do a right click on EGX105Z in the gateway list.
3. Select "**Reload configuration from gateway**".



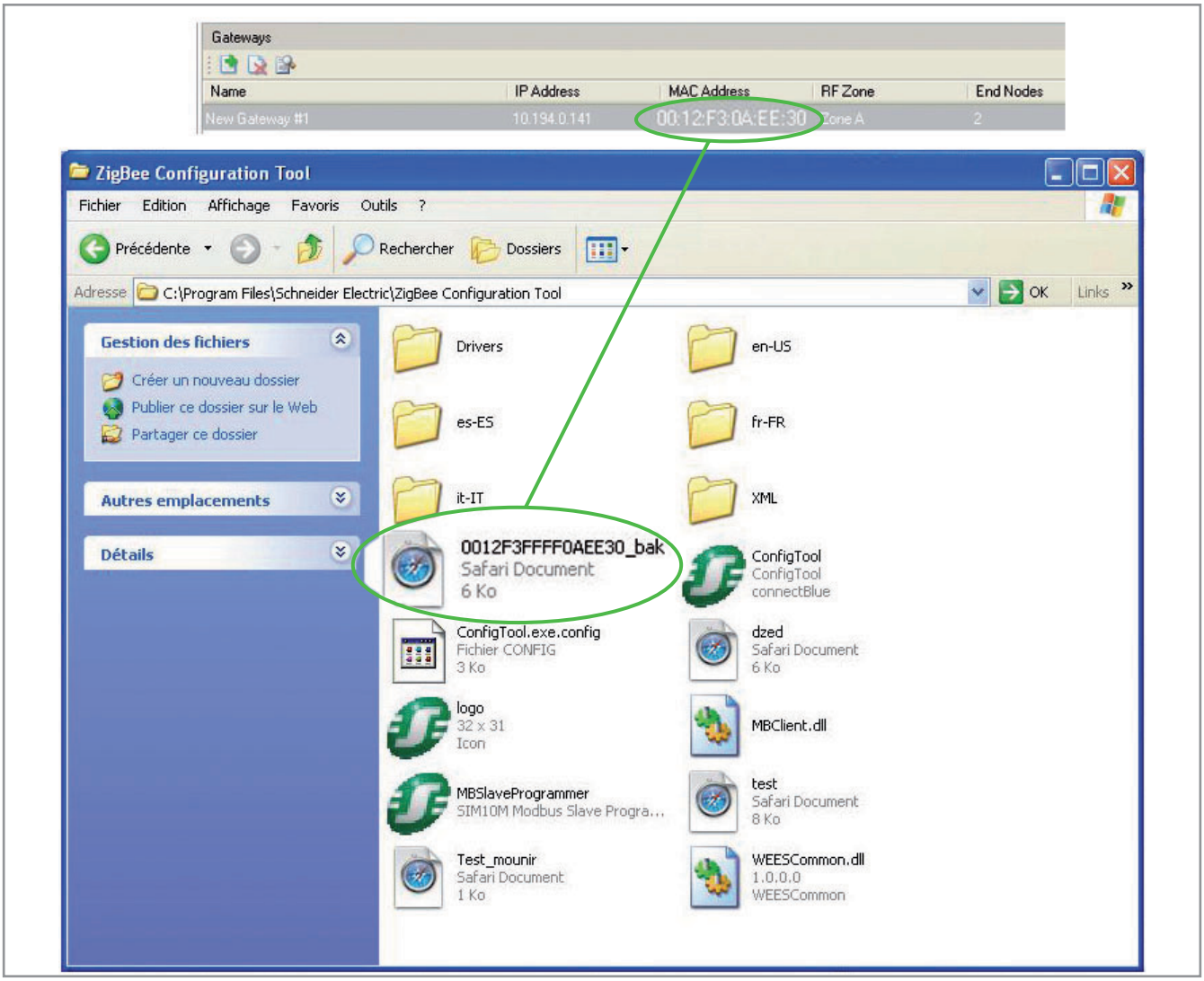
4. Now the SIMs are added to the Node list:



Configuration
ZigBee configuration tool

■ How to load an existing configuration to a new EGX105Z?

As soon as you load a configuration into an EGX105Z by using the "**Start**" button located in the EGX105Z configuration zone, a file is automatically created in the program directory of the ZigBee configuration tool (if you keep the default directory during software installation, you will find it in *C:/Program Files/Schneider Electric/ Zigbee configuration tool*) under the name *EGX105Z MAC address_bak*.



1. Go into the Zigbee configuration tool.
2. Do a right click on the **NEW** EGX105Z added.
3. Select "**Restore from Backup**".
4. Click on "**Open**" and select the "MAC address_bak" file of the previous EGX105Z.
5. Click on "**Restore**".
6. The new EGX105Z receives the previous configuration located in the past EGX105Z and the MAC address of the new EGX105Z is changed to the MAC address of the previous EGX105Z.

Modbus register mapping

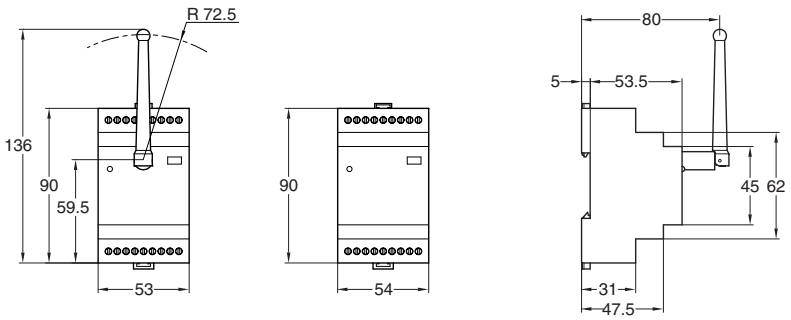
The Modbus register set for each SIM / Modbus slave Id is mapped as follows.

Register Name	Address	Data type	Access	Remark
Module present	0	Bit	R	Not used in the Modbus slave
RSSI	2	16-bit register	R	Not used in the Modbus slave
Link quality	3	16-bit register	R	Not used in the Modbus slave
W0 - Cumulated various DI0	4	2 x 16-bit register	R	Units are Wh
W1 - Cumulated various DI1	6	2 x 16-bit register	R	Units are Wh
W2 - Cumulated various DI2	8	2 x 16-bit register	R	Units are Wh
W3 - Cumulated various DI3	10	2 x 16-bit register	R	Units are Wh
W4 - Cumulated various DI4	12	2 x 16-bit register	R	Units are Wh
W5 - Cumulated various DI5	14	2 x 16-bit register	R	Units are Wh
P0 - Instantaneous various DI0	16	16-bit register	R	Units are W
P1 - Instantaneous various DI1	17	16-bit register	R	Units are W
P2 - Instantaneous various DI2	18	16-bit register	R	Units are W
P3 - Instantaneous various DI3	19	16-bit register	R	Units are W
P4 - Instantaneous various DI4	20	16-bit register	R	Units are W
P5 - Instantaneous various DI5	21	16-bit register	R	Units are W
CB0 - On/Off status DI0	22 bit 0	Bit	R	Circuit breaker / trip 0
CB1 - On/Off status DI1	22 bit 1	Bit	R	Circuit breaker / trip 1
CB2 - On/Off status DI2	22 bit 2	Bit	R	Circuit breaker / trip 2
CB3 - On/Off status DI3	22 bit 3	Bit	R	Circuit breaker / trip 3
CB4 - On/Off status DI4	22 bit 4	Bit	R	Circuit breaker / trip 4
CB5 - On/Off status DI5	22 bit 5	Bit	R	Circuit breaker / trip 5
Absolute threshold alarm	23 bit 0	Bit	R	
Battery critical level alarm	23 bit 1	Bit	R	
Analog 0	24	16-bit register	R	Units are mV
Analog 1	25	16-bit register	R	Units are mV
Battery level indicator	26	16-bit register	R	1 = Critical level (< 3.2 V) 2 = Low level (3.2 to 3.5 V) 3 = High level (> 3.5 V)
Long term accumulated data reset	27	Bit	W	Writing 1 will clear all power data stored in flash. Not used in the SIM10M.
Reset W0	28 bit 0	Bit	W	Writing 1 will clear W0.
Reset W1	28 bit 1	Bit	W	Writing 1 will clear W1.
Reset W2	28 bit 2	Bit	W	Writing 1 will clear W2.
Reset W3	28 bit 3	Bit	W	Writing 1 will clear W3.
Reset W4	28 bit 4	Bit	W	Writing 1 will clear W4.
Reset W5	28 bit 5	Bit	W	Writing 1 will clear W5.
Absolute instantaneous power threshold	29	16-bit register	R/W	Units are W
Relative instantaneous power threshold	30	16-bit register	R/W	Units are 1/10 %
DO0 output	31 bit 0	Bit	R/W	
DO1 output	31 bit 1	Bit	R/W	
Firmware ID	3009	16-bit register	R	
SIM module type	3010	16-bit register	R	
Physical unit for counter DI0	3011	16-bit register	R	
Physical unit for counter DI1	3012	16-bit register	R	
Physical unit for counter DI2	3013	16-bit register	R	
Physical unit for counter DI3	3014	16-bit register	R	
Physical unit for counter DI4	3015	16-bit register	R	
Physical unit for counter DI5	3016	16-bit register	R	
Pulse weight for counter DI0	3017	2 x 16-bit register	R	
Pulse weight for counter DI1	3019	2 x 16-bit register	R	
Pulse weight for counter DI2	3021	2 x 16-bit register	R	
Pulse weight for counter DI3	3023	2 x 16-bit register	R	
Pulse weight for counter DI4	3025	2 x 16-bit register	R	
Pulse weight for counter DI5	3027	2 x 16-bit register	R	

Smart Interface Module range

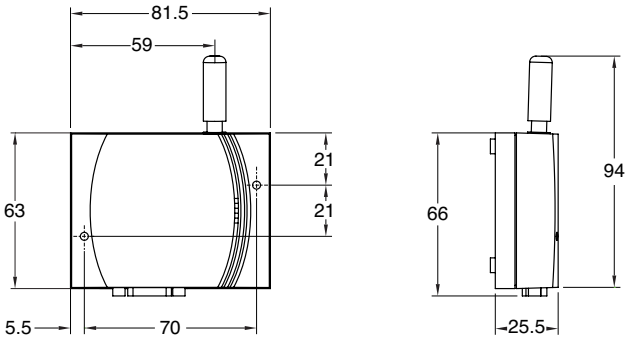
Characteristics	SIM10M	SIM10Z	SIM6BZ
Power supply	Class 2 SELV (Safety Extra Low Voltage) power supply: 24 V DC		Lithium battery 3,6 Volts 2/3 AA 1500 mAh
Consumption	10 mA typical DC	20 mA typical DC	100 µA typical Automatic detection of low battery
Digital inputs	Self powered 2.3V – max 1mA		
Mixed mode: ON/OFF status and/or pulses acquisition			
Maximum pulses frequency	8 Hz	8 Hz	3 Hz
Minimum pulse duration	5 ms	5 ms	5 ms
Maximum pulse duration	500 ms	500 ms	500 ms
Counter mode			
Maximum pulses frequency	8 Hz	8 Hz	3 Hz
Minimum pulse duration	5 ms	5 ms	5 ms
Maximum pulse duration	None	None	None
Analog inputs Resolution	0-10 V 0.01 V		
Digital outputs	24 V DC/50 mA		
Regulatory/standards compliance for safety	IEC/EN 60950-1		
Regulatory/standards compliance for electromagnetic interference	EN/IEC 61000-6-2 (immunity) EN/IEC 61000-6-3 (disturbances)	EN/IEC 61000-6-2 (immunity) EN/IEC 61000-6-3 (disturbances) EN 300-328 EN 301-489-1 EN 301-489-3	
Regulatory/standards compliance for radio product		EN 300-328	
ATEX certification		Certified zone 2A ATEX	
Antenna connector		SMA male	
RS 485 Modbus Communication	2400 to 38400 bauds Parity: odd, even, none		
USB	Mini USB type B connector		
RF ZigBee connection	No	Yes	Yes
Configuration tool	PC tool via USB connector	PC tool via USB connector or via ZigBee gateway EGX105Z	
Languages of configuration	French, English, Spanish, Italian		
IP	IP20		
Operating temperature	-30°C, +85°C		-30°C, +80°C
Humidity	5-90% non condensing		

Dimensions/installation: METSIM10M, METSIM10Z, METSIM6BZ



Characteristics	EGX105Z	REP100Z	RDT100Z
Power supply	Class 2 SELV (Safety Extra Low Voltage) power supply: 9 to 30 V DC	Connector DC plug 2.1 mm center pin negative. 5 V DC - 200 mA	Ni-MH 3xAAA 3.6V 550 mAh Chargeable via USB cable
Consumption	60 mA typical at 24 V DC	40 mA typical at 5 V DC	
Regulatory/standards compliance for safety	IEC/EN 60950-1		
Regulatory/standards compliance for electromagnetic interference	EN/IEC 61000-6-2 EN/IEC 61000-6-4 EN 3003-28 EN 301-489-1 EN 301-489-3	EN/IEC 61000-6-2 EN/IEC 61000-6-3 EN 3003-28 EN 301-489-1 EN 301-489-3	
Regulatory/standards compliance for radio product	EN 300-328		
Antenna connector	SMA male		
RF ZigBee connection	yes		
Ethernet port	RJ45 connector 10BaseT/100BaseTx		
Configuration tool	PC tool via Ethernet port	PC tool via ZigBee gateway EGX105Z	
Languages	French, English, Spain, Italian		
IP	IP20		
Operating temperature	-30°C, +85°C		
Humidity	5-90 % non condensing		

Dimensions/installation: EGX105Z, REP100Z



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