

# GateRO 300 Series

## User Guide

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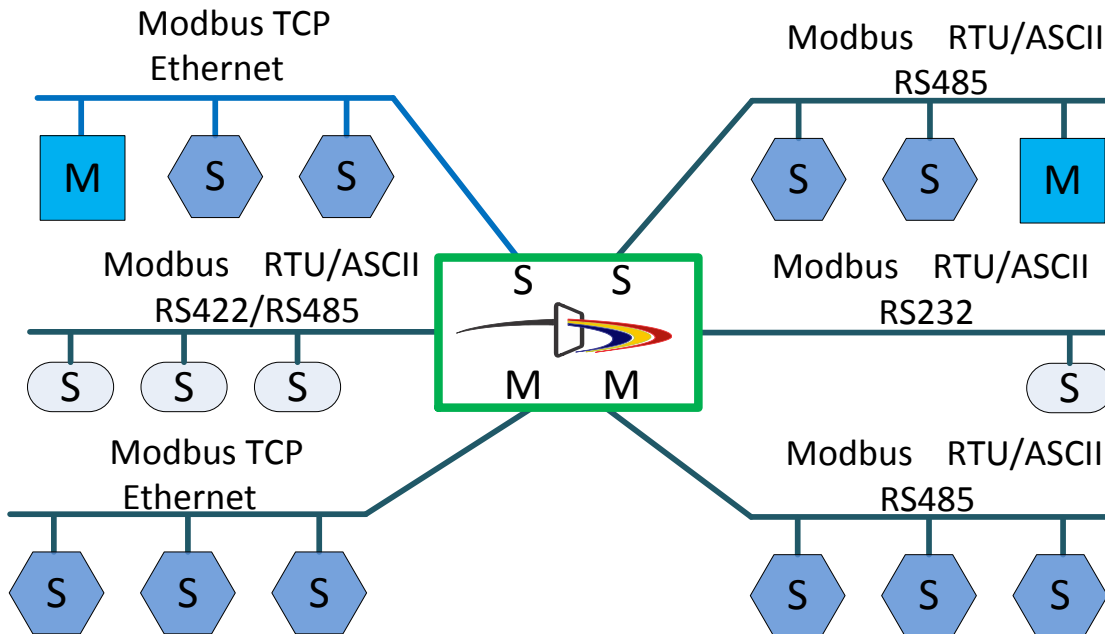
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## ABOUT THIS DOCUMENT

This document describes the GateRO301 module and how the user can configure it.

## 1 INTRODUCTION

GateRO 301 is a router that exchanges network data across multiple industrial network interfaces such as fieldbus (CAN), serial. The routing works over standard industrial protocols such as Modbus/TCP, Modbus/RTU/ASCII, or custom ASCII strings.. In other words, GateRO 301 allows interconnection of devices (PLCs, smart sensors, SCADA) working on different protocols or bus speeds. In addition, all GateRO301 data may be remotely accessed through secured channels over Internet. Hence, the built-in cryptography feature of GateRO401 allows using Cloud based services such as Remote Access, Remote Diagnostic. All connections between GateRO devices and the associated cloud system are encrypted. The security level of algorithms is the same as the ones used in electronic banking.



## 2 OVERVIEW

### 2.1 Front Panel

The Front Panel contains three elements:

- LCD Display

For every GateRO Interface the LCD will display a figure that indicates the interface state:

- Interface OFF
- Interface ON – Startup Error (“Type” is the interface type: Eth, 232, 422, 485)

1		✗
2	Type	✗
3	Type	✓
4	Type	✓

- Interface ON – No Traffic
- Interface ON – The bargraf fill represents the traffic through interface

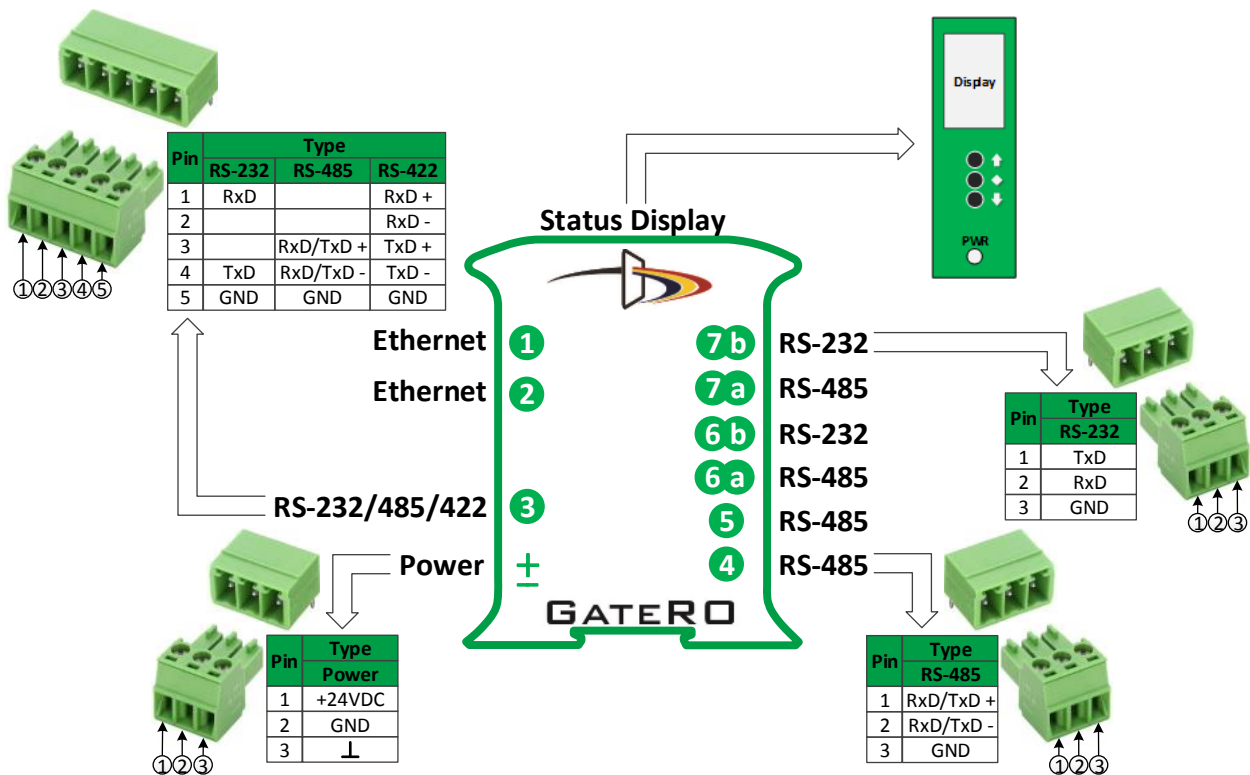
- Buttons

Used to select the configuration menu options.

- LED

- OFF – The application is not running
- Red – The application is not running/Startup errors
- Green – The application is running ok.

## 2.2 Interfaces and Connectors



- Power Connector

It has 3 poles removable screws to connect a regulated 24±10% power supply.

- Ethernet Connectors

Allows to connect the GateRO module to Ethernet networks using UTP cable (min CAT5).

- RS-232/422/485 Connector

Allows to connect the GateRO module to RS232/422/485 serial networks.

- RS-232 Connector

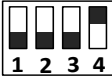
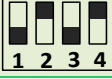

Allows to connect the GateRO module to RS232 serial networks.

- RS-485 Connector

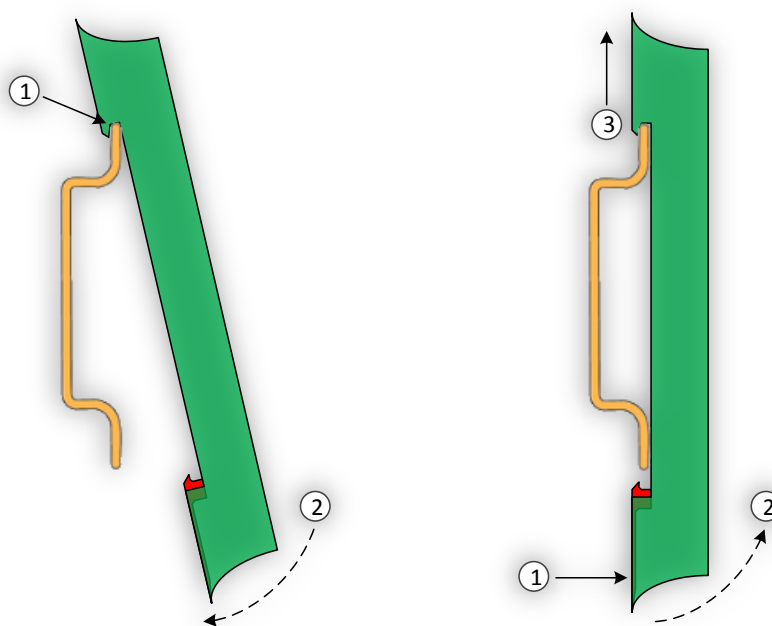
Allows to connect the GateRO module to RS485 serial networks.

### 2.3 Dip Switch

Will switch between RS-232/422/485 modes.

Mode	Position				Dip Switch
	1	2	3	4	
RS232	Down	Down	Down	Up	
RS422	Down	Up	Down	Up	
RS485	Up	Up	Down	Up	

### 3 DIN RAIL MOUNT



**Figure 1. GateRO physical setup.**

- Snap on:
  1. Fasten the GateRO module on top of the DIN Rail.
  2. Push the lower part into position.
- Snap off:
  1. Use a screwdriver to unlock the hook from the lower part.
  - 2-3. Pull the lower part away from the DIN Rail and pick up the GateRO module.

## 4 SETUP

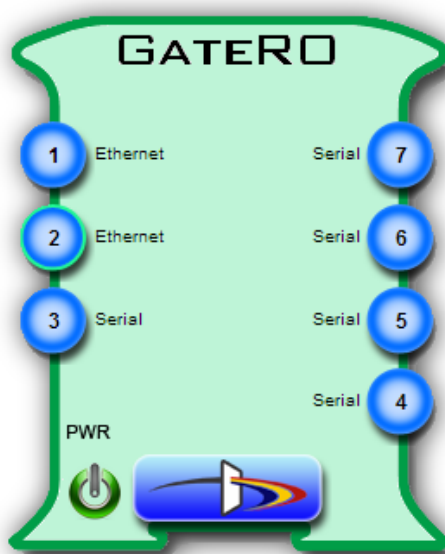
There are three applications that can be used to configure the GateRO devices:

- The web page
- The *GateON* application
- The *Risan\_GUI* application

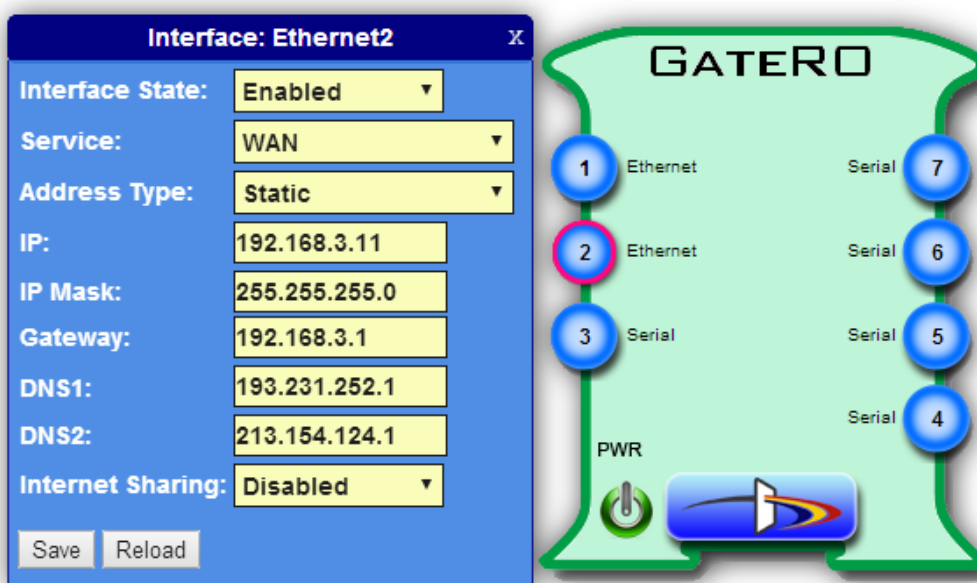
### 4.1 The web page

The GateRO device will be configured using a computer and a web browser. The web page will be used to setup the communication parameters. One single device can be configured at a time.

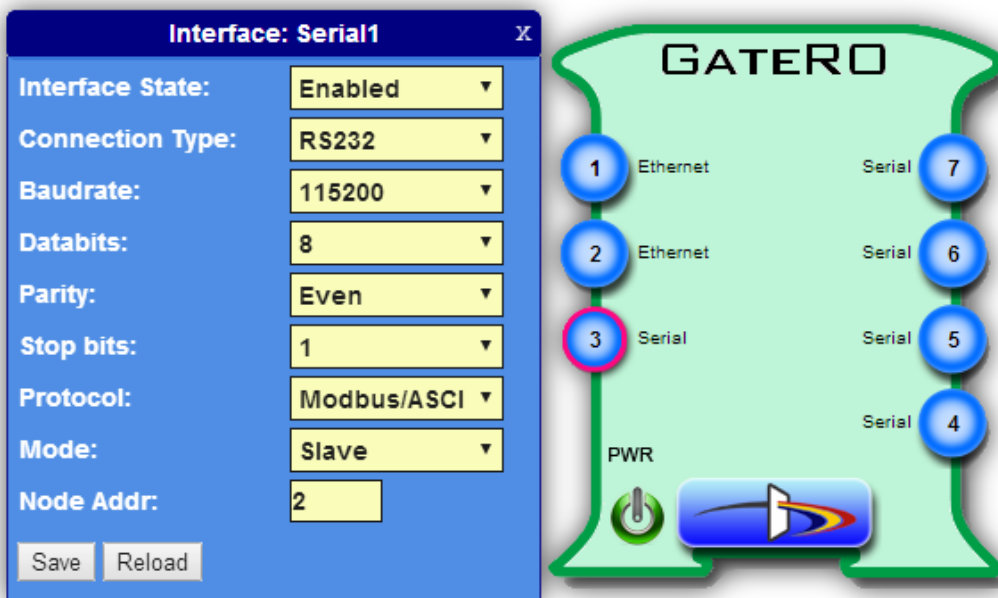
- The parameters can be modified by selecting the appropriate interface using the mouse:



- The Ethernet Interface parameters;



- The Serial Interface parameters;



- The *Save* button will be selected to confirm the appropriate interface parameters.
- In order to submit all the GateRO parameters the device should be rebooted by selecting the *Power (PWR)* button.



#### 4.2 The GateON application

The GateRO devices that will be configured should be connected to a computer using the Ethernet interfaces. The application will run on that computer and will be used to setup the communication parameters. Also the *GateON* application is used to identify the devices. The UDP protocol is used to perform the communication between *GateON* and GateRO devices:

- The *Discover* action is always executed using broadcast messages.
- The remaining operations are executed by unicast or broadcast messages according to the *Broadcast* button:



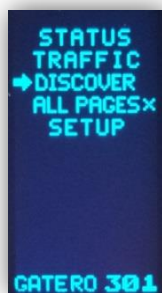
- The broadcast messages used to discover devices are stopped by NAT systems (e.g. wireless router). In this case the GateRO devices can be configured as described in chapter 4.2.1-Method2 and performing the remaining operations by unicast messages.

4.2.1 Discover new devices

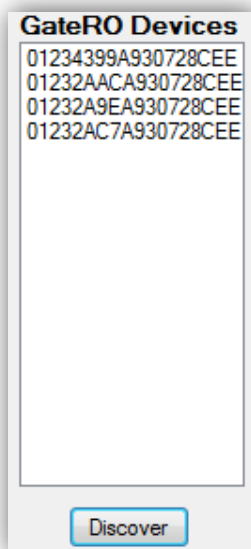
- Method1: The *Discover* button will be selected.



- Method2: Using the GateRO device buttons the *Discover* option will be selected from the menu displayed on the LCD. The appropriate device will be reported by the *GateON* application in a new window.



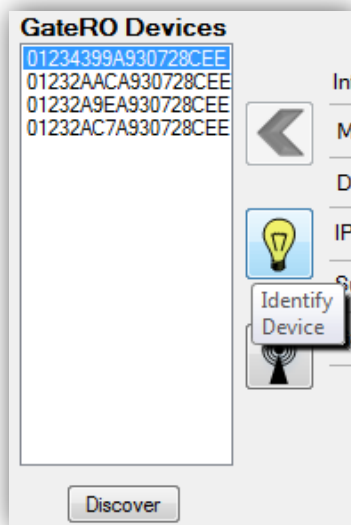
- The discovered devices will be added to the *GateRO Devices* list.





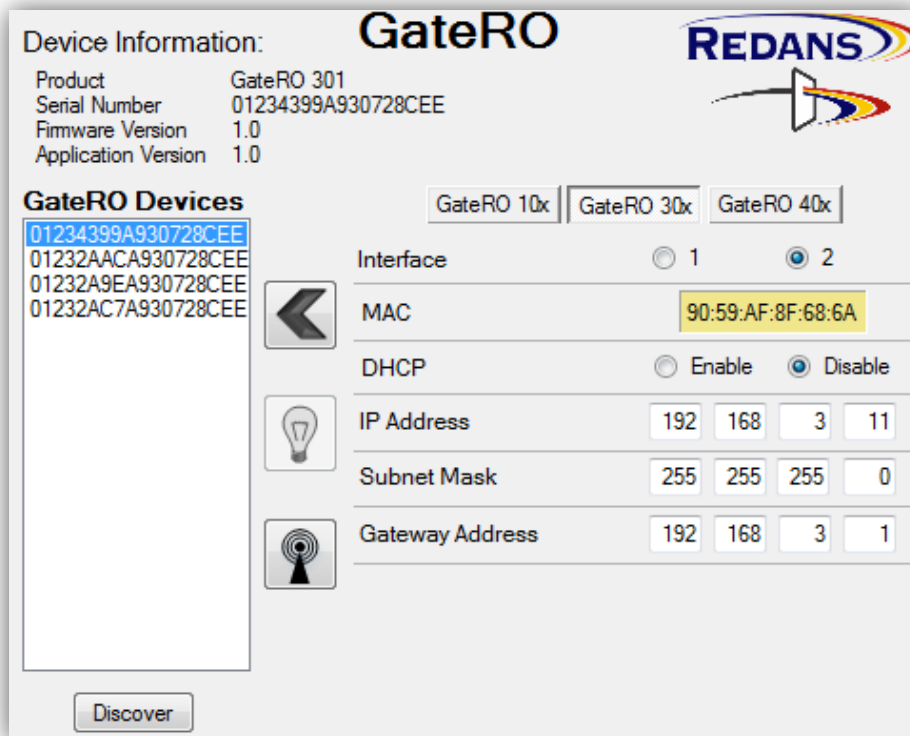
### 4.2.2 Identify devices on the network

- To identify a certain GateRO device (to blink the LED) the appropriate device will be chosen from the *GateRO Devices* list and the *Identify Device* button will be selected.



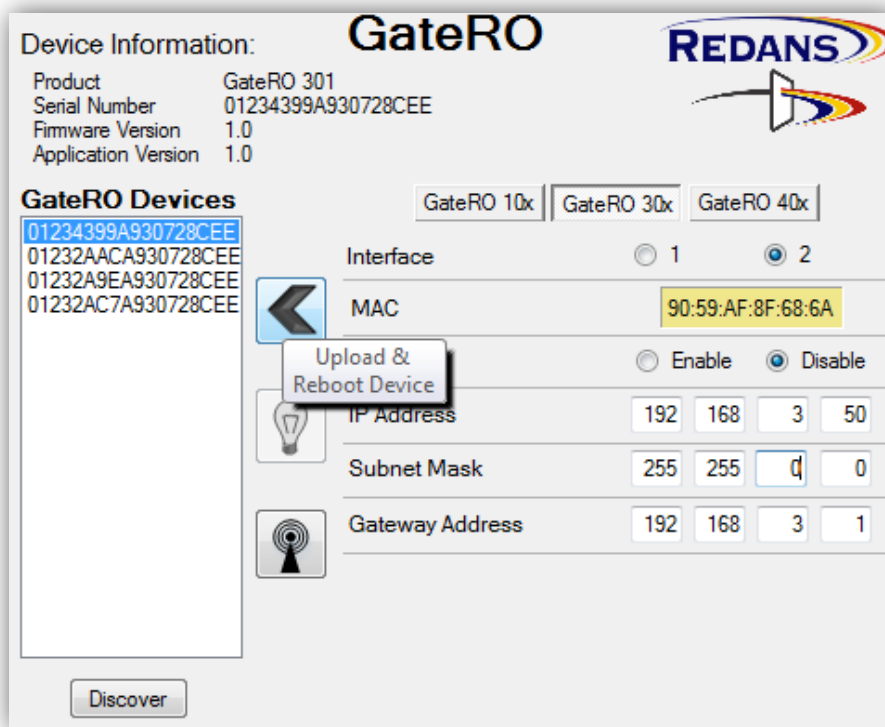
### 4.2.3 Downloading the GateRO parameters to the GateON application

- The GateRO features will be downloaded by double click the appropriate device from the *GateRO Devices* list. These features contain informations about the GateRO device and the communication parameters.

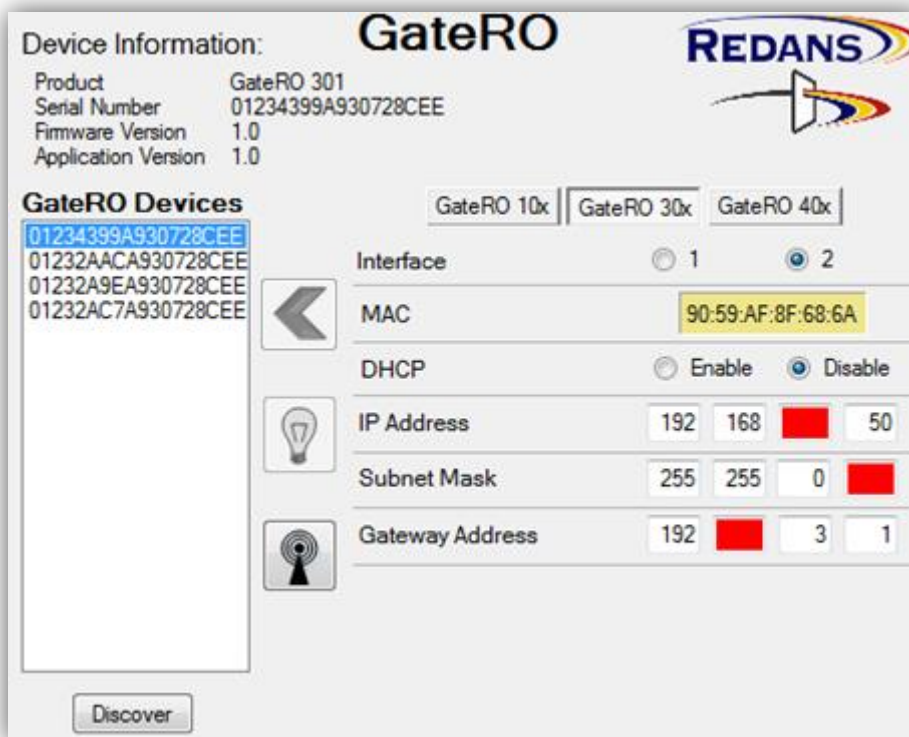


#### 4.2.4 Setup the parameters

- To change the GateRO communication parameters the appropriate fields will be changed and then the *Upload* button will be selected.



- The fields that are incomplete will be highlighted.

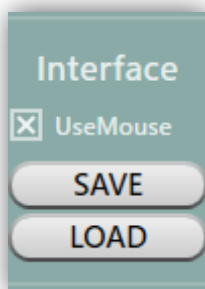


### 4.3 The Risan\_GUI application

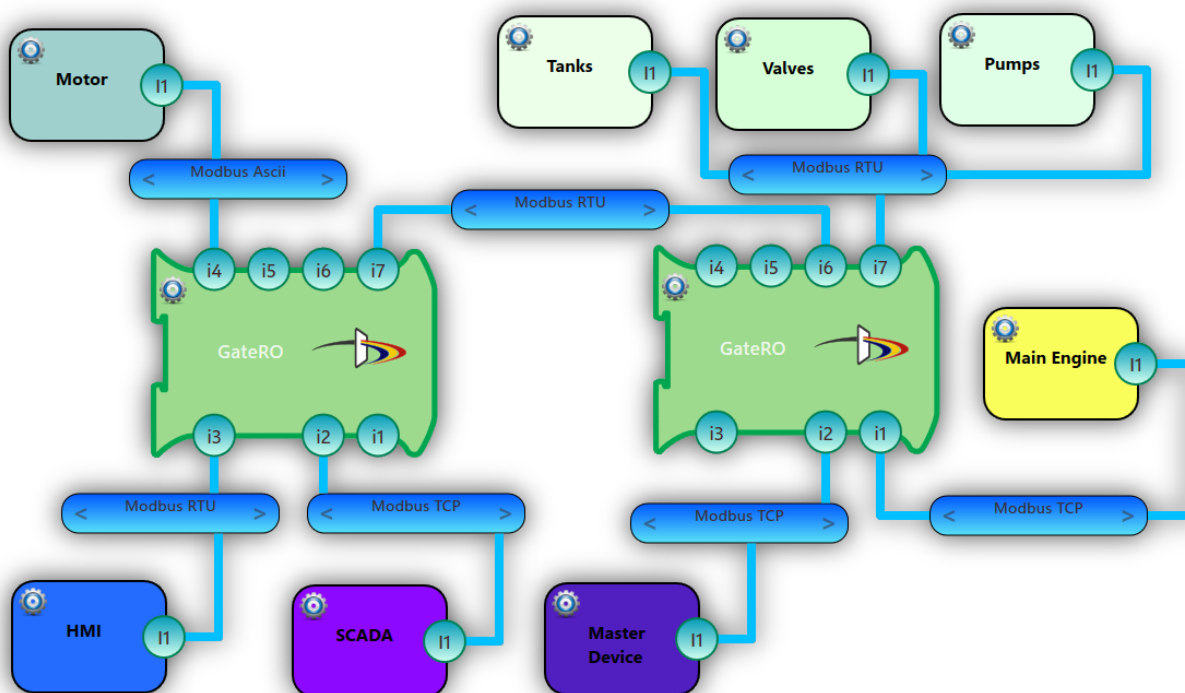
The GateRO devices that will be configured should be connected to a computer using the Ethernet interfaces. The application will run on that computer and will be used to configure the network and to setup the communication parameters and protocols features.

#### 4.3.1 Creating a new project

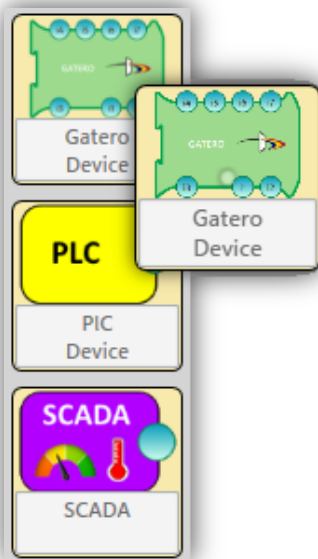
- A new project will be created by opening the *Risan\_GUI* application and selecting the *Save* button. The project name and project path should be filled.
- To edit an existent project please select the *Load* button and choose the appropriate project.



#### 4.3.2 Configuring the network



- By drag and drop the desired items from the left side list will be added to the project. In this way the physical network can be represented.



- New items can be added to the left side list by selecting the “+” button. The next form should be filled using these specifications:
  - The device name;
  - The communications standards that can be used by the device;
  - The communications protocols that can be used by the device;
  - A process value list;
  - An image.



**Create PLC configuration**

Name:

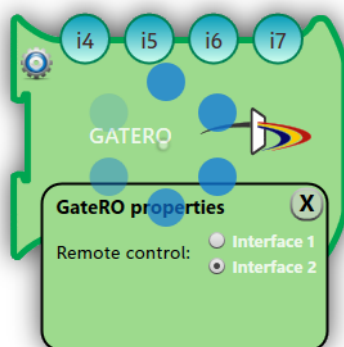
Interfaces	Protocols
RS232	Modbus RTU
RS485	Modbus Ascii
RS422	Freeport
ETHERNET	

Values loaded = 6

- The network can be representing using these type of items:
  - GateRO devices;
  - User custom devices;
  - Buses.
- The connections between devices interfaces will always be made through a bus.
- The connection between an interface and a bus will be made by drawing a line from the interface to the bus.
- A connection can be removed by clicking it.

### 4.3.3 Setup the parameters

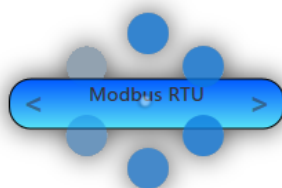
- *The remote control interface:*
  - The Ethernet interface through which the parameters will be loaded to the GateRO device can be selected by click and hold the GateRO device and choose the appropriate interface.



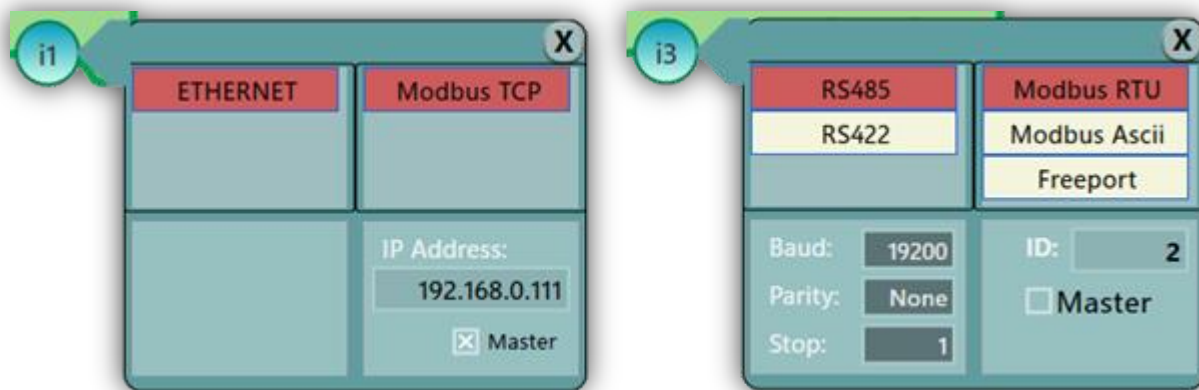
- *The communication parameters:*
  - An interface communication parameters can be modified by click and hold the appropriate interface and setup the wanted parameters.



- A bus communication parameters can be modified by click and hold the appropriate bus and setup the wanted parameters.

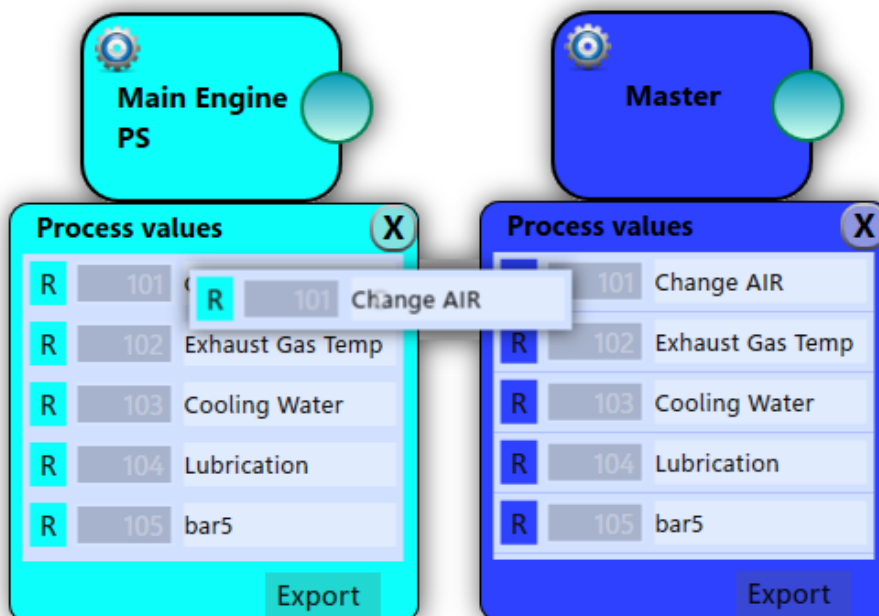


- The parameters that can be modified are:
  - The high level protocol: Modbus TCP/IP, Modbus RTU, Modbus ASCII, Freepoint;
  - The type of the device: Master, Slave;
  - Addresses: IP, Modbus ID;
  - The communications standards: Ethernet, RS232, RS422, RS485;
  - The physical link parameters: baudrate speed, parity control, stop bits.

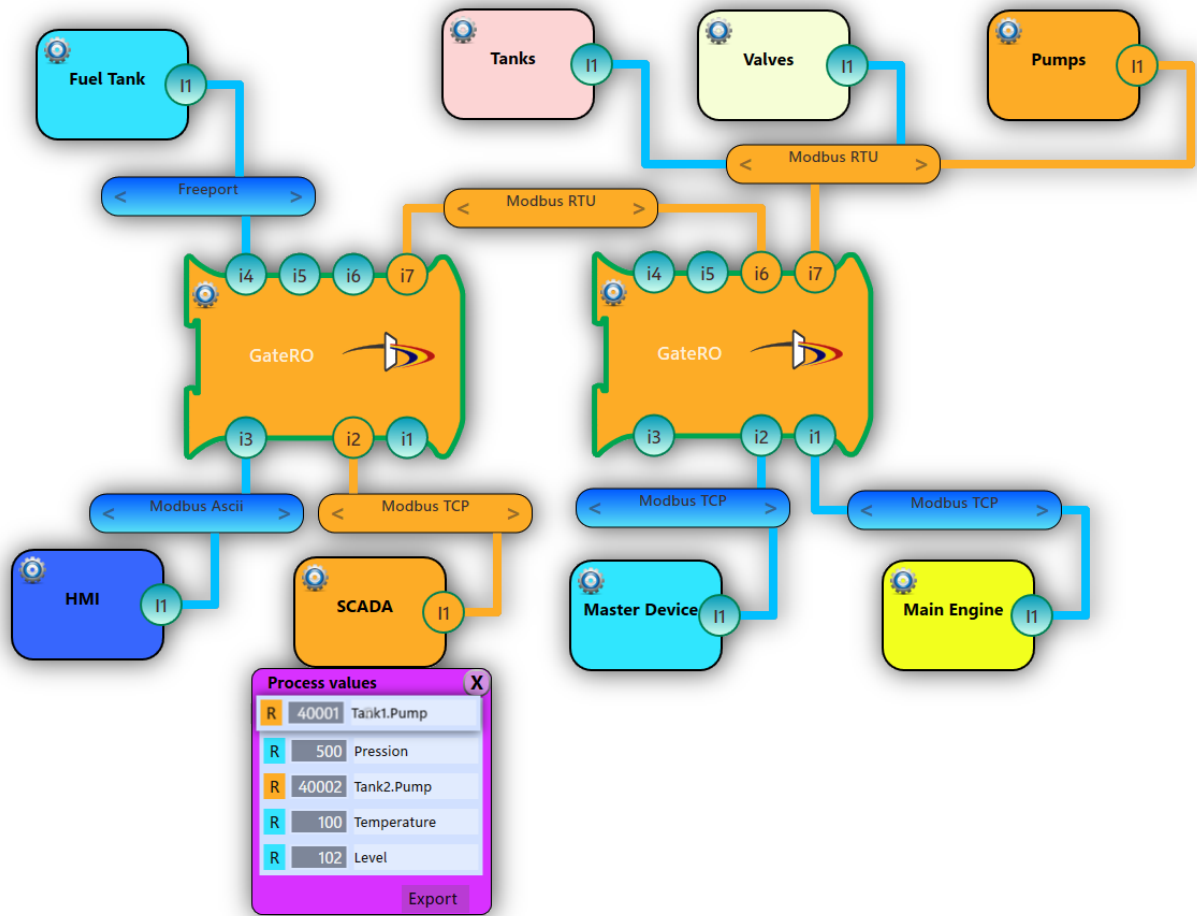


Obs! In order to provide a right setup all the interfaces that are connected to a bus and the appropriate bus must be configured the same.

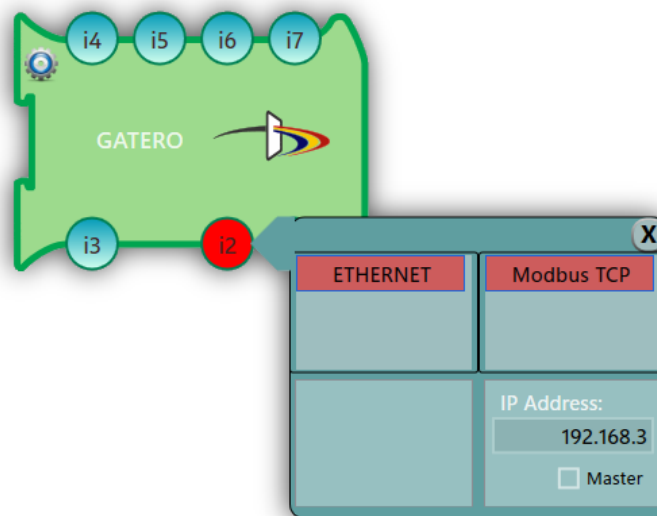
- *Data/Registers shifting between devices:*
  - In order to transfer some data between devices the *Process values* lists should be opened by click and hold the appropriate devices. By drag and drop data will be shifted from one side to another.



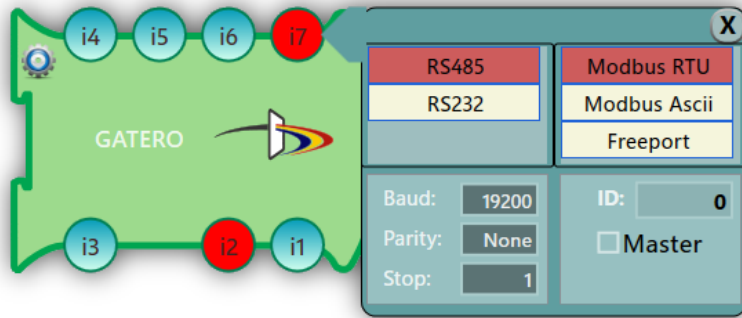
- By clicking the shifted register the physical link between source and destination devices will be highlighted using the source device color.



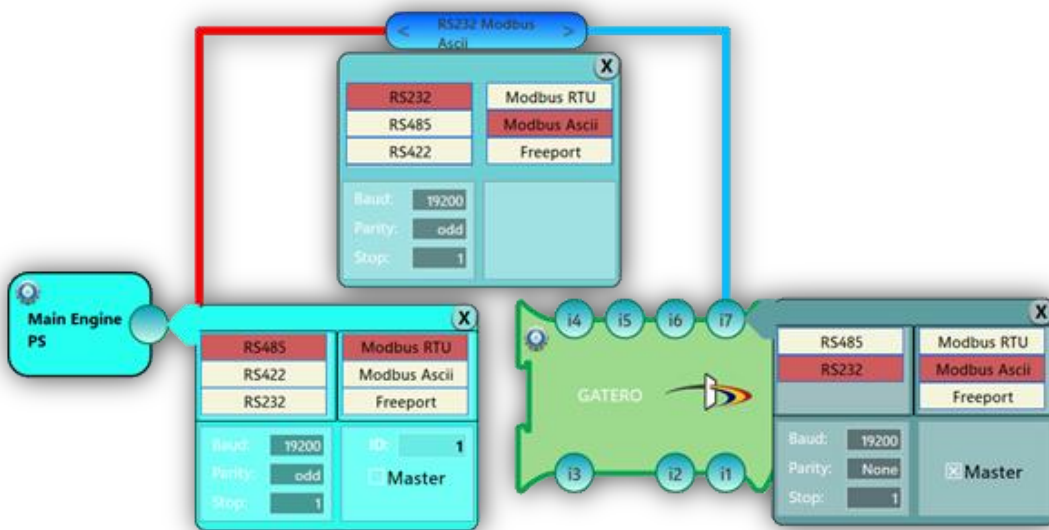
- *A wrong configuration will be highlighted by:*
  - Interface name displayed on red background. Causes:
    - Wrong IP address



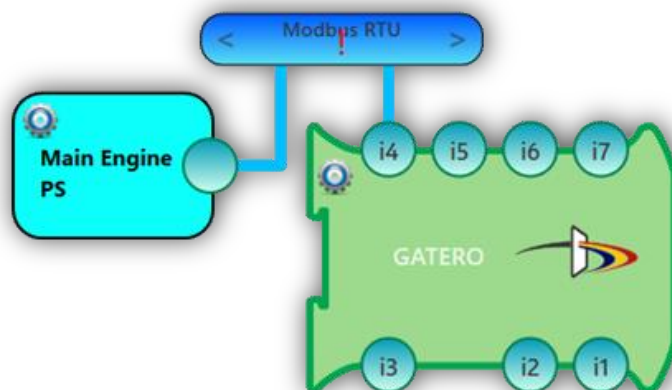
- Wrong Modbus address.



- Red connection. Cause:
  - The communication parameteres are not the same.

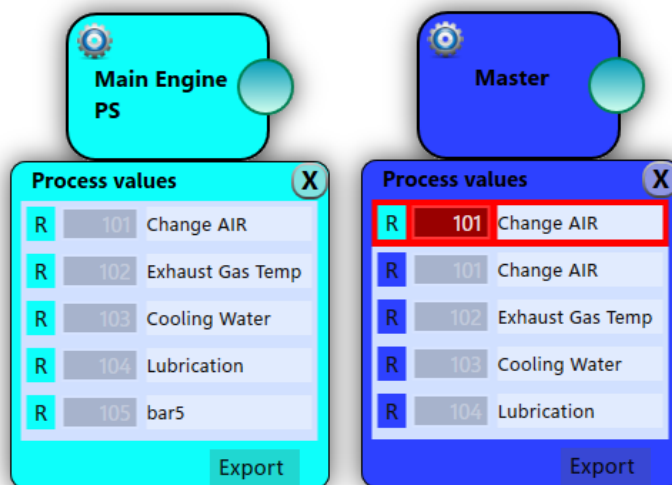


- Bus displayed with an exclamation mark. Causes:
  - The Master/Slave type of devices are improper configured;
  - The Modbus addresses are improper configured;
  - The IP addresses are improper configured.



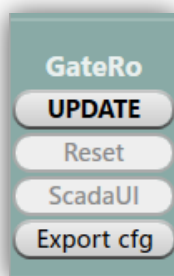


- Register displayed on red background. Cause:
  - No connection between source and destination devices.



#### 4.3.4 Loading the parameters

- The parameters will be loaded to the GateRO devices by selecting the *Update* button.



#### 4.3.5 Other facilities

- Every device on the network has a submenu through which the user can:
  - Change the device name;
  - Change the device color;
  - Remove the device from the network.



- Every item can be removed from the network by drag and drop to the trash.

## 5 TECHNICAL

### 5.1 Connectors

#### 5.1.1 Power

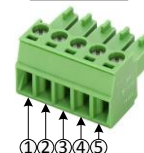
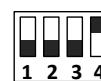
Pin	Signal
1	+24V DC
2	GND
3	



#### 5.1.2 RS-232/422/485

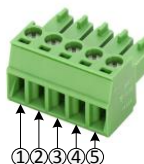
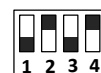
- RS-232

Pin	Signal
1	RxD
2	NC
3	NC
4	TxD
5	GND



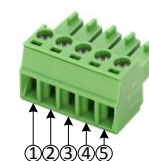
- RS-422

Pin	Signal
1	RxD+
2	RxD-
3	TxD+
4	TxD-
5	GND



- RS-485

Pin	Signal
1	NC
2	NC
3	RxD/TxD +
4	RxD/TxD -
5	GND



#### 5.1.3 RS-232

Pin	Signal
1	TX (Transmit Data)
2	RX (Receive Data)
3	GND

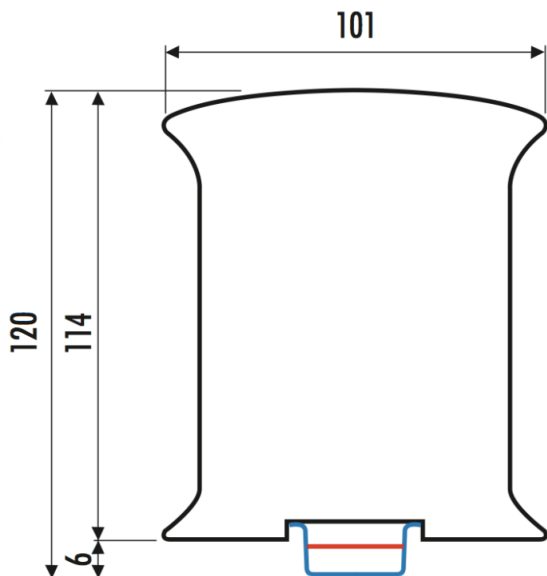


5.1.4 RS-485

Pin	Signal
1	RS485+
2	RS485-
3	GND



5.2 Dimensions



114mm x 101mm x 35mm  
4.488" x 3.976" x 1.377"

5.3 Technical Specification

Power Supply

24VDC ±10%, 1A

Power Consumption:

Max: 8W

Typ: 5W

Operating Temperature

-10 to +75 degree Celsius

Non-operating Temperature

-25 to +85 degree Celsius

Contact:

[info@redans.eu](mailto:info@redans.eu)

[www.redans.eu](http://www.redans.eu)

