

# EEM-XM377 - Measuring device



1674501

<https://www.phoenixcontact.com/us/products/1674501>

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3-phase energy meter with direct measurement up to 100 A AC, Modbus/TCP interface, operating temperature up to +70°C, certified in accordance with Measuring Instruments Directive (MID)

## Product description

Energy meters for billing purposes enable cost-center-specific energy data billing. EMpro AC energy meters with MID approval record all important electrical parameters such as currents, voltages, power factors, power ratings, and energy values in all four quadrants. EMpro DC energy meters enable the direct measurement of currents and voltages up to 650 A/1000 V DC. The measurement data is provided via standard communication interfaces.

## Your advantages

- Direct current measurement up to 100 A AC over the full temperature range of -40°C to +70°C
- Compliance with accuracy class C in accordance with EN 50470-3 and 0.5 in accordance with IEC 62053-21
- Easy, intuitive operation and reading via the backlit LCD display
- Simple bus and network connection via Modbus/RTU or Modbus/TCP interface
- Modbus registers based on EMpro multifunctional energy measuring devices

## Commercial data

Item number	1674501
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C446
Product key	CMMC11
GTIN	4067923225121
Weight per piece (including packing)	370.7 g
Weight per piece (excluding packing)	315 g
Customs tariff number	90283019
Country of origin	CN

## Technical data

### Product properties

Product type	Energy meter
Product family	EMpro
Number (Ethernet ports)	1
Calibration validity period	8 Years
Meter type	Bidirectional meter (delivery and consumption) incl. 4-quadrant measurement

### Insulation characteristics

Protection class	II
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### Insulation characteristics

Overvoltage category	III
Pollution degree	2

### Display

Display type	LCD with white backlighting and maximum display range of 999999.99 kWh/kVArh
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### Electrical properties

Rated surge voltage	6 kV
Accuracy class	C (EN 50470-3) 0.5 (IEC 62053-21)
Mains type	1-phase (2-conductor) 3-phase (3-conductor) 3-phase (4-conductor)

### Supply

Supply voltage range	Supply from the measuring circuit
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### Electrical isolation

Measuring category	CAT III 300 V
Utilization category	UC 2 (EN 62052-31)

### Input data

#### Measurement

Nominal voltage	3x 230 V AC (400 V AC)
Input voltage range	100 V AC ... 277 V AC (Phase/neutral conductor) 173 V AC ... 480 V AC (Phase/Phase)
Input current range	100 A AC (Direct measurement)
Power consumption	10 VA (2 W)
Frequency range	±2 % (50/60 Hz reference frequency $f_N$ )
Power factor (cos phi)	0.5 (inductive) 0.8 (capacitive)

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Startup current $I_{st}$	0.04 A
Minimum current $I_{min}$	0.3 A
Limiting current $I_{max}$	100 A
Transient current $I_{tr}$	1 A
Reference current $I_{ref}$	10 A
Current carrying capacity	≤ 100 A (Neutral conductor)
Overload capacity	30 x $I_{max}$ for 0.01 s
Active energy (EN 50470-3)	Class C
Real energy (IEC 62053-21)	Class 0.5
Reactive power (IEC 62053-23)	Class 2
Scanning rate	4096 Hz

## Output data

### Pulse output

Pulse LED	400 imp/kWh (Metrological LED)
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## Connection data

### Measurement connection

Designation	Measurement connection
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### Conductor connection

Connection method	Screw connection
rigid	1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup>
flexible	1.5 mm <sup>2</sup> ... 25 mm <sup>2</sup>
AWG	14 ... 4 (rigid/flexible)
Stripping length	15 mm
Tightening torque	2.5 Nm

## Interfaces

### Communication:

Communication protocol	Modbus/TCP
Communication standard	Ethernet
Connection method	RJ45
Transmission speed range	100 Mbps
Data update rate	100 ms (Real power) 1 s (Energy values)

## Dimensions

### Item dimensions

Width	72 mm
Height	100 mm
Depth	71 mm

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Depth (NS 35/7,5)	65 mm (Snapped onto DIN rail NS 35/7,5 in accordance with EN 60715)
Horizontal pitch	4 Div.

## Material specifications

Color (Upper housing part)	light gray (RAL 7035)
Color (Lower housing part)	gray (RAL 7042)
Flammability rating according to UL 94	V0

## Environmental and real-life conditions

### Ambient conditions

Degree of protection (Front)	IP51 (Front)
Degree of protection (Connections)	IP20 (Connections)
Ambient temperature (operation)	-40 °C ... 70 °C -40 °F ... 158 °F (MID) 0 °C ... 55 °C (Display)
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Altitude	≤ 2000 m
Permissible humidity (operation)	0 % ... 90 % (non-condensing)
Shock (storage/transport)	30g <sub>n</sub> (300 m/s <sup>2</sup> ), 18 ms (IEC 60068-2-27)
Vibration (storage/transport)	10 Hz ... 150 Hz, 1g (EN 60068-2-6)
Mechanical environment	M1
EMC environment	E2

## Approvals

### CE

Certificate	CE-compliant
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### MID

Certificate	MID-compliant
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## EMC data

Noise immunity	EN 62052-11
Impulse withstand voltage	4 kV

## Standards and regulations

Standards/regulations	EN 50470-1 EN 50470-3
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## Mounting

Mounting type	DIN rail mounting
Mounting position	Horizontal DIN rail

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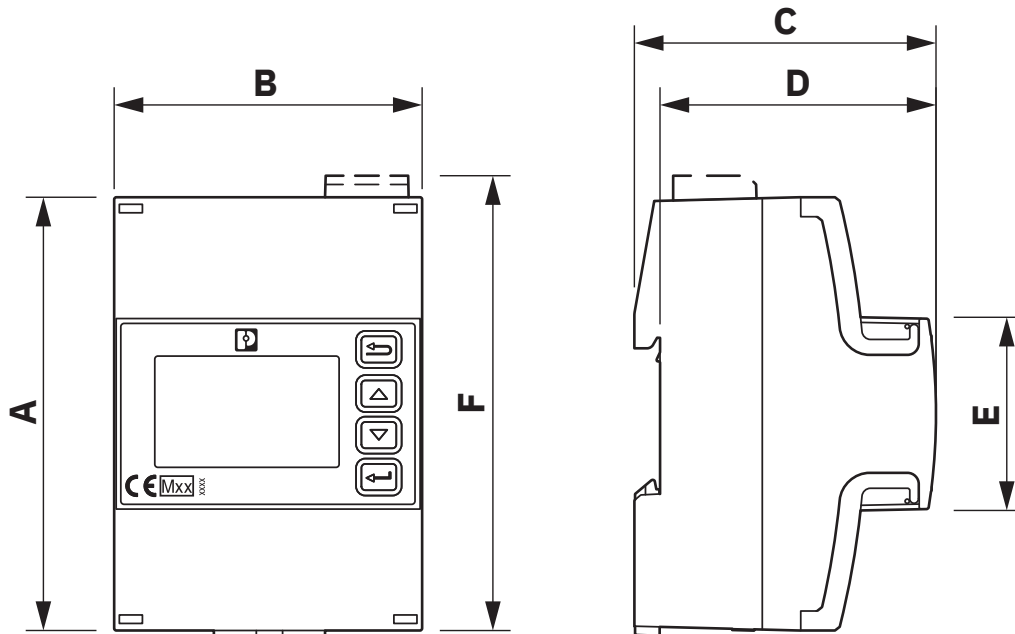
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## Drawings

Dimensional drawing



A = 100 mm; B = 72 mm; C = 71 mm; D = 65 mm; E = 45 mm; F = 105,5 mm

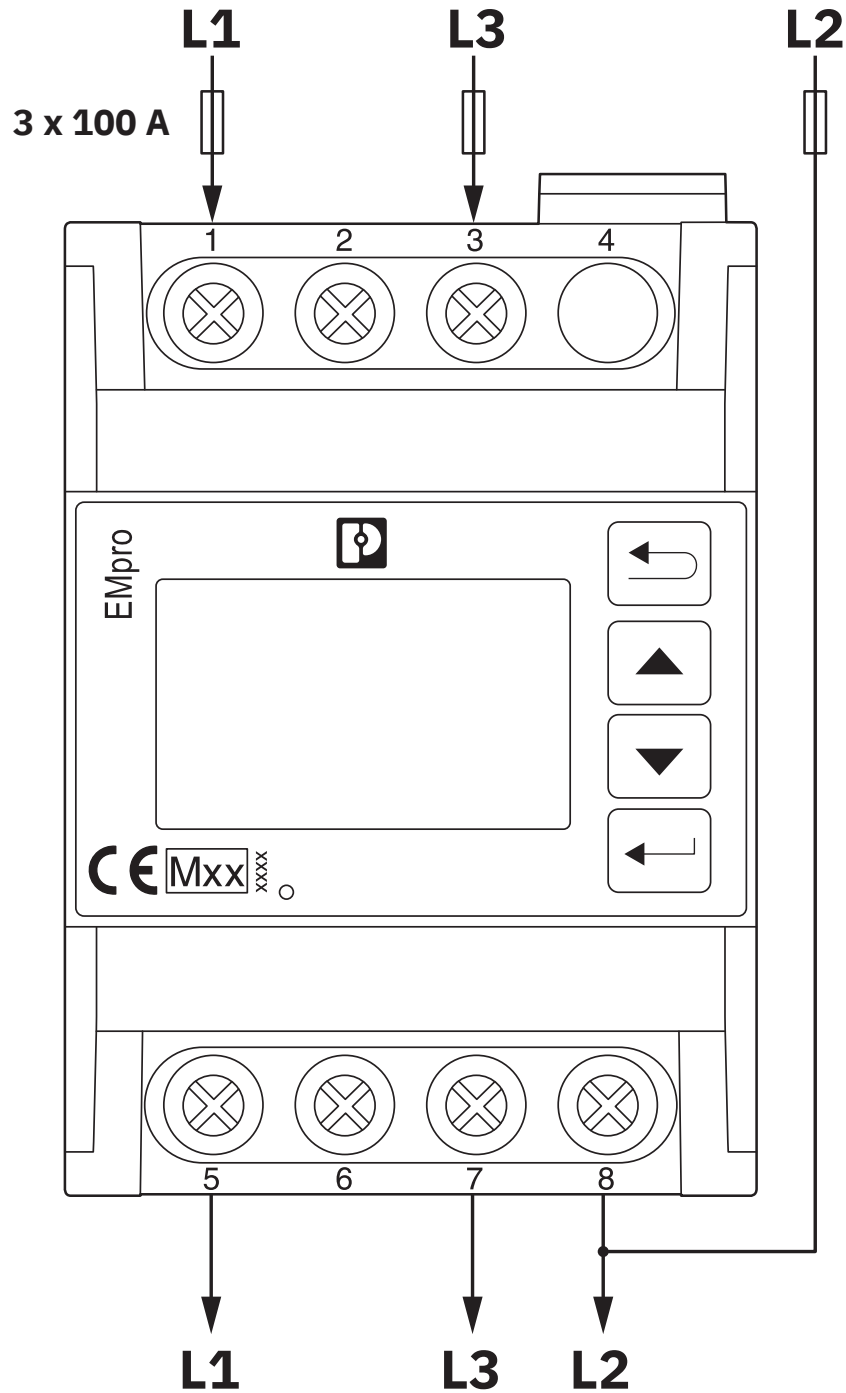
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Connection diagram



3P3W

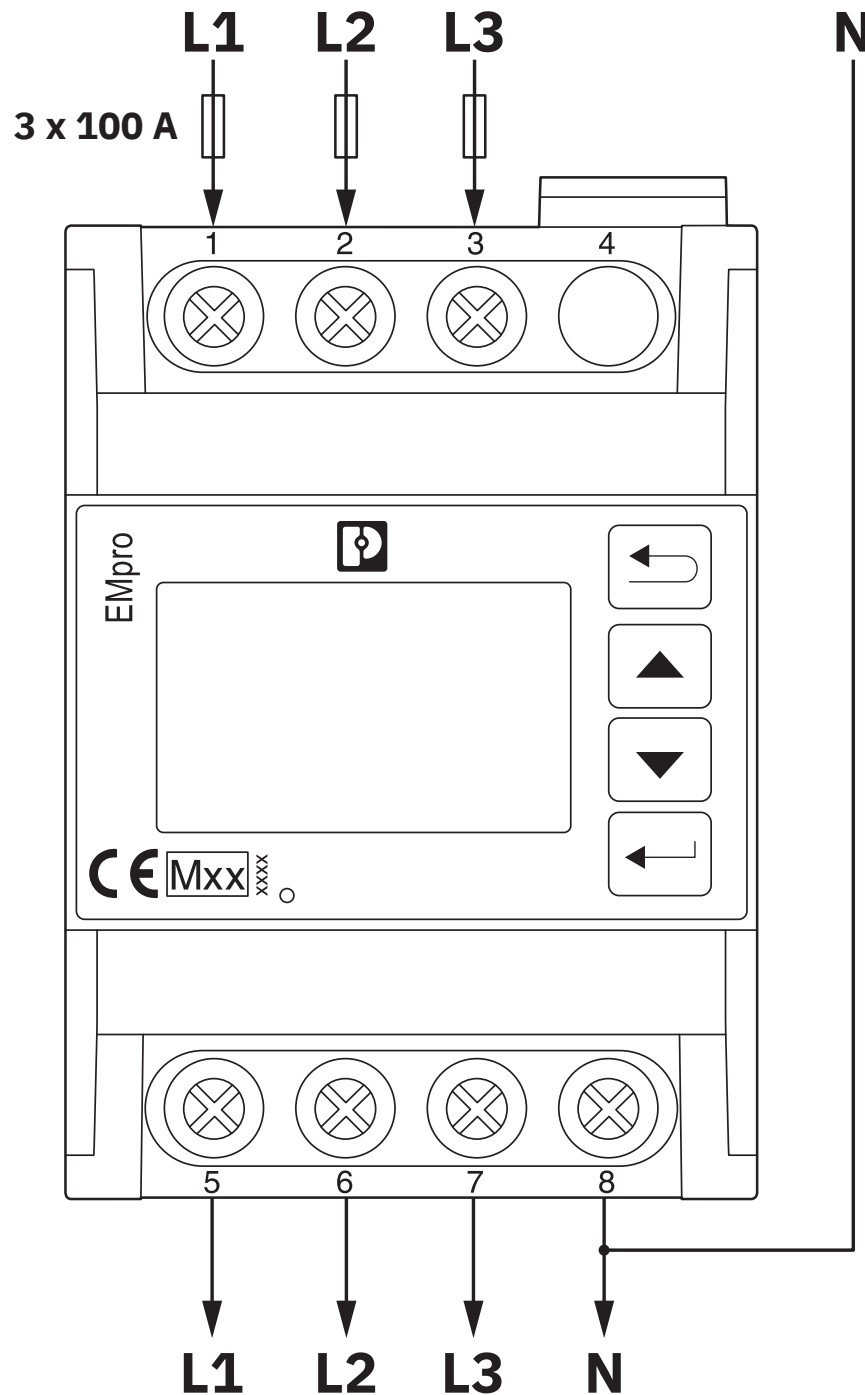
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Connection diagram



3P4W

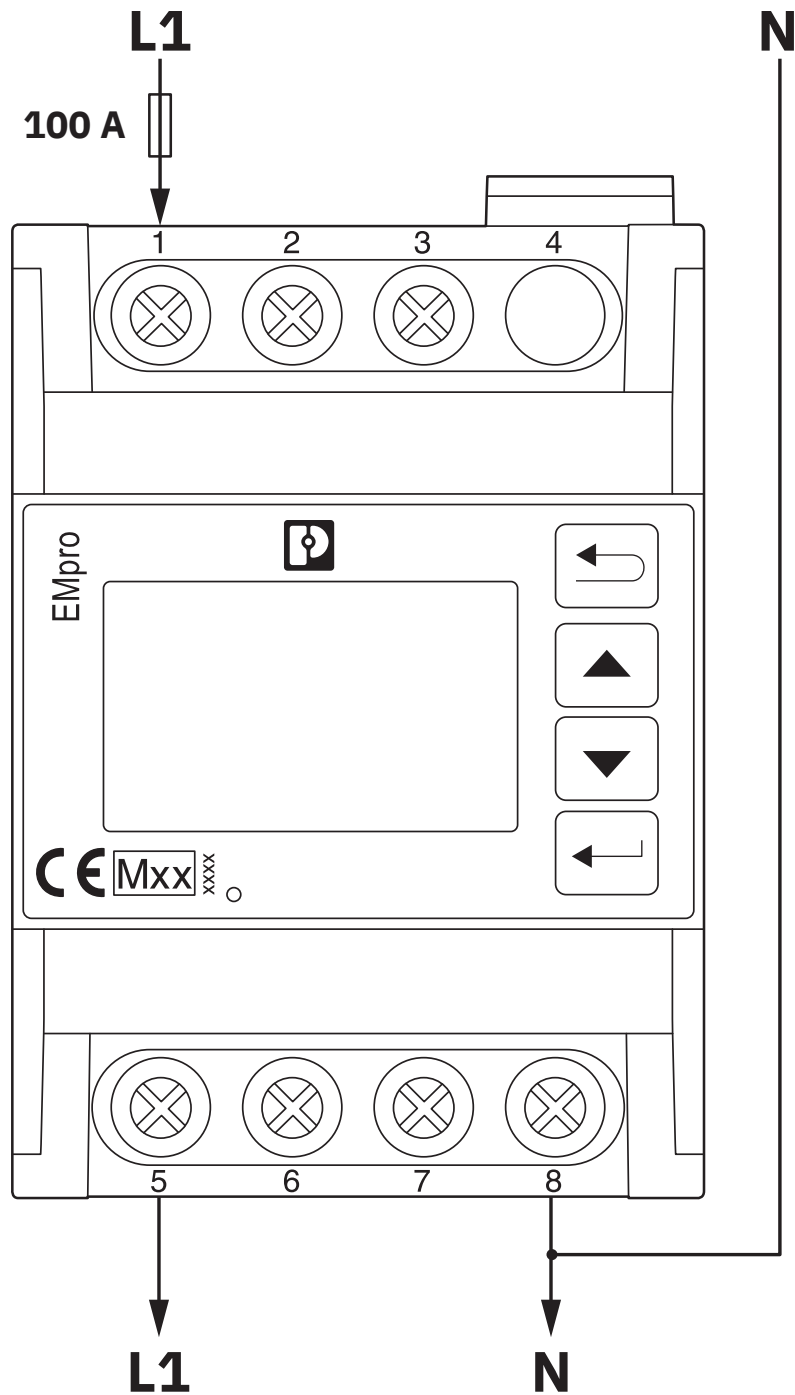
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Connection diagram



1P2W

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## Classifications

### ECLASS

ECLASS-13.0	27142330
ECLASS-15.0	27142330

### ETIM

ETIM 10.0	EC002301
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### UNSPSC

UNSPSC 21.0	26111500
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes, No exemptions
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### China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

### EU REACH SVHC

REACH candidate substance (CAS No.)	No substance above 0.1 wt%
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