Qilowatt MODBUS R2 User Manual

General recommendations

Safety measures

- Read and follow the instructions.
- Installation work may be performed by appropriately qualified individuals. Comply with applicable requirements brought forth in the user manual.
- Making changes or additions not described in this manual is prohibited.
- When making, or creating, electrical connections, the devices must be disconnected from the electrical current.
- A voltage indicator must be used to identify the phase connection, the neutral wire, and the ground wire.
- The relay is not a fuse and does not replace the effect of a fuse.
- The seller is not responsible for any failures or breakages caused by disregarding this manual.

Power supply

- Qilowatt devices use AC supply voltage 230 V / 50 Hz or DC supply voltage 9-24V.
- In case of danger, immediately disconnect the device from the power supply.

Technical limitations

- To avoid data communication interference, do not install connection and data cables near > 50 V cables.
- The AC power circuit must be equipped with a 2A circuit breaker or a fuse.
- The DC power circuit must be equipped with a fuse of up to 2A.

qilowatt.it
info@qilowatt.it
+372 5300 4470

app.qilowatt.it

qilowatt.it
Qilowatt app

Wi-Fi network limitations

- · Do not use special characters in the WiFi network name and/or password.
- · The maximum length of the WiFi network name is **32 characters**.
- · To ensure a more stable Wi-Fi network, disable the following options on the router:
    - o If 5 Ghz Wifi is available - "**AC/N-Mixed**";
    - o Wi-Fi Multi-Media (**WMM**);
    - o **OFDMA**
- · "**802.11b/g**" must be selected as the standard Wi-Fi network in the **Telia X2** router.
- · Outgoing ports **1883** and **8883** must be allowed from the WiFi router´s local area network.

Specification

- · Power supply: 110-230V 50/60Hz AC; 9-24V DC
- · Relay: AC 250V/10A
- · WiFi output power: 17 dBm
- · Ambient temperature: 0°C – 40°C
- · Wi-Fi standard: 802.11 b/g
- · WiFi frequency: 2412 - 2472 MHz
- · Working area (depending on the location):
    - o up to 40m indoors
    - o up to 20m inside the electrical installation
- · Dimensions: 72 × 40 × 30 mm
- · Power consumption: < 4 W

Product description

The MODBUS R2 device is installed on a DIN rail in an electrical panel or in an electrical installation, it can be used to communicate with all devices that support the ModBus RTU RS485 communication protocol.

The device is primarily designed to communicate with solar inverters and/or battery stations. Furthermore, the device can independently control other electrical devices with two potential-free relays.

The device uses a 2.4 GHz local Wi-Fi network for communication with the Qilowatt Cloud service, whose internet connections must be enabled outside the local area network.

Using the indicator button

2 double presses
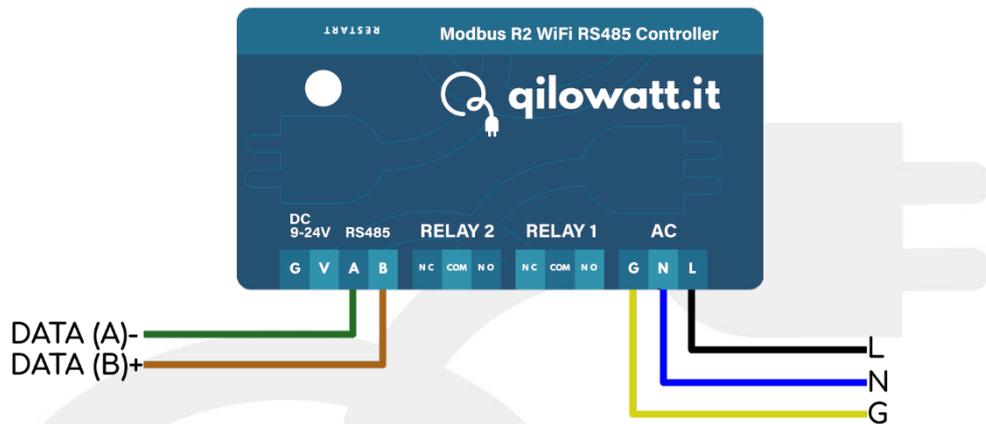Switches Relay No. 1 on/off

3 double presses
Switches Relay No. 2 on/off

Hold down for 40 seconds or more
After a few moments, the device will perform a factory reset and the white indicator light will start flashing rapidly.
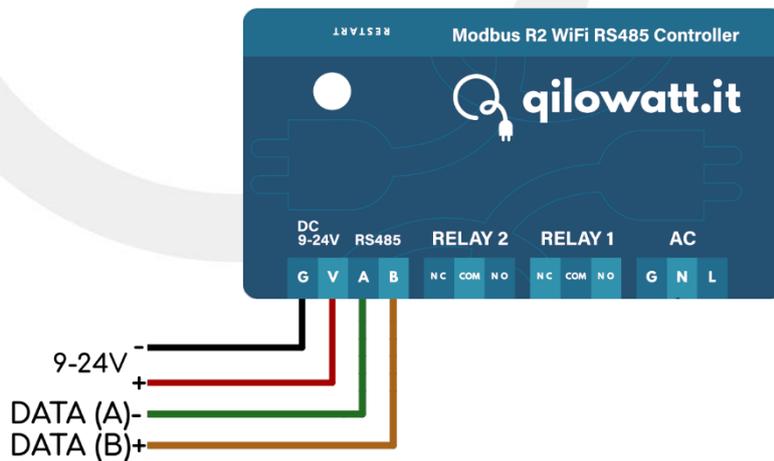
qilowatt.it
info@qilowatt.it
+372 5300 4470

app.qilowatt.it

qilowatt.it
Qilowatt app

Installation examples

Solar Inverter with AC power

Modbus R2 WiFi RS485 Controller
qilowatt.it

DC 9-24V | RS485 | RELAY 2 | RELAY 1 | AC
G V | A B | NC COM NO | NC COM NO | G N L

DATA (A)−
DATA (B)+

L
N
G

Legend:
- **L** – phase
- **N** – neutral
- **G** – ground
- **DATA (A) -** – ModBus signal cable A
- **DATA (B) +** – ModBus signal cable B

Solar Inverter with DC power

Modbus R2 WiFi RS485 Controller
qilowatt.it

DC 9-24V | RS485 | RELAY 2 | RELAY 1 | AC
G V | A B | NC COM NO | NC COM NO | G N L

9-24V −
+
DATA (A)−
DATA (B)+

Legend:
- **9-24V** – Direct current (DC) connection
- **DATA (A) -** – ModBus signal cable A
- **DATA (B) +** – ModBus signal cable B
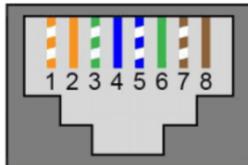
Solar inverter with AC power and a heat pump
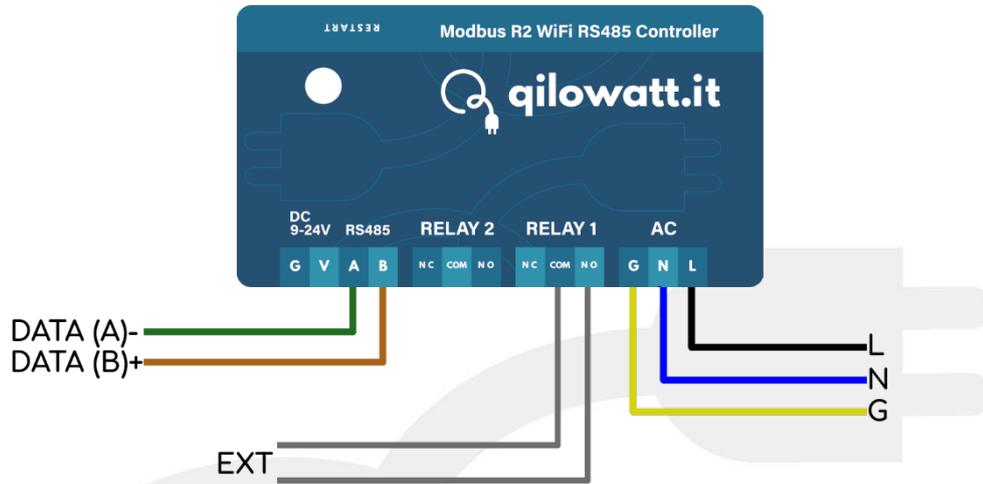
Legend:
L – phase
N – neutral
G – ground
DATA (A) - – ModBus signal cable A
DATA (B) + – ModBus signal cable B
EXT – potential-free contact connection (e.g. heat pump input)

Solar Inverter connection examples

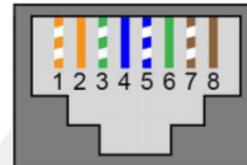## Deye / Sol-Ark / SunSynk
(with older firmware))

MODBUS

1	RS485 B
2	RS485 A
3	GND
4	CAN Hi
5	CAN Lo
6	GND
7	RS485 A
8	RS485 B

Deye / Sol-Ark / SunSynk
(with newer firmware))

BMS

1	RS485 B
2	RS485 A
3	GND
4	CAN Hi
5	CAN Lo
6	
7	
8	

SolaX X1 / QCells HYB series
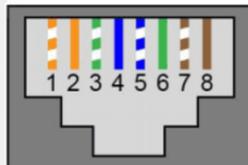
1	-
2	COM / DRM0
3	GND
4	RS485 A
5	RS485 B
6	E_STOP
7	REFGEN
8	-

SolaX X3 HYB series
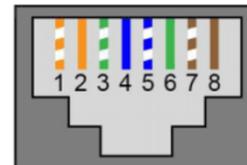
1	Dry contact A in
2	Dry contact B in
3	+13V
4	RS485 A
5	RS485 B
6	GND
7	Dry contact A out
8	Dry contact B out
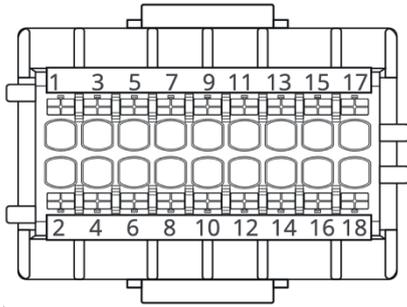
Goodwe ET/BT series
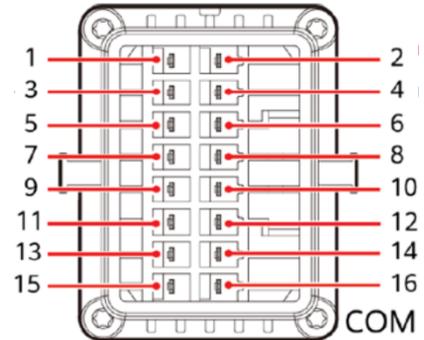
2	RS385-1 B	1	RS485-1 A
4	DRM 2/6 või DIN2	3	DRM 1/5 või DIN1
6	DRM 4/8 või DIN4	5	DRM 3/7 või DIN3
8	REFGEN / REF_2	7	COM/DRM0/REF_1
10	GND-S	9	Remote shutdown
12	LG_EN-	11	LG_EN+
14	-	13	-
16	-	15	-
18	DO+	17	DO-

Huawei SUN2000 series

1	RS485-1 A	2	RS485-2 A
3	RS485-1 B	4	RS485-2 B
5	PE	6	PE
7	RS485 A	8	DIN1
9	RS485 B	10	DIN2
11	-	12	DIN3
13	GND	14	DIN4
15	Remote shutdown	16	GND

Sungrow SG series
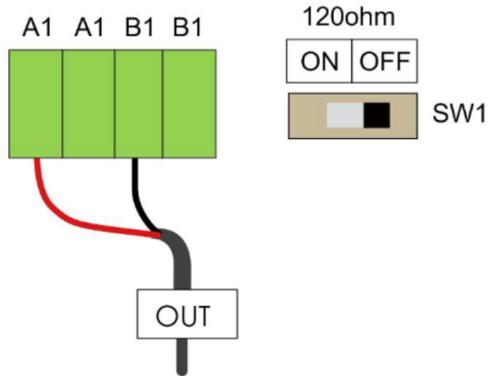
| A1	RS485 A
B1	RS485 B

Sofar G3 / HYD series
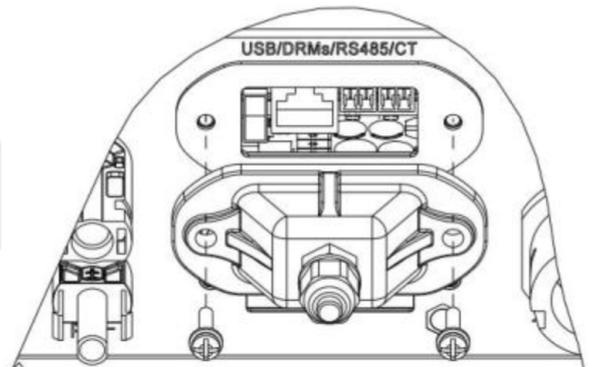
TX-	RS485 A
TX+	RS485 B

Connecting to a WiFi network

1. Upon the first connection to the device´s power supply, the device will start to create the "Qilowatt-XXX" Wi-Fi network. Connect the smart device to this Wi-Fi network.

2. Create an account in the https://app.qilowatt.it application.

3. Press "Sign in to Wi-Fi network" or an equivalent option depending on the operating system. If such an option does not appear, open a web browser (Chrome, Firefox) and enter the website address: **192.168.4.1**

4. The device detects nearby Wi-Fi networks when you first open the app. By clicking on the Wi-Fi network name, the "WiFi Network" text box will be automatically filled.

5. Enter the e-mail address of the user account of the Qilowatt application and the password of the selected Wi-Fi network.

6. After a successful connection, the "Qilowatt-XXX" Wi-Fi network will disappear, the color of the indicator light will change, and the device will appear in the Qilowatt application.
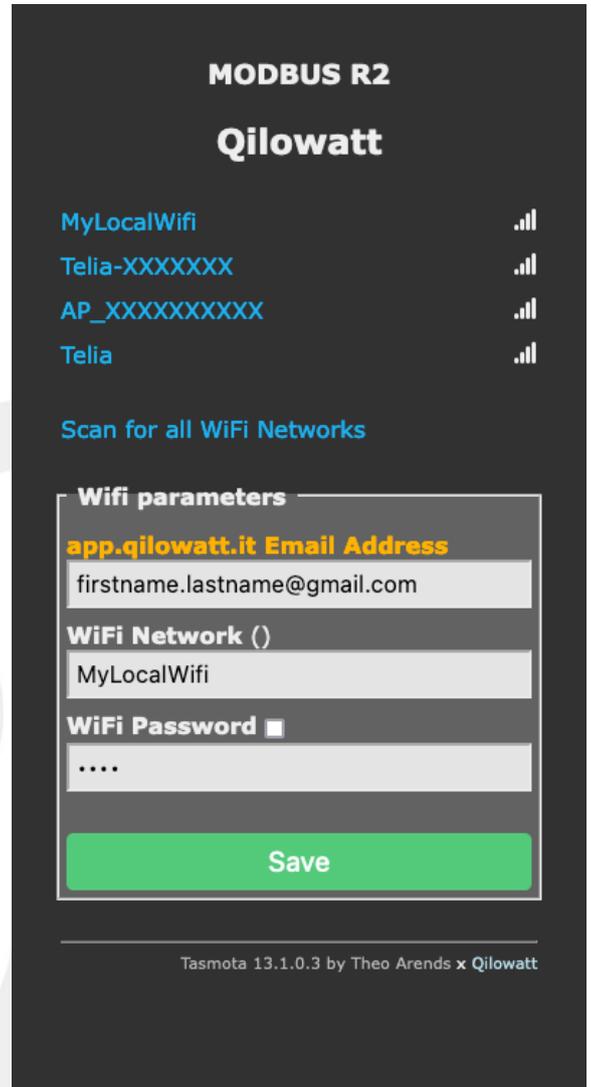
MODBUS R2

Qilowatt

MyLocalWifi

Telia-XXXXXXX

AP_XXXXXXXXX

Telia

Scan for all WiFi Networks

Wifi parameters

app.qilowatt.it Email Address

firstname.lastname@gmail.com

WiFi Network ()

MyLocalWifi

WiFi Password ▪

····

Save

Tasmota 13.1.0.3 by Theo Arends **x Qilowatt**

Error Detection

Indicator light

Colour	Intensity	Explanation	Resolving the error
WHITE	Flashes rapidly	The device starts in the AP setting and is creating the Wi-Fi network "Qilowatt-XXX"	Connect the device to the WiFi network.
GREEN	Flashes rapidly	Software upgrade in progress.	Wait for the software update process to finish.
GREEN	Breathes intensively	ModBus register files are missing.	Select the correct device type and model from the Qilowatt application. Restart the device.
RED	Flashes rapidly	The WiFi connection has been lost	Restart the device. Restart the WiFi router and/or network extender. Check for an internet connection.
ORANGE	Flashes rapidly	The connection to the Qilowatt server has been lost.	Restart the device. Check for an internet connection. Make sure that internet connections are enabled outside LAN.
BLUE	Breathes calmly	Everything is OK	
(missing)		The device does not work	Check the AC or DC supply voltages of the device with a voltage indicator.

Other information

Changing the WiFi network

- If the device is connected to the Internet and to the Qilowatt server, then the WiFi network can be changed in the Qilowatt application under "Device information".
- If the device is not connected to the Internet, the indicator light button on the top of the device must be pressed 6 times at a moderate speed. The device will then start creating a WiFi access point.

Factory reset

- Hold down the indicator light button on the top of the device for 40 seconds or more. After a few moments, the device will perform a factory reset and the white indicator light will start flashing rapidly.

Extra information and feedback

You can always contact us for assistance or to provide feedback.

Choose the most convenient way of contacting us for you:
- From the website https://qilowatt.eu/en/contact
- You can get help with technical questions by calling **+372 5300 4470**.
- Frequently asked questions and solutions regarding the use of the device can be found here https://qilowatt.eu/en/juhendid