

**QUICK INSTALLATION MANUAL**  
**ROUTER BRIDGE MODBUS RS485**  
**PRODUCT CODE: ZR-BR-485-EM**  
**ROUTER FOR ZB-CONNECTION RADIO NETWORK**

### 1) GENERAL DEVICE CHARACTERISTICS

Router-Bridge Modbus RS485 device (ZR-BR-485-EM) is part of the family of wireless radio devices 4-noks/MODBUSPRO.

Its task is to permit communication with standard Modbus devices using ZB-CONNECTION network infrastructure.

The device requires an uninterruptible 12-24 Vac or Vdc power supply.

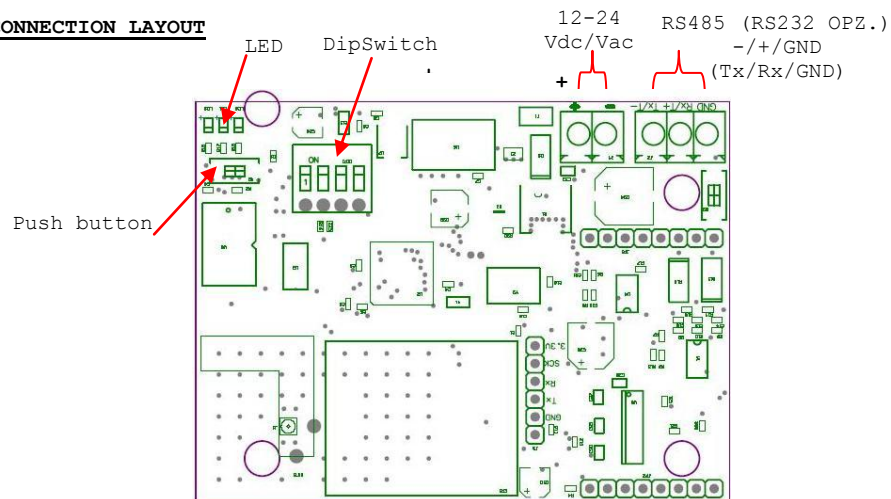
For network purposes, it has the active function of maintaining radio traffic from and to other similar devices and it can also act as a parent device for battery-powered sensors of the same family.

### 2) DEVICE ELECTRICAL CHARACTERISTICS

POWER SUPPLY: 12-24 Vdc/Vac ( $\pm 10\%$ ); 100mA; 50/60Hz

WIRELESS CHARACTERISTICS: 2405 MHz  $\div$  2480 MHz  
 DSSS Modulation  
 Nominal transmission Power 0 dBm  
 IEEE 802.15.4 compliant  
 Stack EmberZNet3.5.0  
 Stack version 0  
 Proprietary profile ID  
 Proprietary encryption key  
 CONNECTIONS: Pull-out terminals (3,81 mm pitch)  
 PROTECTION CLASS: IP55

### 3) CIRCUIT BOARD AND CONNECTION LAYOUT



### 4) DEVICE ADDRESSING

The device has not an address

### 5) ASSOCIATING THE DEVICE TO A COMPATIBLE NETWORK

The process to be followed to join Router-Bridge to a network is the same as for all types of ZB-CONNECTION routers.

The joining process is activated automatically by the device if the node does not have network parameters, this happens if the device is new or if it has been voluntarily disassociated.

The joining process consists in scanning all 16 radio channels, in search of an "open" and compatible network (a ZB-CONNECTION network).

Scanning continues about 20 seconds. At the end of the scanning process if the joining process terminates unsuccessfully, then device resets and the joining process re-starts.

Network opening is performed by stimulating the Gateway (for further information, refer to the document relating to the Gateway).

### 6) DISASSOCIATING THE DEVICE FROM THE NETWORK

Device disassociation causes the loss of network parameters, with the consequent exiting of the device from the network it belongs to.

Disassociation can be commanded in two ways:

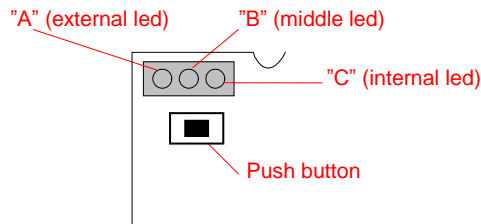
- 1) Receipt of the appropriate command password.
- 2) Holding the pushbutton on the card down for at least 6 seconds. Disassociation using the push-button is only possible within 20 seconds from when the device is switched on.

## 7) LED/PUSH-BUTTON INTERFACE

The Router-Bridge has three leds through which them is possible obtain information on the device's operating state.

Furthermore, the Router-Bridge has a push-button which makes it possible to send commands to the device.

Nomenclature of Router-Bridge leds:



### Behaviour of leds at the start-up:

At the reset of Router-Bridge all leds lighted for 2 seconds, then all leds flash fast for another 2 seconds.

At the end of flashing device starts the normal functioning.

### How the leds function when the Router-Bridge is NOT on the network:

Led "A" on lighted steady, leds "B" and "C" off

### How the leds function when the Router-Bridge is on the network:

#### Led "A": Working State

Slow flashing (1Hz) -> Closed Router

Fast flashing (4Hz) -> Opened Router

#### Led "B" (middle led): Radio Link

Turned off -> No router with good link in the proximity

1 flash -> One router with good link in the proximity

2 flashes -> Two routers with good link in the proximity

3 flashes -> Four or more routers with good link in the proximity

#### Led "C": Radio Activity

Usually turned off

Shortly Lighted on transmitting or receiving a radio message

## 8) CHARACTERISTICS OF MODBUS DEVICES CONNECTED WITH THE ROUTER-BRIDGE

Router-Bridge can connect to the ZB-CONNECTION Gateway one or more Modbus devices.

The attached devices must comply to ModBus-RTU standard.

The Modbus devices are interfaced with the Router-Bridge by the RS485 port.

Data bits: 8  
Handshaking: none

The remaining communication parameters must be definite by setting up the 4 DIP-SWITCH on the Router-Bridge according to the following table:

| DIP1 | DIP2 | DIP3 | DIP4 | Speed | Parity | StopBits |
|------|------|------|------|-------|--------|----------|
| OFF  | OFF  | OFF  | OFF  | 9600  | none   | 2        |
| ON   | OFF  | OFF  | OFF  | 19200 | none   | 2        |
| OFF  | ON   | OFF  | OFF  | 9600  | even   | 2        |
| ON   | ON   | OFF  | OFF  | 19200 | even   | 2        |
| OFF  | OFF  | ON   | OFF  | 9600  | none   | 2        |
| ON   | OFF  | ON   | OFF  | 19200 | none   | 2        |
| OFF  | ON   | ON   | OFF  | 9600  | Odd    | 2        |
| ON   | ON   | ON   | OFF  | 19200 | Odd    | 2        |
| OFF  | OFF  | OFF  | ON   | 9600  | none   | 1        |
| ON   | OFF  | OFF  | ON   | 19200 | none   | 1        |
| OFF  | ON   | OFF  | ON   | 9600  | Even   | 1        |
| ON   | ON   | OFF  | ON   | 19200 | Even   | 1        |
| OFF  | OFF  | ON   | ON   | 9600  | None   | 1        |
| ON   | OFF  | ON   | ON   | 19200 | None   | 1        |
| OFF  | ON   | ON   | ON   | 9600  | Odd    | 1        |
| ON   | ON   | ON   | ON   | 19200 | Odd    | 1        |