

REL.44, Modbus I/O module



The REL.44 module has 2 bi-stable, potential-free 10A relay contacts and 2 low-power solid-state outputs for switching coupled consumers. In addition, there is also a P1 connection for reading the digital meter* and 2 pulse inputs for counting and / or time measuring consumers via impulses.

This module can be wired via Modbus with a MEMo3 and from there configured and controlled. Multiple REL.44 can be connected to the MEMo3 web server.

The REL.44 is a 'Modbus slave' i/o module and can therefore also be used to connect with any Modbus master, as Modbus relay, but also as P1 to Modbus and/or pulse to Modbus interface. The list of Modbus registers can be found on the 2-wire website.

The push button on the front serves to (temporarily) pair the REL.44 with WiFi to download the latest firmware.

*REL.44 is compatible with all Belgian and Dutch digital meters.

Via P1, REL.44 reads:

- Consumption import high rate
- Consumption import low rate
- Consumption export high rate
- Consumption export low rate
- Rate (high or low rate)
- Consumption of gas (if measuring device is present)
- Consumption of water (if measuring device is present)
- Consumption import high + low rate
- Consumption export high + low rate
- Consumption import – export (positive or negative)

1. Connect:

Power supply: [1] Always first connect the optional 9–15 ±10% Volt DC power supply and only then [2] P1 port input with galvanic isolation with RJ12 cable (max 3 meters). **Only** with a Belgian or a

DSMR 5.x digital meter one does NOT need to connect an external 15 VDC power supply*

*Provided that the digital meter provides sufficient power: the COM LED must first be constantly lit to flicker on/off after approx. 10sec. If there is not enough power from the digital meter, the REMI will restart itself after about 3 minutes of charging, or disconnect itself and only connect when all LEDs are off.

Modbus: [3] shielded EIB bus cable 4x 0.5mm² use and respect the color code GAB=black, yellow and white. ReMi or set as Modbus master with 2-WIRE meters, or Modbus slave in a MEMo3 setup, not both simultaneously.

Pulse IN: [4] 2x NO potential-free reed contact, 0-5v/2mA, cable max. 2 meters, section 2x0.5mm². Pulse duration min. 100msec, max. 10 pulses/hour.

Pulse-OUT: [5] 2x low power solid state contact with optical isolation, max. 24 VDC/5mA, cable max. 2m, section 2x0.5mm². Generates via logic either consumption pulses of P1 meter, or a low-power switching contact.

Relay output: [6] 2x bi-stable potential-free 10A/230V relay contact up to max. 2300 Watt ohmic load, or use as release contact to the control of eg heat pump, charging station, boiler, accumulation,... Connection wire min. 0.25mm² ... Max. 2.5mm².

Please note:

- **Mono-phase module:** connect both contacts to the same phase!
- **Bi-stable:** in case of voltage interruption, they retain their position!
- LED:[7]PWR:power status, COM:Communication, R1 and R2: status relays.

Antenna: On the SMA connector the WiFi antenna screws, when mounted in metal cabinet order the optional antenna with magnetic base.

2. Configuration in MEMo3b via tablet or PC:

See also MEMo3 manual 1.3.

In summary:

1. Login as installer under Level3: password 'Level3' and then 'CANCEL'
2. Create a channel with 'ADD CHANNELx'

Select Choice (Level3)

Pass Word:

Group Name / Channel Nr:

ADD GROUP 2 **DELETE GROUP 1** **RENAME GROUP 1**

ADD CHANNEL 8 (3) **DELETE CHANNEL** **CANCEL**

CH 3	REL44 4	P1 port 7	VOLT	CURRENT	POWER	STATUS	—	KWh+	—
ADR/CH	DAG MAAND	LOW	0 V	0.00 A	0 W	0	—	0.00 kWh	0.00 kWh
GENERATE RT		Address	SubAddress	MQTT-SN	P1 Type 1-8	Protocol 2-4-6	Par1	0	Para3
		2	5	44R00770	6	3	6	0	0
TEST RX									
SAVE	LOAD	2		P1 rel44 EXPORT					

44R00770	FW 21.9.7.3	ADRES	2
		P1 protocol	BE
		Input1	Pulse
		SEND	Input2 Not Used

3. When the channel appears click on the CHx button so that the channel configuration opens see figure
4. As a module type you choose 'REL 44'
5. Enter Modbus address and that MUST be the same for all channels of this REL.44 module
6. Enter the serial number e.g. '44R00770'
7. As a fashion you choose either:
 - a. 'P1 port' and complete P1 Type and Protocol (Belgium=6)
 - b. 'Bi-stable', choose Relay 1-4, at para3 power in Watts
 - c. 'Counter', choose IN1 or 2, give at para 3 pulse weight
 - d. 'Time', choose IN1 or 2, at para3 consumption after 1 hour
8. Press 'SEND'
9. Press 'SAVE'

Below is an example with 3 channels of the same REL.44 module.

CH 2	REL44	P1 port	VOLT	CURRENT	POWER	STATUS	—	KWh+	—
ADR/CH	DAG MAAND	LOW	0 V	0.00 A	0 W	0	—	0.00 kWh	0.00 kWh
GENERATE RT		Address	SubAddress	MQTT-SN	P1 Type 1-8	Protocol 2-4-6	Par1	0	Para3
		2	2	44R00770	6	5	6	0	0
TEST RX									
SAVE	LOAD	2		P1 rel44 EXPORT					

44R00770	FW 21.9.7.3	ADRES	2
		P1 protocol	BE
		Input1	Pulse
		SEND	Input2 Not Used

CH 4	REL44	P1port	VOLT	CURRENT	POWER	STATUS	—	KWh+	—
ADR/CH	DAG MAAND	ON	0	0 W	—	—	—	0.00 kWh	0.00 kWh
GENERATE RT	2	Address	SubAddress	MQTT-SN	RELAY 4	Par1	Par2	Par3	100
		0	0	44R00770	1	0	0	0	100
TEST RX									
SAVE	LOAD	4		R1 rel44					

44R00770	FW 21.9.7.3	ADRES	2
		P1 protocol	BE
		Input1	Pulse
		SEND	Input2 Not Used

CH 5	REL44	Teller	POWER	—	—	—	—	KWh+	—
ADR/CH	DAG MAAND	OFF	0 W	—	—	—	—	0.00 kWh	0.00 kWh
GENERATE RT	2	Address	SubAddress	MQTT-SN	Port 1/2	Par1	Par2	Par3	1000
		0	0	44R00770	0	0	0	0	1000
TEST RX									
SAVE	LOAD	5		Pulse1 rel44					

44R00770	FW 21.9.7.3	ADRES	2
		P1 protocol	BE
		Input1	Pulse
		SEND	Input2 Not Used

3. Pairing with WiFi for upgrade

REL.44 is controlled via Modbus from the MEMo3 module. The connection with WiFi is only necessary if you want to upgrade.

Once REL.44 is connected correctly (see power supply REL.44) the green PWR LED will be constantly lit followed by the orange COM LED which after about 10 sec. flickers on/off every second. To REL.44, the 'WiFi access point' mode can be applied for about 5 seconds to press the JOIN/UPGR button until the orange LED is constantly lit. REL.44 now becomes "WiFi access point".

NOTE: WiFi range: Make sure that during WiFi connection and also during firmware upgrade the distance between REL.44, router, smartphone or PC is as short as possible!!!

NOTE: Change existing WiFi link: Orestart and then press the JOIN/UPGR button after 2-3 seconds (approx. 5 sec) until the COM LED remains solidly lit. REL.44 now becomes "access point".

OER.44 ACCESSPOINT:

Choose 'networks' on your laptop, smartphone or tablet and if it works well, the list should now say: '2-WIRE-REL04'. **Select this network.** When asked for a key (password): 'adminREL04'.

Automatically your web browser opens and after a maximum of 1-2 minutes you will be redirected to a **DIRECT** page where you can then enter the IP settings.

N.B.: If this does not work automatically, surf to 192.168.4.1 (type in the browser toolbar). If it does not work immediately, try to pair via smartphone or tablet and be sure to check the Wi-Fi signal. Also check if the COM LED is continuously lit.

DIRECT PAGE**2WIRE-REL04**

WiFiManager



Once on the redirect page, click on '**Configure WiFi'** and a list of networks in your vicinity will appear. You can now select your WiFi network from the list (SSID), and also enter the password of your network. After serving, press **SAVE** and you will receive the confirmation.

You may need to restart now and REL.44 is now connected to your WiFi network. You now get an orange LED which gives a heartbeat every 5 seconds. You can now upgrade by pressing the JOIN/UPGR button for approx. 5 seconds until the LED is continuously lit.

4. General remark:

- Pre-activate the Belgian digital meters [on the Fluvius website](#) to open power and data to the P1 port.
- If no digital meter or digital meters with DSMR 4.x: then connect the optional 15VDC power supply.

5. Modbus registers:

REL.44 can be used as a Modbus slave module and can serve as:

- Relay module puts 2x 10A/230V in 2x Solid-state relay
- P1 port to Modbus interface
- Pulse input to Modbus interface

The list of Modbus register can be found on the product page on the 2-Wire website.

6. Technical data:*General:*

- WiFi network 802.11 b/g/n/e/i (2.4 GHz) , which needs internet access. Built-in antenna.
- Tx pwr:802.11b:+20dBm, 802.11g:+17dBm, 802.11n:+14 dBm
- Rx Sensitivity:802.11b: -91 dbm (11 Mbps) 802.11g: -75 dbm (54 Mbps), 802.11n: -72 dbm (MCS7)
- Security: WPA/WPA2, Encryption: WEP/TKIP/AES
- Network Protocol: IPv4, TCP/UDP/HTTP/FTP
- Built-in time clock daily synchronous with an NTP clock.
- 2 digital inputs potential-free (pulse or time base)
- 2 optically isolated pulse outputs max. 24VDC/max 5mA
- Connector for external power supply 8-15V/1A
- Modbus master of slave configurable
- 2 bi-stable relay-OFF 10A/230V potential-free, max.2300Watt ohmic load. Transfer voltage to bus 3kV
- 16 log channels, 10 days with 5 min.-, 1 year with day resolution.
- Included: 3 meter **RJ12/6p6c** cable (power supply from >DSMR 5)

Operating conditions:

- Operating temperature range: 5 °C to 40 °C, indoor mounting
- Maximum humidity: 80 %, no condensation, Max.: 2000m

Physical properties:

- Housing: plastic, self-extinguishing UL94-V0
- Degree of protection: IP20, EN 60529
- Dimensions: 2 DIN rail modules ca 75 grams

Quality marks:

- CE : According to EMC and low voltage directive: RE EMC: ETSI EN 301 489-17 V3.2.4; EMC : EN 61326-1:2013, Safety: EN 61010-1:2010 + A1:2019; RoHS.

7. Installation prescription

The installation must be carried out by an approved installer and in accordance with the applicable regulations.

During installation, the following must be taken into account (non-exhaustive list):

- the applicable laws, standards and regulations.
- the state of the art at the time of installation.
- this manual which mentions only general provisions and should be read in the context of each specific installation.
- the rules of good workmanship.

This manual must be attached to the electrical installation file. On the 2-Wire website you can always find the most recent manual of the product.

8. Support

Do you want to exchange the product in case of a possible defect? Then contact your wholesaler or order a "review module" online.

9. Warranty provisions

The warranty period is two years from the date of delivery. The delivery date is the invoice date of purchase of the product by the consumer. If no invoice is available, the production date applies. The consumer is obliged to inform Qonnex bvba in writing about the lack of conformity, and this at the latest within two months after discovery. In the event of a lack of conformity, the consumer is only entitled to a free repair or replacement of the product, which is determined by Qonnex. Qonnex is not responsible for a defect or damage as a result of incorrect installation, improper or negligent use, incorrect operation, transformation of the product, maintenance in violation of the maintenance instructions or an external cause such as moisture damage or damage due to overvoltage. The mandatory provisions in national legislation on the sale of consumer goods and the protection of consumers in countries where Qonnex sells directly or through distributors, agents or permanent representatives take precedence over the above provisions.

Qonnex sprl
B-9310 Aalst,
Belgium
info@2-wire.be
www.2-wire.net