

QUICK-START GUIDE (QSG)

MODBUS RS485 Module

FOR CAIRSENS

MARCH 2022

ENVEA RECOMMENDS TO READ ALL THESE INSTRUCTIONS
BEFORE POWERING ON AND USING THE EQUIPMENT



- WARNING -


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- Enter the address « <https://www.envea.global/envea-connect/> » in the Smartphone/Tablet internet browser, or directly enter “ENVEA connect” in the Play store (Android) or in the App store (iOS)
- Download the application.
- Click on the icon  to launch the “ENVEA connect” application.

- Downloads -

To download the Micro-sensor documentation or the Cairsoft software, go to our website : <https://www.envea.global/solutions/ambient-monitoring/faq-cairnet-cairsens-caircloud/>

In order to contribute to environmental preservation, hard copies of the manuals will no longer be printed by ENVEA.



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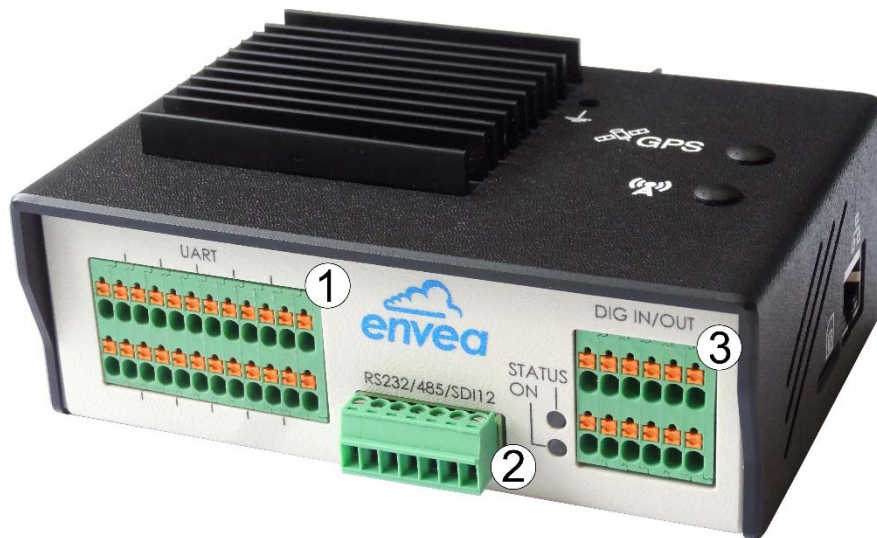
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1. PRESENTATION OF MODBUS RS485 MODULE FOR CAIRSENS

This document describes the implementation of the MODBUS RS485 Module for Cairsens as a connection gateway towards the CAIRSENS micro-sensors.

After configuration, the MODBUS RS485 Module for CAIRSENS acts as a MODBUS/RTU server on RS485 link (2 wires).

The address of each CAIRSENS micro-sensor is predefined by default by the channel number to which they are connected, but it can also be configured through a WEB page accessible by temporarily activating the WIFI connection of the MODBUS RS485 Module for CAIRSENS.



Front panel



Rear panel

(1) CAIRSENS, (2) RS485, (3) NOT USED, (4) DIN rail support

Figure 1 – Presentation of MODBUS RS485 Module for Cairsens and available inlets/outlets

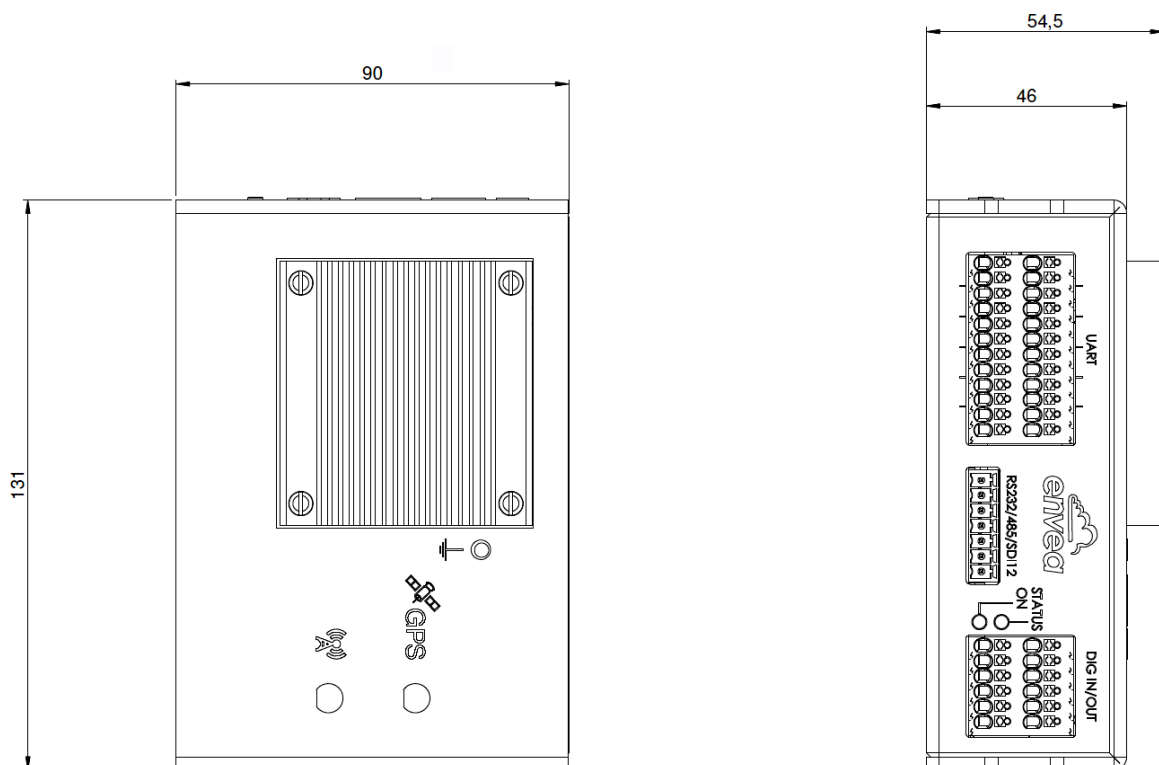
2. MINIMUM CONFIGURATION REQUIREMENTS

- Hardware configuration:
 - 1 x MODBUS RS485 Module for CAIRSENS.
 - 1 to 6 CAIRSENS micro-sensors connected to UART port (micro-USB on front panel).
 - 1 x converter cable FTDI USB-RS485-WE (or acquisition automaton with Modbus input).
 - 1 x WIFI-compatible PC, or other WIFI support (Smartphone, tablet).
- Software configuration :
 - Modbus Poll software to be installed on the PC.
- Communication protocol:
 - The Modbus table is available in the CAIRSENS technical manual by free download from the website https://www.envea.global/design/medias/CAIRSENS-V.3_ENG_Notice.pdf

3. TECHNICAL CHARACTERISTICS

3.1. DIMENSIONS AND WEIGHT

- Length : 131 mm
- Height : 54.5 mm
- Width : 90 mm
- Weight : 0.5 Kg



3.2. ELECTRICAL CONSUMPTION

Supply voltage :	12 VDC
Current consumption in standard and no-load operation: (not-connected Cairsens)	Min = 207 mA Max = 235 mA
Current consumption with WIFI operating: (MODBUS parameter configuration mode via web page) :	Max = 300 mA

4. CONNECTIVITY DESCRIPTION OF MODBUS RS485 MODULE FOR CAIRSENS

- On the top panel of the MODBUS RS485 Module for CAIRSENS, the connectors have the following functions (see Figure 2) :
 - (1) Mains power supply in direct current, 8-30 VDC, 2A. Power supply not provided. 2-point male connector provided. Input is not polarized.
 - (4) ON WIFI button to access the WEB configuration page (see section 8).
 - (8) Heat sink.



Beware of burn hazard due to heat sink contact (8)

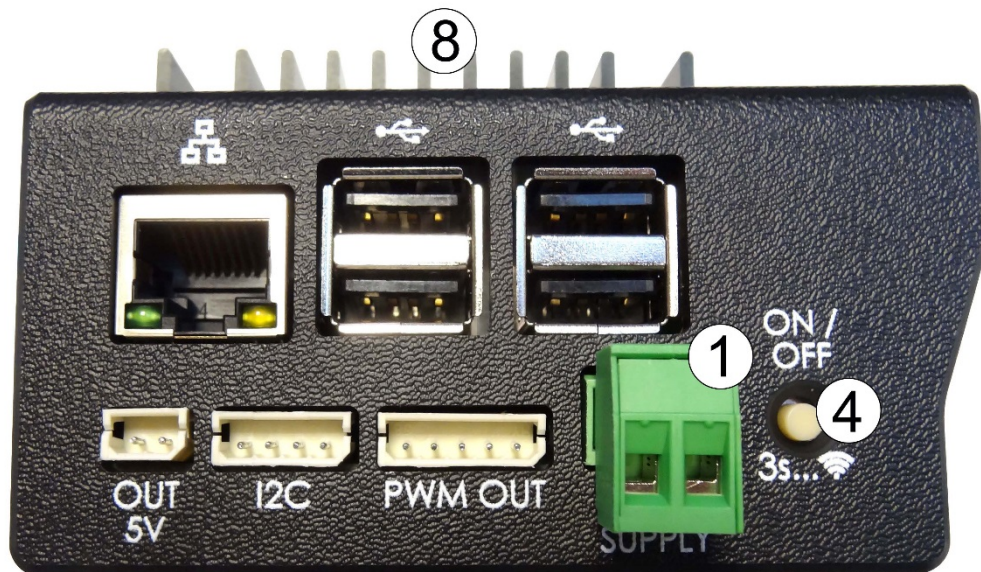


Figure 2 – Top panel connections of MODBUS RS485 Module for CAIRSENS

- On the front panel of MODBUS RS485 module for CAIRSENS, connectics is as follows:
 - 6 micro-USB cables for connection to the CAIRSENS (2) range sensors. The color code of cables is as follows (see Figure 3 to view the (black/red/green/white) connection order :

Black	Red	Green	White
GND	VDC	D+	D-

- Two ON and STATUS LEDs (1) to indicate the system operation status. Only one LED operates at once: ON is blue, STATUS is green or red. The LEDs status are described below :
 - ⇒ The ON LED is continuously blue: the system is supplied and operating.
 - ⇒ The STATUS LED is continuously red or both LEDs are OFF: the system dysfunctions.
- (3) Not used.
- (4) RS485 output: 2 wires (GND when necessary).
Not used: RS-232/SDI12.

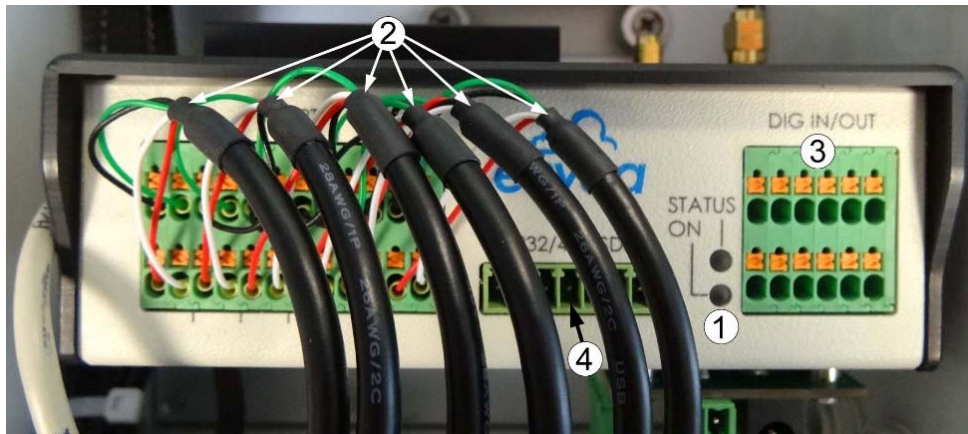


Figure 3 – Front panel of MODBUS RS485 Module for CAIRSENS

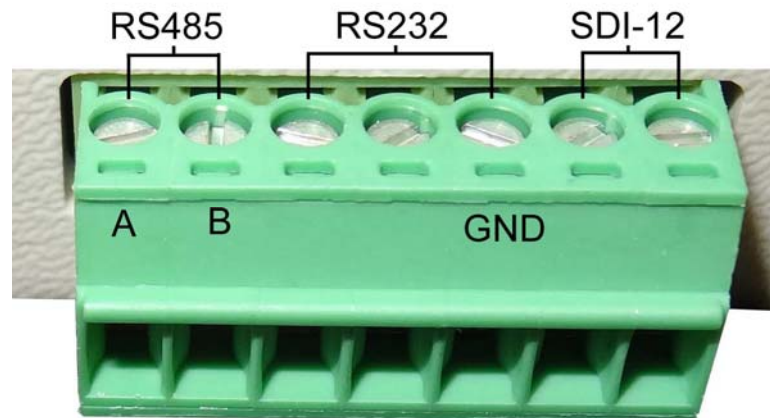


Figure 4 – RS485 output connector marking

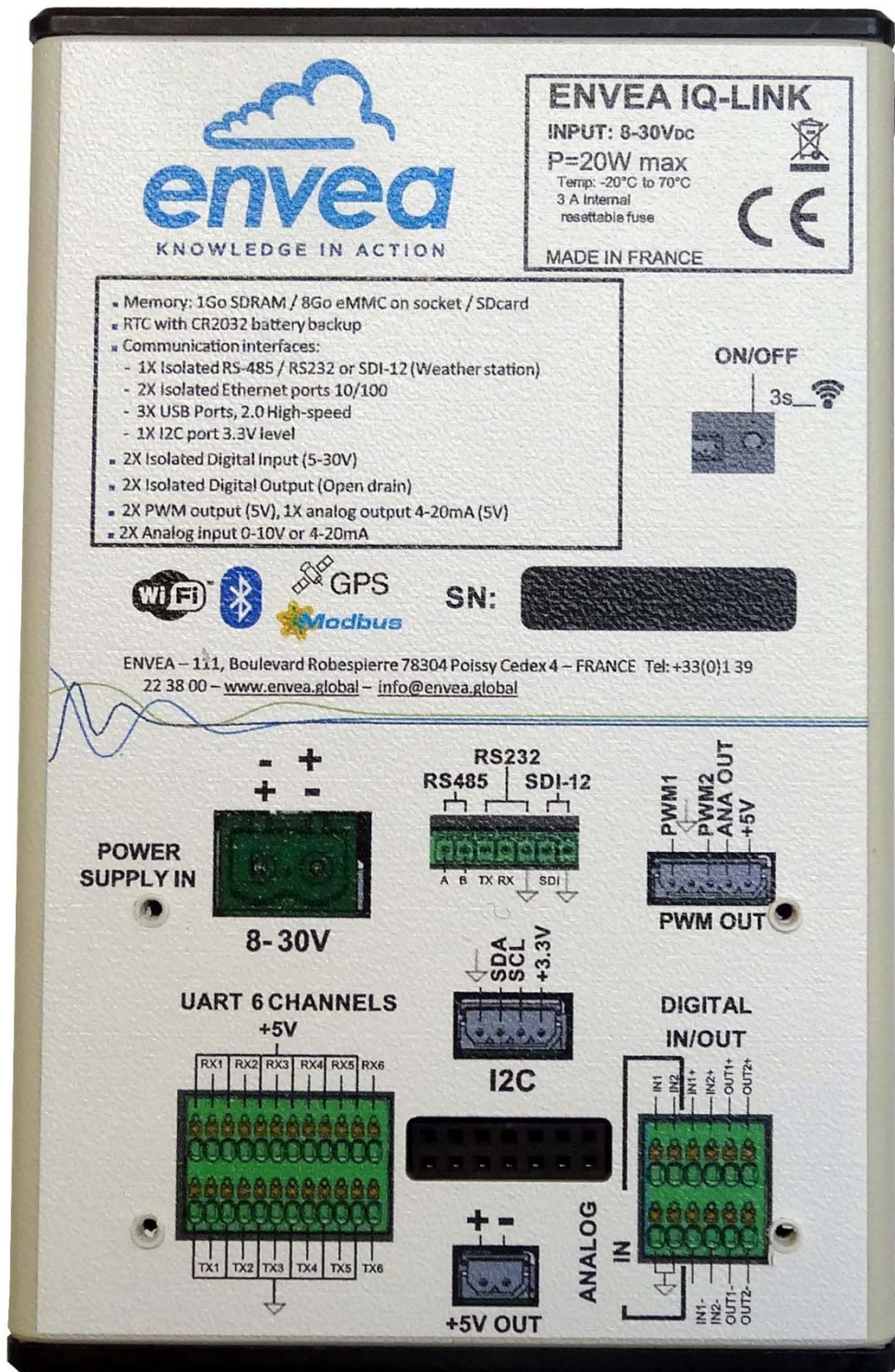


Figure 5 – Drawings of electrical connections and equipments (silkscreen)

5. COMMISSIONING

Power the MODBUS RS485 Module for CAIRSENS with an 8-to-30 VDC voltage source.

The **blue LED** should light up steadily during-start-up. After about 30 seconds, the **green STATUS LED** flashes which indicates the system is operational and ready.

Note: The test software used to do this quick-start guide is available under the following link <https://www.modbustools.com/download.html>. It is not described in this document (please refer to its manual). An adapter cable (TTL to USB) reference USB-RS485-WE has been used to carry out the tests.

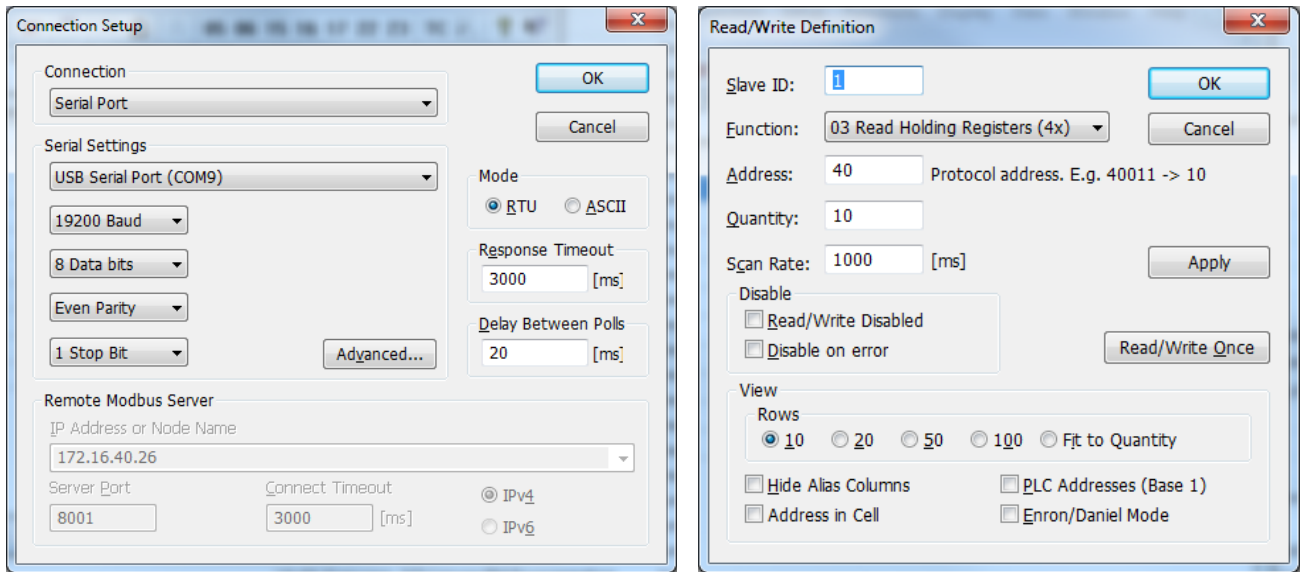
6. IN-FACTORY CONFIGURATION

The MODBUS RS485 Module for CAIRSENS is preconfigured in the factory as follows:

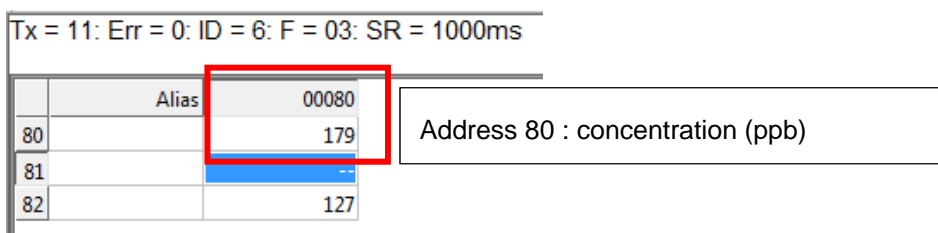
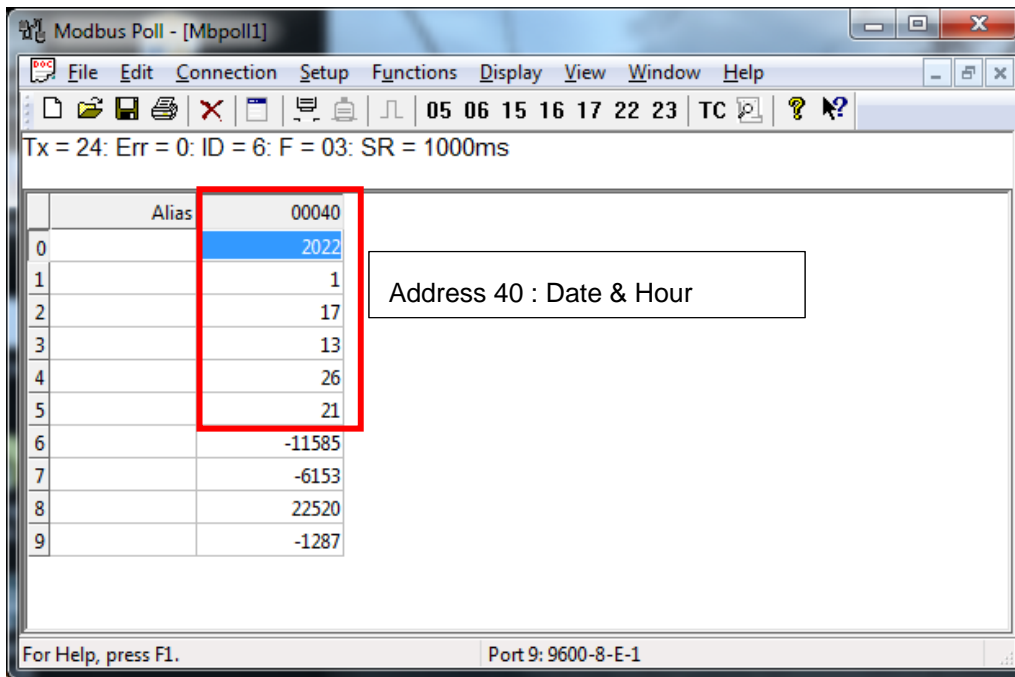
- RS485 communication: 19200 bauds, 8 bits data, even parity, 1 bit stop.
- Cairsens addresses :
 - UART1 port = SLAVE 1
 - UART2 port = SLAVE 2
 - UART3 port = SLAVE 3
 - UART4 port = SLAVE 4
 - UART5 port = SLAVE 5
 - UART6 port = SLAVE 6

The Modbus table is available in the CAIRSENS technical manual by free download from the website https://www.envea.global/design/medias/CAIRSENS-V.3_ENG_Notice.pdf

6.1. MODBUS POLL SOFTWARE CONFIGURATION TO COMMUNICATE USING DEFAULT CONFIGURATION



6.2. VIEWING EXAMPLE OF MODBUS/RTU EXCHANGE USING MODBUS POLL



7. COMMUNICATION PARAMETER MODIFICATION OF MODBUS OUTPUT

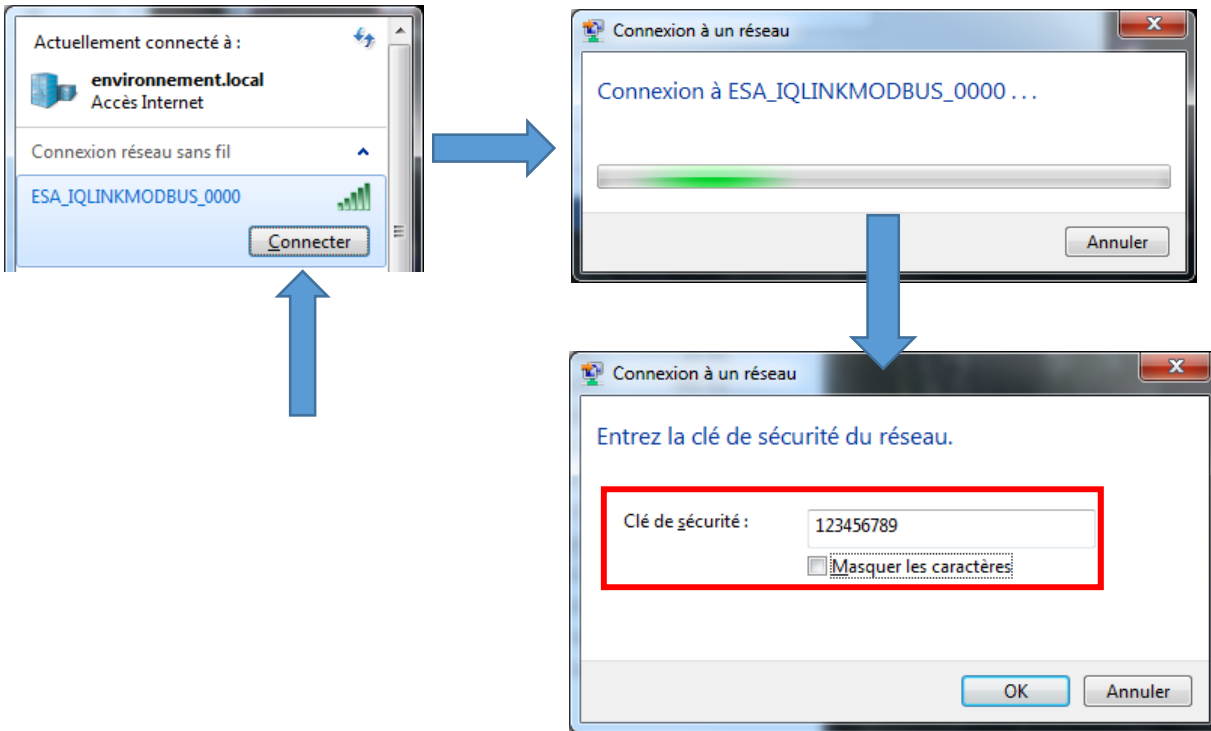
It is necessary to switch on the MODBUS RS485 Module for CAIRSENS WIFI to access the configuration WEB page.

To do this, press the button (4) 6 times, the spot **ESA_IQLINKMODBUS_0000** is generated and appears in the WIFI list detected by the PC.

The STATUS LED **RED/GREEN** flashes alternately which indicates the WIFI spot is available.



Select the WIFI spot and enter the security key = **123456789**

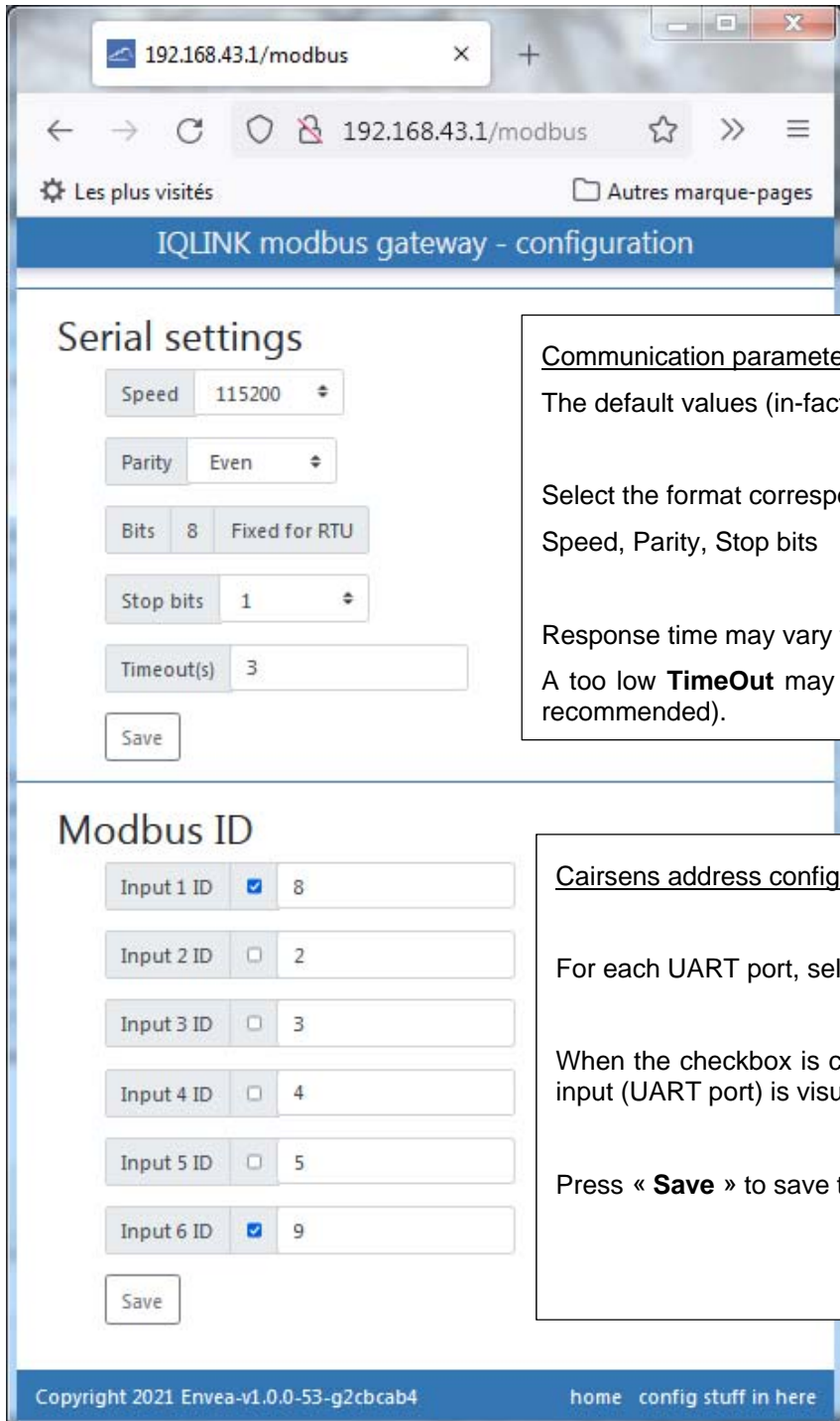


ESSENTIAL The WIFI spot of the MODBUS RS485 Module for CAIRSENS switches off automatically after 30 minutes or after 10 minutes without action on the WEB page.

8. "MODBUS" WEB PAGE ACCESS

When the WIFI spot connection is established, go to a WEB browser and enter the address: <http://192.168.43.1>

After a few seconds, the following configuration page is displayed:



Serial settings

Speed: 115200

Parity: Even

Bits: 8 Fixed for RTU

Stop bits: 1

Timeout(s): 3

Save

Modbus ID

Input 1 ID	<input checked="" type="checkbox"/>	8
Input 2 ID	<input type="checkbox"/>	2
Input 3 ID	<input type="checkbox"/>	3
Input 4 ID	<input type="checkbox"/>	4
Input 5 ID	<input type="checkbox"/>	5
Input 6 ID	<input checked="" type="checkbox"/>	9

Save

Copyright 2021 Envea-v1.0.0-53-g2cbcab4 home config stuff in here

Communication parameter configuration :
The default values (in-factory input) are filled-in.

Select the format corresponding to your RS485 bus
Speed, Parity, Stop bits

Response time may vary from one query to another
A too low **TimeOut** may cause response errors (3 sec minimum recommended).

Cairsens address configuration:

For each UART port, select the 1-to-255 Modbus address.

When the checkbox is checked, then Cairsens connected to this input (UART port) is visualized on the RS485 bus.

Press « **Save** » to save the settings.