EMH metering
GmbH & Co. KG

Neu-Galliner Weg 1 • 19258 Gallin
GERMANY

Tel. +49 38851 326-0
Fax +49 38851 326-1129

E-mail info@emh-metering.com
Web www.emh-metering.com

Tel. +49 38851 326-1930 (Technical Support)
E-mail support@emh-metering.com

DIZ generation G

Digital Industry Meter

EN Instructions for use

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Edition: 04.12.2020; Product specifications are subject to change without notice! DIZ-G-EMH-BIA-E-1.50

Scope of delivery

Please check the content of the package, before starting with the installation and commissioning.

- 1 DIZ device of generation G
- 1 Instructions for use
- Accessory (optional):
    - Path separator

If the content is incomplete or damaged, please contact your source of supply. Store, use and transport the device such, that it is protected from moisture, dirt and damage.

Important notes

This instruction is part of the documentation. All versions of this device are described in this instruction. Therefore characteristic features may be described, which are not valid for your device.

Further informations about this device refer to the product manual. Pay attention to all component accompanying documents when operating this device.

Target group

This instruction is intended for technicians who are responsible for installation, connection and maintenance of the device. The device has to be installed and put into operation only by qualified electricians in accordance with the generally accepted rules of technology and if necessary the regulations, which are relevant for the installation of telecommunications equipment and end devices.

Intended use

The meter has to be used for measuring electrical energy only and has to operate within the specified values (refer to nameplate).

Maintenance and warranty instructions

The devices are maintenance-free. In case of damage (e. g. due to transportation, storage) no repairs may be carried out independently. Opening of the device invalidates any warranty claim. The same applies for any defect caused by external influences (e. g. lightning, water, fire, extreme temperatures and weather conditions) and any inappropriate or

improper use or handling.

Only authorised personnel are allowed to break the sealing!

Care and disposal instructions

⚠ DANGER!

Contact of parts under voltage is extremely dangerous!

When cleaning the housing of the meter, the conductor to which the meter is connected must be de-energized.

Clean the housing with a dry cloth. Do not use chemical cleaning agents!

The following table lists the components and how to handle them at the end of their life cycle:

Components	Waste collection and disposal
PCB's	Electronic waste: dispose in accordance with local regulations.
LEDs, LC display	Special waste: dispose in accordance with local regulations.
Metal parts	Scrap, recyclable: separate according to type and recycle.
Plastic parts	Separate according to type and recycle (re-granulate). Send for waste incineration if necessary (energy generation by thermal process).

Basic safety notes

The following safety notes have to be observed in principle:

- Observe the local standards, guide lines, regulations and instructions for safety at work and electrical installations.
- Read all the enclosed instructions and information.
- Adhere to the warnings on the device and in the documents.
- Always work on the device in a safety-conscious and threat-aware manner.
- The customary local occupational health and safety regulations for electrical installations must be observed during assembly, installation and removal of the device.

- Make sure that the installation and operating location of the device corresponds to the specifications in the technical data.
- Before assembly, check the devices for any transport or other damage visible from the outside.
- Only use the device if it is in a technically flawless state, and exclusively in line with its intended use.
- The connection cables used to connect a meter must be selected to match the maximum load of the meter and the installation environment in terms of type, cross-section, voltage and temperature.
- Provide flexible wires with ferrules.
- Follow the maintenance and warranty instructions.
- If mains power fails and then returns, no actions on the meter are necessary.

General description

This meter is a digital one, two or four tariff meter for measuring positive and negative active and reactive energy in 2-, 3- and 4-wire networks. Tariff switching can be realized via the internal real time clock (RTC) or via an external control input for 2 tariff types.

The application areas are mainly the energy data collection in the industrial and building technology, the switchgear engineering and the use in the energy supply sector.

Its design allows for space-saving installation (only 6 modules according to DIN 43880).

The meter in the converter design has an adjustable transformer ratio to capture the actual energy consumption. The converter ratio can be set directly on the meter using the call-up button.

The energy consumption values are presented on an 8-digit LC-display.

Furthermore, the energy consumption values can be issued via secondary or primary pulse outputs and/or via a two-wire electrical interface (M-Bus, LON®) or RS485 (M-Bus, SML, Modbus-RTU®). The pulse constant and pulse length can be adjusted depending on the meter types.

The meter has the following accuracy classes:

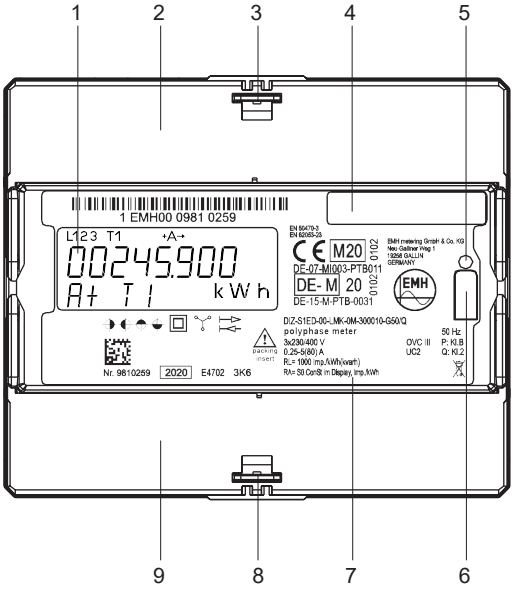
- Active energy: accuracy class B or A according to EN 50470-1, -3
- Reactive energy: accuracy class 2 or 3 according to IEC 62053-23

The meter can be operated as a secondary meter (measured energy from the secondary side of the transformer got to be multiplied with the transformer ratios (VT x CT)) or as a primary meter by setting the transformer ratios (real energy on the primary side of the transformer).

Technical data

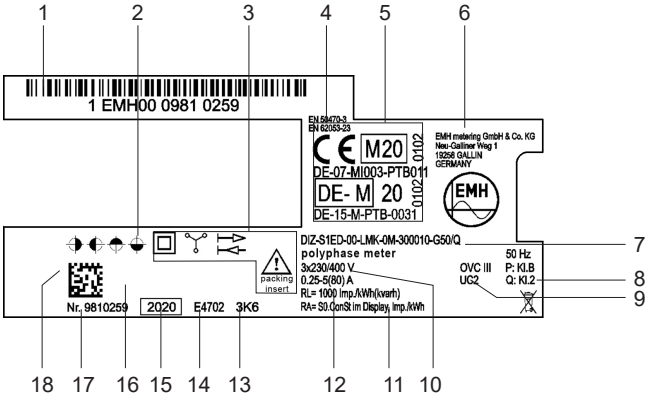
Voltage, current	see nameplate
Utilisation category	UC2 (direct connected meter)
Over voltage category	OVC III (according EN 62052-31)
Rated surge voltage	4 kV (according EN 62052-31)
Frequency	50 Hz, 60 Hz
Input	
Low voltage	5...40 V AC
System voltage	58...230 V AC
Output	
S0 output	max. 27 V DC, 27 mA (passive)
Opto-MOSFET	max. 250 V AC/DC, 100 mA
Temperature range	specified operating range: -25 °C...+55 °C limit range for operation, storage and transport: -40 °C...+70 °C
Relative humidity	max. 95 %, non-condensing, according to IEC 62052-11, EN 50470-1 and IEC 60068-2-30
Class of protection	II
Degree of protection	housing, terminal block: IP 30
Installation environment	The device may only be used in control and meter cabinets with degree of protection IP51 (or higher). This provides the protection against the ingress of dust and water that is prescribed in the relevant standards (EN 50470-1, EN 62052-31).
Fire characteristics	according to IEC 62052-11
Environmental conditions	mechanical: M1 according to Measuring Instruments Directive (2014/32/EU) electromagnetic: E2 according to Measuring Instruments Directive (2014/32/EU) intended location: indoor according to EN 50470-1
Weight	approx. 450 g

Housing, display and operating elements



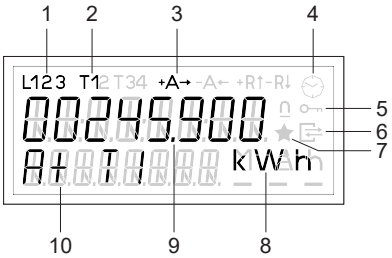
1	LC display
2	Folding terminal cover
3	Seal eye
4	Compartment for transformer plate (only on transformer connected meters)
5	Test LED
6	Call-up button to operate the meter
7	Nameplate
8	Seal eye
9	Folding terminal cover

Nameplate



1	Space for ownership inscription
2	Registered quadrants
3	Safety and instruction notes
4	Product standard
5	Conformity and approval mark
6	Manufacturer address
7	Type designation and type key
8	Accuracy classes
9	Over voltage category (OVC), Utilisation category (UC)
10	Voltage, current, frequency
11	Output impulse constant
12	LED impulse constant
13	Temperature class according to IEC 60721-3-3
14	Contact sequence number
15	Model year
16	Server ID (for SML) or Neuron ID (for LON®)
17	Serial number
18	Bar code

LC display



1	Phase display
2	Display of the active tariff
3	Energy direction display
4	Clock symbol
5	Lock symbol (key)
6	Communication symbol
7	Test mode symbol (star)
8	Display of the units
9	Value area
10	Information area

Phase display

L1, L2, L3 are continuously lit: Phase voltages are applied.

L1, L2, L3 are flashing: Phase sequence of the voltage is wrong.

Display of the active tariff

T1, T2, T3 or T4: Tariff 1, 2, 3 or 4 is active

Energy direction display

+A is lit continuously: The meter has started up and registers positive active energy.

+R is lit continuously: The meter has started up and registers positive reactive energy.

-A is lit continuously: The meter has started up and registers negative active energy.

-R is lit continuously:	The meter has started up and registers negative reactive energy.
+A/-A flash:	Non-reverse ratchet is active, energy is not registered (+A: meter is only recording imported energy, flashing when energy is exported; -A meter is only recording exported energy, flashing when energy is imported).

Clock symbol

is lit continuously:	Tariff control is done via the tariff switching clock.
flashes:	Clock is defective or power is depleted.
off:	Tariff control deactivated or is done via an external signal (control input).

Lock symbol (key)

flashes:	Edit mode is active or was left without locking. The edit data can continue to be changed (not allowed for billing purposes).
off:	The edit mode is continuously locked and cannot be activated (allowed for billing purposes).

Communication symbol

Lights up during communication via the electric interface. The frame of the symbol flashes when the parametering status is active.

Test mode symbol (star)

is lit continuously:	Test mode active. Pulse output of active power to test LED with increased pulse valence.
flashes:	Test mode active. Output of reactive power to test LED with increased pulse valence.

Display of the units

Unit of the value displayed in the value area.

Value area

Display of the register content or action target during menu navigation.

Information area

Additional description of the displayed value.

Lighted display (optional)

Optionally the meter can be equipped with a backlight display.
The backlight will be activated by using the call-up button. A further short push of the call-up button will start the call-up menu with the static list.

The lighting expires:

- when leaving the call-up menu the display goes back to the operating display
- if the call-up button is pushed longer ($t \geq 5$ s). Automatically the display switches back to the operating display.
- if the call-up button is not used:
    - automatically after 30 s during the operating display.
    - automatically after 5 min during a menu are active.

During battery operation the backlight function of the display is not possible.

Interfaces

M-Bus interface

The M-Bus interface is built according to DIN EN 13757-2, -3.

The M-Bus interface which is galvanically separated from the meter is found at the auxiliary terminals 23 and 24.

The following parameter can be transferred via the M-Bus:

- Manufacturer identification
- Medium
- Primary and secondary addresses for M-Bus
- Energy values
- Instantaneous values:
    - power P for all phases
    - active power (P_1, P_2, P_3)
    - currents
    - voltages (U_1, U_2, U_3, U_{12}, U_{23}, U_{13})
    - reactive powers (Q)

    - apparent powers (S)
    - frequency
    - power factors (PF)
    - neutral conducter current
- U and I transformer ratio (changes are only possible on devices with activated edit mode! see also page 37)
- Error status
- Load profile

Further information and details can be found in the M-Bus description for this meter. It is possible that not all data can be read, this depends on the read tool. If this is the case we recommend the EMH industrial meter tool.

LON® interface

The LON® interface is designed according to ISO/IEC 14908-1, -2, -3, -4 and is based on the specification “LONMARK®”, which permits harmonisation of any LON®-module in any environment. Each LON®-module has a world-wide unique address (Neuron-ID). This address is specified during manufacturing and is imprinted on the meters nameplate. The LON®-Bus supports open net-topologies.

The following data can be called up via the LON® interface:

- Energy values
- Instantaneous values:
    - power P for all phases
    - active power (P_1, P_2, P_3)
    - currents
    - voltages (U_1, U_2, U_3, U_{12}, U_{23}, U_{13})
- Error status
- Voltage (VT) and current (CT) transformer ratio (changes are only possible on devices with activated edit mode! see also page 37)

Further information and details can be found in the LON® description for this meter.

The LON® interface which is galvanically separated from the meter is found at the auxiliary terminals 14 and 16.

RS485 interface (M-Bus, SML, Modbus-RTU®)

The electrical interface RS485 is a symmetrical two-wire interface (half-duplex) and is built according to TIA/EIA-485/ITU-T V.11.
The RS485 interface which is galvanically separated from the meter is located at the auxiliary terminals 14 and 16.
Used as data protocols are the M-Bus protocol (also see chapter M-Bus interface on page 10), SML (according to SML specifications version 1.03) or Modbus-RTU® (Remote Terminal Unit).

Characteristics		
Number of connected devices	up to 32	
Maximum cable length	up to 1000 m	
Data transmission rate	300...38400 baud, depending on the protocol	
Signal according to TIA/EIA-485/ITU-T V.11	logical "1" -0,3 V to -6 V	logical "0" +0,3 V to +6 V

RS485 Norm-Bus

At an RS485 bus can be operated up to 31 meters and 1 modem (or master, e. g. i/o controller). The first and last device in bus system are terminated with a terminating resistor between line B and line A to eliminate line reflections. If a terminating resistor is already available as in the EMH modem, a further resistor is not necessary at this side of the bus. Furthermore, this modem (master) must be installed at the beginning or at the end of the bus.

Further features and details can be found in the protocol descriptions for this meter.

SML (Smart Message Language)

The status of the energy registers can be read as table via SML_GetList.Request. It is not possible to read the load profile.

In the product manual you will find the values that can be queried by SML_GetProcParameter.Request.

Modbus-RTU® (Remote Terminal Unit)

Depending on the respective meter design and meter configuration, the meter supports the protocol Modbus-RTU® (Remote Terminal Unit).

Modbus-RTU® is an open master slave protocol, designed by Modicon (nowadays Schneider Electric).
The master sends a telegram via the bus, which is addressed to a certain slave or all slaves (broadcast). If the slave can process the telegram without conflicts, then it will issue, depending on the received telegram type, a special answer. Only the master is allowed to initiate a data exchange. There can only be one master in any network, however, up to 247 slaves can exist.
The settings for the serial interface are called transmission mode.

The following possibilities are available:

- 1 start, 8 data, 1 stop bit, even parity (8E1)
- 1 start, 8 data, 1 stop bit, uneven parity (8O1)
- 1 start, 8 data, 2 stop bit, no parity (8N2)
- 1 start, 8 data, 1 stop bit, no parity (8N1)

The transmission mode can be changed either via Modbus® or using the call-up button via the user menu. The baud rates 1200, 2400, 4800, 9600 19200 and 38400 are supported.

Input and outputs

Input

The two tariff meter can be equipped with a control input (voltage system) for tariff switching.

Specifications	
System voltage	58...230 V AC (standard)
Low voltage	5…40 V AC

Outputs

The meter has two potential-free S0 impulse outputs (according to IEC 62053-31) or two potential-free MOSFET impulse outputs (semiconductor relay). The MOSFET outputs are designed as a make contact.

Specifications	
Opto-MOSFET	max. 250 V AC/DC, 100 mA (standard)
S0	max. 27 V DC, 27 mA (passive)

Secondary pulse outputs

The pulse outputs are not affected by any possibly transformer ratios.

Depending on device configuration the pulse duration can be 30, 50, 100 or 500 ms.

The energy pulses (R_A) can be, depending on device configuration, 1, 10, 50, 100, 500, 1 000, 5 000, 10 000, 50 000 or 100 000 Imp./kWh or Imp./kvarh and are always based secondary.

Primary pulse outputs

The transformer ratios effect the pulse output.

Depending on device configuration and the transformer ratio, the pulse duration can be 100 or 500 ms. The pulse valence can be set to 1, 10, 100 or 1 000 Imp./kWh or Imp./kvarh.

On meters with a configured primary pulse output, the functionality of the pulse output also depends on the set total transformer ratio.

The transformer ratios must be selected by the user in a way that during maximum load of the meter a sufficiently high pulse pause in ensured.

Configuration of the pulse outputs

The configuration of the impulse outputs will be fixed during the production process. It is not possible to change it later.

Out 1	Out 2
|P|	none
|P|	|Q|
+P	none
+P	-P
+P	+Q

Test LED

Any possibly transformer ratios do not effect the test LED.

The LED constant (R_L) depends on the device model and is always related secondary.

Battery

⚠ CAUTION!

Danger of explosion due to improper handling of the exchangeable battery!

Only authorised personnel are permitted to insert or replace the battery. Batteries may leak or ignite.

- Do not short-circuit, damage, heat or open force batteries.

The meter can optionally be equipped with an internal battery, which allows the reading of the meters display in a de-energised state.

At least 250 readings with duration of 1 min each are possible. The readings can be done in a time period of 8 years, whereby the runtime of the battery changes through the respective user profile.

During battery operation the display extinguishes automatically 20 s after the last actuation of the call-up button.

The following is not provided during battery operation:

- Optical/electrical interface
- Measuring element
- Data storage
- Pulse counting
- Input
- Outputs
- Display lighting

During battery operation no symbols are shown in the display.

Next to the standard operating display the menu contains the listmenu as the only sub-menu. In the listmenu the measured values list is hidden.

In the scrolling list of standard operating display the energy values for the active tariff are shown.

The battery that is used in the meter is a lithium battery with slow self-discharge. If lithium batteries are stored or not used for a long time a protective film forms technology-related on the inner contacts that prevents self-discharge. If the battery is used again, this protective film must first be removed, so that the full power is available. Therefore, it may be necessary that the call-up button must be pressed for a longer time (≤ 30 s) so that the device can be operated again.

Real Time Clock

The quartz-run, capacitor buffered real time clock (RTC) is used for tariff switching and synchronization of the load profile.

The running accuracy of the real time clock is operating within ± 5 ppm (at 23 °C).

After a charging time of the gold caps of at least 24 hours, the internal clock is running even during a power outage with a power reserve of at least 168 hours (7 days).

The time and date can be set via the data interface and the setmenu.

Installation and commissioning

Mounting the meter

The meter is designed for the installation onto DIN rails TH 35-7.5 according to IEC 60715. The following figure shows the relevant dimensions for the mounting of the meter (in mm).

The device may only be used in control and meter cabinets with degree of protection IP51 (or higher). This provides the protection against the ingress of dust and water that is prescribed in the relevant standards (EN 50470-1, EN 62052-31).

⚠ DANGER!

Contact of parts under voltage is extremely dangerous!

When installing or changing the meter, the conductor to which the meter is connected must be de-energized.

- Remove the relevant back-up fuses, for two-sided supply on the mains side as well as on the generation side.
- Store the back-up fuses in such a way that other people cannot refit them unnoticed.
- If you use selective circuit breakers for disconnection from the mains, secure them against being switched on again unnoticed.
- Before a meter is installed, the consequences of activating the electrical system on immediate dangers to the life and health of persons as well as economic damage must be checked.
- To avoid immediate dangers and damage, suitable countermeasures must be taken prior to activation in order to prevent resulting interference.
- Only use the dedicated screw terminals for installation and connection of the meter.

⚠ DANGER!

Risk of danger to life due to electric arc and electric shock!

The input and outputs are not secured internally.

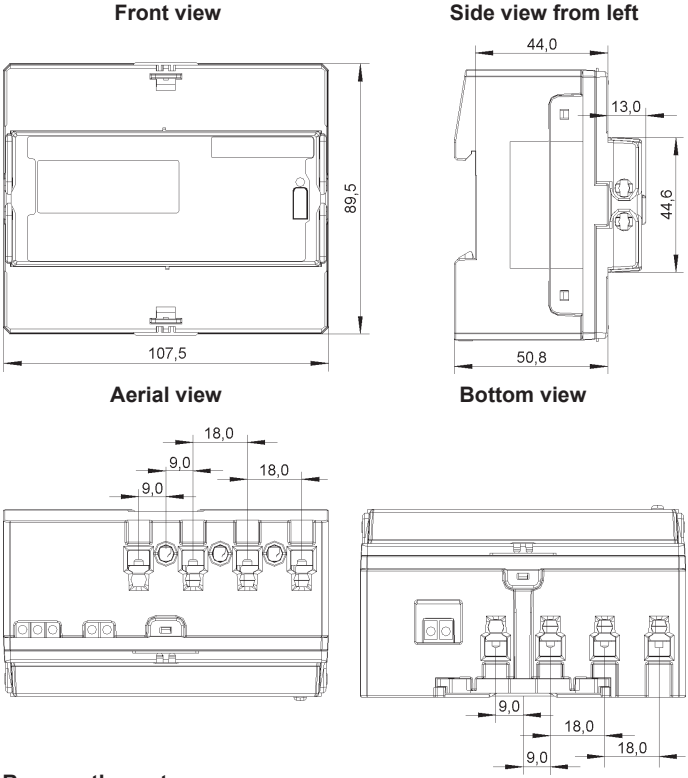
- Secure the input with a back-up fuse of ≤ 0,5 A according to valid technical directives.
- Secure the outputs in compliance with the current value specified on the nameplate of the meter and the Opto-MOSFET output with a back-up fuse of 0,1 A according to valid technical directives.

⚠ DANGER!

Risk of danger to life due to electric arc and electric shock!

The voltage taps are not secured internally and directly connected to the mains potential.

- Secure external devices, which are operated via the voltage taps of the meter, with back-up fuses of ≤ 0,5 A according to valid technical directives.



Remove the meter

For disassembly of the meter from the rail, the locking can be released with a suitable screwdriver on the underside of the counter.

Installation the meter

When connecting the meter, observe the appropriate wiring diagram, which you can find inside the terminal cover.

If the wiring diagram is missing, please contact the supplier.

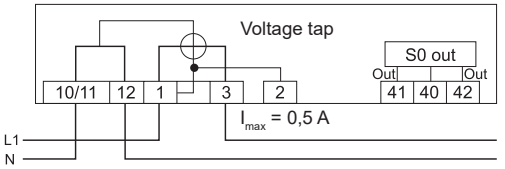
Examples of wiring diagrams

⚠ DANGER!

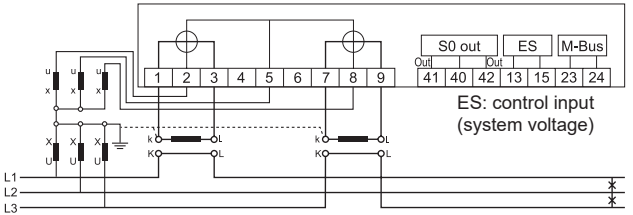
Improper installation endangers life and health and carries the risk of malfunction and property damages!

- When connecting the meter make sure that the terminals for neutral conductor 10/11 and 12 are on the left side.

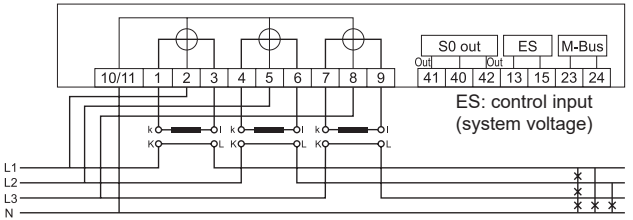
2-wire version, connected directly



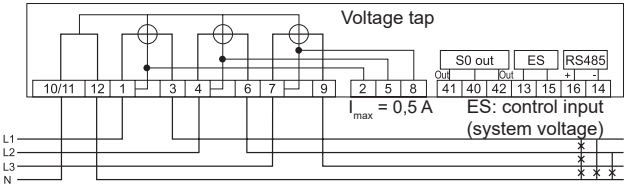
3-wire version, connected to the current and voltage transformer



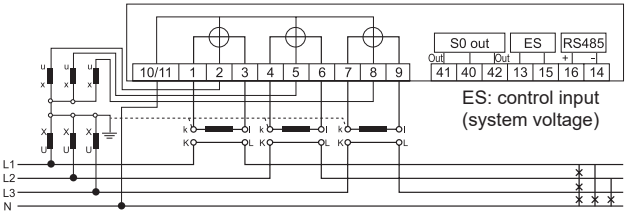
4-wire version, connected to the current transformer



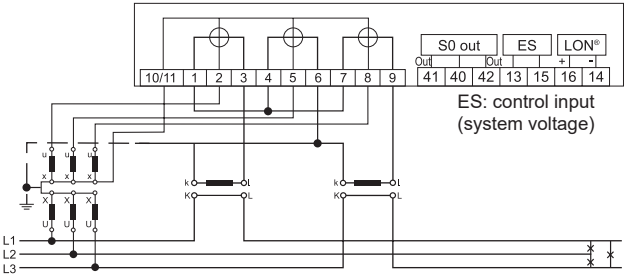
4-wire version, connected directly



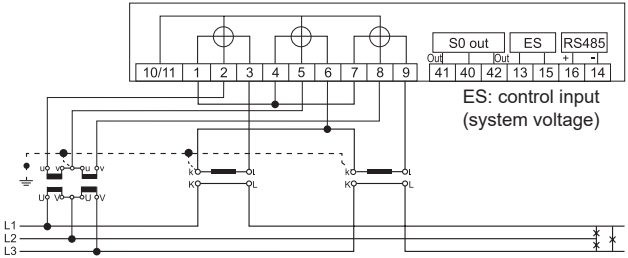
4-wire version, connected to the current and voltage transformer



4-wire version connected to current and voltage transformers (3 voltage transformers) (auxiliary circuit with 2 current transformers)



4-wire version, connected to the current and voltage transformer (auxiliary circuit with 2 current converters)



Terminal blocks

NOTICE!

Damage of the terminals due to excessive torque!

The appropriate torque depends on the type of the connection line and on the maximum current.

- Tighten the terminals with the required torque according to IEC 60999-1.

Transformer connected meter to 5 A

⚠ DANGER!

Contact of parts under voltage is extremely dangerous!

- Protect meters with a transformer connection in the voltage circuit with a back-up fuse of < 6 A according to valid technical directives.
- Secure the current paths in compliance with the current value specified on the nameplate of the meter according to valid technical directives.

⚠ DANGER!

Risk of danger to life due to high voltage when current transformers are interrupted!

The high voltage on the interrupted current transformer at the transformer connected meter is extremely dangerous and destroys the current transformer.

- Short-circuit the secondary circuits of the current transformer at the testing terminals before disconnecting the current path.

Meter up to 80 A

⚠ DANGER!

Improper installation endangers life and health and carries the risk of malfunction and property damages!

- Use a overcurrent protection for maximal 65 A or 80 A (e. g. a main circuit breaker) before the meter.
- Secure the connection paths in compliance with the current value specified on the nameplate of the meter according to valid technical directives.
- The installer bears responsibility for coordinating the rated values and parameters of the supply-side overcurrent protection devices with the maximum rated currents as well as the rated consumption category of the meter system for directly connected meters.
- The connection cables used to connect a meter must be selected to match the maximum load of the meter and the installation environment in terms of type, cross-section, voltage and temperature.

NOTICE!

Damage of the meter in the absence of back-up fuse on the control input!

- Protect the control input by a back-up fuse of 0,5 A.

NOTICE!

Damage of the meter in the absence of back-up fuse on the Opto-MOSFET output!

- Protect the Opto-MOSFET output by a back-up fuse of 0,1 A.

	Current terminals/ N-terminal		Voltage terminals	Auxiliary terminals
	up to 80 A	up to 5 A	up to 80 A/ up to 5 A	
Terminal dimensions W x H or d (mm)	6,9 x 7,9	d = 3,1	d = 3,1	d = 2,5
Minimum connection cross section (mm²)	2,5	0,5 **	0,5 **	0,5 **
Maximum connection cross section (mm²)*	25,0 ***	4,0 ****	2,5	2,5
Maximum torques (Nm)	3,0	0,5	0,5	0,8
Screw type	Screw and washer assembly with cross recess, type PZ2 (Pozidriv)	Screw and washer assembly with cross recess, type PH1 (Phillips)	Screw and washer assembly with cross recess, type PH1 (Phillips)	Slotted screw, type SL 0,6 x 4
Thread size	M5	M3	M3	M3

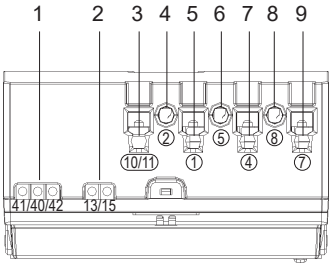
* Rated connection capacity according to IEC 60999-1

** Rated connection capacity according to IEC 60999-1, maximum 0,5 mm^2 flexible

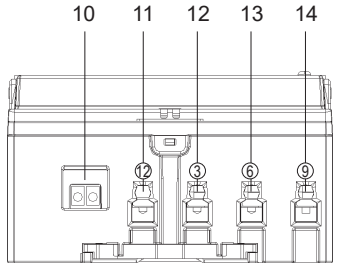
*** Rated connection capacity according to IEC 60999-1, maximum 16,0 mm^2 flexible

**** Rated connection capacity according to IEC 60999-1, maximum 2,5 mm^2 flexible

Terminal arrangement on top of the meter



Terminal arrangement down on the meter



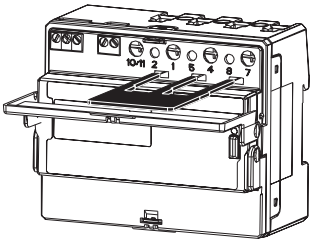
1	S0 outputs
2	Control input
3	Neutral conductor N
4	Voltage input U1
5	Current input I1
6	Voltage input U2
7	Current input I2
8	Voltage input U3
9	Current input I3

10	Electrical interface (optional), e. g.
	• Two-wire interface
	  • M-Bus (terminals 23 and 24) or
	  • LON® (terminals 14 and 16)
	• RS485 interface
	  • M-Bus (terminals 14 and 16) or
	  • SML (terminals 14 and 16) or
	  • Modbus-RTU® (terminals 14 and 16)

11	Neutral conductor N (terminal 12)
12	Current output I1 (terminal 3)
13	Current output I2 (terminal 6)
14	Current output I3 (terminal 9)

Path separator (accessory)

With a direct connected meter it is possible to separate the voltage path from the current path for testing. Therefore, a special path separator is used, which is available as an accessory.



Remove the path separator after testing the meter. Otherwise, the meter cannot be started up, as the voltage supply is interrupted.

Terminal cover

To prevent unauthorized access to the terminals, the terminal covers are mounted with sealing screws on the sealing eyes (see page 6).

Operating the meter

Display control

The following applies for operation of the meter via the call-up button:

S **Short operation (t < 2 s):**

- switches to the next list value, menu item or setting value
- activates the backlight, but only if the meter is equipped with this option

L **Long operation (2 s ≤ t < 5 s):**

- activates the currently displayed menu item
- confirms a setting change for the acceptance

Longer operation (t ≥ 5 s):

- leads always back to the standard operating display

If the meter has a LON® interface, operating the button causes an automatic transmission of the Neuron-ID-number via the bus to the LON®-Software used. This feature makes integration into the LON®-system easier.

Error codes

Should an error occurred then an error code is displayed in the standard operating display. For several errors the sum of the respective error code is shown:

Error code	Explanation
00000001	program code faulty
00000002	parameter data faulty
00000004	edit data faulty
00000008	data back-up faulty
00000010	calibration data faulty

If an error is shown at the display it is not allowed to use the meter data for billing purposes. Because the meter could be negatively affected.

The reset of an error massage can only be done in the manufacturer's factory.

If the device shall be used for billing purpose again, it has to be repaired properly and afterwards the manufacturer has to declare the conformity according to the measurement directives and regulations.

Start list

After start-up the firmware version and the firmware checksum appear for 5 s. During this time the call-up button is not active yet. After this time the standard operating display is activated.

Standard operating display

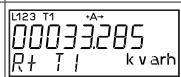
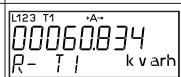
During normal operation the meter is in the standard mode.
If the meter is in a different mode, 5 min after the last operation of the button the display will automatically switch back to the standard display. Here, depending on the configuration, the available energy registers for the active tariff are sequentially displayed (scrolling) every 5 s. If the meter has only 1 energy register, this register is displayed for 10 s. During battery operation, the available energy registers (depending on configuration) at the rates T0 and T1 are displayed at intervals of 5 s of each other (rolling).

With a short push of the call-up button during the operating display the backlight will be activated but only if the meter is equipped with this function. With another short push of the call-up button the call-up menu appears with the static list.

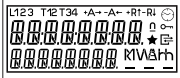
The lighting expires:

- If the call-up menu ends and the display goes back to the operating display.
- If the call-up button is pushed longer (t ≥ 5 s).
- If the call-up button is not used:
  - Automatically after 30 s during the operating display.
  - Automatically after 5 min during a menu are active.

During battery operation the backlight function of the display is not possible.

Menu item	Display	Button
Error display (only if an error is present)		Appears for 60 s if an error S or L Activate the call-up menu
Energy register for positive active energy at the active tariff (if configured)		Appears for 5 s* S or L Activate the call-up menu
Energy register for negative active energy at the active tariff (if configured)		Appears for 5 s* S or L Activate the call-up menu
Energy register for positive reactive energy at the active tariff (if configured)		Appears for 5 s* S or L Activate the call-up menu
Energy register for negative reactive energy at the active tariff (if configured)		Appears for 5 s* S or L Activate the call-up menu

Continued on next page

Menu item	Display	Button
Display test		Appears for 5 s S or L Activate the call-up menu

* If the meter has only 1 energy register, this register is displayed for 10 s.

Call-up menu „Menus“

The call-up menu is activated by pushing the call-up button during the standard operating display.

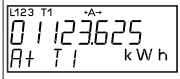
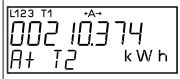
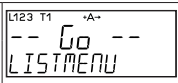
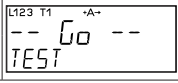
The menu starts with the listing (static list) of the most important values for standard applications. In this list are tariff information T1 and T2 (active energy) and values for an installation check.

Afterwards the following submenus can be activated:

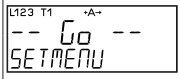
- the list menu
  - tariff list (with additional tariff register)
  - measuring values (extended instantaneous values (measurement device function))
  - device setting (additional device settings)
- test menu (test modes for test purposes)
- edit menu (setup of device settings, which can be blocked against further changes)
- set menu (setup of device settings, which can be changed again)

During battery operation only tariff register and transformer ratios are shown. Only access to the list menu is possible.

The following illustrations are for a better understanding and can differ from the display of your meter.

Menu item	Display	Button
Tariff 1, positive active energy (if configured)		S To the next menu item L Return to the standard operating display
Tariff 2 positive active energy (if configured)		S To the next menu item L Return to the standard operating display
Tariff 1, negative active energy (if configured)		S To the next menu item L Return to the standard operating display
Tariff 2, negative active energy (if configured)		S To the next menu item L Return to the standard operating display
Other possible displays: • Voltage transformer ratio (U-Const) • Current transformer ratio (I-Const) • Active power (P) • Total active power (P_{total}) • Active power L1 (P1) • Active power L2 (P2) • Active power L3 (P3) • Voltage (U) • Voltage L1 (U1) • Voltage L2 (U2) • Voltage L3 (U3)		• Current (I) • Current L1 (I1) • Current L2 (I2) • Current L3 (I3) • S0 impulse constant • S0 impulse length • M-Bus address 1 • M-Bus address 2 • M-Bus baud rate • Modbus address • Modbus baud rate
List menu		S To the next menu item L Activate the list menu
Test menu		S To the next menu item L Activate the test menu

Continued on next page

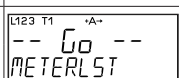
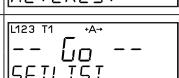
Menu item	Display	Button
Set menu (only on meters with communication interfaces and/or tariff switching clock)		S To the next menu item L Activate the set menu
Switch to the first entry of the menu or to the standard operating display		S To the first entry of the menu L Return to the standard operating display (scrolling)

When pressing the button longer (> 5 s) the display will switch from any point in the list menu back to the standard operating display (scrolling, unlit).

List menu „Listmenu“

Further sub-menus can be accessed via the list menu. The sub-menus contain the display values for the available energy register, measuring values and device settings.

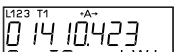
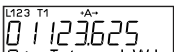
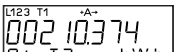
The sub-menu „Meterlist“ is hidden during battery operation.

Menu item	Display	Button
Tarifflist		S To the next menu item L Activate the Tarifflist
Meterlist		S To the next menu item L Activate the meterlist
Setlist		S To the next menu item L Activate the setlist
Switch to the first entry of the menu or the call-up menu		S To the first entry of the menu L Return to the call-up menu

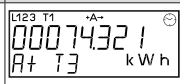
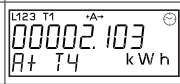
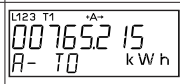
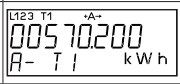
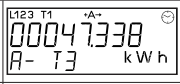
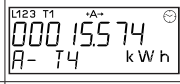
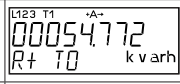
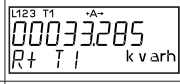
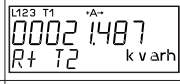
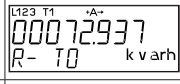
Tarifflist

The tariff list contains all energy registers, ones with and without tariff. They can be reached via the list menu. Following energy registers and amount of tariffs are possible:

Meter type	Direction of energy	Energy register	Amount of tariffs
uni directional meter with reverse stop as consumption meter	+P	+A	maximum 4 (T0 - T4)
uni directional meter with reverse stop as consumption meter with measurement of reactive energy	+P +Q -Q	+A +R -R	maximum 2 (T0 - T2)
uni directional meter with reverse stop as exported energy meter with measure-ment of reactive energy	-P +Q -Q	-A +R -R	maximum 2 (T0 - T2)
combi meter as import energy	+P +Q	+A +R	maximum 2 (T0 – T2)
combi meter as exported energy meter	-P -Q	-A -R	maximum 2 (T0 – T2)
bidirectional meter	+P -P	+A -A	maximum 4 (T0 - T4)
4-quadrant meter	+P -P +Q -Q	+A -A +R -R	maximum 2 (T0 - T2)

Menu item	Display	Button
No tariff, positive active energy		S or L To the next menu item
Tariff 1, positive active energy (if configured)		S or L To the next menu item
Tariff 2, positive active energy (if configured)		S or L To the next menu item

Continued on next page

Menu item	Display	Button
Tariff 3, positive active energy (if configured)		S or L To the next menu item
Tariff 4, positive active energy (if configured)		S or L To the next menu item
No tariff, negative active energy		S or L To the next menu item
Tariff 1, negative active energy (if configured)		S or L To the next menu item
Tariff 2, negative active energy (if configured)		S or L To the next menu item
Tariff 3, negative active energy (if configured)		S or L To the next menu item
Tariff 4, negative active energy (if configured)		S or L To the next menu item
No tariff, positive reactive energy		S or L To the next menu item
Tariff 1, positive reactive energy (if configured)		S or L To the next menu item
Tariff 2, positive reactive energy (if configured)		S or L To the next menu item
No tariff, negative reactive energy		S or L To the next menu item
Tariff 1, negative reactive energy (if configured)		S or L To the next menu item

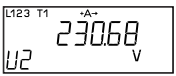
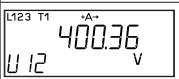
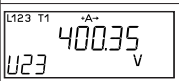
Continued on next page

Menu item	Display	Button
Tariff 2, negative reactive energy (if configured)		S or L To the next menu item
Switch to the first entry of the menu or the call-up menu		S To the first entry of the menu L Return to the call-up menu

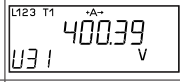
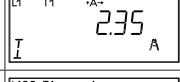
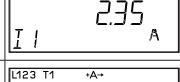
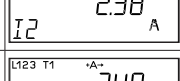
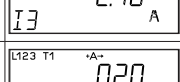
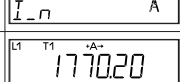
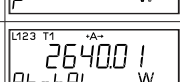
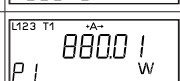
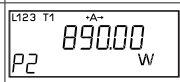
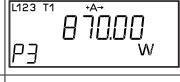
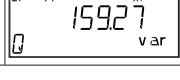
Meterlist

The meter list contains the recorded instantaneous values. If transformer ratios are set in the meter then the instantaneous values are shown for the primary side. The meter list can be accessed via the list menu.

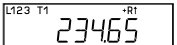
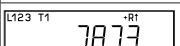
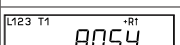
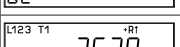
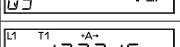
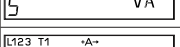
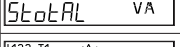
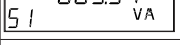
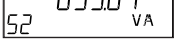
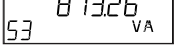
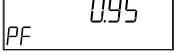
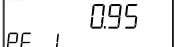
During battery operation the meterlist is hidden in the list menu.

Menu item	Display	Button
Voltage L1-N (only on 2-wire-meters)		S or L To the next menu item
Voltage L1-N (only on 4-wire-meters)		S or L To the next menu item
Voltage L2-N (only on 4-wire-meters)		S or L To the next menu item
Voltage L3-N (only on 4-wire-meters)		S or L To the next menu item
Voltage L1-L2 (only on 3 or 4-wire-meters)		S or L To the next menu item
Voltage L2-L3 (only on 3 or 4-wire-meters)		S or L To the next menu item

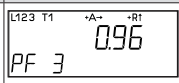
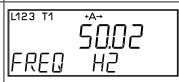
Continued on next page

Menu item	Display	Button
Voltage L3-L1 (only on 3 or 4-wire-meters)		S or L To the next menu item
Current L1 (only on 2-wire-meters)		S or L To the next menu item
Current L1 (only on 3 or 4-wire-meters)		S or L To the next menu item
Current L2 (only on 4-wire-meters)		S or L To the next menu item
Current L3 (only on 3 or 4-wire-meters)		S or L To the next menu item
Current N (calculated, only on 4-wire-meters)		S or L To the next menu item
Active power (only on 2-wire-meters)		S or L To the next menu item
Total active power (only on 2-wire-meters)		S or L To the next menu item
Active power L1 (only on 4-wire-meters)		S or L To the next menu item
Active power L2 (only on 4-wire-meters)		S or L To the next menu item
Active power L3 (only on 4-wire-meters)		S or L To the next menu item
Reactive power (only on 2-wire-meters)		S or L To the next menu item

Continued on next page

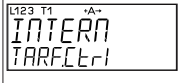
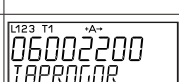
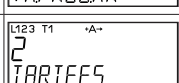
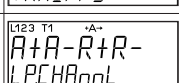
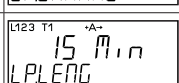
Menu item	Display	Button
Total reactive power (only on 2-wire-meters)		S or L To the next menu item
Reactive power L1 (only on 4-wire-meters)		S or L To the next menu item
Reactive power L2 (only on 4-wire-meters)		S or L To the next menu item
Reactive power L3 (only on 4-wire-meters)		S or L To the next menu item
Apparent power (only on 2-wire-meters)		S or L To the next menu item
Total apparent power (only on 2-wire-meters)		S or L To the next menu item
Apparent power L1 (only on 4-wire-meters)		S or L To the next menu item
Apparent power L2 (only on 4-wire-meters)		S or L To the next menu item
Apparent power L3 (only on 4-wire-meters)		S or L To the next menu item
Total power factor (only on meters with measure of reactive power)		S or L To the next menu item
Power factor L1 (only on 4-wire-meters)		S or L To the next menu item
Power factor L2 (only on 4-wire-meters)		S or L To the next menu item

Continued on next page

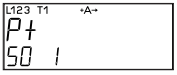
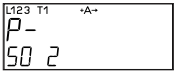
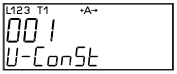
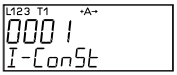
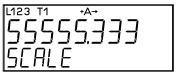
Menu item	Display	Button
Power factor L3 (only on 4-wire-meters)		S or L To the next menu item
Frequency		S or L To the next menu item
Switch to the first entry of the menu or the call-up menu		S To the first entry of the menu L Return to the call-up menu

Setlist

The settings for the meter can be seen in the device setting list. Some of the settings can be changed in the edit menu, if it's available and not locked. The set list can be accessed via the list menu.

Menu item	Display	Button
Mode of the device clock		S or L To the next menu item
Source of the tariff control (Possible displays: Intern, Remote or Off)		S or L To the next menu item
Time switch program number		S or L To the next menu item
Amount of tariffs		S or L To the next menu item
Channels of load profile		S or L To the next menu item
Period length of load profile		S or L To the next menu item

Continued on next page

Menu item	Display	Button
Measured energies		S or L To the next menu item
Electrical interface (Possible displays: MbuS SER, Modb SER (for Modbus), SML SER or Lon, if configured)		S or L To the next menu item
Pulse constant S0 outputs in Imp./kWh		S or L To the next menu item
Pulse length S0 outputs in milliseconds		S or L To the next menu item
Configuration S0 output 1		S or L To the next menu item
Configuration S0 output 2		S or L To the next menu item
Voltage transformer ratio		S or L To the next menu item
Current transformer ratio		S or L To the next menu item
Amount of pre and post decimal positions of the energy register representation		S or L To the next menu item
Switch to the first entry of the menu or the call-up menu		S To the first entry of the menu L Return to the call-up menu

Edit menu „Edit“

The status of the edit menu is indicated by the lock symbol (key) in the display (also see chapter LC display on page 8).

The meter must not be used for billing purpose while the edit menu is unlocked.

Changeable Parameter

If the meter is not used for billing, the edit menu can be available (flashing key symbol in the display).

The following parameters can be changed in this case:

- transformer ratios
- arity of the energy register
- settings of the pulse outputs

a) Change transformer ratios:

- voltage transformer ratio VT (on transformer-connected meters):
  - integer values from 1 to 999 (default value 1)
- current transformer ratio CT (on transformer-connected meters):
  - integer values from 1 to 9999 (default value 1)

► **The product of CT x VT can be max. 999999.**

If the transformer ratios are set, the measuring values (secondary side of the transformer) will be multiplied with the transformer ratios. In this case the meter operates as a primary meter.

Should the transformer ratios be changed on a meter that has already registered energy, then the energy registers are reset to „Zero“.

This can be done only if the meter is not used billing and the edit menu is be available.

In this case the resolution of the energy registers and pulse constants are reset to the standard values. Only after the changes the new transformer ratios are considered.

b) Arity of the energy register:

The resolution of energy register can be changed manually via the display control or via the data interface. Possible values are:

- direct connected meters:
  - 8.0 (default value), 7.1, 6.2, 5.3
- transformer connected meters:
  - secondary meters: 8.0, 7.1, 6.2, 5.3 (default value), 4.4
  - primary meters: 8.0, 7.1, 6.2, 5.3, 4.4

According to the MID (Measuring Instruments Directive) 4000 hours operation at maximum load may not cause register overflow.

If meter resolutions are selected, which do not guarantee this fact, the meter cannot be used anymore for billing purposes!

Example:

Meter with 3 x 230/400 V, direct connected 80 A

P_{Max} = 3 x U_{Ref} x I_{Max}

= 3 x 230 V x 80 A

= 55,2 kW

registered energy after 4000 h = 220.800 kWh

► **There must be at least 6 digits before the decimal point.**

The meter resolution should therefore be selected with the following limitations:

- direct connected meters:
  - 8.0 (default value), 7.1, 6.2
- transformer connected meters:
  - secondary meters: 6.2, 5.3 (default value)
  - primary meters: The available arity and the unit are derived from the transformer ratio for voltage (VT) and current (CT). If in the meter the corresponding transformer ratios are set (see the example of edit menu on page 40), the energy register displays the primary energy (primary meter).

The following example shows the permissible solution of energy register of a primary meter with 3 x 230/400 V in accordance with MID. Other examples can be found in the product manual.

Transformer ratio (VT x CT)	Meter resolution	Unit
1 - 5	8.0, 7.1, 6.2, 5.3	kWh/kvarh
6 - 49	8.0, 7.1, 6.2	kWh/kvarh
50 - 499	8.0, 7.1	kWh/kvarh
500 - 4 999	8.0, 7.1, 6.2, 5.3	MWh/Mvarh
5 000 - 49 999	8.0, 7.1, 6.2	MWh/Mvarh
50 000 - 499 999	8.0, 7.1	MWh/Mvarh
500 000 - 999 999	8.0	MWh/Mvarh

During an energy registers display overflow due to the set arity the leading numbers are cut respectively. The internal meter state stays.

c) Change the pulse outputs:

- pulse values for pulse outputs:
  - secondary meters: 1, 10, 50, 100, 500, 1 000, 5 000, 10 000, 50 000 or 100 000 Imp./kWh resp. Imp./kvarh
  - primary meters: 1, 10, 100 or 1 000 Imp./kWh resp. Imp./kvarh

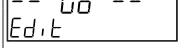
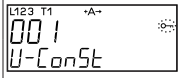
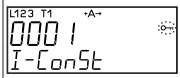
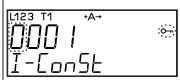
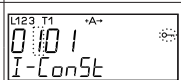
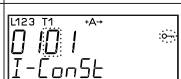
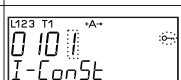
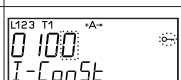
- pulse duration for pulse outputs:
  - secondary meters: 30, 50, 100 or 500 ms
  - primary meters: 100 or 500 ms

Not every pulse length can be realized with appropriate pulse rate (Impulse constant and registered energy per time). Therefore some settings can't be possible. Following messages are displayed, if the pulse lengths are not allowed:

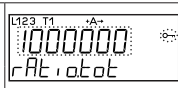
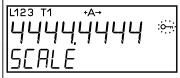
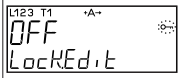
- w.SETTInG: The pulse length must be adjusted.
- no.CHOICE: No valid setting possible. The pulse value must be adjusted new.

Edit menu - example:

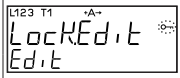
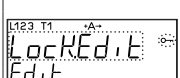
In the following, the I-transformer ratio are changed from 0001 to 0100. The same procedure applies for changing the counter, S0-constants and also the impulse length.

Menu item	Display	Button
Activation of the edit menu		S To the next menu item L **Activate the edit menu**
Voltage transformer ratio		S **To the next menu item** L Edit value
Current transformer ratio		S To the next menu item L **Edit value**
Edit the first digit (digit flashes)		S Increase digit by 1 L **Edit next digit**
Edit the second digit (digit flashes)		S **Increase digit by 1** L Edit next digit
Edit the second digit (digit flashes)		S Increase digit by 1 L **Edit next digit**
Edit the third digit (digit flashes)		S Increase digit by 1 L **Edit next digit**
Edit the fourth digit (digit flashes)		S **Increase digit by 1** L Transfer of values
Edit the fourth digit (digit flashes)		S Increase digit by 1 L **Transfer of values**

Continued on next page

Menu item	Display	Button
Take over value (all digit flash)		S Edit the first digit L **Take over the edited value, switch over to the next menu option**
Checking the transformer ratios		
Total transformer ratio too large: VT x CT > 999999		S Overwriting the transformer ratios L New input of transformer ratios, set values are discarded
Total transformer ratio is OK: VT x CT ≤ 999999	no display	Accepting the values, default values for meter solution is selected automatically
Arity of the energy registers		S **To the next menu item** L Edit value
Output constant in Imp./kWh or Imp./kvarh		S **To the next menu item** L Edit value
Pulse length in milliseconds		S **To the next menu item** L Edit value
Leave edit menu without final locking („Off“ must be activated)		S **To the next menu item** L Edit value
Switch to the menu start or the call-up menu		S To menu start L **Return to the call-up menu**

Continued on next page

Menu item	Display	Button
Leave edit menu with final lock („On“ must be activated)		S **To the next menu item** L Edit value
Confirm locking		S Return to the previous menu item L **To the next menu item**
Permanent lock and leave edit mode (LocK. Edit flashes)		S Return to the previous menu item L **Leave edit mode and permanent lock, switch to the menu and acceptance of all values**

When pressing the button longer, the edit mode can be permanently locked, meaning data can no longer be edited!

Determining the transformer ratios

The transformer ratios result as a dividend from the primary current or voltage information and the secondary current or voltage information, e. g. 100 A / 5 A = 20.

► **In this case, the factor 20 is to be entered in the edit menu.**

Set menu „Setmenu“

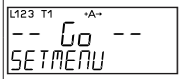
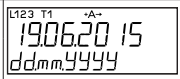
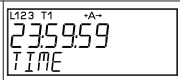
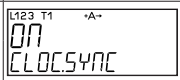
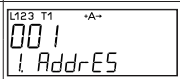
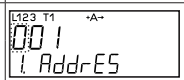
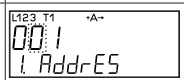
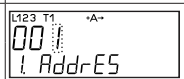
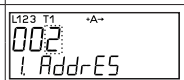
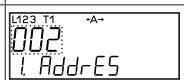
The set menu can be reached via the call-up menu and is only available if the meter has an electric interface or a clock. This includes settings for system time, addresses as well as baud rates.

The data in the set menu have no calibrated legal relevance.

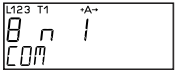
- Primary address: 001
- Secondary address: 8 digits with leading zeros, e. g. 01234567 (serial no.)
- Server ID (SML): in the format 06, 08 or 09
- Baud rate: 2400 baud or 9600 baud (SML)

Set menu - example:

In the following, the value of primary address is changed from 001 to 002. The same procedure applies for changing the other values.

Menu item	Display	Button
Activation of the set menu		S To the next menu item **L Activate the set menu**
Setting the date (Format: tt.mm.yyyy)		**S To the next menu item** L Edit value
Setting time (Format: hh:mm:ss)		**S To the next menu item** L Edit value
Line commutation is active		**S To the next menu item** L Edit value
Primary address (adjustable 001-250; only for meter with M-Bus)		S To the next menu item **L Edit value**
Edit the first digit (digit flashes; only for meter with M-Bus)		S Increase digit by 1 **L Edit next digit**
Edit the second digit (digit flashes; only for meter with M-Bus)		S Increase digit by 1 **L Edit next digit**
Edit the third digit (digit flashes; only for meter with M-Bus)		**S Increase digit by 1** L Edit next digit
Edit the third digit (digit flashes; only for meter with M-Bus)		S Increase digit by 1 **L Transfer of values**
Take over value (all digit flash; only for meter with M-Bus)		S Edit the first digit **L Take over the edited value, switch over to the next menu option**

Continued on next page

Menu item	Display	Button
Secondary address (adjustable 00000000-99999999; only for meter with M-Bus)		S **To the next menu item** L Edit value
Baud rate M-Bus (adjustable 0300, 2400 and 9600 bd; only for meter with M-Bus)		S **To the next menu item** L Edit value
Modbus® address (adjustable 001-247; only for meter with Modbus®)		S **To the next menu item** L Edit value
Baud rate Modbus® (adjustable 1200, 2400, 4800, 9600, 19200 and 38400 bd; only for meter with Modbus®)		S **To the next menu item** L Edit value
Transfer mode Modbus® (adjustable 8E1, 8O1, 8N1 and 8N2 - see also page 13; only for meter with Modbus®)		S **To the next menu item** L Edit value
Switch to the first entry of the menu or the call-up menu		S To the first entry of the menu L **Return to the call-up menu**

On SML variants the baud rate is permanently set to 9600 baud!

Abbreviations

A	Active energy
+A	Positive active energy (customer imports from utility)
-A	Negative active energy (customer exports to utility)
DIN	Deutsches Institut für Normung e.V. (German Institute for standards)
EN	European standards
I	Current
ID	Identification
IEC	International Electrotechnical Commission
IP	Ingress Protection
ISO	International Standard Organisation
L1, L2, L3	External conductor
LC	Liquid Crystal
LED	Light Emitting Diode
LON®	Local Operating Network
MID	Measurement Instrumements Directive
N	Neutral conductor
OVC	Over voltage category
P	Active power
+P	Positive active power (customer imports from utility)
-P	Negative active power (customer exports to utility)
Q	Reactive power
+Q	Positive reactive power
-Q	Negative reactive power
R	Reactive energy
+R	Positive reactive energy
-R	Negative reactive energy
RTC	Real Time Clock
RTU	Remote Terminal Unit
SML	Smart Message Language
S0	Interface according to IEC 62053-31
t	Actuation time
U	Voltage
UC	Utilisation category

EU Declaration of Conformity

EU-Konformitätserklärung
EU Declaration of Conformity

Der Hersteller
The manufacturer

EMH metering GmbH & Co. KG
Neu-Galliner Weg 1
19258 Gallin
GERMANY

erklärt hiermit in alleiniger Verantwortung, dass folgendes Produkt
declares under his sole responsibility that the following product

Produktbezeichnung: *Product designation:*	Elektrizitätszähler *Electricity meter*
Typenbezeichnung: *Type designation:*	DIZ-...

übereinstimmt mit den grundlegenden Anforderungen folgender EU-Richtlinien:
conforms to the essential requirements of the following EU directives:

2014/32/EU *2014/32/EU*	Messgeräte (MID) *Measuring instruments (MID)*	EU Amtsblatt L 96 *Official Journal of the EU L96*
2014/30/EU *2014/30/EU*	Elektromagnetische Verträglichkeit (EMV) *Electromagnetic compatibility (EMC)*	EU Amtsblatt L 96 *Official Journal of the EU L96*
2011/65/EU *2011/65/EU*	Beschränkung der Verwendung bestimmter gefährlicher Stoffe (RoHS) *Restriction of the use of certain hazardous substances (RoHS)*	EU Amtsblatt L 174 *Official Journal of the EU L174*

Im Rahmen der MID wurde die Konformität des Baumusters (Modul B) festgestellt und
Within the MID the conformity of the type (annex B) was attested and
die Konformitätsbewertung wurde nach Modul D durch den Hersteller vorgenommen:
the conformity assessment was performed by manufacturer according to annex D:

	Modul B *(annex B)*	**Modul D** *(annex D)*
Benannte Stelle (Name/Nummer): *Notified body (name/number):*	PTB/0102	PTB/0102
Zertifikats-Nummer: *Certificate number:*	DE-07-MI003-PTB011	DE-M-AQ-PTB026

Es wurden die folgenden harmonisierten Normen angewendet:
The following harmonized standards were applied:

MID:	**EMV** *(EMC)*:	**RoHS:**
EN 50470-1:2006	EN 62052-11:2003+A1:2017	EN IEC 63000:2018
EN 50470-3:2006	EN 62053-21:2003+A1:2017	
	EN 62053-23:2003+A1:2017	
	EN 55032:2012/AC:2013	

Ort, Datum: Gallin, 17 NOV 2020
Place, Date:

Dipl.-Ing. Norbert Malek
Geschäftsführer
Managing director

The current EU Declaration of Conformity can be found in the download area of www.emh-metering.com.