

EEM-MA370-R - Measuring device

2907980

<https://www.phoenixcontact.com/us/products/2907980>



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Multi-functional energy measuring device with integrated Modbus RTU/TCP interface for measuring electrical parameters in low-voltage installations up to 690 V. (phoenixcontact.com/empro-help)

Commercial data

Item number	2907980
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C446
Product key	CMMC21
GTIN	4055626260570
Weight per piece (including packing)	337.49 g
Weight per piece (excluding packing)	441 g
Customs tariff number	90303100
Country of origin	DE

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2907980

<https://www.phoenixcontact.com/us/products/2907980>



Technical data

Product properties

Product type	Energy measuring device
Product family	EMpro
Number	1

Display

Display type	LCD display, backlit, 2-color, multi-line
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Electrical properties

Maximum power dissipation for nominal condition	10 VA
Mains type	3-phase (3 or 4-conductor), 2-phase (2-conductor), and single-phase (1-conductor)

Electrical isolation

Test voltage ()	4 kV AC (50 Hz, 60 s)
Pollution degree	2

Electrical isolation Housing against all potentials IEC 61010-1

Standards/regulations	IEC 61010-1
Overvoltage category	III (300 V AC)
	II (600 V AC)

Electrical isolation Supply against all other potentials IEC 61010-1

Standards/regulations	IEC 61010-1
Overvoltage category	III (300 V AC)
	II (600 V AC)

Electrical isolation Voltage measurement input against all other potentials IEC 61010-2-030

Standards/regulations	IEC 61010-2-030
Measuring category	III (300 V AC)
	II (600 V AC)

Electrical isolation Current measurement input against all other potentials

Insulation	Functional insulation
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Electrical isolation Digital I/Os

Insulation	Functional insulation
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Electrical isolation Communication interface

Insulation	Functional insulation
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Supply

Supply voltage range	100 V AC ... 230 V AC ($\pm 20\%$)
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EEM-MA370-R - Measuring device

2907980

<https://www.phoenixcontact.com/us/products/2907980>



	150 V DC ... 250 V DC ($\pm 20\%$)
Power consumption	≤ 4 W
Nominal frequency	50 Hz ... 60 Hz (AC sine)

Input data

Measuring data acquisition

Measuring principle	True r.m.s. value measurement (seamless)
Frequency measuring range (Fundamental component)	45 Hz ... 65 Hz
Measured value	AC sine (50 Hz/60 Hz)
Scanning rate	12,8 kHz / 15,4 kHz
Acquisition of harmonics	up to 63rd harmonic

Digital input

Description of the input	Digital input in accordance with IEC/EN 61131-2 (type 3)
Number	1
Voltage input signal	24 V DC
	0 V DC ... 30 V DC
Current input signal	2 mA ... 15 mA
Protection	250 mA (fast-blow)
Protective circuit	Protection against incorrect DC connection (max. 30 V)

Measurement: Voltage

Input name	Voltage measuring input V1, V2, V3
Input voltage range direct	18 V AC ... 690 V AC (Phase/Phase)
	11 V AC ... 400 V AC (Phase/neutral conductor)
Input voltage range via external transformers	60 V AC ... 2000000 V AC (primary)
	60 V AC ... 400 V AC (secondary)
Surge voltage capacity	760 V AC (Phase/Phase)
Precision	0.02 %
Power consumption	< 0.5 VA

Measurement: Current

Input name	Current measurement I1, I2, I3
Input current	1 A (secondary)
	5 A (secondary)
Measuring range	1 A ... 20000 A (primary)
Overload capacity	6 A (I_{max})
Response threshold from measuring range nominal value	10 mA (1 A)
	50 mA (5 A)
Precision	0.2 %
Current overload	50 A for 1 s
	20 A (4 x I_N , continuous)
Power consumption	< 0.5 VA

Measurement: Power

EEM-MA370-R - Measuring device

2907980

<https://www.phoenixcontact.com/us/products/2907980>



Precision	0.5 %
Active energy (IEC 62053-22)	Class 0.5 S
Reactive power (IEC 62053-23)	Class 2
ANSI C12.20	Class 0.5 S

Output data

Output description	Digital output in accordance with IEC/EN 61131-2 (type 3)
Number	1
Current output signal	≤ 100 mA
Voltage output signal	24 V DC
Protection	250 mA (fast-blow)
Protective circuit	Protection against incorrect DC connection (max. 30 V)

Connection data

Current / voltage / supply

Connection method	Screw connection
Stripping length	8 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm ² ... 6 mm ²
Conductor cross-section flexible	0.2 mm ² ... 4 mm ²
Conductor cross-section AWG	24 ... 10
Tightening torque	0.5 Nm ... 0.6 Nm

Digital I/O / communication

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross-section rigid	0.14 mm ² ... 2.5 mm ²
Conductor cross-section flexible	0.14 mm ² ... 1.5 mm ²
Conductor cross-section AWG	26 ... 14
Tightening torque	0.5 Nm ... 0.6 Nm

RS-485

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm ² ... 2.5 mm ²
Conductor cross-section flexible	0.2 mm ² ... 2.5 mm ²
Conductor cross-section AWG	24 ... 12
Tightening torque	0.5 Nm ... 0.6 Nm

Interfaces

Data: Network interface - Ethernet

Communication protocol	Modbus/TCP
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EEM-MA370-R - Measuring device

2907980

<https://www.phoenixcontact.com/us/products/2907980>



	REST (HTTP)
Connection method	RJ45
Transmission speed	10 Mbps
	100 Mbps

Data: Network interface - serial

Communication protocol	Modbus/RTU
Communication standard	RS-485
Connection method	Screw connection
Transmission speed range	2.4 kbps ... 115.2 kbps
Resistance	120 Ω (integrated)

Dimensions

Item dimensions

Width	90 mm
Height	90 mm
Depth	71.9 mm
Horizontal pitch	5 Div.

Material specifications

Color	gray (RAL 7042)
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Environmental and real-life conditions

Ambient conditions

Degree of protection (Housing)	IP20 (Housing)
Degree of protection (Display)	IP40 (Display)
Ambient temperature (operation)	-25 °C ... 70 °C
Ambient temperature (storage/transport)	-30 °C ... 80 °C
Altitude	≤ 2000 m
Max. permissible relative humidity (operation)	≤ 95 % (non-condensing)

Approvals

CE

Certificate	CE-compliant
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UKCA

Certificate	UKCA-compliant
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UL, USA/Canada

Identification	UL/C-UL Listed UL 61010-1
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UL data

Operating mode	Indoor use
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Standards and regulations

EEM-MA370-R - Measuring device

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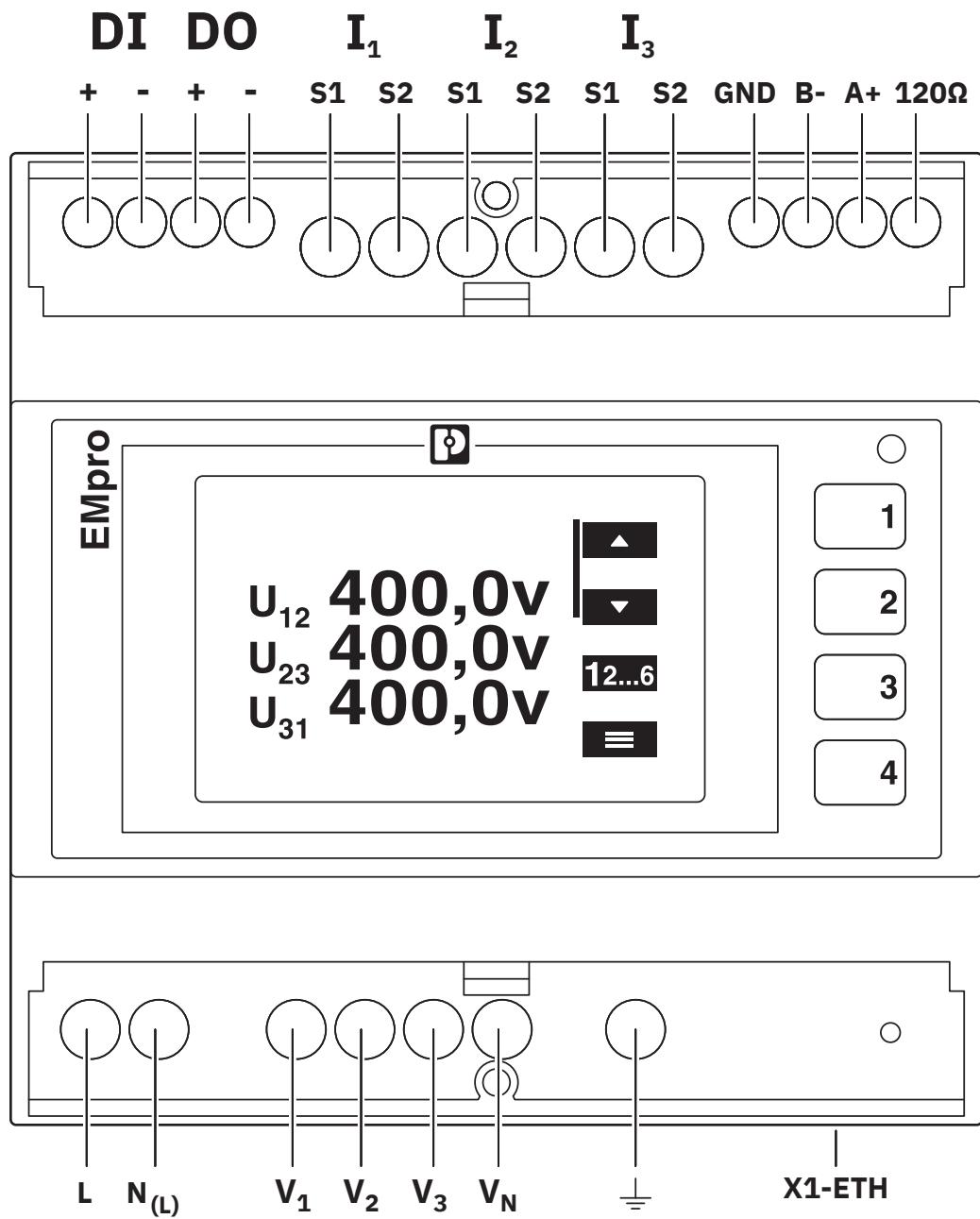
Standards/regulations	IEC 61010-1
	IEC 61326-1
	IEC 61557-12

Mounting

Mounting type	DIN rail mounting
Mounting position	Horizontal DIN rail

Drawings

Connection diagram



Connection assignment

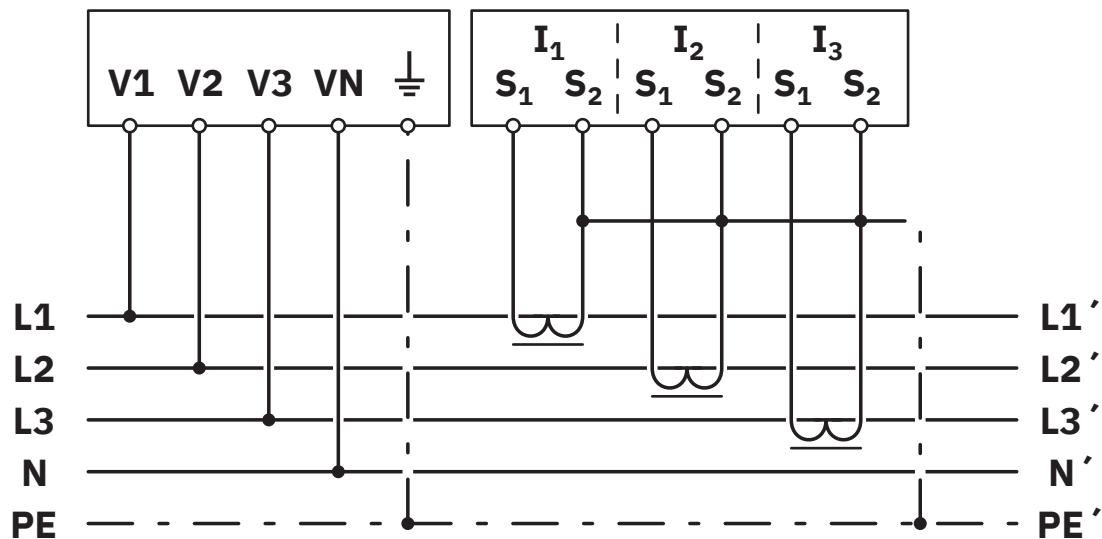
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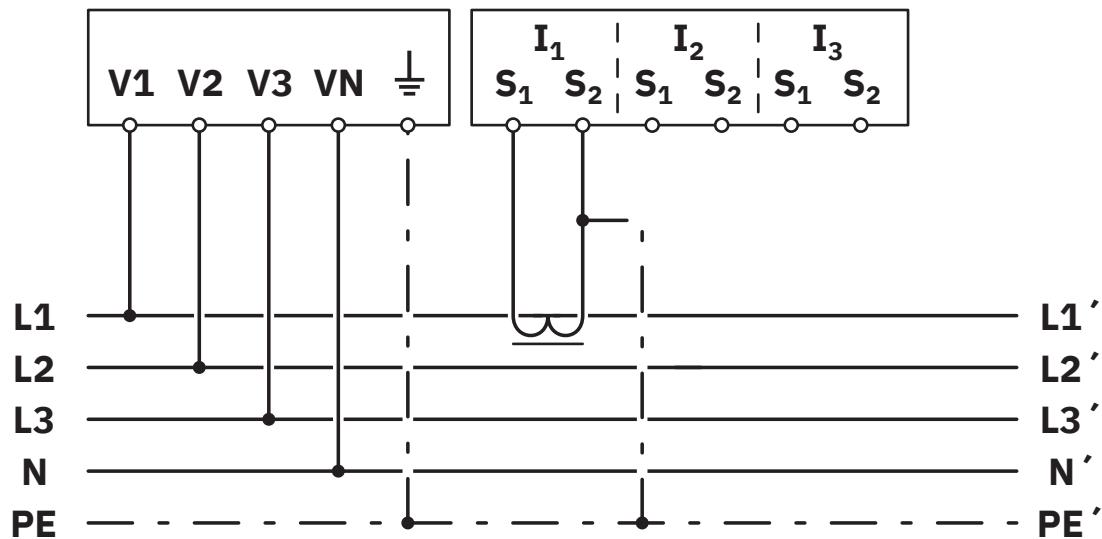


Connection diagram



Network type: 3PH-4W-3CT

Connection diagram



Network type: 3PH-4W-1CT

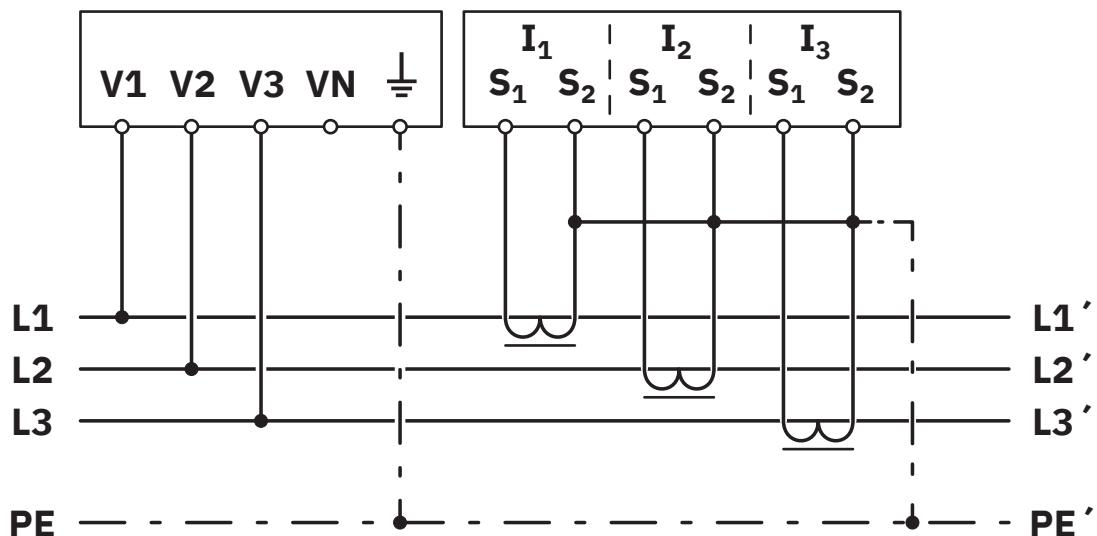
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2907980

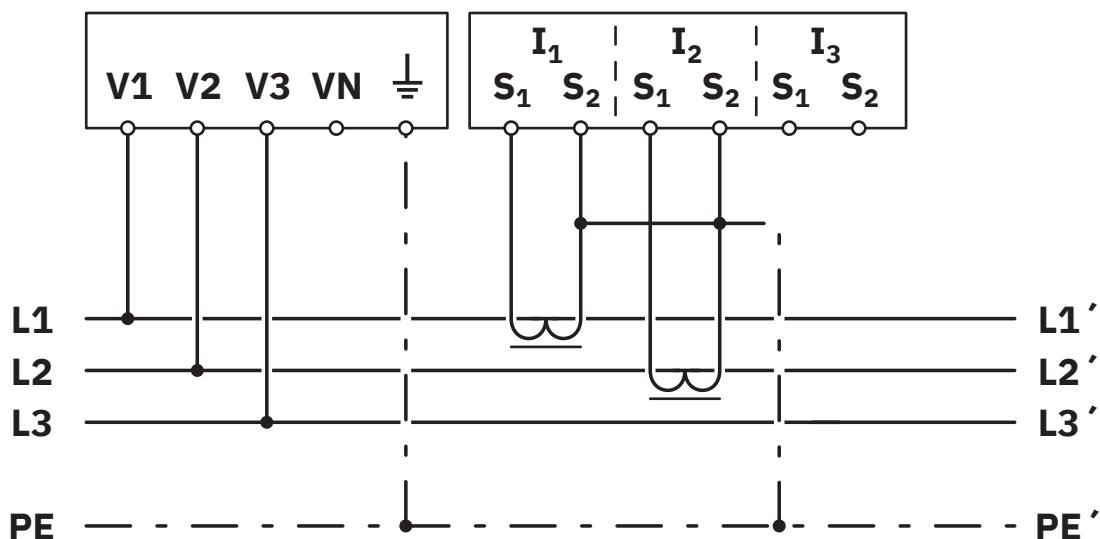
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Connection diagram



Network type: 3PH-3W-3CT

Connection diagram



Network type: 3PH-3W-2CT

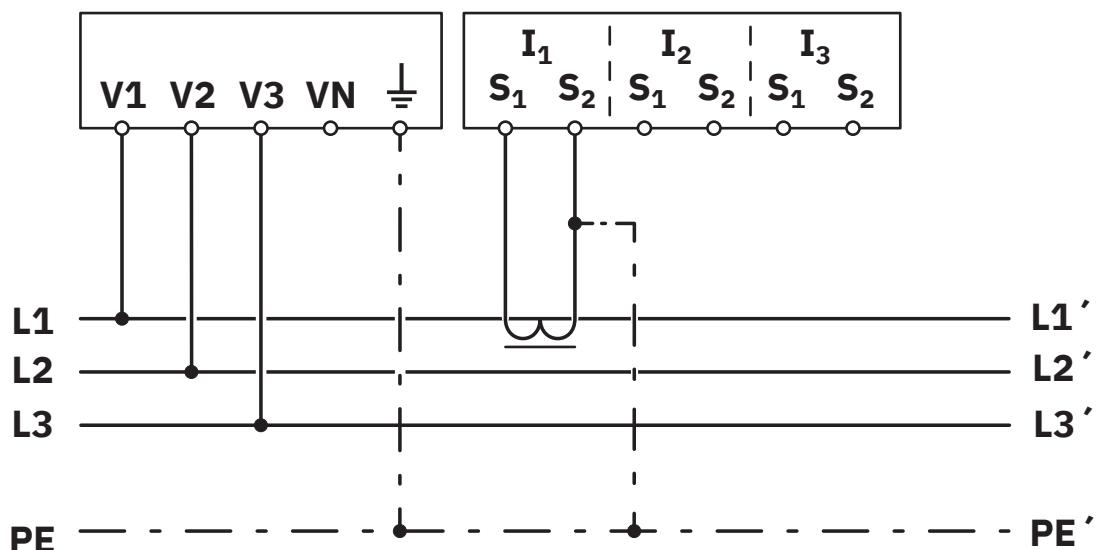
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2907980

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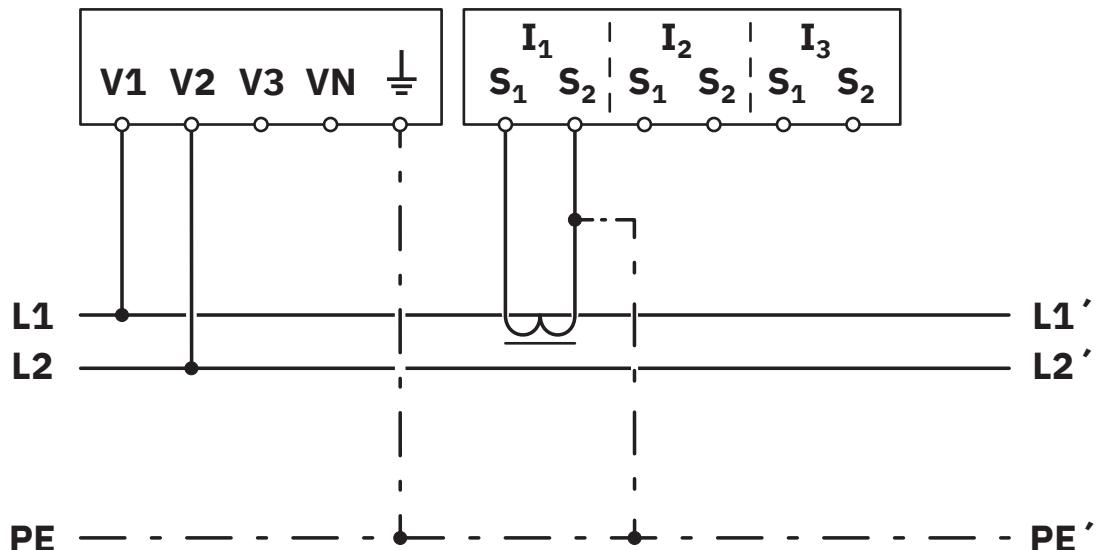


Connection diagram



Network type: 3PH-3W-1CT

Connection diagram



Network type: 2PH-2W-1CT

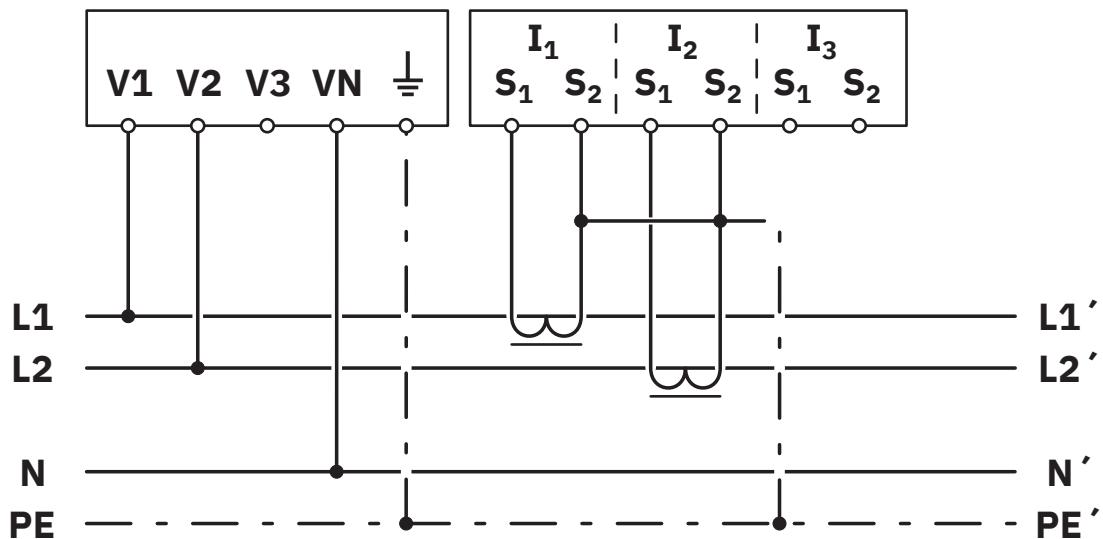
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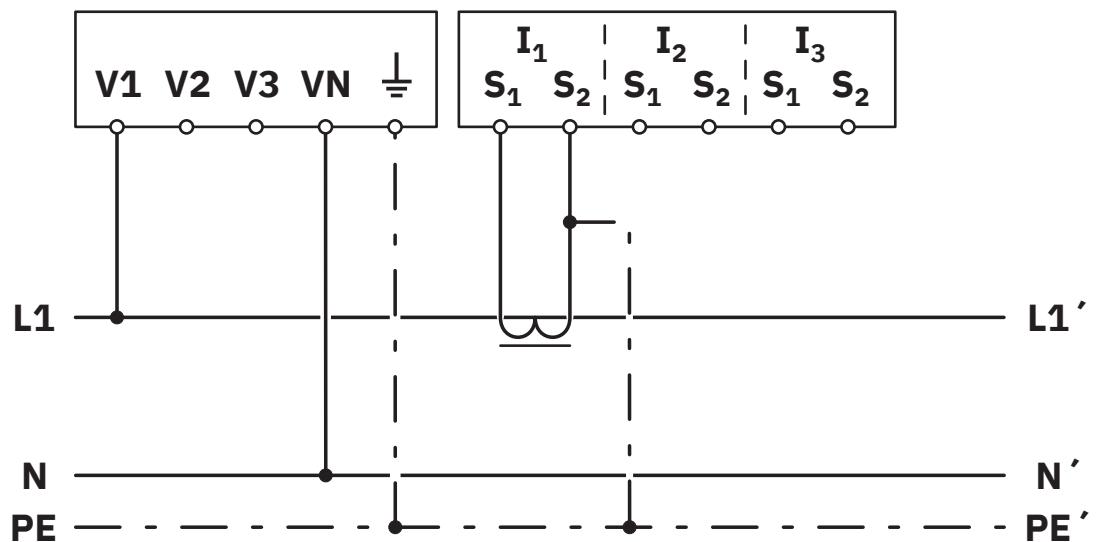
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Connection diagram



Network type: 2PH-3W-2CT

Connection diagram



Network type: 1PH-2W-1CT

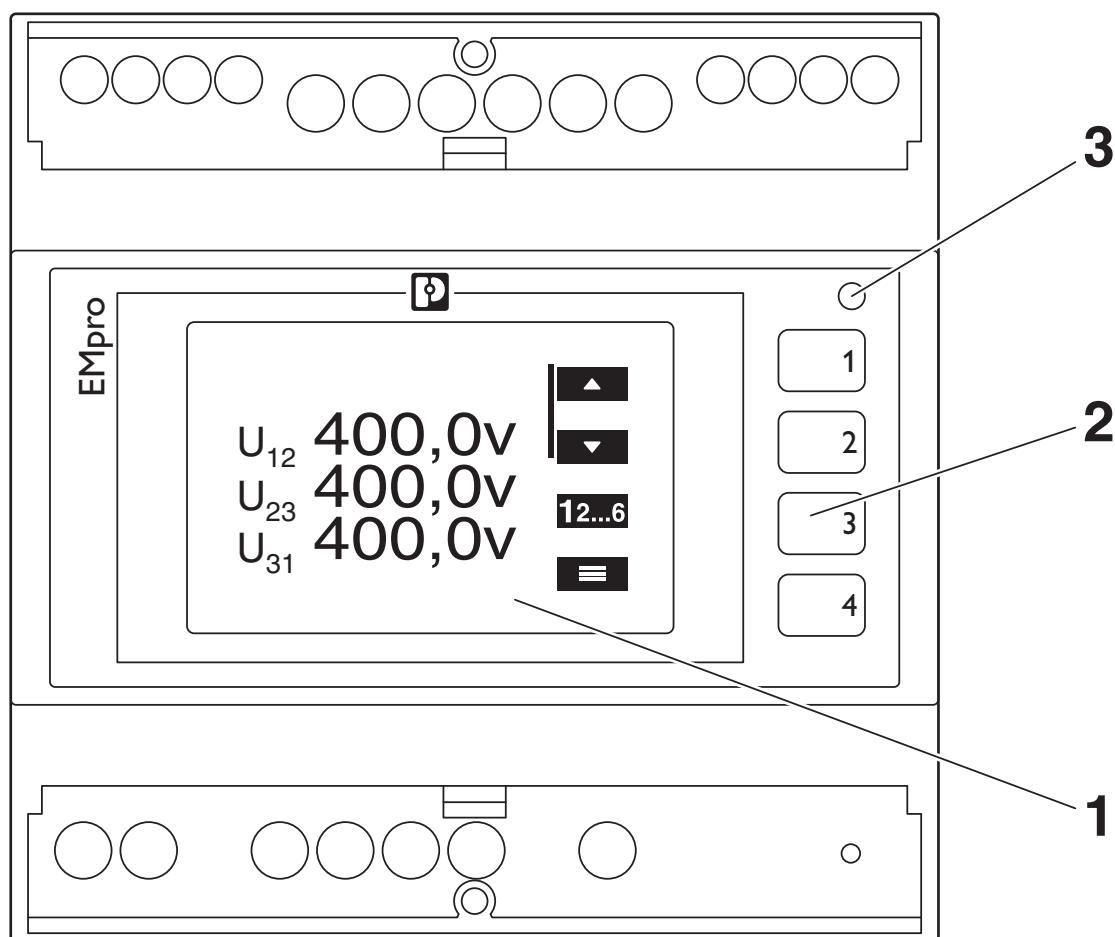
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2907980

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Schematic diagram



Operating and indication elements

1 LCD, backlit

2 Operating buttons for displaying measured values and for changing the configuration

3 Pulse LED

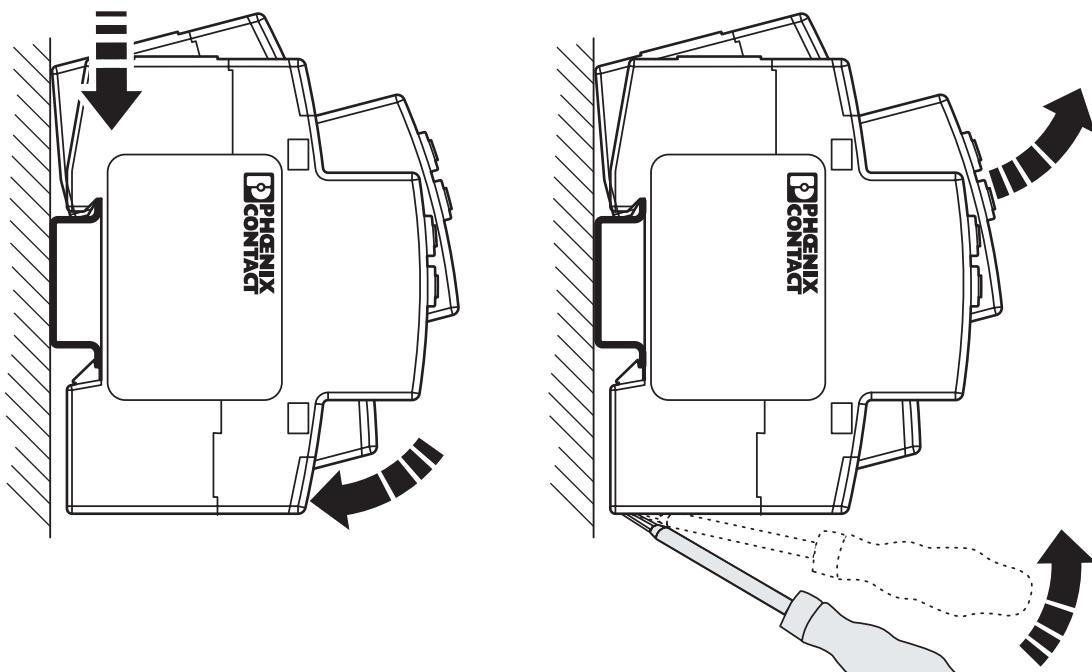
EEM-MA370-R - Measuring device

2907980

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Schematic diagram



Mounting

EEM-MA370-R - Measuring device

2907980

<https://www.phoenixcontact.com/us/products/2907980>



Approvals

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EAC

Approval ID: RU*DE*08.B.00734/19



cULus Listed

Approval ID: E357804

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2907980

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Classifications

ECLASS

ECLASS-13.0	27142330
ECLASS-15.0	27142330

ETIM

ETIM 9.0	EC002301
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UNSPSC

UNSPSC 21.0	41113600
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2907980

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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
	Perfluorobutane sulfonic acid (PFBS) and its salts(CAS: n/a)
SCIP	58f34caa-8150-4f25-a3cb-543dfee16673

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