WM SYSTEMS WM-E8S System Communication Solutions User Guide

WM-E8S® modem – Quick Reference Guide

Contents

COMMUNICATION PROPERTIES

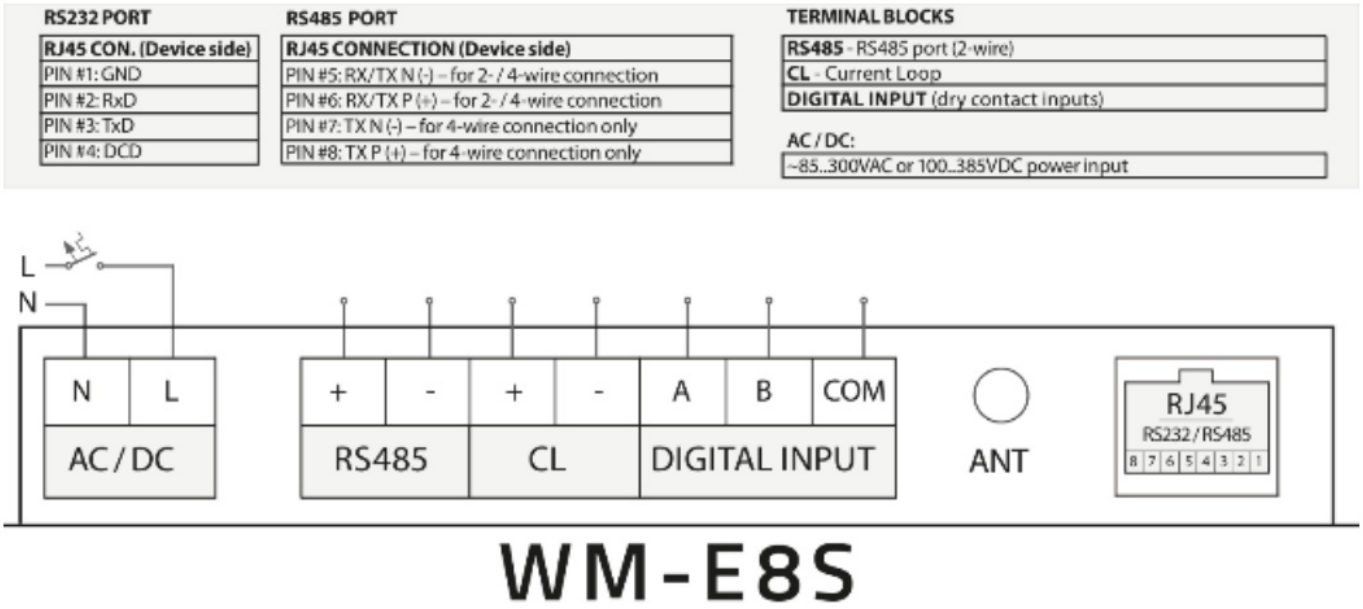
- The WM-E8S external universal modem is a transparent AMR communication equipment with 4G LTE / 2G or LTE Cat.M / Cat.NB / 2G capabilities for automated remote reading of electricity meters. The modem can be connected to any meter type.
- Cellular module: according to the chosen internet module type (see Datasheet)
- SIM-card holder (replaceable push-insert SIM, 2FF type)
- External antenna connector interface: SMA-M (50 Ohm)

CONNECTORS

- AC/DC power input connector for ~85..300VAC / 100..385VDC – terminal block
- RS232 + RS485 port (RJ45 connector, wiring can be requested as 2- or 4-wire)

- RS485 alternative port (2 or 4-wire) – terminal block connector
- CL (current loop, IEC1107 Mode C) – terminal block connector
- DI (2 digital inputs / logical inputs) – terminal block connector
- Order options:
    - RS485 alternative / secondary port (2-wire, terminal block connector)
    - or Mbus interface (terminal block connector) – Mbus master for max. 4 slave

*Instead of optional, alternative RS485 terminal connector shown in the picture, the modem can be ordered with an Mbus interface also.



CURRENT, CONSUMPTION

- The modem can be powered from the AC/DC power input connector
- Power supply: ~85..300VAC (47-63Hz) / 100..385VDC
- Current (stand-by): 20mA @ 85VAC, 16mA @ 300VAC / (Average) 25mA @ 85VAC, 19mA @ 300VAC
- Power consumption: Average: 1W @ 85VAC / 3.85W @ 300VAC

DESIGN & CONSTRUCTION

- IP52 plastic enclosure (according to DIN 43861 part 2) with transparent terminal block cover (protect the ports)
- 6 operation LEDs
- Operational temperature: between -25°C and +70°C, at 0 – 95% rel. humidity / Storage: between -40°C and +80°C, at 0 – 95% rel. humidity
- Dimensions (W x L x H) / Weight: 175 x 104 x 60 mm / 400gr

MAIN FEATURES

- Universal external modem, compatible with any meter type
- Surge protection (up to 4kV) – order option
- Tamper switch for detecting the cover open

- Supercapacitor option (for power outages)

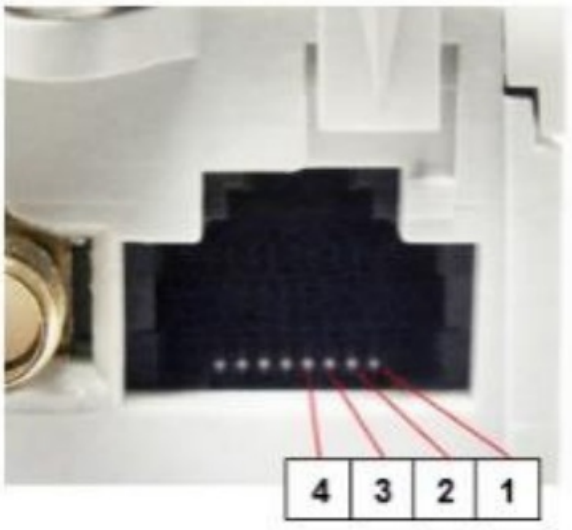
OPERATION

- Transparent communication
- Immediate alarm notification (power loss, input changes)
- Remote & safe firmware updates
- Configuration: WM-E Term software; optionally by Device Manager® software

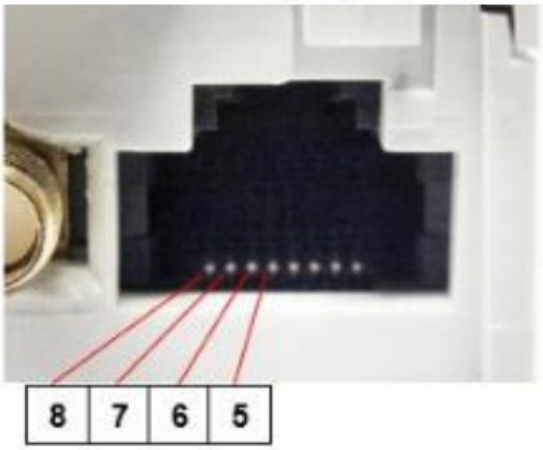
RJ45 INTERFACE CONNECTION

Use the RJ45 connector for meter connection (RS232 or RS485) and for configuration from a PC.

- Serial RS232 connection:
  Make serial connection from the modem to a PC or a meter by wiring RJ45 connector's Pin #1, Pin 2, and Pin #3 – optionally pin nr. #4.
  - PIN #1: GND
  - PIN #2: RxD (receiving data)
  - PIN #3: TxD (transmitting data)
  - PIN #4: DCD



- RS485 2- or 4-wire connection:
  Configure the modem for RS485 meter connection – 2-wire or 4-wire mode:
  - PIN #5: RX/TX N (-) – for 2-wire and 4-wire connection
  - PIN #6: RX/TX P (+) – for 2-wire and 4-wire connection
  - PIN #7: TX N (-) – for 4-wire connection only
  - PIN #8: TX P (+) – for 4-wire connection only



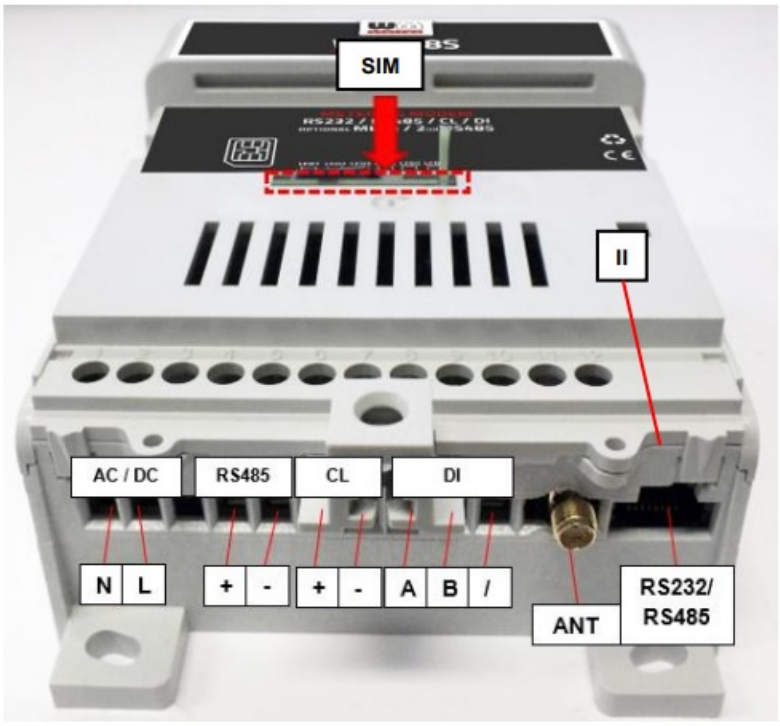
INSTALLATION STEPS

- Step #1: In powered off status, ensure that the plastic terminal cover (marked by „I") is placed on the device enclosure („II") before continue!
- Step #2: An active SIM card (2FF type) must be inserted to the modem's SIM holder. Take care to the direction of insertion (follow the hints of the next photo). The proper orientation / direction of the SIM can be seen on the product sticker.
- Step #3: Connect the wired serial cable to the RJ45 connector (RS232) according to the pinout on the previous page.
- Step #4: Attach an external LTE antenna (800-2600MHz) to the SMA antenna connector.
- Step #5: Add ~85-300VAC or 100-385VDC power voltage to the AC/DC titled connector and the device will starting its operation immediately.

CAUTION!
Please consider the following, ~85-300VAC or 100-385VDC electric shock hazard inside the enclosure!
DO NOT open the enclosure and DO NOT touch the PCB or its electronical parts!
The device must be used and operated according to the related user manual. The installation can be carrying out only by a responsible, instructed and skilled person by the service team, who has enough experience and knowledge about carrying out the wiring and installing the modem device. Its prohibited to touch or modify the wiring or the installation by the user.
It is prohibited to open the device enclosure during its operation or under power connection.
* Instead of optional, alternative RS485 terminal connector shown in the picture, the modem can be ordered with an Mbus interface also.

STATUS LED SIGNALS (from left-to-right)

- LED 1: Mobile network status (if the mobile network registration was successful, it will be flashing faster)
- LED 2: PIN status (if it is lighting, then PIN status is okay)
- LED 3: E-meter communication (only active with DLMS)
- LED 4: E-meter relay status (inactive) – only works with M-Bus
- LED 5: M-Bus status
- LED 6: Firmware status



CONFIGURATION

The modem has a pre-installed system (firmware). The operational parameters can be configured with the WM-E Term II software (through its RJ45 connector in RS232 or RS485 mode).

- Step #1: Download the WM-E TERM configuration software to your computer by this link: https://m2mserver.com/m2m-downloads/WM_ETerm_v1_3_80.zip
- Step #2: Unpack the .zip file into a directory and execute the WM-ETerm.exe file. (The Microsoft .Net Framework v4 must be installed on your computer for the usage).
- Step #3: Login to software with the following creditentials:
  Username: Admin / Password: 12345678
  Push to the Login button to enter into the software.
- Step #4: Choose the WM-E8S and push to the Select button there.
- Step #5: On the left-side of the screen, click on Connection type tab, choose Serial interface.
- Step #6: Add a name for the profile at the New connection field and push to the Create button.
- Step #7: In the next window the connection settings will appear, where you have to define the connection profile parameters.
- Step #8: Add the real COM port of the device connection according to the available serial port(s), the Baud rate must should be 9 600 bps or greater, the Data format should be 8,N,1.
- Step #9: Click on Save button to save the connection profile.
- Step #10: Choose the saved Serial connection profile at the bottom of the screen to connect to the modem before readout or configuration!
- Step #11: Click on the Parameters Read icon in the menu to readout the data from the modem. All parameter values will then be read out and visible by selecting a parameter group. The progress will be signed by the indicator bar at the bottom of the screen. At the end of the readout push to the OK button.
- Step #12: Choose the APN parameter group, and push the Edit settings button. Add the APN server name value, if necessary give the APN username and APN password values and push to the OK button.
- Step #13: Then choose the M2M parameter group, and push the Edit settings button. At the Transparent (IEC)

meter readout port, give the PORT number, by which you try to readout the meter. Add this PORT number to the Configuration and firmware download, which you want to use for remote parameterization of the modem / for the further firmware exhange. Then push to the OK button.

- Step #14: If the SIM uses a PIN code, then choose the Mobile network parameter group, and add the SIM PIN value there. Here you can change the Frequency band settings to 4G only or LTE to 2G (for fallback feature), etc. You can also select here a dedicated mobile network provider (auto or manual). Then push to the OK button.
- Step #15: For configuring the RS232 serial port and transparent settings, open the Trans. / NTA parameter group. Basic device settings are the Multi utility mode: transparent mode, Meter port baud rate: from 300 to 19 200 baud (or use the default 9600 baud), Fixed 8N1 data format (by checking the box at the meter). Confirm the setting with the OK button.

  Step #16: For configuring RS485 parameters – after the performing the settings push to the OK button.
  - Open the RS485 meter interface parameter group. Configure the RS485 mode to the proper value according the used cable version (for 2-wire or the recommended 4-wire).
  - In case of using the alternative RS485 terminal block connector, the setting must be 2-wire! (Otherwise it will be not working.)
  - The operation of the RJ45 port's RS485 interface and the terminal block RS485 interface are parallelised!
  - In case of using RS232 mode only, „disable" the RS485 port here.
- Step #17 (optional): If you have ordered the device with Mbus interface, for the settings of the transparent Mbus port, choose the Secondary transparent parameter group and set the Secondary transparent mode to value 8E1.
- Step #18: When you've finished, choose Parameter write icon to send the changed settings to the modem. The status of the configuration process can be seen at the bottom of the screen. At the end of the upload, the modem will be restarted and operating according to the new settings.

The modem uses the TCP port nr. 9000 for the transparent communication and port nr. 9001 for configuration. The MBus is using the TCP port nr. 9002 (speed rate should be between 300 and 115 200 baud).
Further settings can be found in the software's user manual: **https://m2mserver.com/m2m-downloads/WM-E-TERM_User_Manual_V1_94.pdf**
The product documentation, software can be found on the product's website: **https://www.m2mserver.com/en/product/wm-e8s/**

CERTIFICATIONS
The product has CE / ReD certification and compatible with the related international standards This product assigned with CE symbol according to the European regulations.

CE

WM SYSTEMS

Documents / Resources

	WM SYSTEMS WM-E8S System Communication Solutions [pdf] User Guide WM SYSTEMS WM-E8S System Communication Solutions, WM SYSTEMS WM-E8S, System Communication Solutions, Communication Solutions, Solutions

References

- M2M WM-E8S - WM Systems LLC - M2M / IoT Communication Solutions
- User Manual