







Embedded Systems SIA, VAT No LV40003411103 47. Katolu str., Riga, LV 1003, LATVIA

Phone: +371 67648888, fax: +371 67205036, e-mail: sales@openrb.com

## CANx / LoRa 433 MHz 6 x 16A Relays, high switch-on current

#### **ENG** - Data sheet

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#### **Application**

6 channel CAN relay extension is designed to be used in building and industrial automation applications as an extension module to LogicMachine series devices based on CAN FT bus and LoRa 433 wireless. The configuration and monitoring of the device is done through separate LogicMachine CANx application. The device is designed for DIN-rail mounting and requires 6 DIN-units.



## Types of product

CAN-R6HC-LoRa CANx / LoRa 433 MHz 6 x 16A Relays, high switch-on current

#### Standards and norms compliance

CE conformity: EMBS-CE-110926/01 Electromagnetic compatibility

EMC: EN61000-6-1

EN61000-6-3

PCT Certificate

#### **Technical data:**

Power supply: 12-32V DC Power supply

Power consumption 200 mW per each relay

Relay contact rating Relays 6

Resistive 16A / 250VAC Incandescent lamp 3000W / 230VAC Inrush current 165A / 20ms

LED 492A / 1.5ms

Interface: USB 1 microUSB for upgrade

firmware flashing

CAN FT 1

Operating elements LED 1 – CPU load

1 - Error

2 - RX/TX LoRa

Relays status LED 6

Relay manual operating

Buttons 6 Programming/reset button 1

Clamps: CAN FT Terminal 0.8mm2

Relays 5 mm2 Power supply 5 mm2

Enclosure: Material: Polyamide

Color: Gray

Dimensions: 61(W)x90(H)x108(L) mm

Protection: IP20 according to EN 60529

Usage temperature: -5C ... +55C Storage temperature: -20C ... +70C

Net weight: 160g Gross weight: 170g



## Caution

#### **Security advice**

The installation and assembly of electrical equipment may only be performed by skilled electrician. The devices must not be used in any relation with equipment that supports, directly or indirectly, human health or life or with application that can result danger of people, animals or real value

### Mounting advice

The devices are supplied in operational status. The cables connections included can be clamped to the housing if required.

#### **Electrical connection**

The devices are constructed for the operation of protective low voltage (SELV). Grounding of device not needed. When switching the power supply on or off, power surges must be avoided.

#### **Default settings**

Line ID: 0

Node ID: 1

Max. number of group addresses per object: 16

#### Reset to defaults

Press programming button for 5 seconds, the RED LED blinks 2 times, then release button - GREEN lights up shortly.

### **Programming physical address**

Press programming button shortly, GREEN LED lights up. After you have programmed address from canX application, it will automatically switch off the LED.

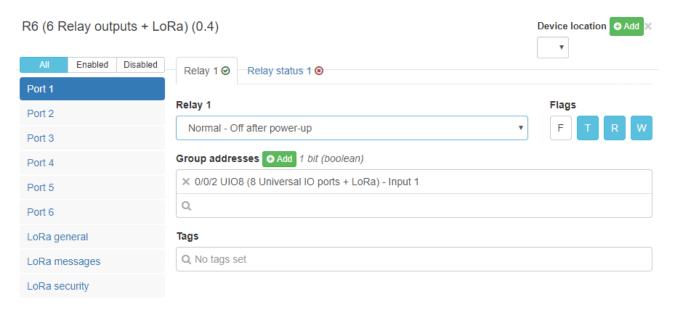
# **Connection diagrams**

CAN FT connection and power supply

## Lamp / motor / etc. connection

## 1. canX software settings

### 1.1. Relay





Default flags: read (R), write (W), transmit (T)

## Relay mode:

Normal – Off after power-up

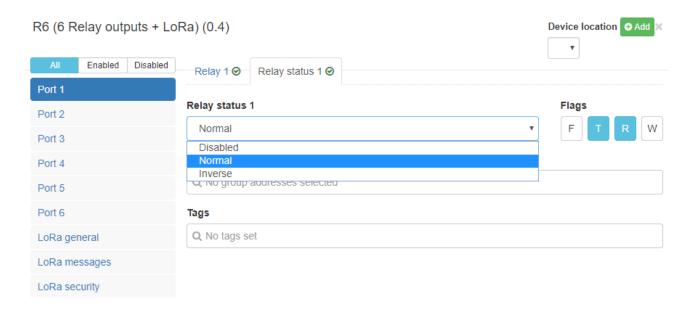
Inverse – Off after power-up

Normal – On after power-up

Inverse – On after power-up

*Group addresses* – you can assign group addresses from the predefined list or add manually by clicking on ADD button. You can assign max 16 group addresses to one object / output.

### 1.2. Relay status



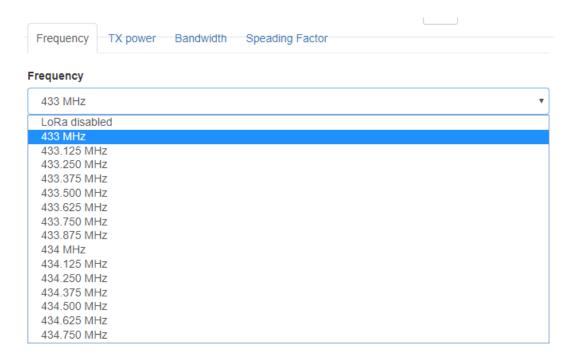
Default flags: read (R), transmit (T)

Output status: Disabled, Normal, Inverse

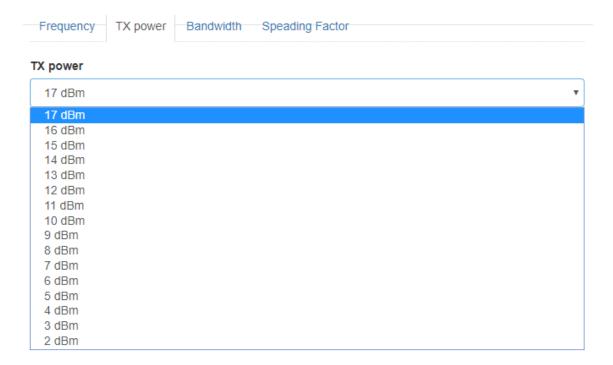
*Group addresses* – you can assign group addresses from the predefined list or add manually by clicking on ADD button. You can assign max 16 group addresses to one object / relay status

### 1.3. LoRa General settings

1.3.1. **Frequency** – define the frequency LoRa will operate in. Frequency should be equal on transmitter and receiver(-s).



1.3.2. **TX power** – output power of LoRa transceiver



1.3.3. **Bandwidth** – define the bandwidth of the channel. The lower the bandwidth – the lower the data rate / longer the distance. Bandwith should be equal on transmitter and receiver(-s).



1.3.4. **Spreading factor** - The basic principle of spread spectrum is that each bit of information is encoded as multiple chirps. Within the given bandwidth the relationship between the bit and chirp rate for LoRa modulation may differ between spreading factor (SF) 7 to 12. Spreading factor should be equal on transmitter and receiver(-s).



#### 1.3.5. Date rates

Best case: SF7 / 500 kHz = 16ms per message (22 kbps) Default: SF7 / 125 kHz = 62ms per message (5.5kbps)

Worst case: SF12 / 125 kHz = 1300ms per message (0.3 kbps)

2x increase in bandwidth provides 2x less air time SF+1 takes approximately 2x more air time compared to previous SF

- 1.4. LoRa Messages
- 1.4.1. **ACK mode** message acknowledgement mode

ACK disabled - no ACK will be done (faster and less reliable communication)
ACK enabled - each message will be acknowledged (slower, more reliable)
ACK gateway mode – the node will retransmit ACK to the next node

ACK mode Filter mode Statistics **⊙** 

#### ACK mode

ACK disabled (faster, less reliable)

ACK disabled (faster, less reliable)

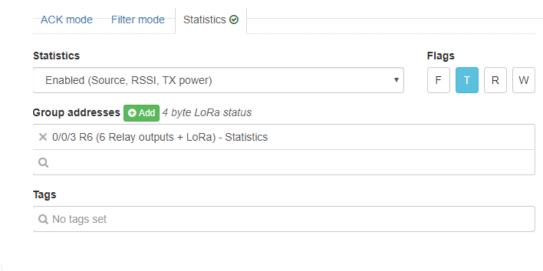
ACK enabled (slower, more reliable)

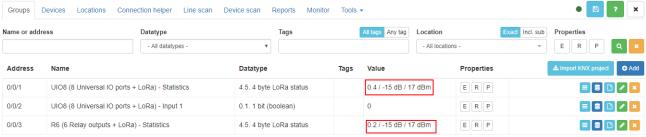
ACK gateway mode (slower, more reliable)

1.4.2. **Filter mode** – define either to pass messages with F (Filter) flag enabled in object settings



1.4.3. **Statistics** – receive statistic information to group address – source address / RSSI signal level / TX power. Statistics telegram can be sent on all valid telegrams which are received by LoRa.



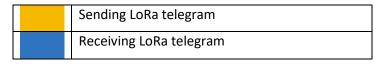


1.5. **LoRa Security** – define security key 1 or/and key 2 in HEX form. Up to 8 HEX characters are supported for each of the keys. Encryption keys must be equal for all LoRa devices on the same line



#### 1.6. **Notification LEDs**

During transmission you can see two LEDs on LoRa device



- In case statistics is enabled on receiver device and CAN FT line is disconnected from it, both LEDs will light up (receiving telegram from sender, sending telegram with statistics).
- In case ACK is enabled, both orange and blue LEDs will light up.