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WM SYSTEMS WM-E LCB IoT Load Control Switch Installation Guide

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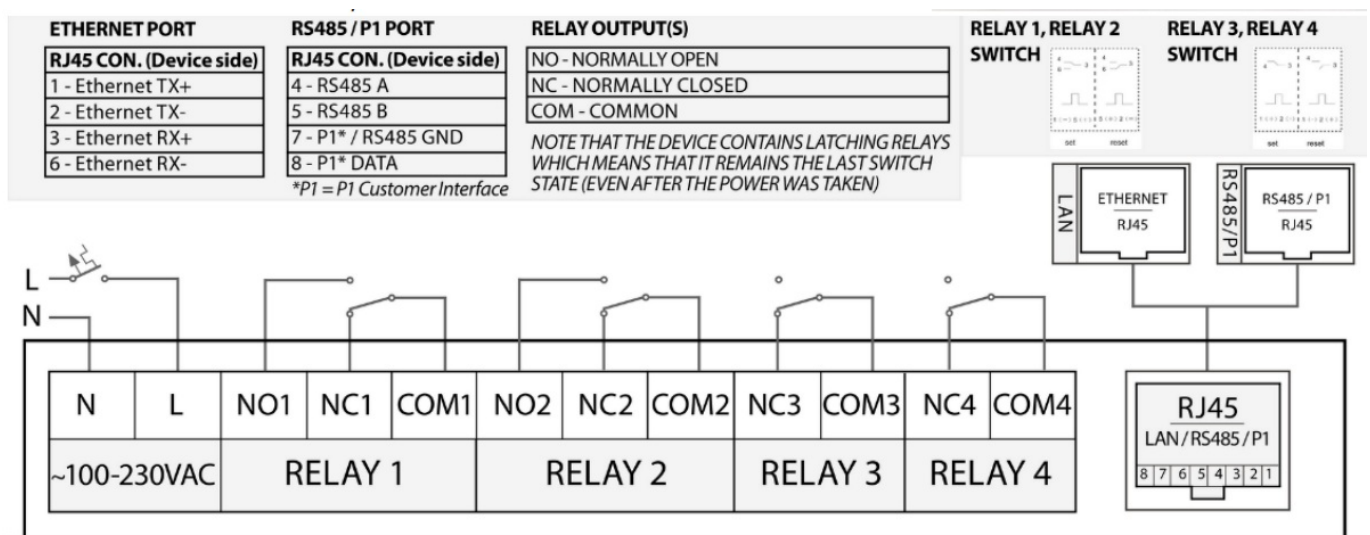
INTERFACES

- Power supply – AC power input, 2-pins terminal block
- Relay 1..2 – latching relay, 16A 250V AC, switch modes: NO, NC, COM, terminal block
- Relay 3..4 – latching relay, 16A 250V AC, switch mode: NC, COM, terminal block
- RJ45 connector features:
    - Ethernet – 10/100MBit, RJ45 port, by UTP Cat5 cable
    - RS485 – for external devices by Y-shaped cable
    - P1 interface – for smart meters by Y-shaped cable
- LED1..LED4/WAN – Status LEDs
- SIM – Push insert SIM card slot (mini SIM, type 2FF) micro-SD card slot – for memory cards (max. 32 GByte)
- Internal LTE Antenna – adhesive, surface mountable

CURRENT & CONSUMPTION / OPERATING CONDITIONS

- Power input: ~100-240V AC, +10% / -10%, 50-60Hz +/- 5%
- Consumption: Minimal: 3W / Average: 5W / Max: 9W (0.25A)
- Cellular module options:
    - LTE Cat.1: Telit LE910C1-EUX (LTE Cat.1: B1, B3, B7, B8, B20, B28A / 3G: B1, B3, B8 / 2G: B3, B8)
    - LTE Cat.M / Cat.NB: Telit ME910C1-E1 (LTE M1 & NB1 B3, B8, B20)
- Operating / storage temperature: between -40'C and +85'C, 0-95% rel. humidity
- Size: 175 x 104 x 60 mm / Weight: 420gr
- Enclosure: IP52 ABS plastic with transparent terminal cover, can be mounted on rail / to wall

SCHEMATIC FIGURE OF INTERFACES, PINOUT

| ETHERNET PORT	RS485 / P1 PORT	RELAY OUTPUT(S)
RJ45 CON. (Device side)	**RJ45 CON. (Device side)**	NO - NORMALLY OPEN
1 - Ethernet TX+	4 - RS485 A	NC - NORMALLY CLOSED
2 - Ethernet TX-	5 - RS485 B	COM - COMMON
3 - Ethernet RX+	7 - P1* / RS485 GND	*NOTE THAT THE DEVICE CONTAINS LATCHING RELAYS*
6 - Ethernet RX-	8 - P1* DATA	*WHICH MEANS THAT IT REMAINS THE LAST SWITCH*
	P1 = P1 Customer Interface	*STATE (EVEN AFTER THE POWER WAS TAKEN)*

CAUTION! DO NOT CONNECT ~100-240V AC POWER SOURCE to the pigtail AC CONNECTOR (24) OR THE POWER INPUT (12) OF THE DEVICE until you did not finished with the wiring!
WHEN OPEN THE ENCLOSURE, ALWAYS ENSURE THAT THE PCB IS NOT CONNECTED TO THE POWER SOURCE and the supercapacitors are exhausted (LED SIGNALS ARE INACTIVE) BEFORE TOUCH THE PCB!

INSTALLATION STEPS

1. Remove the plastic, transparent port top cover protector (1) by releasing the screw (3) from the top of the enclosure.
2. Slide up the plastic part (1) carefully at the bottom side of the base (2), then remove the top cover (1).
3. Now you can free to connect wires and cables to the ports and interfaces. Carefully open up the plastic hooks (12) of the base enclosure (2) by a screwdriver.
4. Now the plastic base can be seen with the assembled PCB (4) inside. Open up the PCB (4) and remove from the base (2), then turn the PCB upside down. Now you can see the bottom side of the PCB.
5. Insert a mini SIM card (activated with APN) into the the SIM holder (23). Check the figure on next page: the SIM's cutted edge must be oriented to the PCB and the SIM chip looks down. Insert and push the SIM until it will be fastened (you will hear a click sound).

6. You can use a micro-SD card if you want (optional). Then insert the memory card into the mini-SD card slot (22) and push until it will be fastened securely.
7. Now turn back the PCB and place back into the enclosure base (2).
8. Check on the PCB that the LTE antenna cable (16) is connected to the Antenna RF connector (15).
9. Place back the removable white ABS plastic top part to the base (2) – check that the hooks (12) are closing.
10. Do the wiring according the needs – based on the schematic figure (above).
11. Connect the AC power chord (AC pigtailed connector) wires (24) to the first two pins (5) of the device (from left to right): black to N (neutric), red to L (line).
12. Connect the lighting unit relay wires (25) of the street light cabinet box – to the required relay outputs (6).
    Note that the RELAY 1..2 are latching relays, which allows the NO, NC, COM connection and switching modes, while the RELAY 3..4 having only NC, COM connection and switching mode.
13. Connect the Y-shaped UTP cable (27) – for Ethernet / RS485 / P1 – or a direct UTP cable (26) – for Ethernet only – to the RJ45 port (7) – according to the needs. The other side of the Ethernet cable should be connected to your PC or the external device you want to connect.
    Note, that RS485 / P1 interface wires are standalone sleeve swing wires (28).
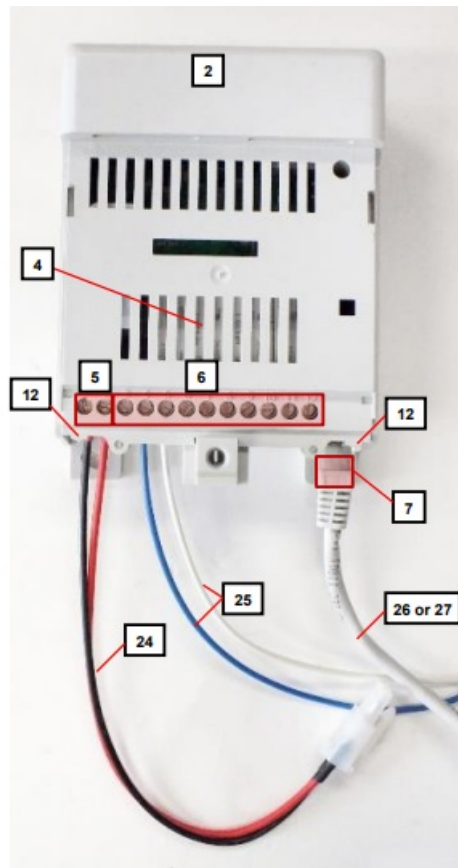
14. Connect the RS485 to the external device. The P1 interface is available for connecting an electricity meter / smart metering modem.
15. Place back the plastic transparent terminal top cover (1) to the base (2).
16. The device enclosure contains a two-type of fixation, which are to be intended to mount to rail or using a 3-point fixation by screws, or using the hook (in hanging position to a wall / into the street light cabinet box).
17. Plug the 100-240V AC power supply to the pigtail connector of the AC power cable (24) and to the external power source / electricity plug.
18. The device has a pre-installed system. The current status of the device is indicated by its LED lights (11).
    - **LED LIGHTS** – Check the Installation manual for more info.

- **REL.1:** Relay#1 (mode: NO, NC, COM) SET/RESET available
- **REL.2:** Relay#2 (mode: NO, NC, COM) SET/RESET available
- **REL.3:** Relay#3 (mode: NC, COM) no RESET pin, SET negated
- **REL.4:** Relay#4 (mode: NC, COM) no RESET pin, SET negated
- **WAN LED:** for network connection (LAN/WAN activity)

  Note, that the device has supercapacitor component inside, which provides safe shutdown in case of power outage. In case of a power outage – due to the supercapacitors – has enough power to provide a safe disconnection and shutdown (before the supercapacitors will be exhausted).

  The supercapacitor can be exhausted after an outage or if you store the device for months without connecting power. It must be charged before usage

STARTING THE DEVICE

1. When powering on the device, the recharge of the supercapacitor will be started automatically. The device's system will be started only after the end of the charge process.
2. Connect the Ethernet (UTP) cable between the device's RJ45 interface or its Y-shaped cable adapter and your PC's Ethernet port. (The RS485 device should be connected tot he Y-shaped cable's other port.)
3. Configure the Ethernet interface's on your PC for TCP/IPv4 protocol for setup the IP address: 192.168.127.100 and subnet mask: 255.255.255.0
4. Start the device by the adding the AC power to the power input (5).
5. All the four LEDs will be blank for a few seconds – its normal. (If the device was not used since long time, the supercapacitors must be charged before the microcontroller could start the device.)
6. After a few seconds only the WAN LED will be lighting continously by red until the supercapacitors will be charged (the device still not started). It could take about 1-4 minutes.

7. When the charge has been finished, the device will be started. It will be signed by red lighting of all the relay LEDs (REL.1..4) for 3 seconds and by the WAN LED which is lighting by green shortly. This means that the device has been started.

8. Very soon, when the WAN LED will be blank and all the relay LEDs (REL.1..4) will be continously lighting by red*, that means the device is currently booting. It takes about 1-2 minutes.*Remember, if you already connected a relay, that will sign the current status of the relay by its right status (red means switched OFF, green means switched ON).

9. At the end of the boot process the device can be reached on its network interfaces (LAN and WAN) if they were already configured. If the current network interface is available, it is signed by the WAN LED signal.

10. When the device is accessible on the configured LAN interface, the WAN LED will be lighting continuosly by green. (If it is flashing fastly, it signs network activity on the interface.)
    - When WAN interface was already configured, and APN is connected, the WAN LED will be lighting by red. (If it is flashing fastly, it signs network activity.)
    - If LAN and WAN are accessible, the WAN LED will active by bi-color (red AND green at the same time), apparently by yellow. Flashing signs network activity.

CONFIGURING THE DEVICE

1. Open the device's local website in Mozilla Firefox browser, where the default web user interface (LuCi) address on Ethernet port is: https://192.168.127.1:8888

2. Login with the Username: root , Password: wmrpwd and push to the Login button.

3. Configure the SIM card's APN settings: open the Network / Interfaces menu, WAN interface, Edit button.

4. Fill the SIM #1 APN (APN setting of your SIM card). If you have PIN code on the SIM card that you are using, add the right PIN here. (Ask your Mobile Operator.)

5. Click to the Save & Apply button to store the settings and configuring the cellular module. Soon (~10-60 seconds) the cellular module will be configured regarding the new settings.

6. Then the device will try to connect and register the SIM to the network. The availability of the mobile network will be signed by the WAN LED (lighing / flashing by green – together with the Ethernet LED, apperently yellow (red+ green LED activity at the same time). When the module has been sucessfully registered to the APN, it will be having data traffic on the WAN interface – check at Rx/Tx values. You can check Status / Overview menu, Network part for more details.

7. To configurine RS485 settings, read the User manual.

DOCUMENTATION & SUPPORT

The documentations can be found on the product website: **https://m2mserver.com/en/product/wme-lcb/**
In case of product support request, ask our support at the **iotsupport@wmsystems.hu** email address or check our support website for the further contact opportunities please: **https://www.m2mserver.com/en/support/**

This product is marked with the CE symbol according to the European regulations.
The crossed out wheeled bin symbol means that the product at the end of its life cycle should be disposed of with general household waste within the European Union. Only discard electrical/electronic items in separate collection schemes, which cater for the recovery and recycling of materials contained within. This refers not only to the product, but also to all other accessories marked with the same symbol.

Documents / Resources

	WM SYSTEMS WM-E LCB IoT Load Control Switch [pdf] Installation Guide WM-E LCB IoT Load Control Switch, WM-E LCB, IoT Load Control Switch, Load Control Switch, Control Switch, Switch

References

- ᴹ²ᴹ **IoT Load Control Switch - WM Systems LLC - Innovation in Smart IoT systems**
- ᴹ²ᴹ **Support - WM Systems LLC - M2M / IoT Communication Solutions**

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