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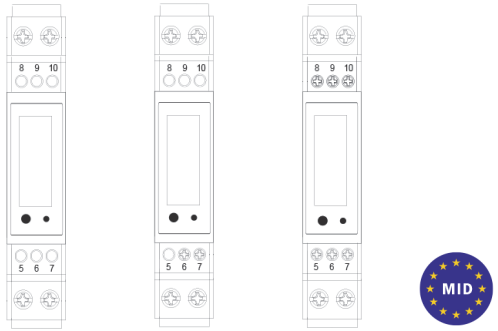
CONTO D1 - Single Phase DIN rail Energy Meter

Cat.Nos: CE1D45A0 - CE1D45AP - CE1DMID45AP CE1D45AMB - CE1DMID45AMB - CE1D45AM CE1DMID45AM



1. USE

The energy-meters are used to measure single-phase applications like residential, utility and Industrial. The unit measures and displays various important electrical parameters. It is equipped with a white back- lighted LCD screen for perfect reading (only LCD for Basic version). Bi- directional energy measurement makes it a good choice for solar PV energy metering. The compact design and DIN rail installation provides an easy and economical solution for your metering demand.

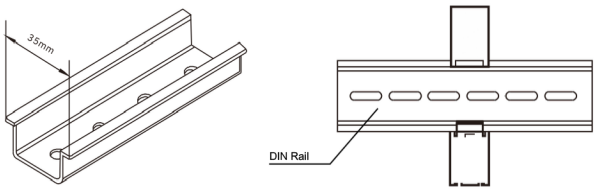
2. RANGE

Cat.Nos	Version	Display	Measurement	Outputs
CE1D45A0	Basic	LCD	kWh	No
CE1D45AP	Pulse	LCD with Backlight	kWh	Pulse
CE1D45AMB	ModBus	LCD with Backlight	Multi-parameters	Pulses & RS485
CE1D45AM	MBus	LCD with Backlight	Multi-parameters	Pulses & MBus
CE1DMID45AP	Pulse	LCD with Backlight	kWh	Pulse
CE1DMID45AMB	ModBus	LCD with Backlight	Multi-parameters	Pulses & RS485
CE1DMID45AM	MBus	LCD with Backlight	Multi-parameters	Pulses & MBus

3. INSTALLATION

3.1 Fixing

On IEC/EN 60715 symmetric rail or DIN 35 guide.



For fastening the device on the DIN rail: 5,5 mm flat screwdriver (from 4 to 6 mm).

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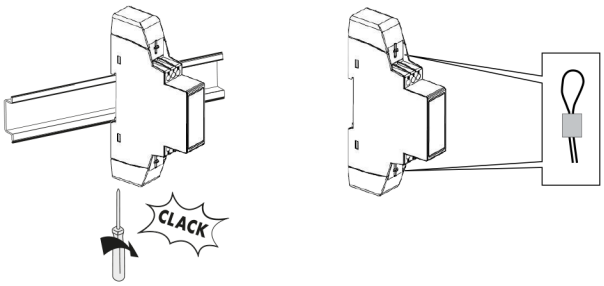
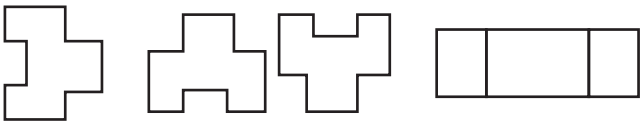


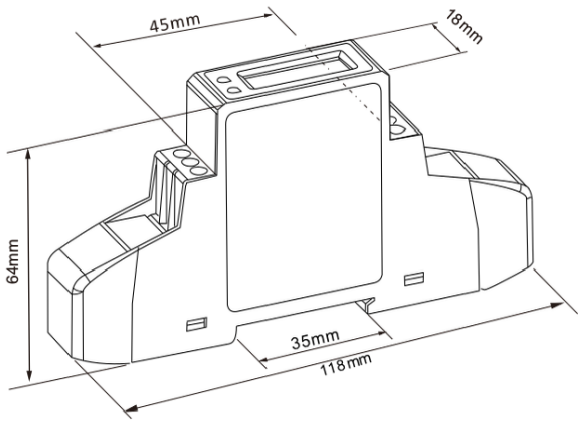
3.2 Operating position

Vertical Horizontal Upside down On the side



4. DIMENSIONS (mm)

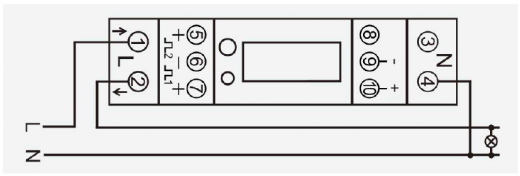
1 module DIN 43880
Dimensions: 18 x 64 x 118 (W x H x D)
Weight: 0.1 kg
Packaged volume: 0.20 dm^3



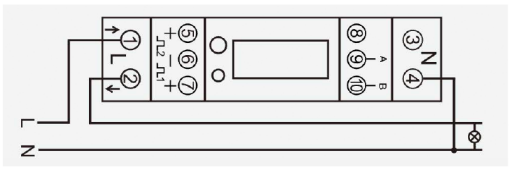
5. CONNECTION

5.1 Wiring diagrams

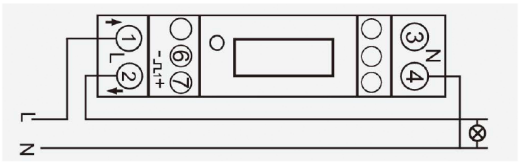
CE1D45AMB



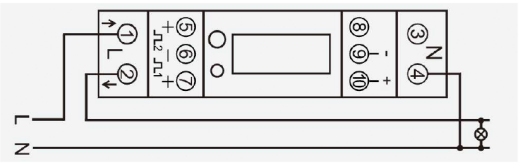
CE1D45AM



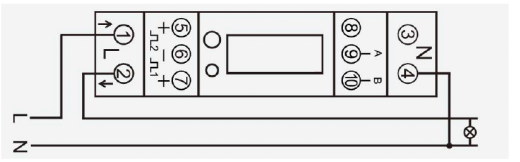
CE1D45AP



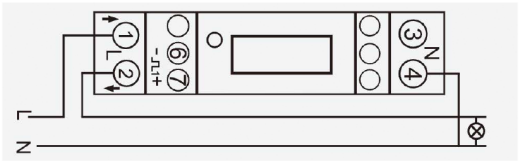
CE1DMID45AMB



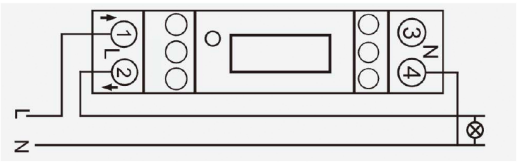
CE1DMID45AM



CE1DMID45AP



CE1D45A0



1 - 2 3 - 4	8 mm	MAX 1 x 2,5 mm² 1 x 2,5 mm² 1 x 10 mm²	max 1,5 Nm 4mm PZ1
5 - 6 - 7 8 - 9 - 10	5 mm	MAX 1 x 0,5 mm² 1 x 0,5 mm² 1 x 1,5 mm²	max 0,2 Nm 3mm PZ0

5.2 Protection of the device

By means of thermal-magnetic circuit breaker.

6. TECHNICAL CHARACTERISTICS

6.1 Display

Start-up Screens

When it is powered on, the meter will initialize and do self-checking. After the self-checking program, the meter screen will display the total active energy (kWh).

Scroll Display by Button

There is a button on the front of the meter. After initialization and self-checking program, the meter display the measured values. The default page is total kWh. If the user wants to check other information, he needs to press the scroll button on the front panel.

	Click the button, the LCD display will scroll the measurements.
	Keep pressing the button for 3 seconds, the meter will enter set-up mode.

The display of each model:

- CE1D45A0/CE1D45AP/CE1DMID45AP:
Total active energy in kWh

- CE1D45AMB/CE1DMID45AMB:
Total active energy in kWh -> Imported active energy in kWh -> Exported active energy in kWh -> Total reactive energy in kVArh -> Phase to neutral voltage -> Current of phase -> Instantaneous active power in kW -> Frequency -> Power factor -> Address -> Baud rate -> Parity bit -> Stop bit

- CE1D45AM/CE1DMID45AM:
Total active energy in kWh -> Imported active energy in kWh -> Exported active energy in kWh -> Total reactive energy in kVArh -> Phase to neutral voltage -> Current of phase -> Instantaneous active power in kW -> Frequency -> Power factor -> Address -> Baud rate -> Parity bit -> Stop bit -> Secondary address-high address -> Secondary address-low adress

6.2 Electric characteristics

Voltage AC (Un)	230 V
Voltage range	176-276 V~ (Basic/Pulse vers.) 100-277 V~ (Modbus/MBus vers.)
Current input	0.15-5 (45) A (Max. 45 A)
Voltage Circuit	< 2 W/10 VA
Current Circuit	< 1 VA
Frequency	50/60 Hz
AC voltage withstand	4 kV for 1 minute
Impulse voltage withstand	6 kV~1.2uS waveform
Overcurrent withstand	30 Imax for 0.01 s
Pulse output 1	1000/100/10/1imp/kWh/kVArh (conf.)
Pulse output 2	1000 imp/kWh (no conf.)
Max. Reading	99999.9 kWh/kVArh

6. TECHNICAL CHARACTERISTICS *(continued)*

6.2 Electric characteristics (continued)

Accuracy (IEC/EN61557-12)	
Voltage	cl. 0.5
Current	cl. 0.5
Frequency	cl. 0.2
Power factor	cl. 1
Active power	cl. 1
Reactive power	cl. 1
Apparent power	cl. 1
Environment	
Reference temperature (IEC/EN 62052-11)	23 °C ± 2 °C
Installation category	CATIII
Relative Humidity	0 to 95%, non-condensing
Altitude	Up to 2000 m
Location	Dry
Warm up time	3 s

6.3 Mechanical characteristics

Protection class:
- Terminal protection index against solid bodies and liquids: IP20 (IEC/EN 60529).
- Housing protection index against solid bodies and liquids: IP51 (IEC/EN 60529).
- Material: Self-extinguishing UL94V-0
- Class II: Front panel with cover plate
- Level of pollution: 2
- Protection class against external mechanical impacts: IK02 (IEC/EN 62052-31).
- Mechanical environment: M1
- Electromagnetic environment: E2

6.4 Climatic characteristics

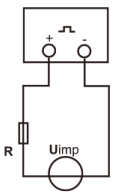
- Operating room temperatures: T min. = - 40 °C; T max. = + 70 °C
- Storage room temperatures: T min. = - 40 °C; T max. = + 80 °C

6.5 Diagnostic

Current output diagnostic: Open circuit.
Voltage output diagnostic: Low output load.

7. COMMUNICATION

The meter is equipped with pulse output, which is fully isolated from the inside circuit. That generates pulses in proportion to the measured energy. The pulse output is polarity dependent, passive transistor output requiring an external voltage source for correct operation.
For this external voltage source, the voltage shall be 5-27 V DC, and the maximum input current shall be 27 mA DC.



CAUTION: Pulse output must be fed as shown in the wiring diagram on the left. Scrupulously respect polarities and the connection mode. Opto-coupler with potential-free SPST-NO Contact.

Contact range: 5-27 VDC max.
Max. current Input: 27 mA DC

Pulse output for CE1D45AP/CE1DMID45AP:

Pulse constant: 1000 imp/kWh
Pulse width: 80 ms

Pulse output for CE1D45AMB/CE1DMID45AMB/CE1D45AM/ CE1DMID45AM:

MBus and ModBus vers. provide two pulse outputs. Both pulse outputs are passive type. Pulse output 1 is configurable. The pulse output can be set to generate pulses to represent total/import/export kWh or kVArh. The default is export kWh. Pulse width: 50 (default)/100/200 ms.
The pulse constant can be set to: 1000 (default)/100/10/1imp/kWh/kVArh.
Pulse output 2 is non-configurable. It is fixed to import kWh.
The constant is 1000imp/kWh. Post width: 100ms.

RS485 Output for CE1D45AMB/CE1DMID45AMB:

The meter provides a RS485 port for remote communication.
Modbus RTU is the protocol applied. For Modbus RTU, the following RS485 communication parameters can be configured via Modbus communication or from the Set-up Mode.
Baud rate: 2.4k, 4.8k, 9.6k, 19.2k, 38.4k bps
Parity: None/Even/Odd
Stop bits: 1 or 2
Modbus Address: 001 to 247
Default parameters for communication:
- Baud rate: 19.2kbps
- Parity: Even
- Stop bit: 1
- Modbus address: 0x05

MBus Communication for CE1D45AM/CE1DMID45AM - EN13757-3:

The meter provides an MBus port for remote communication. The protocol fully comply with EN 13757-3.
The following communication parameters can be configured via MBus communication or from the Set-up Mode.
Baud rate: 600, 1200, 2400, 4800, 9600 bps
Parity: None/Even/Odd
Stop bits: 1 or 2
MBus network primary address: nnn - 3 digits number from 001 to 250
MBus network secondary address: 00 00 00 00 to 99 99 99 99
Default parameters for communication:
- Baud rate: 2400 bps
- Parity: Even
- Stop bit: 1
- MBus primary address: 0x01
- MBus secondary address: last 8 digits of SN

8. CONFORMITY AND CERTIFICATIONS

European Directives:
2014/30/EU - 2014/32/EU -2014/35/EU

According to the standard:
Low voltage Directive IEC/EN 61010-1
EMC compatibility: EN/IEC 62052-11 / EN 50470-3

Active energy: Class 0.5 Wh (EN 62053-21)
Class C (EN 50470-3) (MID version)
Reactive energy: Class 2 varh (EN 62053-23)

Respecting the environment - Conformity with CEE Directives: Compliance with the 2011/65/EU Directive, as modified by the 2015/863/EU Directive (RoHS), on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Conformity with the REACH Regulation (1907/2006): at the date of publication of this document no substance in the annex XIV is found in these products.

RAEE Directive (2012/19/EU): the sale of this product includes a contribution to the appointed enviromental bodies of each European country incharge of handling, at the end of their life, the products falling within the scope of the EU Directive on Electrical and Electronic Equipment Waste.

Plastic materials:
Plastic materials without Halogens.
Parts marking according to standards ISO 11469 and ISO 1043.

Packaging:
Packaging designed and produced in accordance with Decree 98-638 of 20/07/98 and Directive 94/62/CE.

CE