WM-E1SL® modem – Quick Reference Guide
## for Landis+Gyr® E350 / E450 / E650 families (ZxD and ZxG type)

CONNECTION

1 – Mains connector connector (pigtail connector for the AC power of the meter)
2 – RS232 connector (RJ12 – for data connection modem← → meter and for configuration of the modem) – upon request it can be RS485
3 – External antenna connector (SMA-M, 50Ω)
4 – SIM card slot (mini SIM, insert-push)
5 – Plastic holder (lower plastic case fixation to the upper plastic case)
6 – Plastic hooks to fix the modem case into the meter coverage – optional
7 – Status LEDs
8 – Fixation screw of top modem enclosure
9 – DIN-rail adapter (order option) to fasten/mount to wall
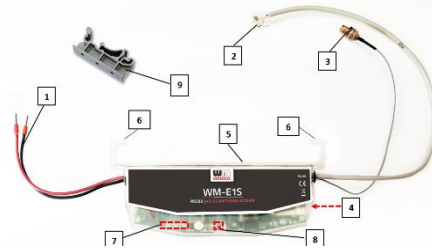
## POWER SUPPLY AND ENVIRONMENTAL CONDITIONS

- Power voltage: ~100-240V AC +10%/-10% , 50-60Hz +/- 5%
- AC power supplied by the meter (pigtail connector or ferrule connector / 2-pins)
- Surge withstand: 4kV (peak), 1,2/50µs, line to line 2Ω / 6kV (peak), 1,2/50µs, line to earth (ground) 2Ω / 12kV, Rsource = 40Ω (1,2/50µs, Impulse 1 min) / Dielectric test: 4kV, 1 min, 50Hz
- Supercapacitor option (for LastGASP notification of power outages)
- Power consumption / Current: · Average: 2.9W, 230VAC   · Stand-by: 24mA 100V, 12mA 230V / Average: 30mA 100V, 15mA 230V / Max: 0.15A @ 230V
- Wireless communication: according to the selected cellular module (order options)
- Operation temperature: from -40'C to +70'C at 95% rel.humidity(in case of TLS: from -40°C to +70'C) / Storage temperature: from -40'C to +80'C at 95% rel.humidity

MECHANICAL DATA / DESIGN

- Dimensions / Weight: 162 x 70 x 35mm / 108gr
- Outfit: IP51 plastic transparent casing, mountable into the meter enclosure

INSTALLATION STEPS

- *Step #1:* Remove the meter terminal cover by its screws (with a screwdriver).
- *Step #2:* Ensure that the modem is NOT under power supply, remove the AC connector from the meter. (The power source will be removed.)
- *Step #3:* Insert a replaceable and active SIM card (with APN) into the SIM-holder (4) - the chip looks down, and the cutted edge of the SIM looks to the modem. Push the SIM until it will be fastened (you will hear a click sound). *If it is necessary, the SIM card can be easily removed by pressing the card again, causing the card to be ejected from the tray.*
- *Step #4:* Install the modem enclosure (5) and fasten near to the meter – or mount to the wall in a fixed position. You can insert the device into the internal mounting points of the meter - under the meter terminal cover - and attach it to the meter terminal cover according to the meter's user guide.
- *Step #5:* Mount an external magnetic base or stick LTE antenna to the antenna connector (3).
- *Step #6:* Connect the modem to your computer with the RS232 cable (2) (RJ12 connector) and use an RJ12-USB adapter.
- *Step #7:* Connect the modem's AC power connector (1) - wire socket connection or "pigtail" connector depending on the version - to the meter power input (for 100-240V AC) or to an external 240V power supply.
- *Step #8:* Configure the modem with the WM-E Term® software via RS232 port ←→ PC connection. (For further details see the next chapter).
- *Step #9:* After completing the configuration, remove the R232 cable (or RJ12 cable) - labeled with „2" - from USB adapter.
- *Step #10:* Disconnect the modem AC power connector (1) from the meter (or power source). The modem will be shutting down.
- *Step #11:* Make a data connection between the modem ←→ meter on the interface you want to use (port nr. „2" - RS232 data connection). If the modem has RS485 port, then make data connection between the modem ←→ meter by RS485 cable.
- *Step #12:* Connect back the modem's AC power connector (1) - wire socket connection or "pigtail" connector depending on the version - to the meter's power input (for 100-240V AC). The modem will be powered by the meter and the modem will starting its operation and the LED signals are signing the current activity. Place back the terminal cover of the meter and secure with the screws.
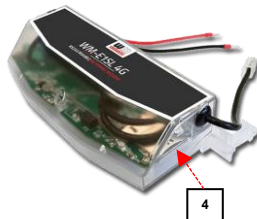
Color	Alternative colour	Sign	Meaning	Meter RS485 port connector side
White	Black	RX+	Receiving data	Meter_TX+
Brown	Red	RX-	Receiving data	Meter_TX-
Yellow	Yellow	TX-	Sending data	Meter_RX-
Green	Green	TX+	Sending data	Meter_RX+

OPERATION LED SIGNALS

LED identifier	Events
LED1 GSM / GPRS status	• If there is a SIM and PIN code ok, the LED will turn on • If there is no SIM or the SIM PIN is incorrect, the LED flashes every 1 second. • If there is no SIM, the LED flashes every 1 second. • RSSI flashes the LED according to the field strength value (1 flash lasts for 1 second, followed by a pause): ▪ RSSI <= -98 → 1 flashing ▪ RSSI -98 and <= -83 → 2 flashing ▪ RSSI -83 and <= -68 → 3 flashes ▪ RSSI> -68 → 4 flashes
LED 3 SIM status / SIM failure or PIN failure	• During network registration: led is active • During network search: blinking once per second • When connected to the network and the IP connection is okay: blinking twice per second • When the mobile network access technology was changed: quick flashing will be relied: ▪ 2G → 2 flashing per second ▪ 3G → 3 flashing per second ▪ 4G LTE → 4 flashing per second • If no network is detected: the led will be blank • During the CSD call and IP data transmitting the LED is lighting continuously
LED2 E-meter status	• During the transparent meter communication: twice per second. • At finish of the transparent communication: led is blank. • According the IEC meter status: the LED will be active. • In case of configuring the Multi Utility mode: led will be active or blank.

Note, that over the factory defaults, the operation and the sequence of the LED signals can be changed by the **WM-E Term®** *configuration tool, at the* **General Meter Settings** *parameter group. The free to choose further LED options can be found in the WM-E1SL® modem's Installation Manual.*

CONFIGURATION OF THE MODEM

The modem can be configured with the **WM-E Term®** software by setup of its parameters. This must be done before the operation and usage.
- Connect the modem to the computer by its RS232 cable and the RS232-USB converter.
- For the serial cable connection configure COM port settings of the connected computer according to the modem serial port properties in the Windows at the a **Start menu / Control panel / Device Manager / Ports (COM and LTP)** at the **Properties**: **Bit/sec**: 9600, **Data bits**: 8, **Parity**: None, **Stopbits**: 1, **Bandwith control**: No

The configuration can be performed via CSData call or TCP connection if the APN is already configured. *Read* **Installation manual** *for CSD settings.)*

MODEM CONFIGURATION BY THE WM-E TERM®

The Microsoft .NET framework runtime environment is required on your computer. For modem configuration and testing you will need an APN/data package enabled, an active SIM-card. The configuration is possible without a SIM card, but in this case the modem is performing restart periodically, and some modem features will be not available until the SIM card is inserted (e.g. remote access).

Connection to the modem (via RS232 port*)

- **Step #1:** Download the https://www.m2mserver.com/m2m-downloads/WM_ETerm_v1_3_80.zip file. **Uncompress** and **start** the **wm-eterm.exe** file.
- *Step #2:* Push the **Login** button and choose the **WM-E1S** device by it's **Select** button.
- *Step #3:* At left on the screen, at the **Connection type** tab, choose the **Serial** tab, and fill the **New connection** field (new connection profile name) and push the **Create** button.
- *Step #4:* Choose the proper **COM port** and configure the **Data transmission speed** to 9600 baud (in Windows® you have to configure the same speed). The **Data format** value should be *8,N,1.* Push **Save** button to make a connection profile.
- *Step #5:* At bottom left side of screen **choose the „Serial port" connection** type .
- *Step #6:* Choose the **Device information** icon from the menu and check the **RSSI** value, that the signal strength is enough and the antenna position is right or not. (The indicator should be at least yellow (average signal) or green (good signal quality). If you have weak values, change the antenna position while you will not receive better *dBm* value. (you have to request the status again by the icon).
- *Step #7:* Choose the **Parameter readout** icon for the modem connection. The modem will be connected and its parameter values, identifiers will be read out.
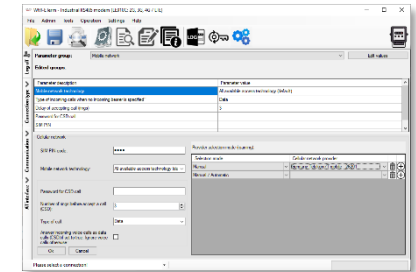
Parameter configuration

- *Step #1:* **Download** a WM-E Term sample configuration file https://www.m2mserver.com/m2m-downloads/WM-E1SL_STD_default.zip and uncompress the file. Then choose the **File / Load** menu to load the sample configuration file. Edit parameter settings by following these steps.
- *Step #2:* On the screen at bottom, choose the **Advanced settings** button and choose the **Parameter group: APN**, then push to the **Edit values** button. Define the **APN server** and in case of neccassary the **APN Username** and **APN password** fields, and push to the **OK** button.
- *Step #3:* Choose **M2M** parameter group, then push **Edit values** button. Add **PORT number** to the **Transparent (IEC) meter readout port** field – which will be used for the remote meter readout. Give the configuration **PORT NUMBER** to the **Configuration and firmware download port**.
- *Step #4:* If the SIM is using a SIM PIN, then you have to define it to the **Mobile network** parameter group, and give it into the **SIM PIN** field. Here you can choose the **Mobile technology** (e.g. *All available network technology* - which is recommended to select) or choose the **LTE to 2G (fallback)** for network connection. You can also select a mobile operator and network– as *automatic* or *manual*. Then push to the **OK** button.
- *Step #5:* The RS232 serial port and transparent settings can be found in the **Trans. / NTA** parameter group. The default settings are the following: at **Multi utility mode**: *transzparent mode*, **Meter port baud rate**: *9600*, **Data format**: *Fixed 8N1*). Then push to the **OK** button.
- *Step #6:* In case of RS485, the RS485 settings can be performed in the **RS485 meter interface** parameter group. The *RS485 mode* can be setup here.
- *Step #7:* After the settings you have to choose the **Parameter write** icon to send the settings to the modem. You can see the progress of the upload at the bottom status's progress bar. At the end of the progress the modem will be restarted and will be starting with the new settings.

Further setting options

- The modem handling can be refined at the **Watchdog** parameter group. Configured parameters can be saved to your PC in the **File/Save** menu.
- **Firmware upgrade**: select the **Devices** menu, and the **Single Firmware upload** item (where you can upload the proper.DWL extension file). After the progress of the upload, the modem will be rebooting and operating with the new firmware and the previous setttings!

SUPPORT

The product has CE sign according to the European regulations.
The product documentation, software can be found on the product's website: https://www.m2mserver.com/en/product/wm-e1sl/

CE