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EIZ

Electronic Impulse Meter

EN Operation- and installation guide

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Abbreviations

A	Active energy
+A	Positive active energy (customer imports from utility)
Cl.	Accuracy class
DIN	Deutsches Institut für Normung e.V. (German institute for standards)
EN	European Norms
IEC	International Electrotechnical Commission
Imp.	Impulse
Imp./kWh	Impulse per kWh
kWh	Kilowatt hour (energy)
LED	Light Emitting Diode
N	Neutral conductor
P	Active power
+P	Active power (customer imports from utility)
RTC	Real Time Clock
S0	Interface acc. to DIN 43 864

Important notes

Safety notes

The meter is to be used exclusively for measuring electrical energy and must only be operated within the specified technical data (see also nameplate).

When installing or changing the meter, the conductor to which the meter is connected must be de-energised. For this purpose only the provided terminals must be used.

Contact to parts under voltage is extremely dangerous! Therefore the relevant back-up fuse are to be removed and stored so that other people cannot insert this unnoticed.

When using transformer connected meters the secondary circuit of the current transformer must definitely be short circuited. The high voltage on the current transformer is **extremely dangerous** and destroys the current transformer.

The local standards, guidelines, regulations and instructions are to be obeyed. Only authorised personnel is permitted to install the electricity meters.

Maintenance and guarantee instructions

The meter is maintenance-free. With damages (e.g. due to transportation, storage) no repairs may be carried out independently. As soon as the meter is opened, the guarantee claims are no longer valid. The same applies in case the defect can be traced back to external influences (e.g. lightning, water, fire, extreme temperatures and weather conditions, improper or negligent use or treatment).

Notes for approval

The step-switching registers are not shielded against emissions of common available permanent-magnets. If the meter is used for billing purposes, special attention in terms of installation should be taken.

General description

In this manual all design variants of the meters are described. Please note, the meters can be designed differently regarding for example configuration, interfaces, outputs etc. It is therefore possible that meter features are described in this manual which do not apply to the meter used by you.

The meter is a digital single tariff meter for measuring positive active energy in 2-, 3- or 4-wire networks.

These meters are principally used for energy data registration in the industry and building installation, switching stations and the field of energy supply.

The compact design of this meter allows “space saving” mounting (only 7 pitch wide).

The energy consumption values are displayed on a 7 digit drum register.

These values can also be given out via a impulse output with primary or secondary impuls constants. Furthermore these values also can be sent via a M-Bus-interface (acc. to DIN EN 13757-2, -3) or a RS485-interface (acc. to TIA/EIA-485). The data format for both interfaces is the M-Bus-protocol.

The meter corresponds to the accuracy class B or A acc. to EN 50470-1, -3 resp. accuracy class 1 or 2 acc. to IEC 62053-21.

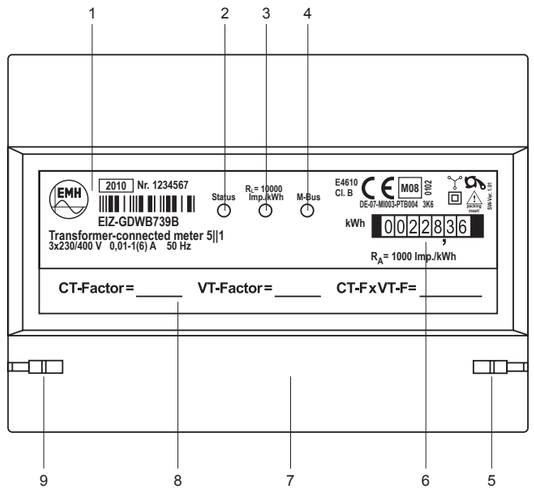
Main features of the meter

- Measuring active energy +A
- Design as a direct-connected or transformer-operated meter
- Primary and secondary impulse output for passing on energy proportional impulses
- Test LED for meter test
- Status LED for installation check
- Communication LED for display of communication via the interface
- Data interfaces with recognition of instantaneous values and load profile with a capacitor buffered real time clock
  - M-Bus
  - RS485

Technical data

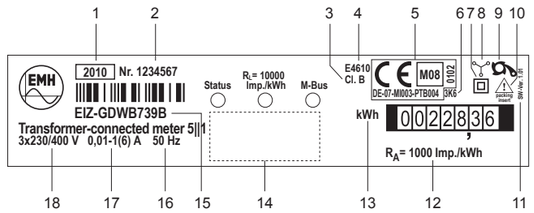
Voltage, current	see nameplate
Frequency	50 Hz
Output (optional) S0-output Opto-MOSFET	 max. 27 V DC, 27 mA (passive) max. 250 V AC/DC, 100 mA
Temperature range	specified operating range: -25 °C...+55 °C Limit range for operation: -40 °C...+70 °C Limit range for storage and transport: -40 °C...+70 °C
Relative humidity	max. 95 %, non-condensing, acc. to IEC 62052-11, EN 50470-1 and IEC 60068-2-30
Class of protection	II
Degree of protection	housing: IP 51 terminal block: IP 20
Environmental conditions	mechanical: M1 acc. to Measuring Instruments Directive electromagnetic: E2 acc. to Measuring Instruments Directive planned site of installation: indoor acc. to EN 50470-1
Weight	approx. 500 g

Housing- and display elements



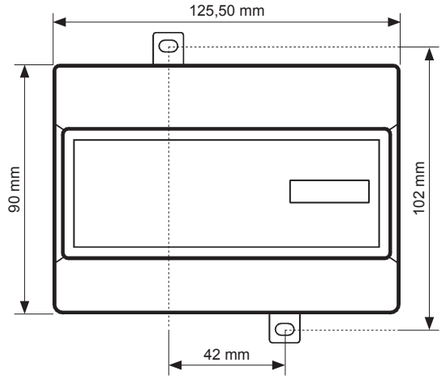
1	Nameplate
2	Status LED
3	Test LED
4	Communication LED
5	Seal eye
6	Drum register for display the energy value
7	Terminal cover with pasted connection diagram
8	Transformer nameplate (only with transformer meters)
9	Seal eye

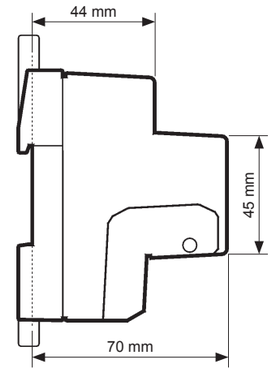
Nameplate



1	Model year
2	Serial number
3	Accuracy class
4	Contact sequence number
5	Labelling of conformity and certification
6	Temperature code
7	Protection class II
8	Type of network and load
9	Non-reverse ratchet
10	Pay attention to package insert
11	Firmware version number
12	Pulse constants for pulse output
13	Unit of the measured value
14	Space for property labelling
15	Type designation and type key
16	Frequency
17	Current
18	Voltage

Package dimensions





Mounting and installation

Please note the safety tips before mounting and installation of the meter.

The meter is suitable for both wall mounting and DIN-rails mounting acc. to DIN EN 60715. With mounting on DIN-rails the two wall supports on the meter are to be removed. The hole matrix for wall mounting can be found on the back of the meter.

When connecting the meter, please pay careful attention to the relevant connection diagram which you can find inside the terminal cover. If a connection diagram is not included, please contact the supplier.

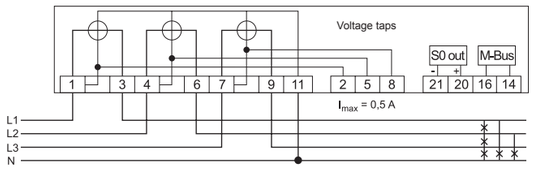
When installing the meter please pay attention that after the connecting leads have been threaded the screws are tightened with the relevant torque acc. to EN 60999 to guarantee a safe contact. The torque depends on the type of the connecting leads and the maximum current.
In order to avoid damage to the meter the valid, maximum torque for the terminal clamps may not be exceeded.

Note: Meters for direct connection shall be secured by an overcurrent protection device of 63 A. For transformer connected meters a back-up fuse of < 6 A is required in the voltage path.

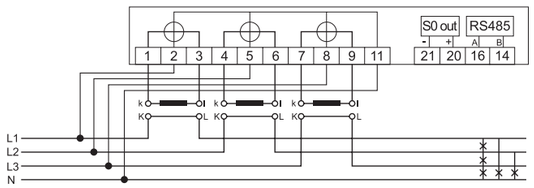
External devices which are connected to the voltage taps of the meter have to be protected by a suitable back-up fuse. The voltage taps of the meter have no internal protection and are directly connected to the system voltage. The maximum load is 0,5 A.

Connection diagrams (examples)

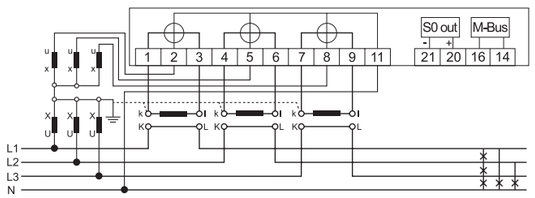
4-wire version, direct connection



4-wire version, connected to current transformer



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

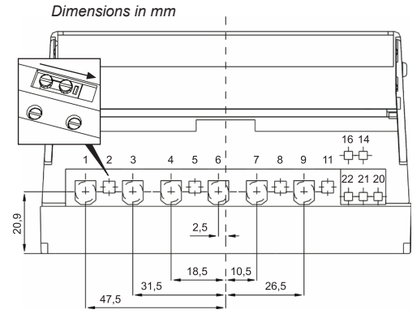


Terminal blocks

a) direct-connected meter

- Table 1-	Current terminals	Voltage terminals	Auxiliary terminals	N-terminal
Terminal dimensions d (mm)	7	3	2,5	3
Maximum connection cross section (mm^2)	16	2,5	2,5	2,5
Maximum torques for terminals (Nm)	3,0	0,6	0,5	0,6

Dimensions in mm

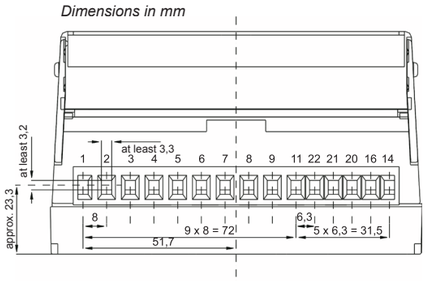


For test purposes the voltage path can be separated from the current path. For this, the voltage slide of all 3 phases in the terminal block must be opened (see detail). To do this, loosen both screws and push the voltage slide to the right. Afterwards, tighten the screws with the permitted torque according to table 1.

b) transformer meter

- Table 2-	Current terminals	Voltage terminals	Auxiliary terminals
Terminal dimensions W x H (mm)	3,3 x 3,2	3,3 x 3,2	3,3 x 3,2
Maximum connection cross section (mm^2)	4	4	4
Maximum torques for terminals (Nm)	0,6	0,6	0,6

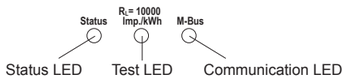
Dimensions in mm



Installation check

In the standard mode (normal operation) the meter has a Status LED which displays when the start-up threshold is exceeded, when there is a wrong rotary field and when there is an error. An error can be due to an incorrect check sum of the firmware, the parameter record or set record (see table 3).

LED functions



- Table 3 -

Status LED (green)		
Standard operation mode **Installation check**	*Does not light up:*	At least one phase has not yet exceeded the voltage start-up threshold
	0,5 s on and 1,5 s off:	Wrong rotary field
	Continually lit up:	All phases have exceeded the voltage start-up thresholds
	4 x flashes and 1,5 s off:	Error status
Test mode	*2 x flashes and 1,5 s off:*	Test mode active
Parametering mode	*Flashes:*	Parametering mode active

Test LED (red)		
Standard operation mode	*Continually lit up:*	No load
	Flashes energy proportional:	Energy registration
Test mode	*Continually lit up:*	No load
	Flashes energy proportional x 10:	Energy registration x 10
Parametering mode	*Flashes:*	Parametering mode active

Communication LED (green)		
Standard operation mode	*Flashes when communication:*	M-Bus communication
	Flashes when communication:	RS485 communication
Test mode	*Flashes when communication:*	M-Bus communication
	Flashes when communication:	RS485 communication
Parametering mode	*Flashes:*	Parametering mode active

Operating conditions

Standard operation mode

During normal operation the meter is in the standard operation mode.

Secured parametering mode

The secured parametering mode is for the reconfiguration of pulse outputs and for activation of the test mode. In case of the reconfiguration, please contact your service partner.

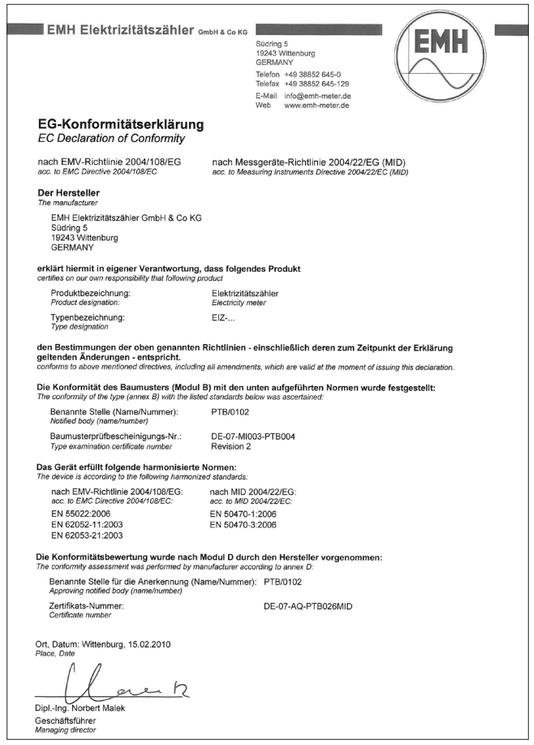
Test mode

The test mode is solely for test purposes. The register and the test LED are controlled faster by a factor of 10. The test mode can be activated via software from the parametering mode.

The test mode is ended in the following way:

- Automatically with 10 s low voltage on all phases or
- Automatically after 12 hours operation time.

EC Declaration of Conformity



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EG-Konformitätserklärung
EC Declaration of Conformity

nach EMV-Richtlinie 2004/108/EG
acc. to EMC Directive 2004/108/EC

nach Messgeräte-Richtlinie 2004/22/EG (MID)
acc. to Measuring Instruments Directive 2004/22/EC (MID)

Der Hersteller
The manufacturer

EMH Elektrizitätszähler GmbH & Co KG
Südring 5
19243 Wittenburg
GERMANY

erklärt hiermit in eigener Verantwortung, dass folgendes Produkt
certifies on our own responsibility that following product

Produktbezeichnung: Elektrizitätszähler
Product designation: Electricity meter

Typenbezeichnung: EIZ-...
Type designation

den Bestimmungen der oben genannten Richtlinien - einschließlich deren zum Zeitpunkt der Erklärung geltenden Änderungen - entspricht.
conforms to above mentioned directives, including all amendments, which are valid at the moment of issuing this declaration.

Die Konformität des Baumusters (Modul B) mit den unten aufgeführten Normen wurde festgestellt:
The conformity of the type (annex B) with the listed standards below was ascertained:

Benannte Stelle (Name/Nummer): PTB/0102
Notified body (name/number)

Baumusterprüfbescheinigungs-Nr.: DE-07-MI003-PTB004
Type examination certificate number Revision 2

Das Gerät erfüllt folgende harmonisierte Normen:
The device is according to the following harmonized standards:

nach EMV-Richtlinie 2004/108/EG: nach MID 2004/22/EG:
acc. to EMC Directive 2004/108/EC: acc. to MID 2004/22/EC:
EN 55022:2006 EN 50470-1:2006
EN 62052-11:2003 EN 50470-3:2006
EN 62053-21:2003

Die Konformitätsbewertung wurde nach Modul D durch den Hersteller vorgenommen:
The conformity assessment was performed by manufacturer according to annex D:

Benannte Stelle für die Anerkennung (Name/Nummer): PTB/0102
Approving notified body (name/number)

Zertifikats-Nummer: DE-07-AQ-PTB026MID
Certificate number

Ort, Datum: Wittenburg, 15.02.2010
Place, Date

Dipl.-Ing. Norbert Malek
Geschäftsführer
Managing director

Note:
The current EC Declaration of Conformity is available on request.