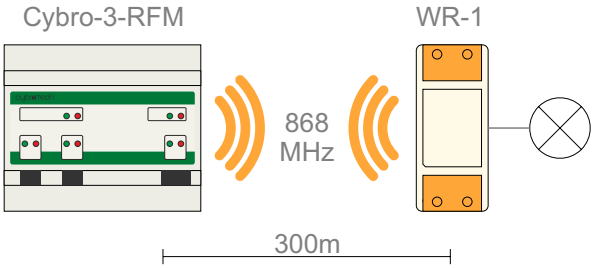
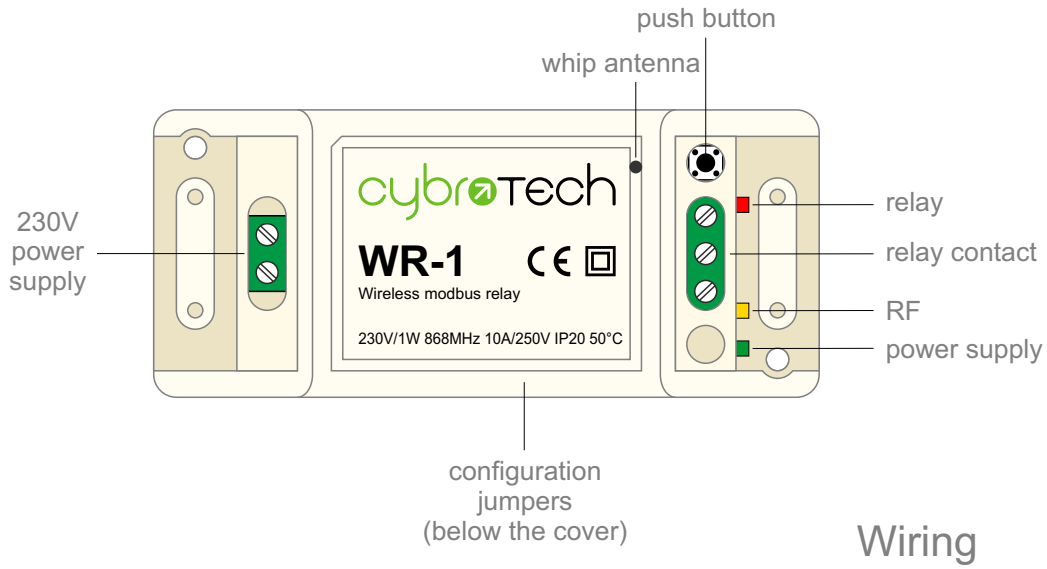
WR-1

Wireless modbus relay

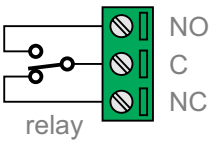
Features

- remote controlled relay
- act as modbus RTU slave
- very long range, no hopping
- up to 8 relays per network
- protected private connection
- multiple addressable groups

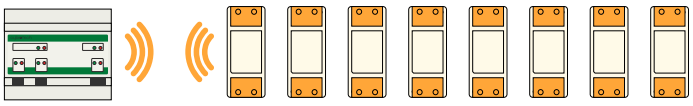




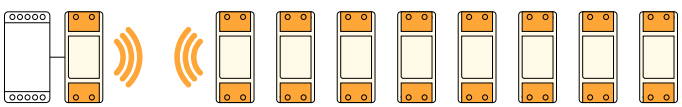
Wiring



Examples



Cybro-3-RFM, acting as modbus master, connected to 8 wireless relays (200..207).



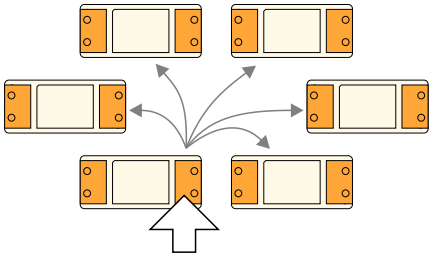
Any modbus master, connected to 8 relays using WM-1 device as wireless adapter.

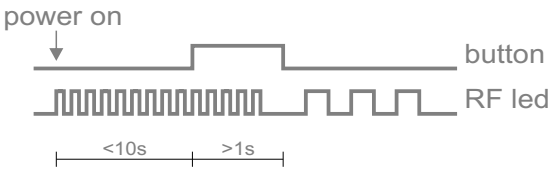
Radio configuration

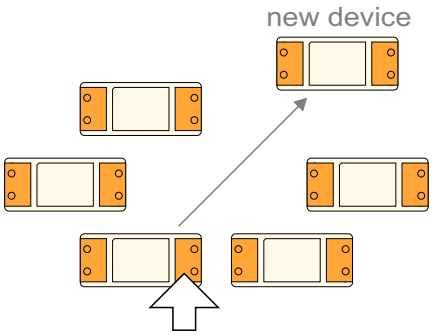
Create a new secure group

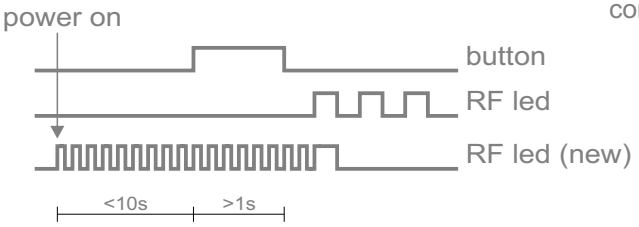
- turn on all devices at the same time
- within 10 seconds, while RF led is blinking, press and hold button on one of the devices

After a second, the new address is randomly generated and sent to all devices. RF led will blink 3 times, to confirm the new address.









Add new device to the group

- turn on new device
- within 10 seconds, press and hold button on one of the existing devices

After a second, the existing group address is sent to the new device. RF led will blink 3 times, to confirm the address is sent.

Relay on/off

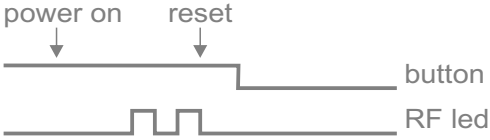
- press the button shortly

With each press of the button, the relay will switch on/off. Other devices are not affected.

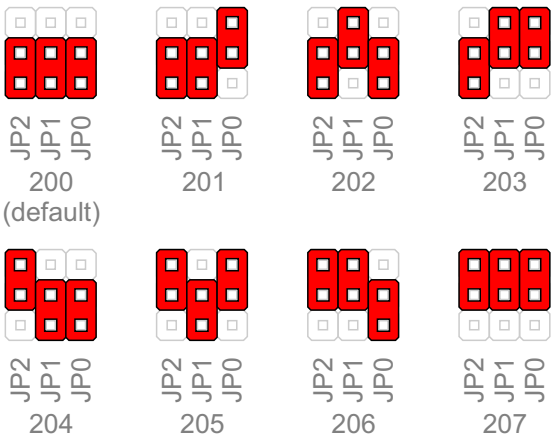
Factory reset

- hold the button and turn device on

RF led will blink twice. Group address is now reset to default. Other devices are not affected.



Modbus address

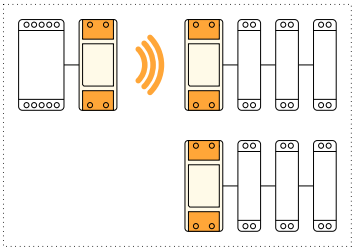


Change is applied right away, no reset needed.

Message example

Relay on: C8 05 00 00 FF 00 9D A3
Relay off: C8 05 00 00 00 00 DC 53

Secure group



By default, all devices are in the same group, they listen to each other. To separate your devices, for each modbus master create a new secure group. Once the group is created, no other device can listen or interfere with your data.

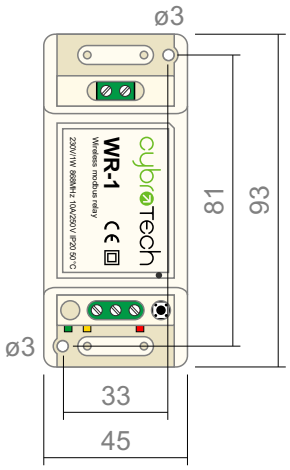
Groups share the same bandwidth. To avoid collisions, keep the traffic low or synchronize masters so that messages don't overlap.

Frequency subband

865.0-868.6	868.7-869.2	869.3-869.4	869.4-869.6	869.7-870.0
1%	0.1%	1%	10%	100%
25mW	25mW	10mW	500mW	5mW

Device uses L subband, which allows 1% utilization and 25mW output power

Mounting



Device should not be installed inside the metal cabinet. Distance from antenna to the nearest object should be at least 10cm.

Technical specifications

Modbus

Address range	200..207
Relay mapping	coil 1 (start address 00h)
Data bits & parity	8n1
Supported functions	01 - read coils 05 - write single coil 15 - write multiple coils

Relay output

Nominal rating (resistive)	10A 250Vac (NO), 3A 250Vac (NC) 5A 30Vdc (NO), 3A 30Vdc (NC)

Radio

Frequency band	ISM 868MHz (EU)
Subband	L 866.8MHz, 1% utilization
Modulation	FSK, 160kHz bandwidth
Listen before talk	yes, delay limited to 20ms
Group address	32-bit, automatically generated
Connection time	10s power-on to network ready
Message delay	5ms from tx start to relay on
Output power	25mW
Operating range	300m with optical visibility

General

Power supply	230V, 50..60Hz, 1W
Terminals	0.25..1.5mm2
Operating conditions	-20..+50°C, 0..85% rh nc
Storage temperature	-40..+85°C
Dimensions	93x45x27mm, 86mm antenna
Weight	100g
Degree of protection	IP20
Standards	EN 60730-1, EN 300 220-2, EN 301 489-1, EN 301 489-3

cybroTech