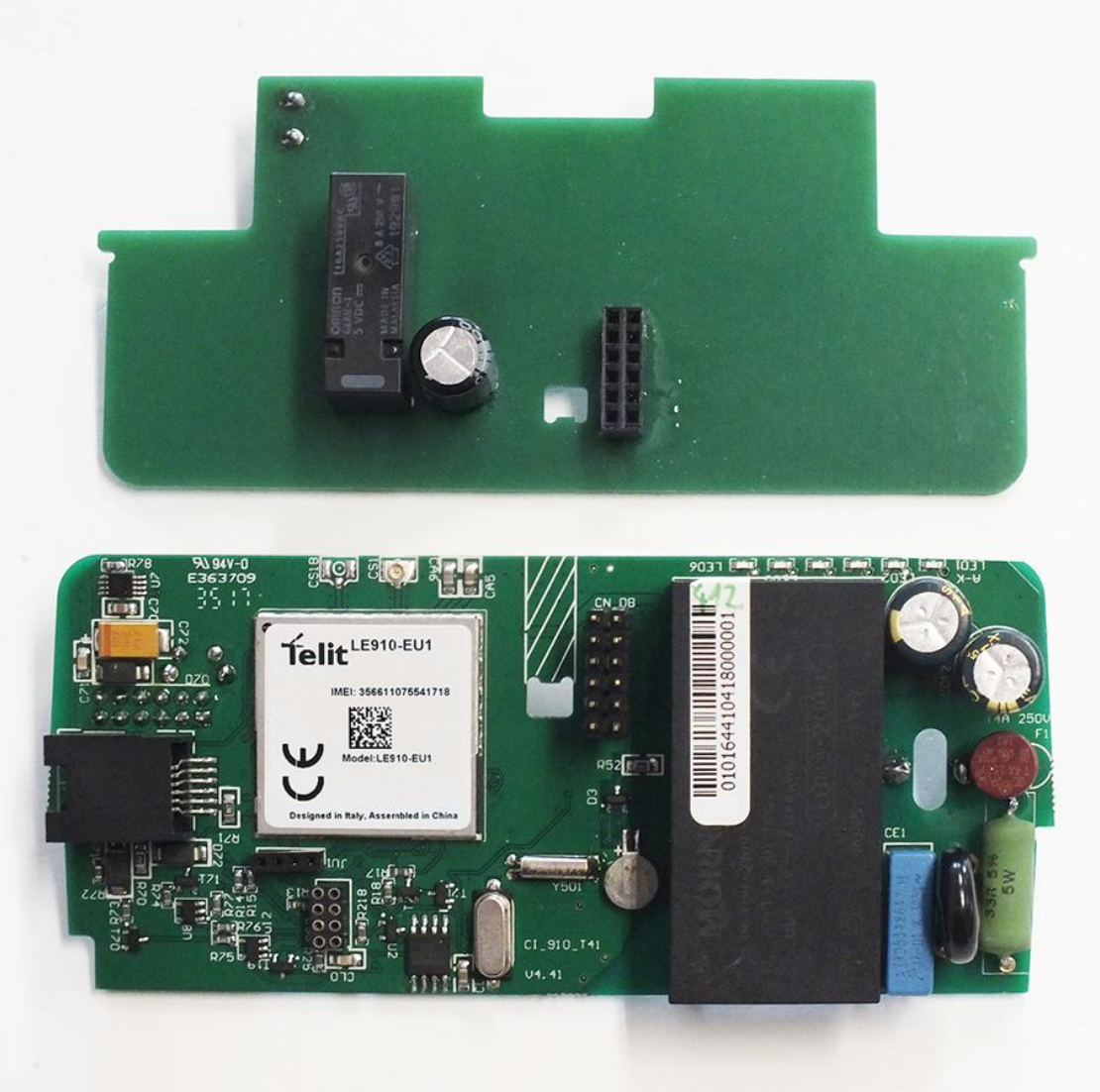
WM-E3S 4G CI® modem
WM-E3S 4G CI R® modem

Installation Guide and
Modem Configuration



Rev: 1.5.1.7

2025-12-03

Document specifications

This documentation was made for the installation and configuration of the **WM-E3S 4G CI®** (Customer Interface version) modem and the **WM-E3S 4G CI R®** (Customer Interface and relay output version) modem.

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Hardware Type/Version:	**WM-E3S 4G CI®, WM-E3S 4G CI R® modem for electricity metering**
Hardware Version:	**V 4.41 + CI board**
Firmware Version:	**V 2.3.10 / 5.3.46.0**
WM-E Term® config. software version:	**V 1.4.15**
Pages:	**36**
Status:	**Final**
Created:	**15-11-2016**
Last Modified:	**03-12-2025**

Chapter 1. Introduction

The **WM-E3S 4G CI®** is an integrated modem, which is suitable for remote reading of electricity meters remotely, on the 4G LTE-based cellular network. The communication module is a part of the Smart Metering concept.

This modem was especially developed for **Elster® AS220, AS230, AS300, AS1440, AS3000, AS3500** electricity meters, and can be connected to the meter by sliding into the meters' communication module slot and can be sealed.

Thus, the modem presents a compact solution, the dimensions of the meter will not change if a modem if fitted or not. This solution offers the possibility of future upgrade of the electricity meter with a communication module and is ideal for installations where there is restricted assembling space. The modem is powered internally by 230V AC power through the meter's integrated mains connector.

The **WM-E3S 4G®** is modem is suitable for reading the meter's actual and stored consumption values, access the recorded event log, read the load profile data, and read or modify the parameter set of the meter - remotely.

The modem can be accessed remotely through the cellular network (by the **Telit®** module) and it is able to send data on the Internet by using an APN.
It has 2G fallback features, therefore in case of outage/inaccessibility of the 4G network it is communicating further on the 2G network.
You can save money by using our modem, because there is no further need of manual readout of the meter systems.

The Customer Interface (CI) version receives data from the meter in the scheduled intervals, therefore can readout the meter registers over the parameters.

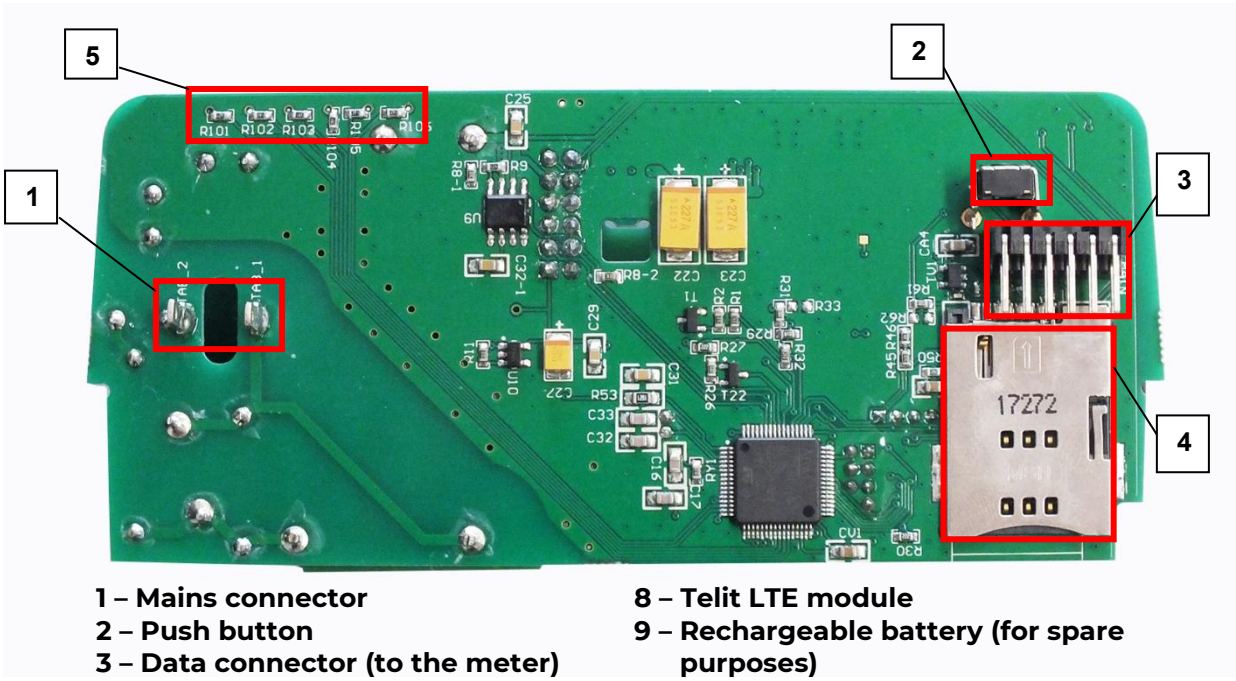
All over these, the „**R**" version (**WM-E3S 4G CI R®** modem) has relay output, therefore the it can switch the meter to change the tarrif mode through its output - due to the 1-4 configures Tariff-mode settings.

The modem can be used with push data transmission method, thus the modem can initiate the communication with the AMR centre periodically at a pre-programmed time interval or triggered by an alarm (power outage, cover removal, reverse run, etc.)

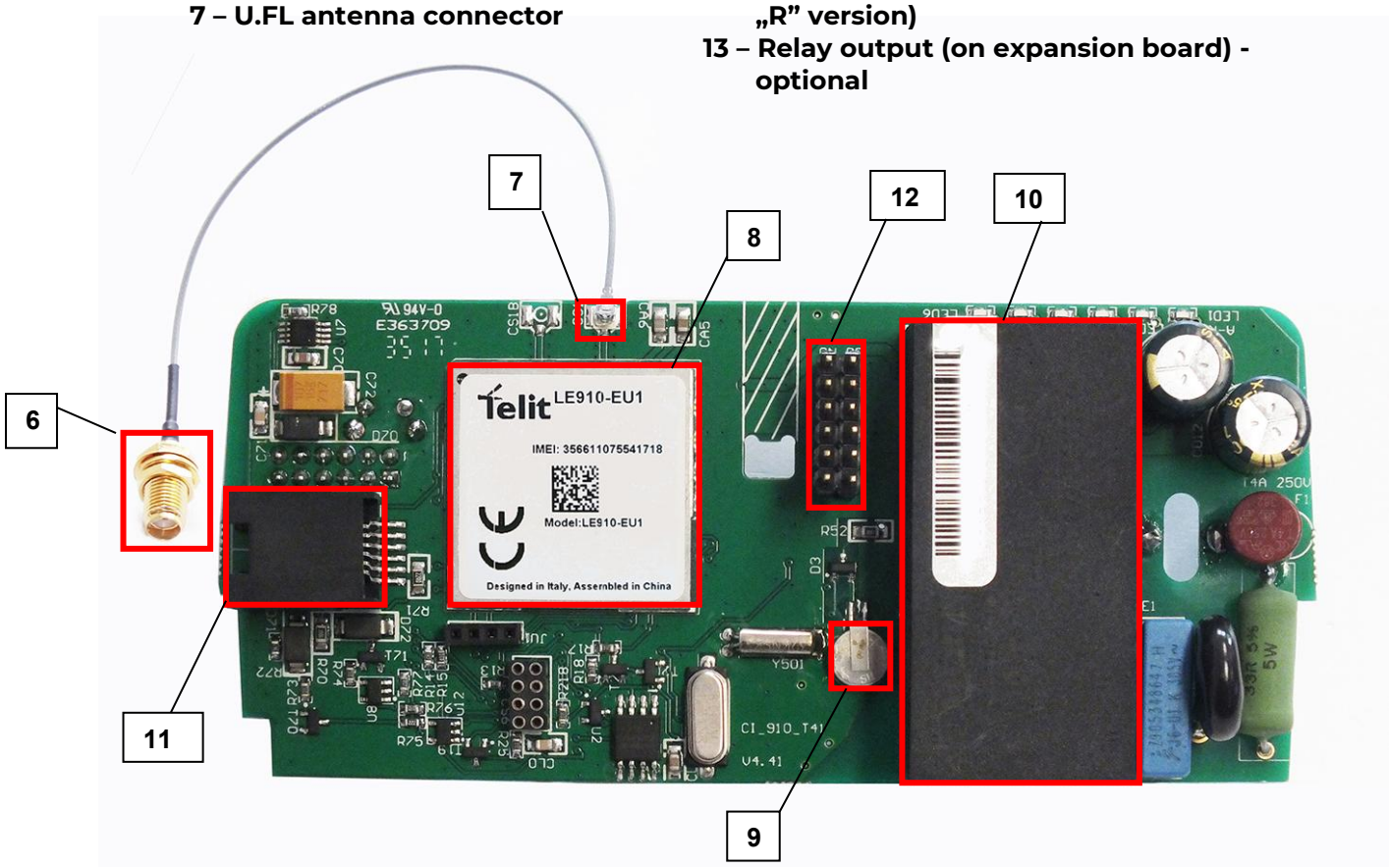
The device can be configured through the serial port, but can be performed through TCP connection remotely.

Chapter 2. Connections

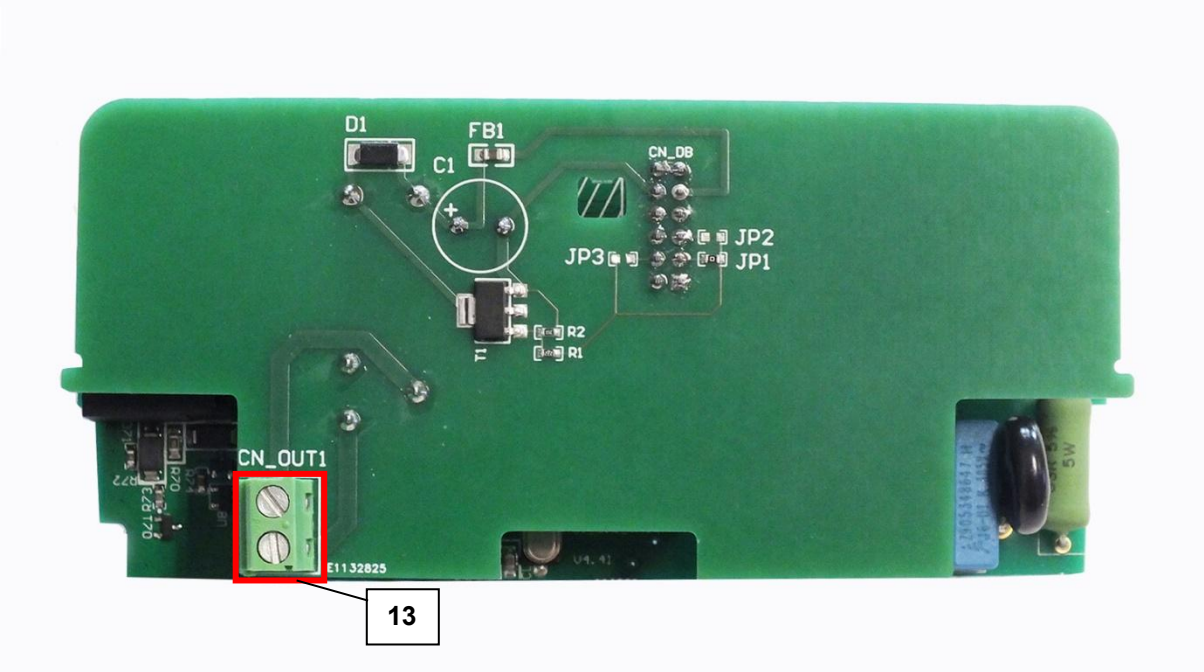
2.1 Interface connectors, internal connections (mainboard)



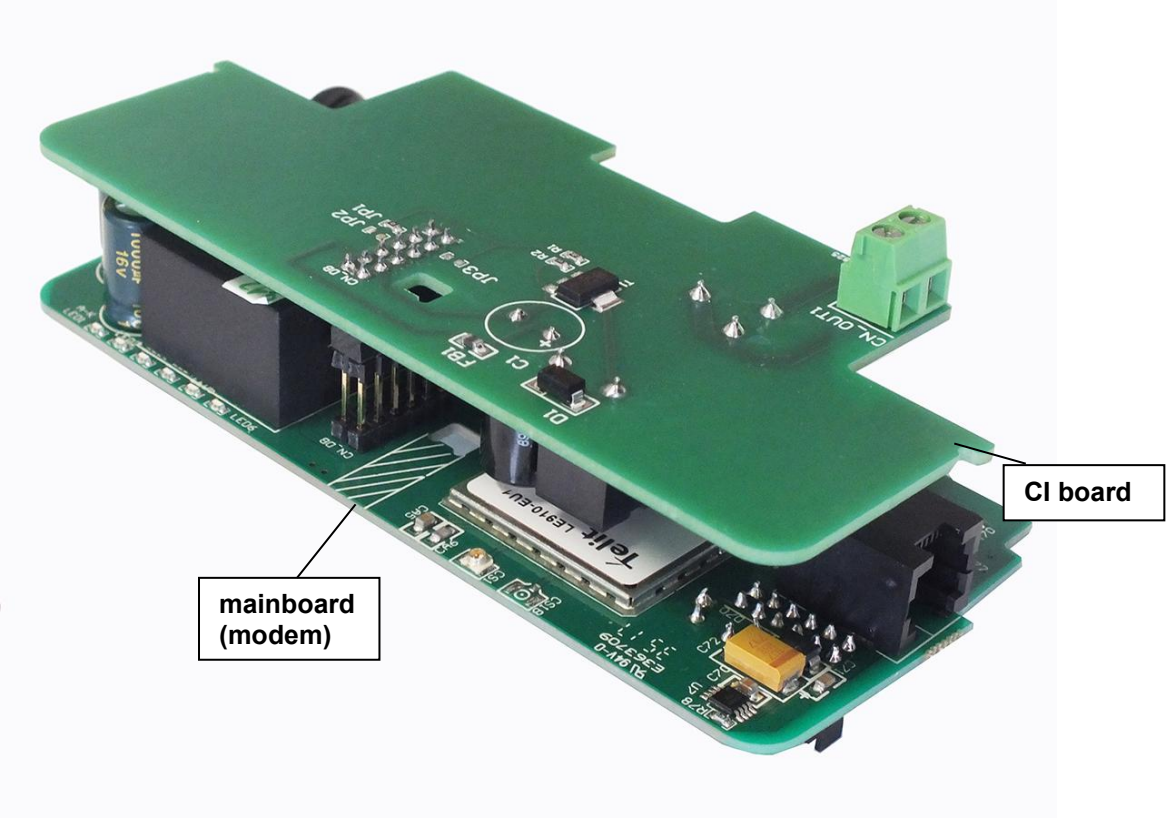
1 – Mains connector
2 – Push button
3 – Data connector (to the meter)
4 – SIM card socket (push-insert)
5 – Status LEDs
6 – SMA antenna connector
7 – U.FL antenna connector
8 – Telit LTE module
9 – Rechargeable battery (for spare purposes)
10 – Power adapter unit
11 – RJ12 interface connector (6P6C)
12 – Internal data connector (for relay board „R" version)
13 – Relay output (on expansion board) - optional



2.2 Interface connectors, internal connection (expansion board)



2.3 Assembled modem (mainboard + expansion board)



We deliver assembled product as it is show in the picture.

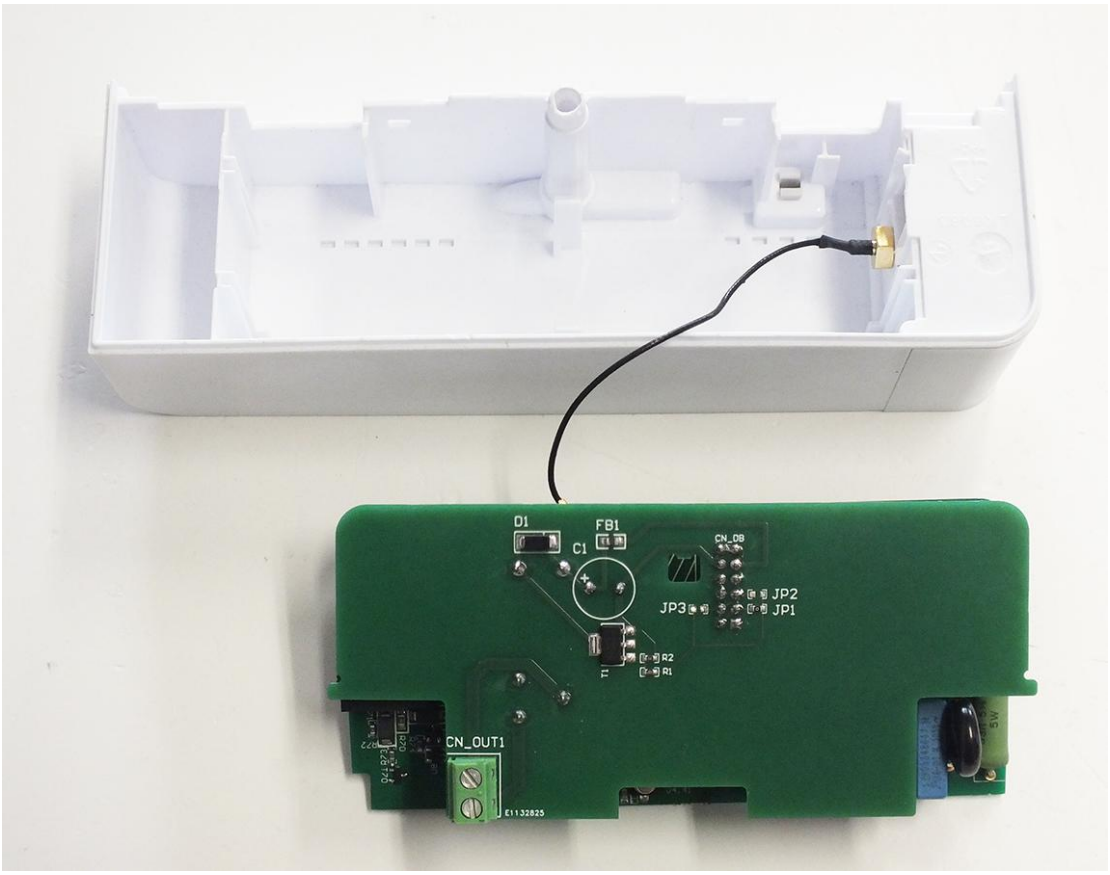
2.4 Inserting a SIM card

Insert an activated SIM card into the push-push SIM card slot (4). The SIM card is replaceable by pushing the inserted SIM card – if it is necessary.

2.5 Connecting the modem the AS3000, A3500 meter

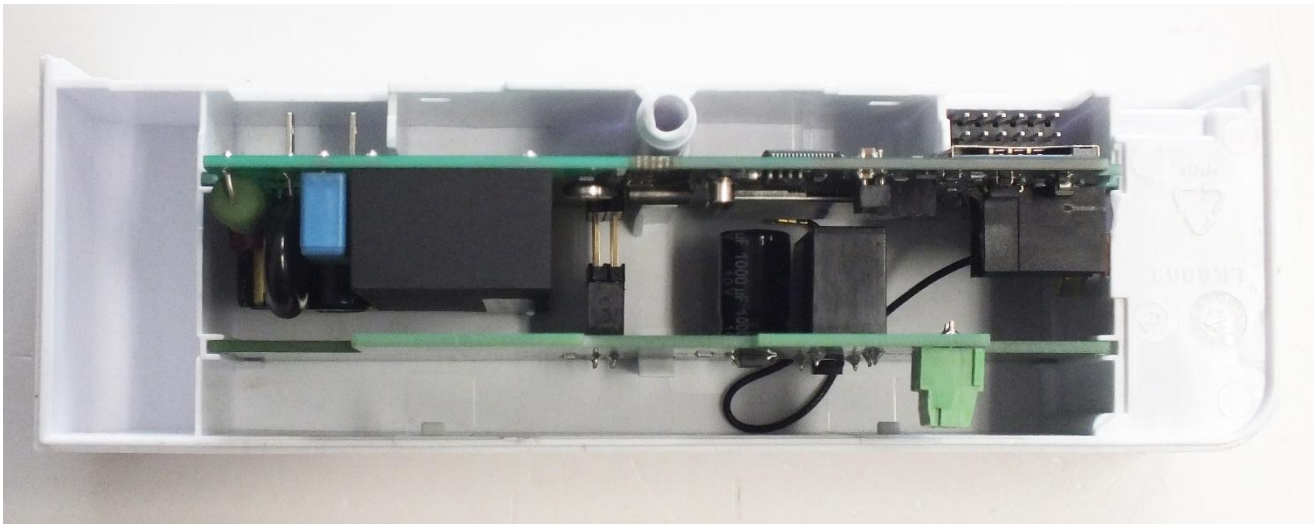
Remove the Elster® AS3000, AS3500 meter's communication module plastic case by releasing the screw from the top middle part of the housing.

Inside the communication unit's case mount the SMA-M antenna interface connector (6) on the housing (fix it with the SMA connector's screw).

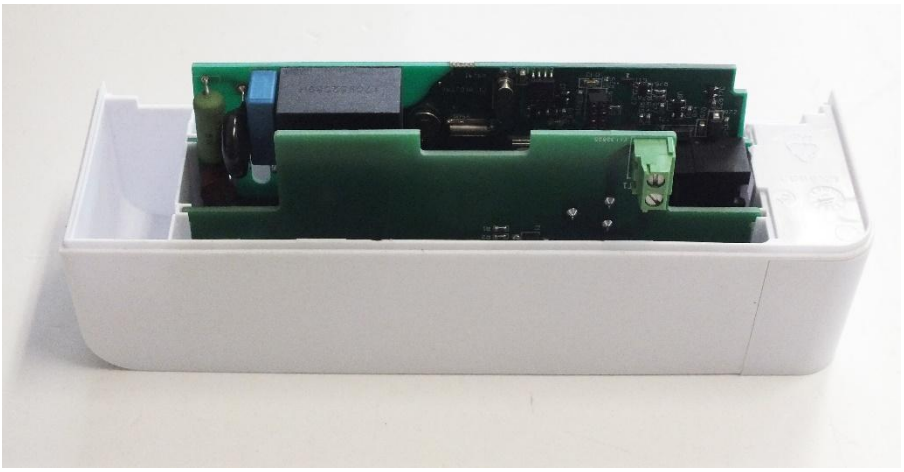


Snap the modem unit (mainboard + expansion board) into the communication module terminal's plastic enclosure by sliding into, through the guiding rails of the case. Insert the modem into the right orientation into the slot. Check the 12-pin data connector (3) position – according the next picture.

Push the modem into the terminal enclosure, until you'll hear a click sound.

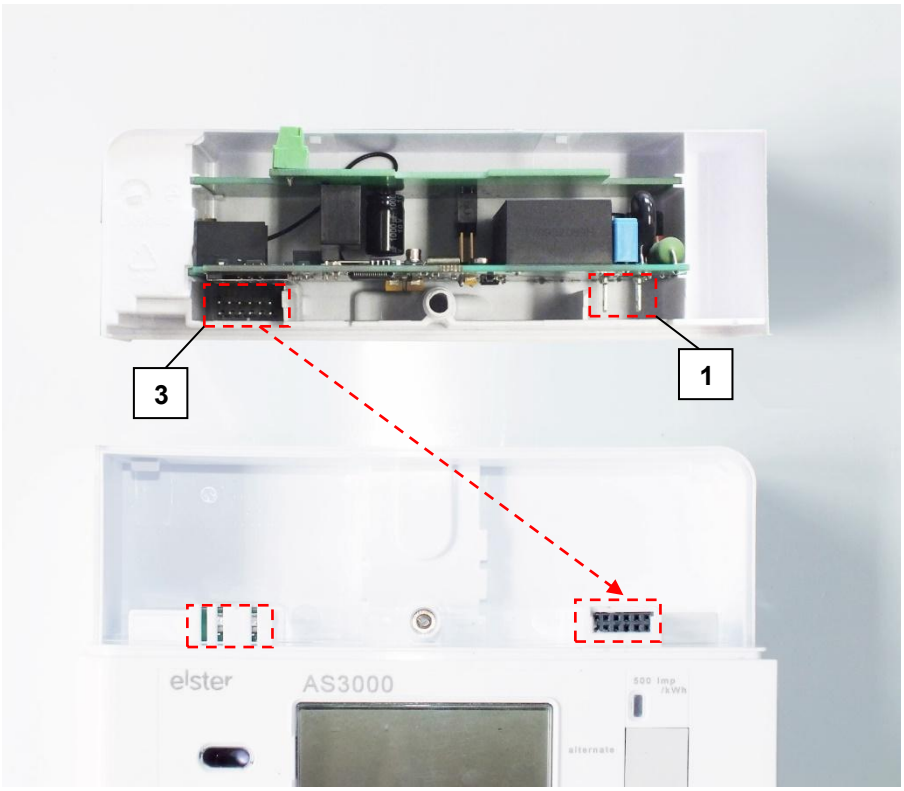


The interface connector (3) is close to the SMA antenna connector (6) (right top side on the picture).



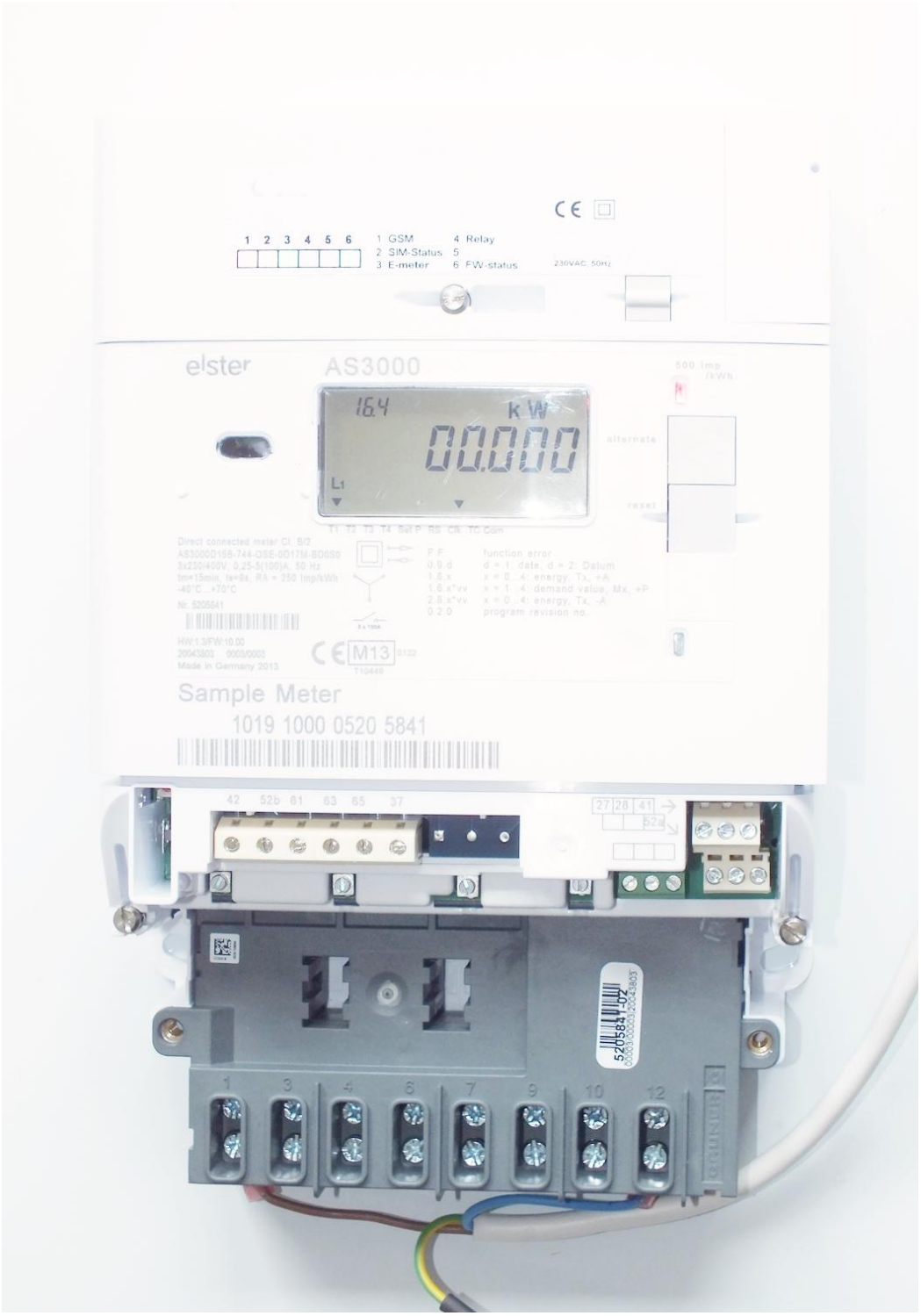
At the center of the modem you will found two plastic hooks, which helps you at the fixation into the enclosure.
(If you want to remove the modem board, push these hooks carefully, and you can free to remove the communication module from the terminal case.)

Now we can connect the communication module to the meter by sliding the modem into the meter enclosure.
The communication interface (3) and the mains connectors (1) must be connected to the connector pairs from the meter housing.



(Check the 12-pins data connector and the power connector (2-pins) position in the picture. You will find the same connectors' opposite part at the bottom meter side, which you have to connect.
The meter's terminal module housing upper right edge is a rounded as a sign of the perfect slide fit the adaptation to the meter.

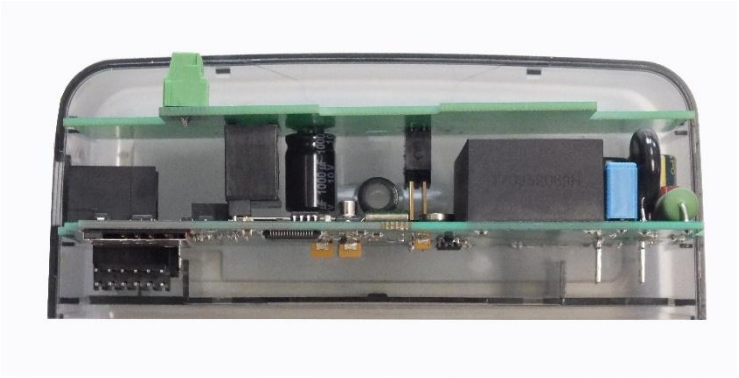
After assembling, attaching the modem terminal unit and turning on the meter, the modem will be immediately powered on, and its operation is confirmed by the LED signals.



2.6 Connecting the modem to the AS220, AS230, AS300 meter

Disassemble the Elster® AS220, AS230, AS300 meter's communication module plastic case. Release the top screw at the middle and take off the upper modem unit case.

The modem can be inserted into the transparent plastic enclosure of the communication unit.



Inside the communication module's transparent plastic case, mount the SMA-M antenna to the antenna connector (6) on the housing (fix it with the SMA connector screw).

The communication unit now is ready to be attached to the meter by fixing it on the meter housing.

The 12 pins communication interface (3) and the mains connector (1) now plugs into the meter.

After assembly and turning the meter on the communication module is ready for operation. The LED signals will sign the operation status of the communication module.

2.7 Antenna connection

For proper operation of the communication module it is necessary to have appropriate signal strength.

In places where the signal strength is strong it is possible to use internal antenna, for areas with poor reception mount an external antenna (50 Ohm SMA-M connected) to the antenna connector (6) of the device, which you can place inside even inside the meter enclusre (under the plastic housing).

2.8 using the RJ12 connection

Connect the proper cable to the modem's RJ12 communication interface (11). The listed registers can be readout on the cable (see Chapter 4).

The data is always active on the P1 interface, furthermore you can readout other registers from the meters.

The RJ12 connection pinout can be seen in the following table.*

Pin # (RJ12)	Signal name	Description	Remark
1	+5V	+5V power supply	Power supply line
2	Data request	Data request; Rx	Input
3	Data GND	Data ground	
4	NC	-	
5	Data	Data line; Tx	Output; open collector
6	Power GND	Power ground	Power supply line

**The Pin nr. 2 inactvice in case of the relay output version modem!*

2.9 Relay connection

You can found the relay output (13)on the modem's optional expansion. Then, by using the Customer Interface, the client can receive data in cyclic intervals from the meter, which is switching the operation by the current tarrif settings – due to the modem's relay output switching.

Chapter 3. Modem Installation Guide

The *WM-E3S 4G CI*® communication module unit can be configured by the a **WM-E Term® v1.3.19T** or newer version or the **DM Set**® / **AlphaSet®** software which is also suitable for setup the electricity meter through a serial connection.

The **WM-E Term®** tool is suitable over the communication settings to readout the ***P1 Customer interface*** registers and to perform ***Tariff*** mode settings. You can found a document about the application tool's settings on our website.

Here we show the **DM-Set®** software settings, which is used by the utility companies. Follow the next steps for configuring the CM to the meter.

3.1 Connection

1. The **DM Set®** software must be installed to a *Microsoft Windows*® capable installed PC computer.
2. Connect properly the optical head to the meter and to the USB port of the computer.
3. Configure the modem through the optical head.
4. Start the **DM Set®** application for the configuration (version 2.14 or newer is necessary).
5. After launching the application, choose the **Extras** menu and **Set modem series** option.
6. Then choose **AMXXX** option then click on the **OK**.
7. Choose **Extras** menu and **Options**, then choose the proper **serial port** which is used for the connectivity of the optical head. Let's choose the **8N1** data format and **115 200 baud** speed rate for the data transfer.
8. When you are configuring the modem first time, you can read out the version information only.

   Load the sample config file provided (go to step 9.), or request it from your supplier.

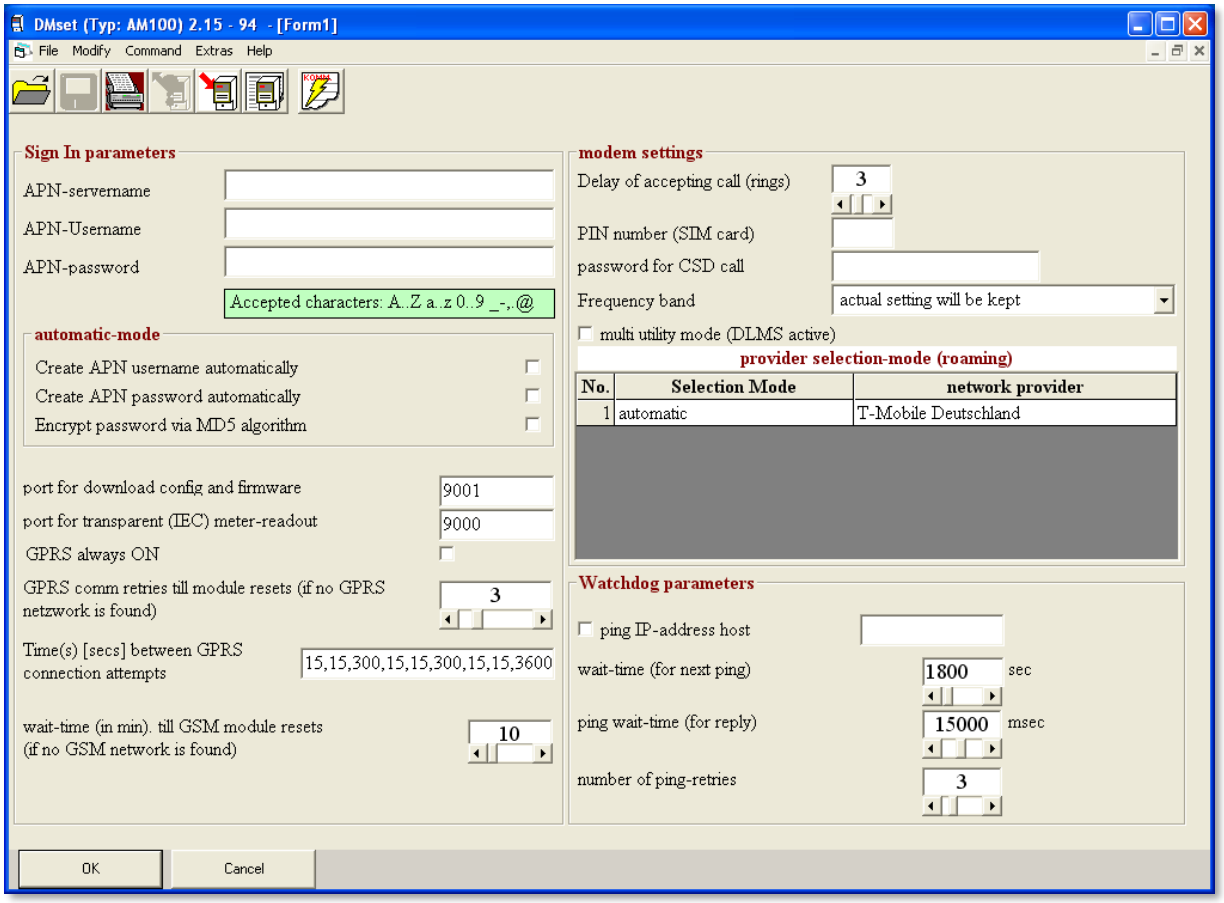
   IF YOU HAVE ALREADY LOADED A VALID CONFIGURATION FILE TO THE MODEM, You can use the Read Settings for readout the parameters of the meter (then edit and save the parameter settings with the Modify / Modem settings).

9. Or it's also possible to open a pre-defined configuration file with the **Open File** menu (after opening the file you can edit the configuration)

10. Choose the **Modify** / **Modem Settings** option from the menu and give the **APN server name** to configure the access point name for the secure logon. (Then the modem will be communicating on the transparent data port number 9000, by default.)

11. **GPRS Always ON** must be checked on.

12. You have to fill the **password** regarding the SIM Card settings (get information from Your Mobile Operator)



Settings of modem unit in the DM Set® application

13. In case of parameter modification after the changes. You have to save the changed parameter values into the configuration file by selecting the **File** / **Save** menu.

14. After the configuration the modem able to connect to the GPRS network.

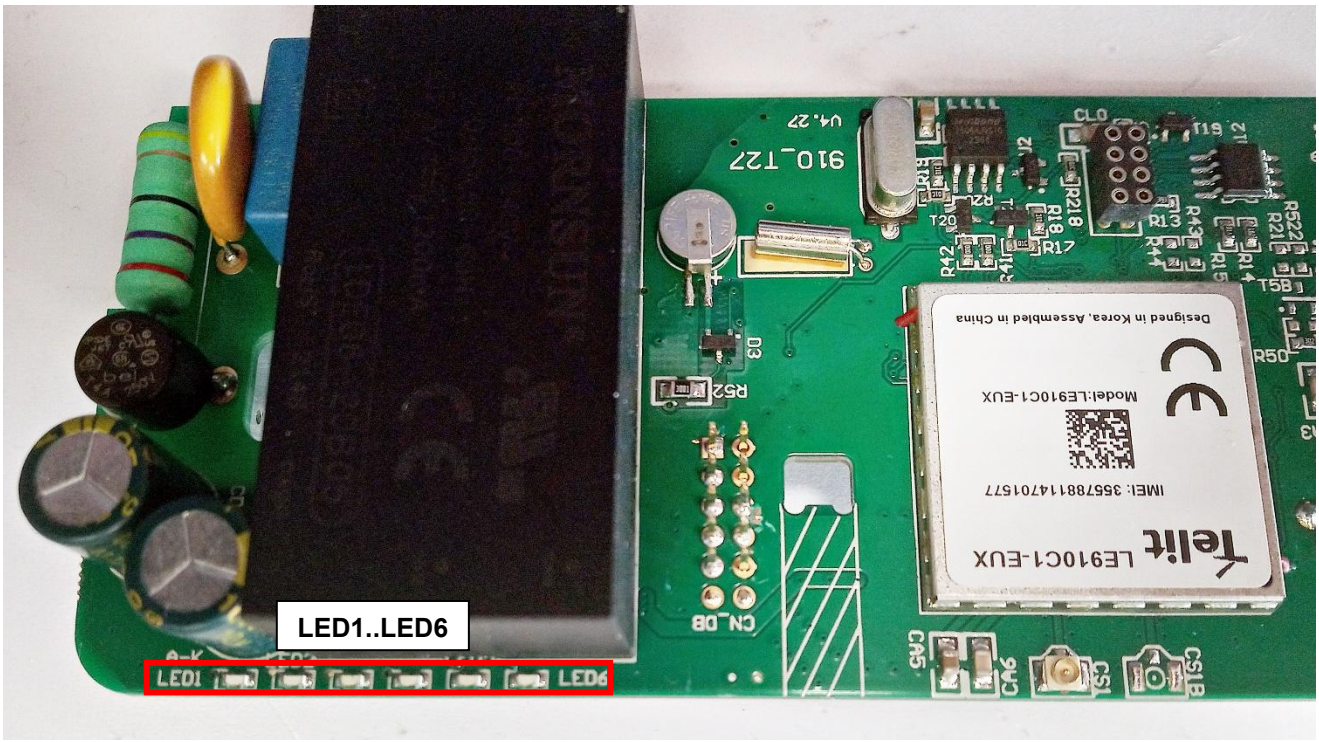
15. The modem will be assessable through the meter.

3.2 Testing the readout of the meter

The readout and connection can be tested with **AlphaSet**® application. Let's *AlphaSet Reading and Configuration Tool Instruction Manual* documentation. *"alphaset_user_manual_GBR.doc"*)

3.3. Status LED signals

The LED numbering can be seen at LED labels on the modem panel: from left to right in order: LED1 (blue, left), LED2 (red, right), LED3 (green, center) then LED4, LED5 and LED6.



Factory default LED signals:

LED identifier	Events

LED 1
GSM / GPRS status
	• **During network registration: led is *active***
	• **During network searching: *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 and LTE → *4 flashing per second***
	• **If there is no available cellular network detected: the led will be blank**
	• **During the CSD call and IP data forwarding, the LED is ligthing continuously**

LED 2	• **Continuously lighting, until the device is not on the cellular network and RSSI cannot be detected (SIM okay)**

SIM status / SIM failure or PIN failure	• **After SIM initialization, when SIM PIN is okay: led is active** • **If there is no SIM detected or SIM PIN is wrong: *blinking once per second*** • **The RSSI (signal strength) value is signed also by this led.** • **In case of invalid RSSI value or AT command timeout: LED continuously flashes slowly (ligthing for 2 seconds, quick blank and it repeats)** • **In case of valid RSSI value (Received Signal Strength Indicator) the LED is flashing by "N" times in every 10-15 seconds, depending on the RSSI refresh period. The RSSI value can be 1,2,3 or 4 on the current cellular network. The numbers of RSSI flashing is different on every available network technology, by the following:** ○ **<u>on 2G network:</u>** ○ **1 flashing: RSSI >= -98** ○ **2 flashings: RSSI between -97 and -91** ○ **3 flashings: RSSI - between 90 and -65** ○ **4 flashings: RSSI > -64** ○ **<u>on 3G network:</u>** ○ **1 flashing: RSSI >= -103** ○ **2 flashings: RSSI between -102 and -92** ○ **3 flashings: RSSI - between 91 and -65** ○ **4 flashings: RSSI > -64** ○ **<u>on 4G LTE network:</u>** ○ **1 flashing: RSSI >= -122** ○ **2 flashings: RSSI between -121 and -107** ○ **3 flashings: RSSI between -106 and -85** ○ **4 flashings: RSSI > -84** ○ **<u>on LTE Cat.M1 network:</u>** ○ **1 flashing: RSSI >= -126** ○ **2 flashings: RSSI between -125 and -116** ○ **3 flashings: RSSI between -115 and -85** ○ **4 flashings: RSSI > -84** ○ **<u>on LTE Cat. NB-IoT (Narrow Band) network:</u>** ○ **1 flashing: RSSI >= -122** ○ **2 flashings: RSSI between -121 and -107** ○ **3 flashings: RSSI between -106 and -85** ○ **4 flashings: RSSI > -84**
LED 3 **E-meter status**	• **During the transparent TCP/IP 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*.**
LED 4* **E-meter relay output status**	• **Default status: "Ready" - LED flashes 1x per second** • **"Active" mode - the *relay switched, which turns on the LED when it is switched on.** • **"Normal" mode - the *relay released, which turns off the LEDs released.**
LED 5** **M-Bus status**	• **Not used**

LED 6 **Firmware status**	• **When the modem firmware starts, the LED turns on** • **When the connection between the meter ←→ modem is established, the LED flashes in every 2 seconds.**

**LED 4 operation is available only in case of presence of the WM-E3S CIR version.*

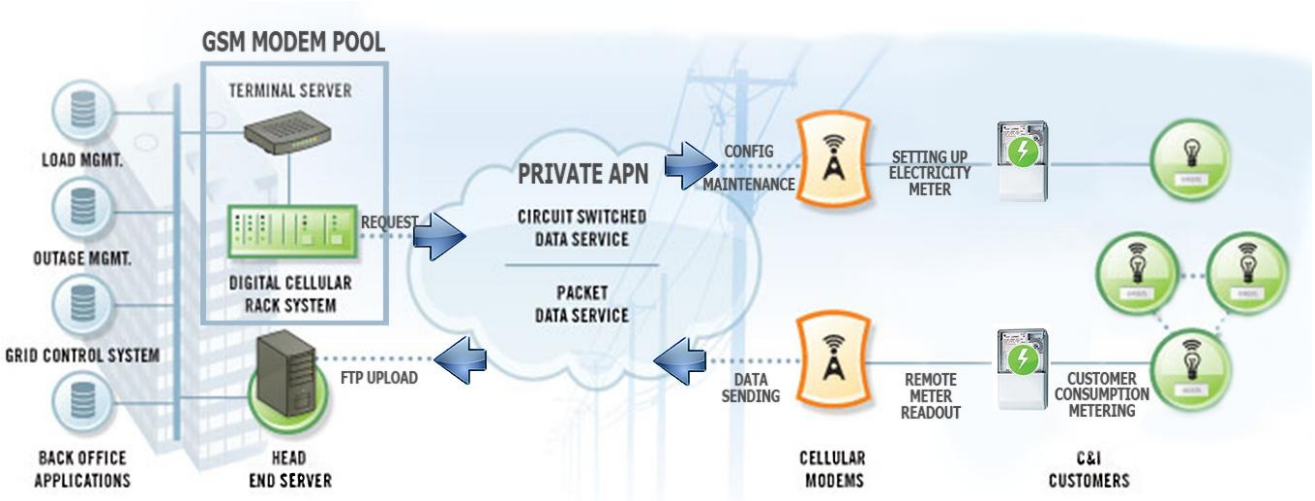
*** LED 5 operation is available only in case of presence of the MBUS version.*

Further status LED signals (can be configured as well):

LED identifier	Events
Network status and access technology	• **During network search: flashes once per second** • **When connected to the cellular network and the IP connection is OK: Blinks twice per second** • **If mobile network access has changed: flashes quickly:** ○ ***2G → 2 flashes / sec*** ○ ***3G → 3 flashes / sec*** ○ ***4G → 4 flashes / sec*** • **If no network is available: the LED is not active**
Meter status with IEC polling	• **When the modem ←→ meter starts communicating, the LED flashes 1x per second.** • **If the meter responds to the modem during communication, it turns on the LED.** • **If the modem ←→ meter cannot communicate with each other for a while, the LED will turned off.**
AMM (IEC) client state	• **By default, or when the modem ←→ EI client communication is closed, the LED is off** • **• modem ←→ EI client** flashes briefly once per second when connecting (then pause for approx. 1 second)** • **If the EI client** flashes once per second when logging in** • **The communication connection between the EI client** ←→ modem is established - the led is active**

*** The EI client is a transparent TCP channel outgoing from the modem to the EI server*

3.4. Push operation method



The complete readout and data sending mechanism to the centre and the other direction for the configuration and maintenance tasks can be realized on the defined paths.

The modem is not operate continously on the GPRS network.

Therefore, there is an another option and meter data sending mode to initiate a remote readout automatically in the pre-defined intervals. Anyway, it is also possible to start the data sending in case of different events (e.g. removal of meter cover, incoming SMS message from the centre).

In this situation the modem is connected to the mobile data network only during the time of the data transmission.

The devices needs to be connected to GSM network and ready to connect to GPRS, but without active IP connection.

Features:

- Data Push - starting at predefined times

The Data Push method triggers FTP file upload, plain text or encrypted.

The unique filename and the file is generated automatically.

The file is always has two parts, first the standard register reading,

then the event log from last 31 days. (the period may extended automatically

if the date of the event is earlier)

The readings shown as standard IEC format, including some ASCII control characters

like STX ETX, etc. also.

The ftp is set to passive mode.

- Alarm Push - starting when new event can be read from meter

Alarm Push method triggers TCP sending of a DLMS WPDU contains the IP address,

listening port number for transparent service, and the meter ID.

- Triggering with SMS

GPRS connection can be activated remotely with a defined SMS from any call number.

The SMS text must be left empty.

After the SMS received, the modem will connect to IP network, and will be accessible as a IP server for a time period defined in the config file.

Example config file will be provided with a 30 minute setting.

3.5. Configuration of the push operation mode

Configuration can be loaded with **DM-Set**, but there is no dedicated menu item for these settings. The configuration file must be edited manually.

The following **DM-Set** configuration file items are necessary to configure this mode.

- Data Push setting (using DMSet):

- GPRS always ON: unchecked
- ping IP-address host: host, user, password:

  ftp://username:password@host/path using IRA(ITU T.50) character set

  Some parameters cannot be set ont he DMSet GUI, these must be defined by direct editing the config file in a text editor.

- Config file keywords:

- smp.always_on = 0
- smp.connect_on_timer = 1
- conn.ping_host = ftp://username:password@host/path

Example: ftp://device001:pwd001@server.com/upload

There can be defined a port number in the ftp upload URL. If the ftp port other than 21, eg. 1021 the port number must be defined.

Example: ftp://username:password@host:1021/path

ftp://device001:pwd001@server.com:1021/upload

- smp.connect_interval = 28800

  Connect interval counted in seconds.

- smp.connect_start = YYYYMMDDWWHHmmSS

  Y = Years, M = Months, D = Days, W = Day of week, where 01 is Monday and 07 Sunday.

  H = Hours, m = Minutes, S = Seconds, wildcards FF are allowed.

  At the datetime (connet_start) the wildcard=FF, upcase only!
  For example: *smp.connect_start = FFFFFFFFFFFF0000* which means send once in every hour.

  When the time is between 01:00:00 AM to 02:00:00 AM UTC, the scheduling maybe skipped on the start of the daylight savings, and run twice at the end.

- csd.password = <max. 16 characters>

- conn.apn_name = wm2m

  Where apn name must be maximal 50 char long.

- conn.apn_user =

- conn.apn_pass =

  Where apn password must be maximal 30 char long.

- smp.connect_interval in seconds, max 0xFFFFFFFF

Meter date format setting must be set in config file for proper operation:

emeter.date_format = YYMMDD

or

emeter.date_format = DD-MM-YY

for example.

- Encryption:

The file can be encripted with AES-128 CBC method.

The 128-bit key must be added to the config file.

If the parameter is empty or the length is wrong, no encryption will be used.

dlms.lls_secret = 00112233445566778899AABBCCDDEEFF

- Triggering with SMS:

- trigger: SMS triggered (Empty SMS)

  The SMS length must be 0. The encoding can be 7-bit or 8-bit.

  The device will be registered to IP network for a predefined time, if the GPRS always on setting is unchecked (smp.always_on = 0) Setting of time period:

- Config file keywords:

- smp.disconnect_delay = 1800

  Above an example can be found, where the 1800 seconds value means that in 30 minutes online time.

- Event Push settings:

The smp.disconnect_delay setting also applies to Event trigger.

The device will remain online for this time after sending the event notification.

- Config file keywords:

ei_client.addr = <destination IPV4 address>

ei_client.port = <destination port number>

example:

ei_client.addr = 192.168.0.1

ei_client.port = 4000

In these examples, the IP address is 192.168.0.1 and the port number is 4000. You can change these values with the required values.

The APN name, user and password parameters are also required for push mode operation.

The device will connect to the defined TCP port.

Event Push data format: DLMS WPDU contains the IP address, listening port number for transparent service, and the meter ID.

TCP data, binary, 29-byte:

00010001000100015FF0203060ACAB60F12232809083035323035383431

Structure:

DLMS WPDU HEADER, 8-byte

Version = 1

srcPort = 1

dstPort = 1

Payload Length = 21

AXDR encoded data packet:

<Data>

<Structure Qty="0003" >

<DoubleLongUnsigned Value="0ACAB60F" /> IP address

<LongUnsigned Value="0FA0" /> port number, that the device listening on

<OctetString Value="3035323035383431" /> meter ID

</Structure>

</Data>

When You'll save the **DM-Set** configuration file, please consider that the filename must be used the following naming convention:
IMEINumber_MeterCode_SN<MeterSerialNumber>_Date_Time_<4-digit_counter>.TXT file format.
Example: 123456789012345_ELS5_SN12345678_20140101_010000_1234.TXT

All strings in parameters must be fit to the IRA character set.
Reference: http://en.wikipedia.org/wiki/ITU_T.50

If You're using a 3G capable version of modem hardware it is highly recommended to set the modem to 2G communication mode for reliable CSD connection.
When further information is necessary related on the implementation, this can be requested from our technical support.

Chapter 4. P1 registers

4.1 Always active data and registers on the P1 interface

#	Value	OBIS E-meter	OBIS P1-out	Value Format	Value Unit	Remark
1	Header information	/ELS5\@V10.03	/ELS5	Manufacturer specific		Optional: firmware version of e-meter
2	Version information for P1 output	-	1-3:0.2.8.255	S2, tag 9		Firmware version of module
3	Date of the P1 message	0.9.2	-			
4	Time stamp of the P1 message	0.9.1	0-0:1.0.0.255	TST	YYMMDD hhmmssX	see [2]
5	Equipment identifier	0.0.0	0-0:96.1.1.255	Sn (n=0,96), tag 9		e-meter serial-number
6	Meter Reading electricity delivered to client (Tariff 1) in 0,001 kWh	1.8.1	1-0:1.8.1.255	F9(3,3), tag 6	kWh	
7	Meter Reading electricity delivered to client (Tariff 2) in 0,001 kWh	1.8.2	1-0:1.8.2.255	F9(3,3), tag 6	kWh	
8	Meter Reading electricity delivered by client (Tariff 1) in 0,001 kWh	2.8.1	1-0:2.8.1.255	F9(3,3), tag 6	kWh	
9	Meter Reading electricity delivered by client (Tariff 2) in 0,001 kWh	1.8.2	1-0:2.8.2.255	F9(3,3), tag 6	kWh	
10	Actual electricity power delivered (+P) in 1 Watt resolution	1.7.0	1-0:1.7.0.255	F5(3,3), tag 18	kW	
11	Actual electricity power received (-P) in 1 Watt resolution	2.7.0	1-0:2.7.0.255	F5(3,3), tag 18	kW	

4.2 Choosable/selectable registers on the P1 interface

#	Value	OBIS E-meter	OBIS P1-out	Value Format	Value Unit	Remark
1	Number of power failures in any phase	C.7.0	0-0:96.7.21.255	F5(0,0), tag 18		
2	Power Failure Event Log (long power failures)	C.77*	1-0:99.97.0.255	TST, F10(0,0) - tag 6 Format applicable for the value within the log (OBIS code 0-0:96.7.19.255)	Timestamp (end of failure)	
3	Number of voltage sags in phase L1	32.32.0	1-0:32.32.0.255	F5(0,0), tag 18		
4	Number of voltage sags in phase L2	52.32.0	1-0:52.32.0.255	F5(0,0), tag 18		
5	Number of voltage sags in phase L3	72.32.0	1-0:72:32.0.255	F5(0,0), tag 18		
6	Number of voltage swells in phase L1	32.36.0	1-0:32.36.0.255	F5(0,0), tag 18		
7	Number of voltage swells in phase L2	52.36.0	1-0:52.36.0.255	F5(0,0), tag 18		
8	Number of voltage swells in phase L3	72.36.0	1-0:72.36.0.255	F5(0,0), tag 18		
9	Instantaneous voltage L1 in V resolution	32.7.0	1-0:32.7.0.255	F4(1,1), tag 18	V	
10	Instantaneous voltage L2 in V resolution	52.7.0	1-0:52.7.0.255	F4(1,1), tag 18	V	
11	Instantaneous voltage L3 in V resolution	72.7.0	1-0:72.7.0.255	F4(1,1), tag 18	V	
12	Instantaneous current L1 in A resolution	31.7.0	1-0:31.7.0.255	F3(0,0), tag 18	A	
13	Instantaneous current L2 in A resolution	51.7.0	1-0:51.7.0.255	F3(0,0), tag 18	A	
14	Instantaneous current L3 in A resolution	71.7.0	1-0:71.7.0.255	F3(0,0), tag 18	A	
#	Value	OBIS E-meter	OBIS P1-out	Value Format	Value Unit	Remark
15	Instantaneous active power L1 (+P) in W resolution	21.7.0	1-0:21.7.0.255	F5(3,3), tag 18	kW	
16	Instantaneous active power L2 (+P) in W resolution	41.7.0	1-0:41.7.0.255	F5(3,3), tag 18	kW	
17	Instantaneous active power L3 (+P) in W resolution	61.7.0	1-0:61.7.0.255	F5(3,3), tag 18	kW	
18	Instantaneous active power L1 (-P) in W resolution	22.7.0	1-0:22.7.0.255	F5(3,3), tag 18	kW	
19	Instantaneous active power L2 (-P) in W resolution	42.7.0	1-0:42.7.0.255	F5(3,3), tag 18	kW	
20	Instantaneous active power L3 (-P) in W resolution	62.7.0	1-0:62.7.0.255	F5(3,3), tag 18	kW	

Chapter 5. Modem Configuration

5.1 Configuration

During the configuration and connection, the power supply of the modem power supply is provided by the connected meter through the internal connector.

The modem must be configured by the WM-E Term® software by configuring its parameters which must be performed before the normal operation and usage.

Important! *The WM-E3S® modem can be configured through meter's RS485 connection, meter's optical interface or via TCP connection settings.*

Use the WM-E Term program for the configuration – use the WM-E Term User manual. Over the parameter settings of meter, modem and communication, etc., you can also test the modem communication by the configuration program.

For the proper communication of the modem, you have to configure the APN settings of the SIM – as PIN code, APN, username and password. These all can be configured by using the WM-E Term® software.
For the successful operation of the communication module it is necessary to have appropriate signal strength.
In places where the signal strength is strong it is possible to use internal antenna, for areas with poor reception mount an external antenna (50 Ohm SMA connection) to the antenna connector (3) of the device, which you can place inside even inside the meter enclosure (under the plastic housing).

If you want to readout the meter parameter values during the PC-modem connection you made, then you should select a different configuration port to the meter as TCP/IP or Optical or RS485 (Serial).

5.2 Configuring the modem by WM-E Term®

The Microsoft .NET framework runtime environment is required on your computer.

Download WM-E Term® to your computer from the following location using a browser: https://m2mserver.com/m2m-downloads/WM-ETerm_v1_4.zip

Then unzip the .zip file to a directory and execute the **WM-ETerm.exe** file.

The configuration software supports user account management and password change. You can log in to the program with a password! Follow the **WM-E Term®** configuration software's **User's Guide**!

The LEDs on the device always inform you about the current status of the modem.

For the operation of the modem cellular network communication and SIM card settings (such as APN, password, and account) are required.

In addition, be sure to review and save the transparent mode data speed functions in the WM-E Term program for the RS485 settings. In addition, you must send the configured configuration to the modem using the program - according to the configuration software's User Manual document.

With the configuration software you can also update the modem's firmware. Then the modem will restart and work according to the new settings.

WM-E Term User Manual:
https://m2mserver.com/m2m-downloads/WM-E-TERM_User_Manual_V1_97.pdf

5.3 Configuring the modem by SMS text messages

Important! *Note, that this feature is available since modem firmware version v5.3.46.*

It's possible to control the modem by sending SMS text notification commands to the device.
For the configuration, a password authentication is necessary in every SMS command.

Note, that by default the CSD configuration password is not set on the modem. Thereful, the modem is open for remotely configuring by anyone. Only in this case (when no password was set) you don't need to use the "pw=" command. But, if you are using a CSD password for configuring, then you have to start every SMS command with the "**pw=**" command tag.

If you want to protect the modem against unathorized personnel connection, on CSD connection we highly suggets you to configure a CSD password for the modem by security reasons.

A password can be given from the WM-E Term configuration or by sending the following SMS command to the modem:
cmd=csd.password = *password*

Important! *Note, that the password length can be max. 31 character long.*

Important! *If you are using CSD Password parameter (in case of CSD connection), the modem can authenticate on CSD connection only with this password.* Without *the CSD password it is not possible to access the modem on CSD. If you already set this, you cannot access the modem via WM-E Term.*
Then the device will respond with the result in SMS notification and the new password will be valid.

Important! *Later, if you want to access the modem via WM-E Term, you should not use any password on CSD. For this use this command via SMS and leave the password value empty:*
cmd=csd.password =

If a password is already configured (by the csd.password parameter) on the modem, then at every SMS command the correct password authentication must be used by using the following command syntax.

pw=<password>.<command>

Syntax part	Syntax description
<password>	**The password specified in the previously mentioned *csd.password* parameter must be entered.**
<command>	**SMS commands - the useable commands are detailed in the rest of this description.**

IMPORTANT!

- The SMS command message must start with the "**pw=**" string, then the SMS command message must continue with the password specified in the configuration. If the password specified in the SMS is not the same as the one set in the modem configuration, then the SMS command cannot be processed.
- At value addition there must be placed a *space* character before and after the "**=**" (quotation mark), so " **=** " must be used), because if the space characters are missing, only the previous value will be interpreted, the complete command will not be interpreted correctly.
- Note, that when using "**pw=**" command, there is no *space* character afterwards
- The password must be followed by the "**.**" (point character). If the SMS message does not continue with a "**.**" character, then the SMS command cannot be processed either.
- This "**.**" string must be followed with a command. If there is no password configured, then the first part can be omitted. Therefore always use it like this: **pw=<password>.<command>**

- Note, that when using "**cmd=**" command, there is no *space* character afterwards. Only values must be defined with using " **=** " value additon – so using spaces before and after the quotation mark.
- There should be no enter or space character before an issued command.
- In some commands the "**?**" (question mark) can be used for readout a parameter.
- Multiply parameters can be executed by a separation string which is "\r\n". Among these string(s) more commands can be executed in one step (by one SMS command) – so you can use more separator tags in on SMS text. This string can be combined with the question mark („**?**") if you want to readout parameters as: **\r\n?**
- An SMS message can be maximum 160 characters long. Beyond this size, the SMS command will be fragmented and its processing will not work completely or partially.

Later, if you want to change a valid password, then you should send an SMS command by using at first authentication and then change the current password by using this syntax:

pw=*password*.cmd=csd.password = *new_password*

Syntax for command if there is no password:

cmd=command = *value*

Syntax for command if there is a password used:

pw=*password*.cmd=command = *value*

List of SMS commands <command>

Command	Command description
cmd=AT&F	Modem configuration reset. After setting the configuration, the modem sends an

	SMS response: **“Configuration structure reset result: <error_code>"** For understanding the result codes, see *error_code* part below.
cmd=ATR	Modem Restart command. Before restarting the device, it sends the following SMS notification: **“Device reset requested after SMS answer”**
cmd=mread	IEC register values registers can be read out with this command, as: - C.1.0 (IEC meter address), - 0.9.2 (IEC meter current date), - 0.9.1 (IEC meter current time) This command only makes sense if the modem is connected to a meter from which the mentioned registers can be read out propely. The response format will be the following: **"(<C.1.0>)\r\n<0.9.2>\r\n<0.9.1>\r\n”**
cmd=certreset	With this command, if the modem uses TLS, you can reset TLS parameters to their default values. Then the firmware sets the the following parameter values to 0: from Device Manager parameter group : - dm.tls_enable (Device Manager TLS enable) - dm.cert (Device Manager Certificate bank) - dm.ca_cert (Device Manager CA certificate bank) - dm.verify (Device Manager certification verification) from Transparent / NTA parameter group : - tm.tls_enable (Transparent mode TLS enable)

	- tm.cert (Transparent mode certificate bank select) - tm.ca_cert (Transparent CA certificate bank select) - tm.verify (Transparent mode certificate verification) The SMS response is as follows: **“Configuration structure reset result: <error_code>”** **For understanding the result codes, see *error_code* part below.**
cmd=?<config_parameter>\r\n?<config_parameter>…	Multiply parameter value query (read out). After the “**cmd=?**“ string, you can specify a modem parameter. If you want to read more parameters, then the “\r\n?“ string must follow the parameter name. This string does not need to be present for the last parameter. After processing the command, the firmware will return the values of the parameters to be read line by line in the following format: **<config_parameter> = <config_parameter_value>\r\n**
cmd=<config_parameter>=<config_parameter_value>\r\n<config_parameter>=<config_parameter_value>\r\n…	Multiply parameter value configuration. After the “**cmd=**“ string, new parameter name and values can be configured in the SMS text message with parameter name and value (similarly to a WM-E Term configuration file – open a CFG file for better understanding). The “**\r\n**” string must be at the end of the lines if you want to modify several parameters at once. After processing the command, the firmware gives

	the following response: "Configuration structure changed result: %d", error_code

The table above shows that the return value answers include the save/write configuration result:

<error_code> value	<error_code> description
0	Write / save completed successfully.
-1	The CRC checksum stored in SPI flash memory and the CRC checksum stored in RAM memory do not match.

SMS text command examples:

SMS text command content	SMS notification answer
pw=password.cmd=?conn.apn_name	Using password authentication, then query a parameter value with using the question mark before the next command. **Answer example:** **conn_apn_name = wm2m**
pw=password.cmd=conn.apn_name = net	Using password authentication, then confuring a parameter. **Answer:** **Configuration structure changed result: 0**
pw=password.cmd=AT&F	Using password authentication, and requesting a modem configuration reset to default

	values. **Answer:** **Configuration structure reset result: 0**
cmd=ATR	Using password authentication, and requesting a modem reset. **Answer:** **Device reset requested after SMS answer**
pw=password.cmd=?conn.apn_name\r\n?conn.apn_user\r\n?conn.apn_pass	Using password authentication, and multiply query of parameters by using the \r\n separator tags between question marks „?" (to read out values) and parameter names: **Answer example:** **conn.apn_name = wm2m\r\n** **conn.apn_user = username\r\n** **conn.apn_pass = password\r\n**
pw=password.cmd=conn.apn_name = name\r\nconn.apn_user = user\r\n?conn.apn_pass = pass	Using password authentication, and multiply parameter configuration by using the \r\n separator tags between parameter names: **Answer:** **"Configuration structure changed result: %d", error_code**

For the useable parameter names and values, please see the Modem Parameter Description document.

5.4 Sending an SMS from the meter

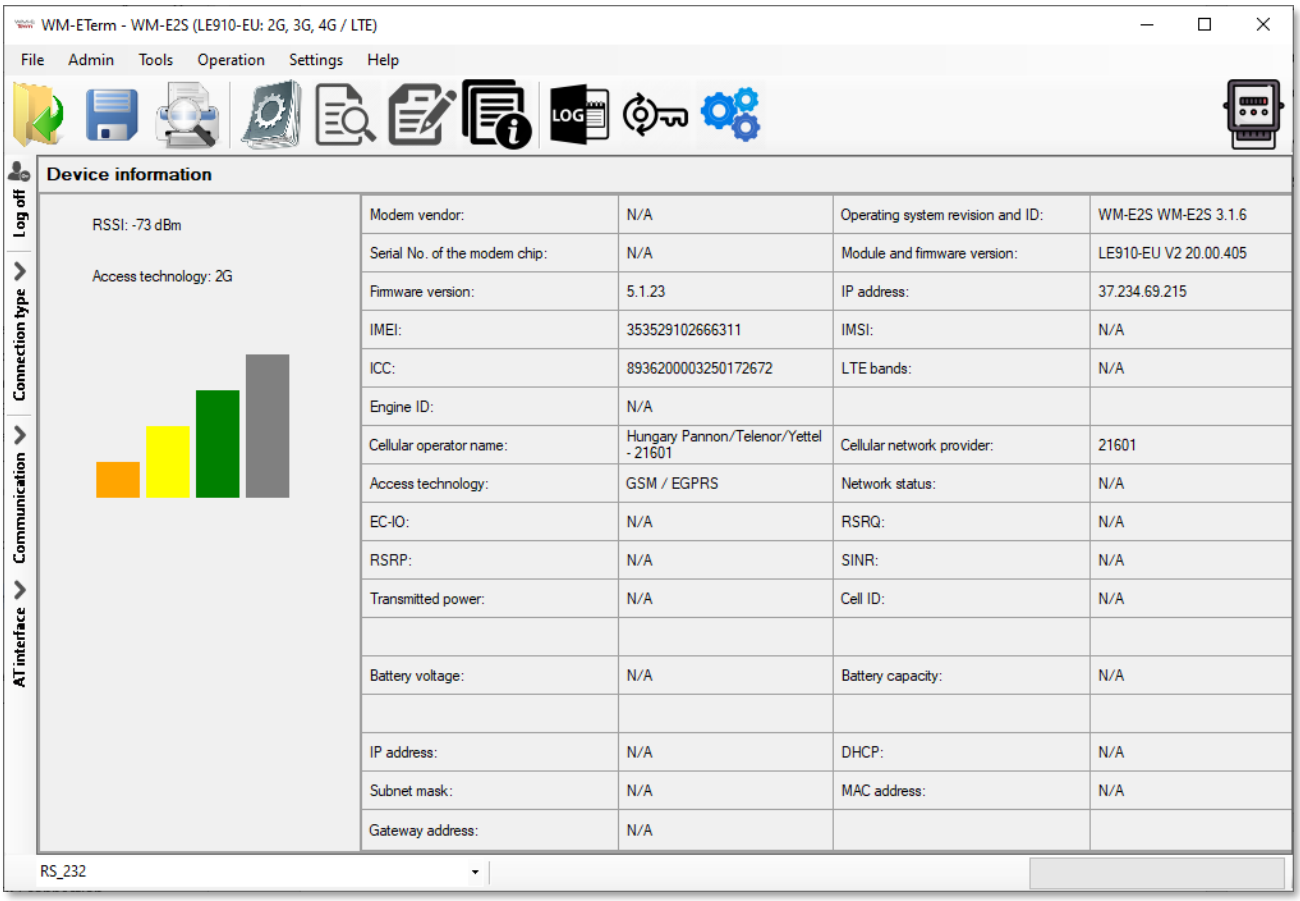
Depending on the meter configuration, by using the modem, the meter can send SMS message corresponding to standard AT commands to the phone number which was configured at the meter side.

It is worth configuring this primarily for alarms and special events, according to the capabilities of the meter.

No other settings are required in WM-E Term®.

5.5 Signal strength

Check signal strength of the cellular network in the *WM-E Term®* software Device Information menu or by using the icon. At the end of the process, the current status information will be updated.



Check RSSI value (at least it should be yellow – which means average signal strength – or better if it is green).

You can change the antenna position while you will not receive better dBm values (the status must be readout again for refresh).

5.6 Power outage management – for supercapacitor expansion only!

If supercapacitors are presented on the PCB or on the additional expansion board, then the firmware of the modem will support the LastGASP feature. This means that in case of power outage the modem's supercapacitor allows to operating further the modem for a short time (a couple of minutes).

In case of detecting the loss of mains/input power source, the modem generates a "POWER LOST" event and the message will be immediately transmitted as an SMS text to the configured phone number.

In case of recovering the mains/power source the modem generates the "POWER RETURN" message and sending by SMS text.

The LastGASP message settings can be enabled by the WM-E Term® application – in the AMM (IEC) parameter group part.

3.7 Restart the modem

There cannot be found a direct option for modem restart in WM-E Term. But it is very easy to push the modem to be restarted.

1. Choose any parameter from the readout values.
2. Change a parameter value
3. Push to the **Save** button.
4. Send the settings by **Parameters Write** icon to the modem.
5. At the end of the writing process, the modem will be restarted.
6. The restart of the device is signed by the **LED3**, which will be flashing quickly

by **green** for 15 seconds. The starting requires 2-3 minutes while the modem will be available on its interfaces.

7. Afterall, the LED will be operating ordinary as it is listed in the LED operation behaviour description.

Chapter 6. Support

If you have any questions concerning the use of the device, contact us at the following address:

E-mail: iotsupport@wmsystems.hu

6.1 Contact the support line

For the proper identification of the modem you should use the sticker on the device, which contains important information for the call center.
Attach the modem related important information – marked - of modem identifiers to the problem ticket, which will help resolving the problem! Thank you!

6.2 Product Support

Documentation and released firmware for the product can be accessed via the following link.
https://www.m2mserver.com/en/product/wm-e3s/

Online product support can be required here:
https://wmsystems.atlassian.net/servicedesk/customer/portal/70/user/login?destination=portal%2F70

Chapter 7. Legal notice

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Warning

Any fault or upcoming error during the software upload/refresh can lead to the device breakdown. When this situation happens call our specialists.