# NG-IoT - Connector

## Transparent RS-485 / Wi-Fi Interface

# USER'S MANUAL

## ⚠ Warning and Precautions

- Install the device only as described in this manual; do not modify the instructions in this manual. Furthermore, please verify all application limits before using the instruments.

- Check that all connections comply with the instructions in this manual before powering the instrument. Make sure you disconnect the power before starting any electrical maintenance activity on the instrument.

- Do not alter any of the instrument's features (i.e. making holes in the external shell, change the lids and the accessories with other manufacturers') since it would damage the instrument, risking its malfunctioning and low protection. Furthermore, do not modify the disposition of the internal components.

- For any maintenance, please refer to Energy Team only. In case of malfunctioning please send the instrument to our lab with a detailed description of the problem.

- Do not expose the instrument to temperature ranges different from those on the technical features. Do not install the instrument in places with strong vibrations, corrosive gases, excessive dirt, and high humidity. Only use the device within the provided limits.

- Make sure, when powering the instrument, to avoid the terminals' overvoltage, as it would compromise the galvanic insulation.

NOTE: this manual is considered part of the instrument, so do store it properly.
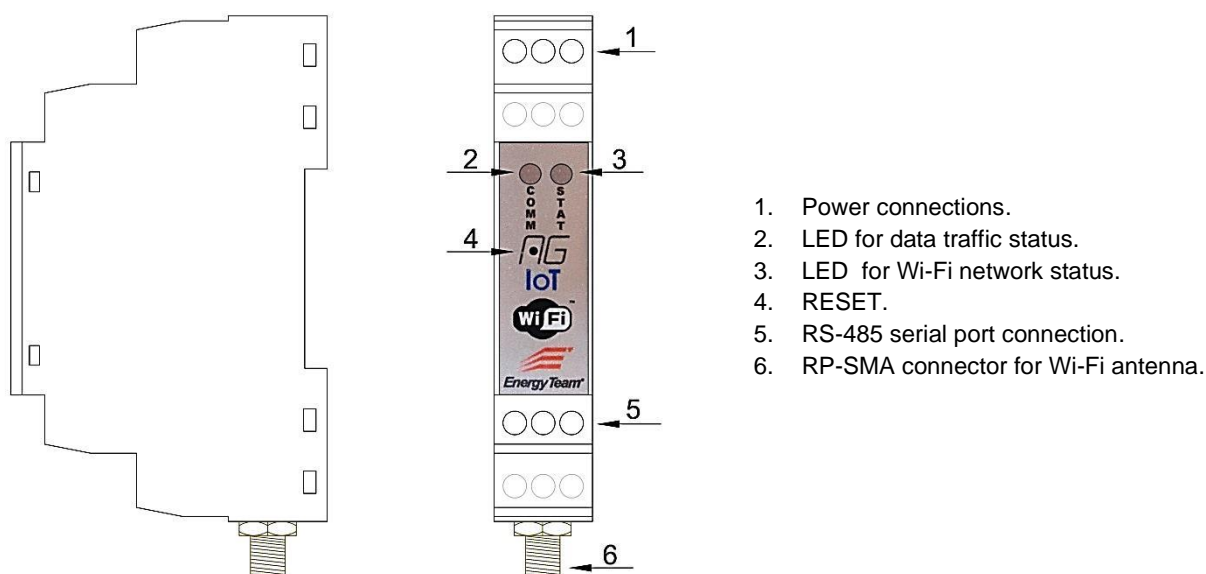
# INTRODUCTION

**NG-IoT** Connector allows converting RS-485 Bus data flows into Wi-Fi connection to acquire, store and manage the data on the set serial.

Thanks to a page created by the Web Server within the instrument, that can be read on any computer and mobile device bearing any kind of operating System, it is possible to set all serial connections and Wi-Fi parameters.

**NG-IoT** can be connected to the Wi-Fi network or operate through its internal Access Point; the device basically generates a Wi-Fi network to which the user has free access to set parameters and manage data flows.

# MAIN FEATURES

1. Power connections.
2. LED for data traffic status.
3. LED for Wi-Fi network status.
4. RESET.
5. RS-485 serial port connection.
6. RP-SMA connector for Wi-Fi antenna.
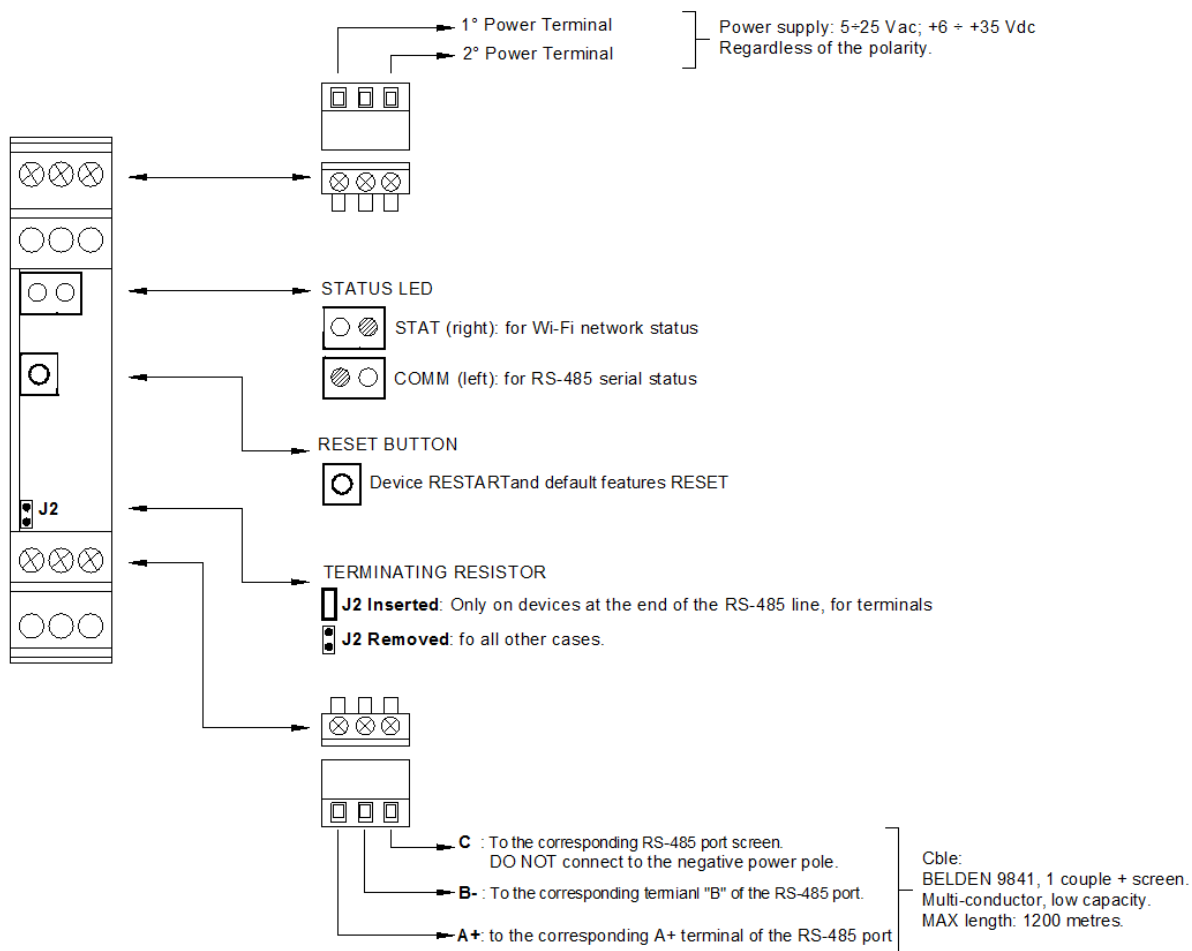
## OPTIMAL INSTALLATION OF THE ANTENNA

- In order to get the radio communication working at its best, it is crucial to follow the instructions below for the installation of the antenna.

- Do not place the antenna inside metallic or screened containers such as electrical panels, concrete structures, sheet metal boxes. It is advisable to place the antenna inside plastic containers.

- As much as possible, place the antenna in open field, without metallic obstacles in its coverage distance; the ideal would be to place the module somewhere "visible".

- Do not place the antenna close to other transmitting devices, radio links or other devices that can be of any disturbance.

- In case of having to place the antenna outside the electrical panel, it must be inside an IP65 waterproof container.

## CONNECTIONS

**IMPORTANT NOTE**:
**Check the voltages and that the cables are properly connected BEFORE powering on the module: a faulty connection could cause it irreversible damage.**

Remove the frontal lid to access internal components. Be extra careful not to damage the hook pins.

1° Power Terminal
2° Power Terminal

Power supply: 5÷25 Vac; +6 ÷ +35 Vdc
Regardless of the polarity.

STATUS LED

STAT (right): for Wi-Fi network status

COMM (left): for RS-485 serial status

RESET BUTTON

Device RESTARTand default features RESET

J2

TERMINATING RESISTOR

**J2 Inserted**: Only on devices at the end of the RS-485 line, for terminals

**J2 Removed**: fo all other cases.

**C** : To the corresponding RS-485 port screen.
DO NOT connect to the negative power pole.

**B-** : To the corresponding termianl "B" of the RS-485 port.

**A+**: to the corresponding A+ terminal of the RS-485 port

Cble:
BELDEN 9841, 1 couple + screen.
Multi-conductor, low capacity.
MAX length: 1200 metres.

# CONFIGURATION

- Power on the module only after the connections are completed. Proceed then with the configuration following the procedure here below.

**NOTE:**
**The module is set by default on "Access Point" and generates the open Wi-Fi network "ET_AP"; access this network using any Browser. The LED STAT will turn RED.**

- Type in the URL bar the default IP address **192.168.4.1** to open the configuration menu. It shows the parameters previously set, which fields are described below. If the module is powered on the first time, the menu shows the default parameters:



<p align="center">**Picture 1: Default screen**</p>

## LAN

- **IP**: to change the module's IP address.
- **Gateway**: type the Gateway's address.
- **Subnet Mask**: type the subnet mask's address.
- **Port**: type the port's address.

## SERIAL

- **Bitrate**: select the data communication speed (bit/s) among the available ones (2400; 4800; 9600; 19200; 38400; 56000; 57600; 115200).
- **Data Bits**: select Data Bit between the available ones (7 or 8).
- **Parity**: select a kind of Parity among the available ones: Even, Odd, None.
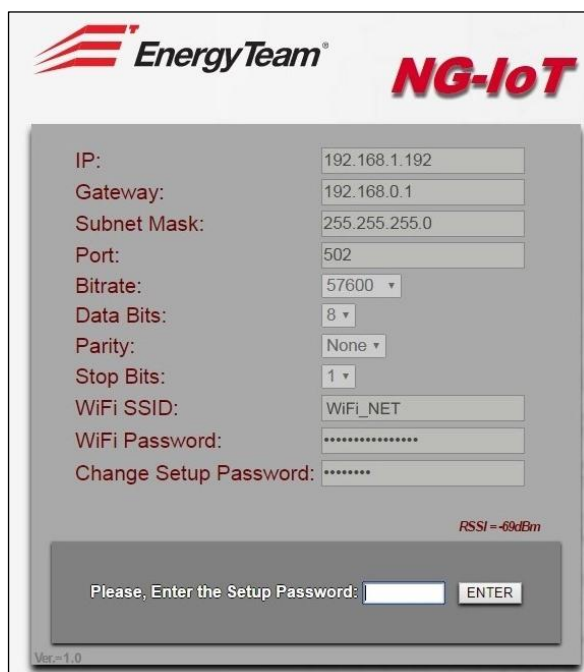- **Stop Bits**: select Stop Bit (1 or 2).

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**Wi-Fi**

- **WiFi SSID**: to change the network to which to connect.
- **WiFi Password**: type the password to access the Wi-Fi network.
- **Change Setup Password**: to set a password for parameters setting. Should the field remain empty, the access will be free.

**NOTE:**
**RSSI (right bottom corner) shows received signal strength (decibel). The closest the value is to zero, the better is the network condition.**

- Click "**SET, SAVE & RESTART**" when finished the setting; the device will restart and save the new parameters.
- During the connection, the **STAT** LED flashes **GREEN**; when connected to Wi-Fi, it lights steady.
- If inserting a password into the field "**Change Setup Password**", during the next access the screen shows the fields disabled; enter the password to enable them.



**Picture 2: This example shows the screen with the new parameters set and the password inserted**

**NOTE:**
**The device works as RS-485 / Wi-Fi converter even in default "Access Point" (ET_AP) mode.**

SERIAL STATUS CHECK

The **COMM** LED shows the RS-485 serial status

- OFF: no data traffic.
- **RED**: data traffic from Wi-Fi network to RS-485 network.
- **GREEN**: data traffic from RS-485 network to Wi-Fi network.

SYSTEM RESTART AND RESET

- Keep the RESET button pressed to reset the system; both LEDs will turn **RED**. No setting will be deleted.
- To restore the default setting, keep the RESET button pressed for 10 seconds until both LEDs turn **ORANGE.**

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# TECHNICAL FEATURES

| General features | |
| --- | --- |
| Dimensions | 18x104x64 mm, antenna connector included. |
| Weight | 50 g |
| Case material | ABS |
| Protection degree | IP20 |
| Power supply | 5÷25 Vac; +6÷ +35 Vdc,  No need of polarity |
| Consumption | 2 W |
| Working Temperature | -10°C ÷ +55°C |
| Humidity | 95% without condensation |
| **Communication** | |
| Nr.1 RS-485 | Galvanically insulated serial interface. Terminating resistor can be inserted. |
| Selectable Speed (bit/s) | 2400; 4800; 9600; 19200; 38400; 56000; 57600; 115200. |
| Parity | Even; Odd; None. Data Bit: 7 or 8. Stop Bit: 1 or 2. |
| RP-SMA connector for Wi-Fi antenna | Standard IEEE: 802.11, Class: b g n (2,4 Ghz). Working as Access Point or connected to the user's Wi-Fi network. |
| Controls and signals | LED signalling Wi-Fi network status. LED signalling Rx/Tx serial data traffic. RESET/RESTART button |
| **Authentication** | |
| Supported | Personal: Open Network; WEP; WPA; WPA2. |
| NOT supported | Enterprise, via RADIUS Server. |

## WARRANTY

Energy Team guarantees that the supplied products are free from defects and suitable for use. Should any malfunctioning occur, due to manufacturing defects, E.T. will respond within the terms and modalities foreseen by General Conditions of Supply, with particular reference to articles **5B** (terms and duration), **1C** (limits), **5D** (other warranties). Whatever operation or manumission made by third parties not expressly authorized determines in each case the immediate termination of the warranty.

## DISPOSAL

**WASTE OF ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)**
**Do not dispose of this device with generic wastes; collect separately for recycling and disposal operations by law.**