

Energy meter 125A
direct connection, MID

Codes: **CE6DMID52 – CE6DMID56**



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1. DESCRIPTION - USE

Three-phase active and reactive energy meter.
 Three-phase meter of electrical values
 Direct connection: 230(400)V – 240 (415)V 125A.
 Displays the energy consumption in kWh and kvarh.

2. RANGE

Art. **CE6DMID52**: Three-phase energy meter with pulse output
 Art. **CE6DMID56**: Three-phase energy meter with Modbus RS485 and pulse output self-powered
EU Declaration of conformity (MID)

Rated currents:

- Starting current, I_{st} : 40mA
- Min. current, I_{min} : 500mA
- Transition current, I_{tr} : 1A
- Reference current, I_{ref} : 10A
- Max. current, I_{max} : 125A

Rated voltage:

- Reference three-phase voltage: 3x230V~/3x400V~ ± 15%

Rated frequency:

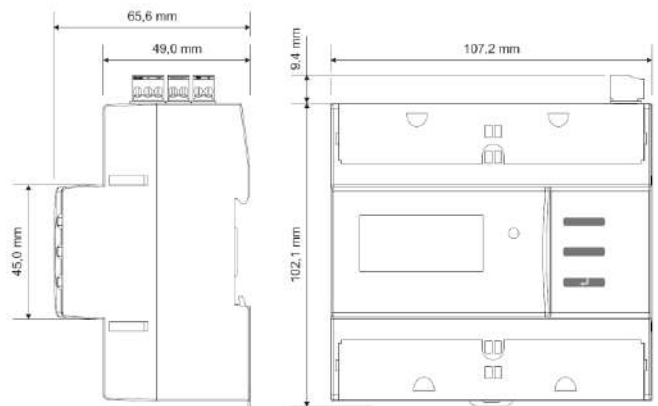
- Fn: **49...51Hz (MID)** – 59...61Hz

Auxiliary supply:

- Taken from voltage measurement (Selfsupplied)

3. OVERALL DIMENSIONS

Housing: 6 module DIN43880



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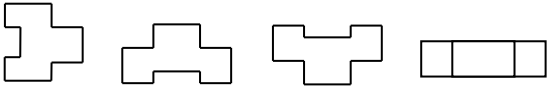
4. PREPARATION - CONNECTION

Fixing:

On symmetrical EN/IEC 60715 rail or DIN 35 rail.

Operating position:

Vertical, Horizontal, Upside down, On the side

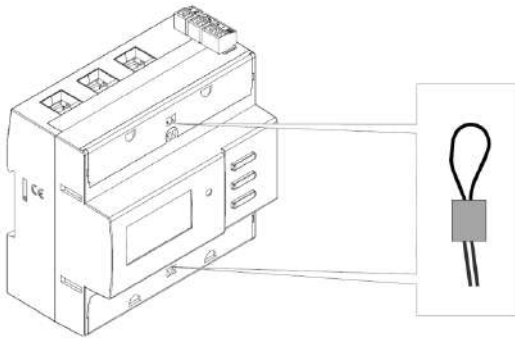


Terminals:

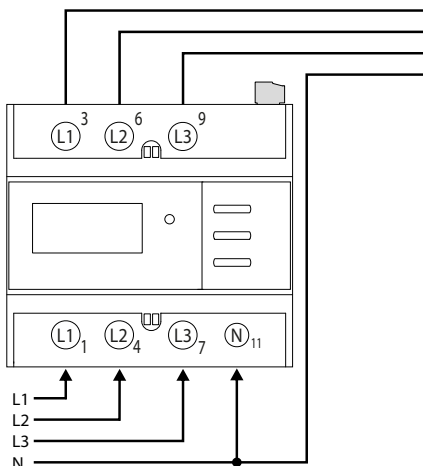
- Terminals depth: 8mm
- Stripping length: 8mm

Terminal protection:

- Voltage terminals are protected with integrated sealable screw cover.



Wiring diagram:



4. PREPARATION - CONNECTION

Screw head:

- Voltages connection terminals (L1, L2, L3): Slotted and Pozidriv
- Neutral connection terminal (N): Slotted
- Terminal blocks in the upper part of the meter (input, pulse output and RS485 bus): Slotted

Recommended tightening torque:

- Voltages connection terminals (L1, L2, L3): 3 Nm
- Neutral connection terminal (N): 1 Nm
- Terminal blocks in the upper part of the meter (input, pulse output and RS485 bus): 0,2 Nm

Max. tightening torque:

- Voltages connection terminals (L1, L2, L3): 4 Nm
- Neutral connection terminal (N): 1,2 Nm
- Terminal blocks in the upper part of the meter (input, pulse output and RS485 bus): 0,3 Nm

Tools required:

- Voltages connection terminals (L1, L2, L3): Flat screwdriver 6 mm or Pozidriv PZ2
- Neutral connection terminal (N): Flat screwdriver 4 mm
- Terminal blocks in the upper part of the meter (input, pulse output and RS485 bus): Flat screwdriver 2,5 mm
- For fixing the device on the DIN rail: Flat screwdriver 5.5 mm (from 4 to 6 mm).

Connectable section:

- Copper cables.
- Voltages connection terminals (L1, L2, L3):

	Without ferrule	With ferrule
Rigid cable	1 x 4 + 50 mm ²	-
Flexible cable	1 x 4 + 35 mm ²	1 x 4 + 35 mm ²

ATTENTION: for safety reasons, it is compulsory not to exceed 4 A/mm² as current density in the input terminals

- Neutral connection terminal (N):

	Without ferrule	With ferrule
Rigid cable	1 x 4 + 16 mm ²	-
Flexible cable	1 x 4 + 16 mm ²	1 x 4 + 16 mm ²

- Terminal blocks in the upper part of the meter (input, pulse output and RS485 bus):

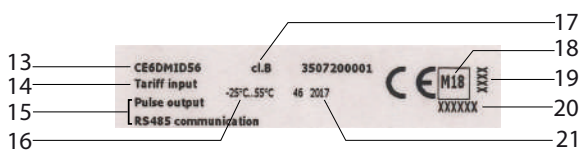
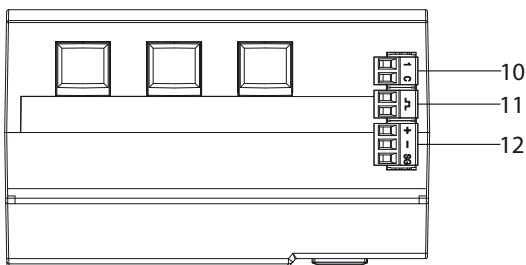
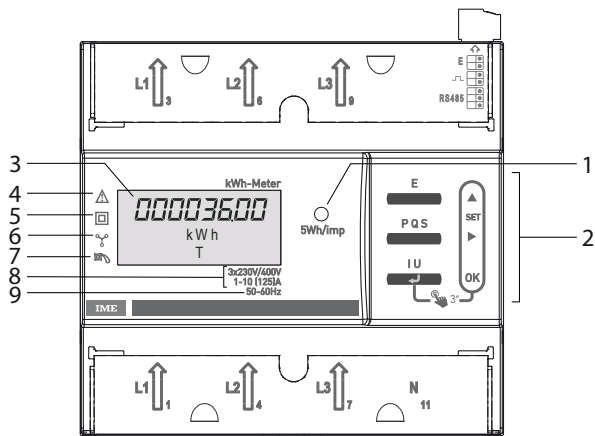
	Without ferrule	With ferrule
Rigid cable	1 x 0,2 + 1,5 mm ²	-
Flexible cable	1 x 0,2 + 1 mm ²	1 x 0,2 + 1 mm ²

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5. GENERAL CHARACTERISTICS

Front face marking:

By permanent ink printing.



LABEL MID

- 1. Metrological LED
- 2. Key-pad with 3 dual-function keys (display or configuration)
- 3. LCD display
- 4. Consult the instruction manual before installation
- 5. Double insulation
- 6. Connection 3-phase 4 wire line
- 7. Anti-rotation device
- 8. Voltage/Current
- 9. Frequency
- 10. Input terminal for energy metering on double tariff
- 11. Pulse output connection terminal
- 12. Modbus RS485 communication bus connection terminal (CE6DMID56)
- 13. Product code
- 14. Double tariff
- 15. Outputs
- 16. Working temperature
- 17. Accuracy class
- 18. Year of approval
- 19. Certifying board
- 20. Certification number
- 21. Manufacturing week and year

5. GENERAL CHARACTERISTICS (continued)

Terminals marking

- By permanent ink pad printing.
- Double tariff input terminal block:



- Pulse output terminal block:

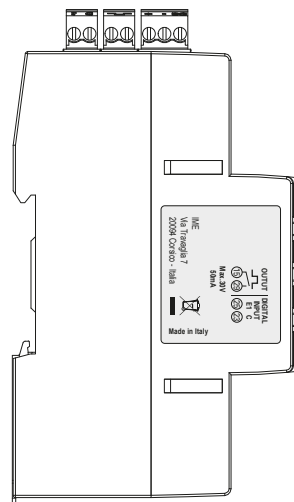


- Modbus RS485 terminal block:



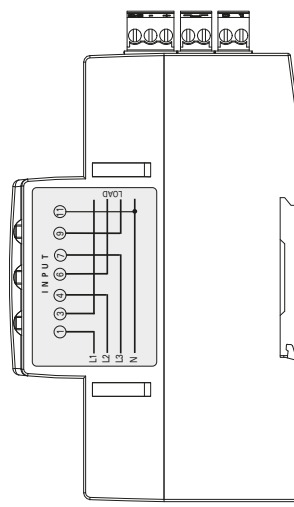
Left face marking:

By adhesive foil: traceability information



Right face marking:

By adhesive foil: Electrical wiring diagram



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5. GENERAL CHARACTERISTICS

Display:

- Type: 8 digit LCD.

Resolution:

- Total energy (T): 1 kWh/kvarh
- Partial energy: 0,01 kWh/kvarh

Maximum indication:

- Total energy (T): 99.999.999 kWh/kvarh
- Partial energy: 999.999,99 kWh/kvarh

Metrological LED: Pulse weight 5 Wh/imp.

Programmaming:

- Through front keyboard, 3 keys.
- Access secured by identification code (**default code 1000**); the code can be modified during the programming procedure.

Values display:

- Manual scrolling by pressing on the 3 front keys:
- Total/partial active energy
- Active energy 1 and 2
- Total/partial reactive energy
- Reactive energy 1 and 2
- Voltage
- Frequency
- Power factory
- Working hours and minutes
- Istantaneous current
- Max. demand and istantaneous power

Hour Meter:

- Counting hours and minutes of operation (**resettable counter**)
- Resolution: 7 digits (5 hours + 2 minutes)
- Maximum display: 99.999h 59min
- Count start: three-phase active power "Pn"
- Programmable value: 0,4...50% Pn –
(Pn = three-phase active power, related to 400V and 10A = 6,9kW)

Accuracy class:

- Positive active energy, Total and Tariff: **class B** (EN50470-1, 3)

Protection index:

- Protection index of terminals against solid and liquid bodies:
- IP 20 (IEC/EN 60529).
- Protection index of terminals against solid and liquid bodies:
IP 54 (IEC/EN 60529).
- Class II, front with faceplate

Impulse withstand voltage:

- Measuring inputs/ Porta RS485 wave 1,2 / 50 μ s 0,5 J: 6kV
alternate voltage 50 Hz / 1 min.: 4 kV
- Measuring input / Digital input - wave 1,2 / 50 μ s 0,5 J: 6kV
alternate voltage 50 Hz / 1 min.: 4 kV
- All circuits / earth
alternate voltage 50 Hz / 1 min.: 4 kV

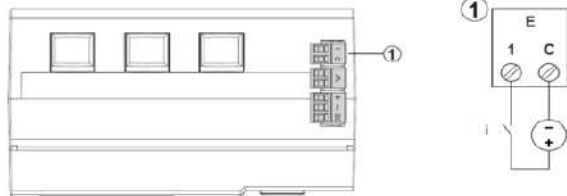
Insulation voltage, Ui: 300V, Phase-Earth

Device protection: by 125A circuit breaker

5. GENERAL CHARACTERISTICS

Digital Input:

- Digital input, allows switching of energy count on 2 tariffs
- 2 input terminals with common point (1 - C)
- Rated voltage: 12-24 VDC, max. 10 mA



Note: "V" 12-24 VDC, max. 10 mA

RS485 communication port's characteristics:

- Programmable addresses: from 1 to 255 (**5***)
- Baud rate: 4,8 - 9,6 - **19,2*** kbps
- Parity bit: none, **even***, odd
- Stop bit: 1
- Galvanically isolated respect to measuring inputs and auxiliary supply
- Standard RS485 3 wires, half-duplex
- Protocol Modbus® RTU
- Response time (time-out question/answer): \leq 200 ms

Pulse output's characteristics:

- Optorelays with potential-free SPST-NO contact
- Type S0 (IEC/EN62053-31)
- Voltage U_{imp} : max 27 VAC/DC
- Current I_{imp} : max 50 mA
- Programmable pulse weight, possible values: 1 - **10*** - 100 - 1k - 10k - 100k Wh/imp or varh/imp
- Programmable pulse duration, possible values: **50*** - 100 - 200 - 300 - 400 - 500 ms.

* Default configuration

Ambient operating temperature:

- Min. = - 25 °C Max. = + 55 °C.

Ambient operating temperature:

- Min. = - 25 °C Max. = + 70 °C.

Pollution degree: 2

Installation category: III

Short-time overcurrent: 30 I_{max} for 10 ms

Power consumption in voltage circuit: Max. 1,5 VA (1,5 W) 3-phase

Power consumption in current circuit: Max. 2,5 W 3-phase

Thermal power dissipated¹: \leq 10 W

¹ For switchboard thermal calculation

Ambient: mechanical M1 - electric E2

Plastic material: Self-extinguishing polycarbonate

Average weight per device: 0,5 kg.

Volume when packed: 1,5 dm³.

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6. COMPLIANCE AND APPROVALS

Compliance to standards:

- Compliance with Directive on electromagnetic compatibility (EMC) n° 2014/30/EU
- Compliance with low voltage directive n° 2014/35/EU
- Compliance with directive on Electrical measurement devices (MID) n° 2014/32/UE standards: EN 50470-1, -3
- Active energy accuracy class B (EN 50470-1, -3)
- Electromagnetic compatibility: Test according to EN/IEC 62052-11 / EN 50470-1, -3

Environment respect – Compliance with EU directives:

- Compliance with Directive 2011/65/EU amended by Directive 2015/863 (RoHS 2), on the restriction of the use of certain hazardous substances in electrical and electronic equipment, such as lead, mercury, cadmium, hexavalent chromium, brominated flame retardants, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)
- Compliance with Directive 91/338/CEE of the 18/06/91 and to the decree 94-647 of the 27/07/04
- Compliance with REACH regulation: at the date of the publication of this document no substance from the candidate list is present in these products.

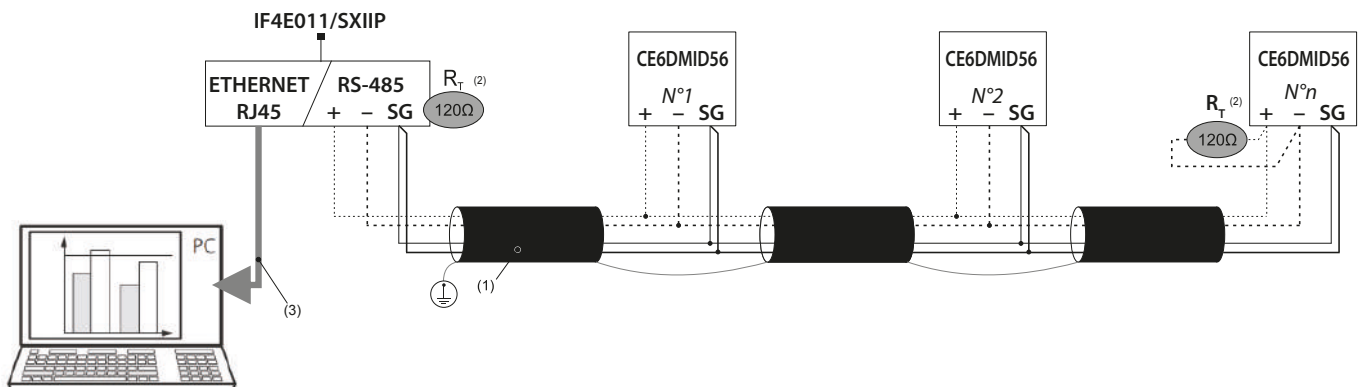
Plastic materials:

- Halogens-free plastic materials.
- Marking of parts according to ISO 11469 and ISO 1043.

Packaging:

- Design and manufacture of packaging compliant to decree 98-638 of the 07.20.98 and also to directive 94/62/CE

7.COMMUNICATION

Modbus RS485 wiring diagram:

(1) RS485: Required use of Belden 9842, Belden 3106A (or equivalent) for a maximum length of 1000 m, or Category 6 cable (FTP or UTP) for a maximum length 50 m

(2) Resistance not furnished supplied to be connected between "+" and "-" of the 1st and last device of the line

(3) Ethernet: Cat. 6 (FTP/UTP)

Modbus communication tables

- MODBUS communication tables are available at <http://www.imeitaly.com>, inserting the "CE6DMID56" code in the search field.