

# EEM-MA370 - Measuring device

2907983

<https://www.phoenixcontact.com/us/products/2907983>



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

## Commercial data

|                                      |                     |
|--------------------------------------|---------------------|
| Item number                          | 2907983             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | C446                |
| Product key                          | CMMC21              |
| Catalog page                         | Page 203 (C-5-2019) |
| GTIN                                 | 4055626260532       |
| Weight per piece (including packing) | 328.8 g             |
| Weight per piece (excluding packing) | 260 g               |
| Customs tariff number                | 90303100            |
| Country of origin                    | DE                  |

## Technical data

### Product properties

|                |                         |
|----------------|-------------------------|
| Product type   | Energy measuring device |
| Product family | EMpro                   |

### 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                     |
| Insulation       | Reinforced insulation |

#### Electrical isolation Housing against all potentials IEC 61010-1

|                       |                                 |
|-----------------------|---------------------------------|
| Standards/regulations | IEC 61010-1                     |
| Overvoltage category  | III (300 V AC)<br>II (600 V AC) |
| Insulation            | Reinforced insulation           |

#### Electrical isolation Supply against all other potentials IEC 61010-1

|                       |                                 |
|-----------------------|---------------------------------|
| Standards/regulations | IEC 61010-1                     |
| Overvoltage category  | III (300 V AC)<br>II (600 V AC) |
| Insulation            | Reinforced insulation           |

#### 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)<br>II (600 V AC) |
| Insulation            | Reinforced insulation           |

#### Electrical isolation Current measurement input against all other potentials

|            |                       |
|------------|-----------------------|
| Insulation | Functional insulation |
|------------|-----------------------|

#### Electrical isolation Digital I/Os

|            |                       |
|------------|-----------------------|
| Insulation | Functional insulation |
|------------|-----------------------|

#### Electrical isolation Communication interface

|            |                       |
|------------|-----------------------|
| Insulation | Functional insulation |
|------------|-----------------------|

#### Supply

|                      |                                                                              |
|----------------------|------------------------------------------------------------------------------|
| Supply voltage range | 100 V AC ... 230 V AC ( $\pm 20\%$ )<br>150 V DC ... 250 V DC ( $\pm 20\%$ ) |
| Power consumption    | $\leq 4\text{ W}$                                                            |

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|                   |                           |
|-------------------|---------------------------|
| Nominal frequency | 50 Hz ... 60 Hz (AC sine) |
|-------------------|---------------------------|

## Input data

### General

|                          |                                                          |
|--------------------------|----------------------------------------------------------|
| Measuring principle      | True RMS value measurement (TRMS)                        |
| Measured value           | AC sine (50 Hz/60 Hz)                                    |
| Acquisition of harmonics | up to 63rd harmonic                                      |
| Description of the input | Digital input in accordance with IEC/EN 61131-2 (type 3) |
| Number                   | 1                                                        |
| Voltage input signal     | 24 V DC<br>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                    | 35 V AC ... 690 V AC (Phase/Phase)<br>20 V AC ... 400 V AC (Phase/neutral conductor) |
| Input voltage range via external transformers | 60 V AC ... 2000000 V AC (primary)<br>60 V AC ... 400 V AC (secondary)               |
| Surge voltage capacity                        | 760 V AC (Phase/Phase)                                                               |
| Precision                                     | 0.2 %                                                                                |
| Power consumption                             | < 2 VA                                                                               |

### Measurement: Current

|                                                       |                                               |
|-------------------------------------------------------|-----------------------------------------------|
| Input name                                            | Current measurement I1, I2, I3                |
| Input current                                         | 1 A (secondary)<br>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)<br>50 mA (5 A)                    |
| Precision                                             | 0.2 %                                         |
| Current overload                                      | 50 A for 1 s<br>20 A (4 x $I_N$ , continuous) |
| Power consumption                                     | < 0.5 VA                                      |

### Measurement: Power

|                               |             |
|-------------------------------|-------------|
| 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 mm² ... 6 mm² |
| Conductor cross section flexible | 0.2 mm² ... 4 mm² |
| 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 mm² ... 2.5 mm² |
| Conductor cross section flexible | 0.14 mm² ... 1.5 mm² |
| Conductor cross section AWG      | 26 ... 14            |
| Tightening torque                | 0.5 Nm ... 0.6 Nm    |

## Interfaces

### Data: Network interface

|                        |            |
|------------------------|------------|
| Communication protocol | Modbus/TCP |
|                        | REST       |
| Connection method      | RJ45       |

## Dimensions

|        |         |
|--------|---------|
| Width  | 90 mm   |
| Height | 90 mm   |
| Depth  | 71.9 mm |

## Material specifications

|       |                 |
|-------|-----------------|
| Color | gray (RAL 7042) |
|-------|-----------------|

## Environmental and real-life conditions

### Ambient conditions

|                                |                |
|--------------------------------|----------------|
| Degree of protection (Housing) | IP20 (Housing) |
| Degree of protection (Display) | IP40 (Display) |

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|                                                |                         |
|------------------------------------------------|-------------------------|
| 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 |
|-------------|--------------|

### UKCA

|             |                |
|-------------|----------------|
| Certificate | UKCA-compliant |
|-------------|----------------|

### UL, USA/Canada

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

### UL data

|                |            |
|----------------|------------|
| Operating mode | Indoor use |
|----------------|------------|

## Standards and regulations

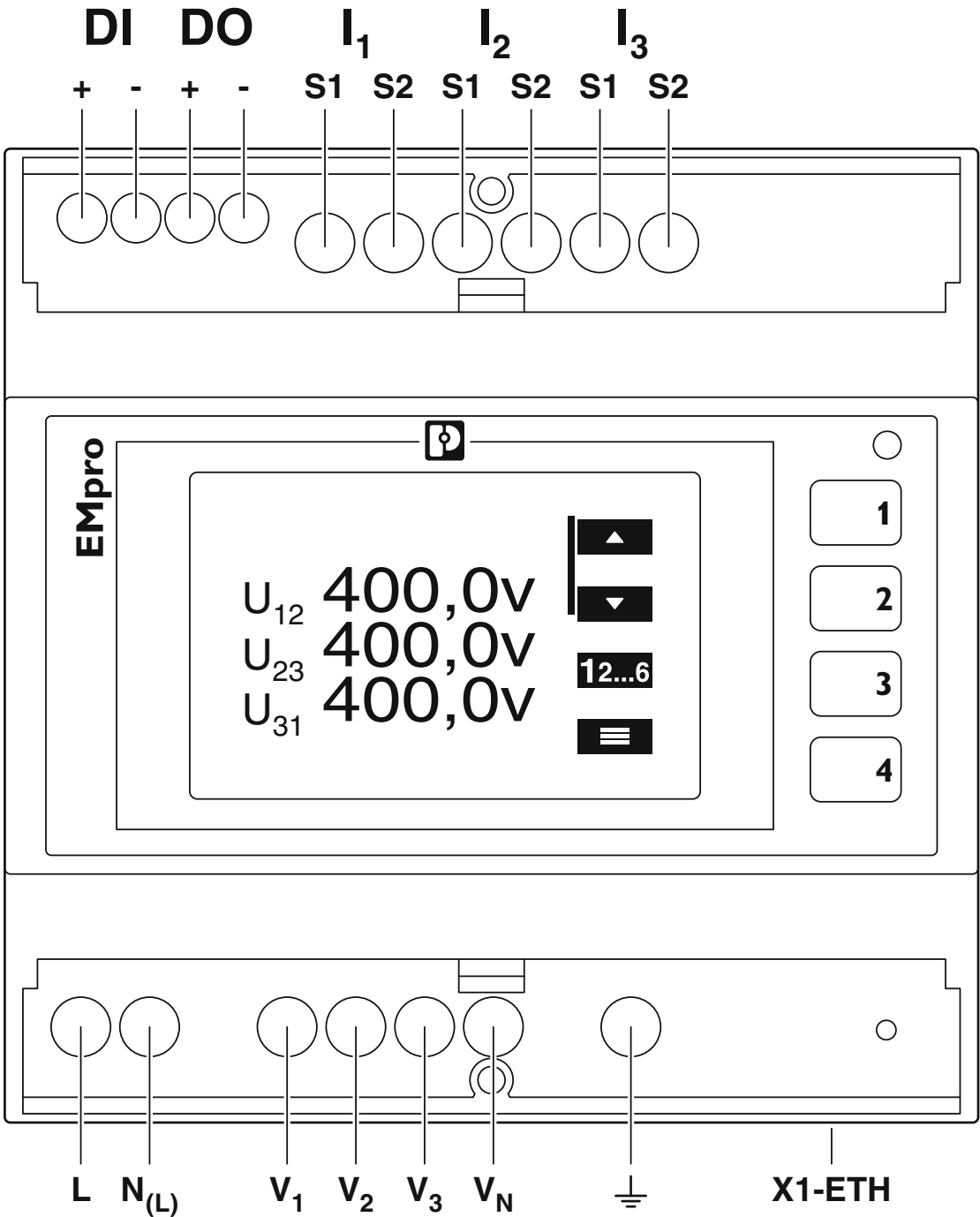
|                       |              |
|-----------------------|--------------|
| Standards/regulations | IEC 61010-1  |
|                       | IEC 61326-1  |
|                       | IEC 61557-12 |

## Mounting

|                   |                     |
|-------------------|---------------------|
| Mounting type     | DIN rail mounting   |
| Mounting position | Horizontal DIN rail |

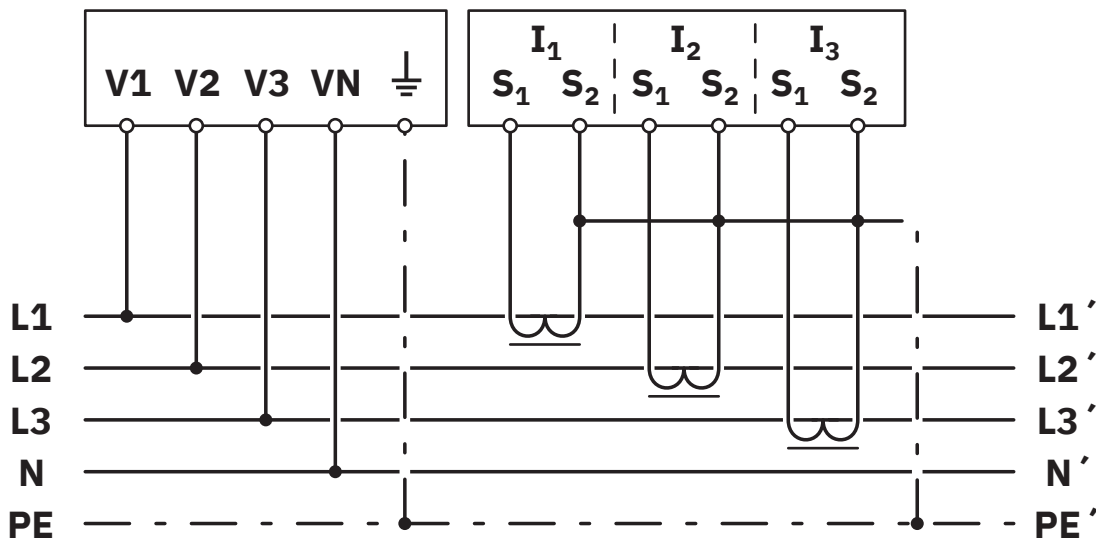
Drawings

Connection diagram



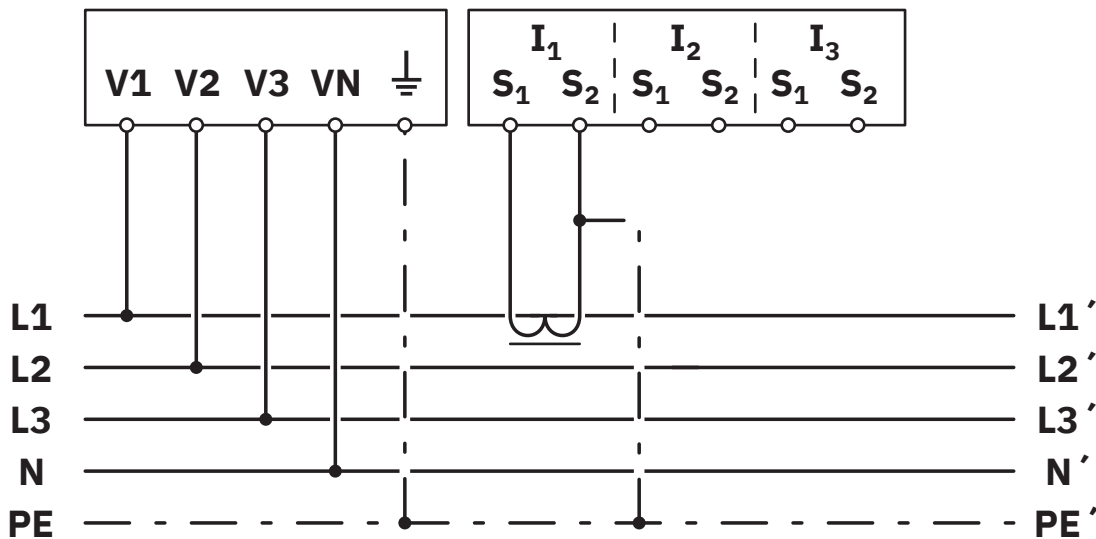
Pin assignment

Connection diagram



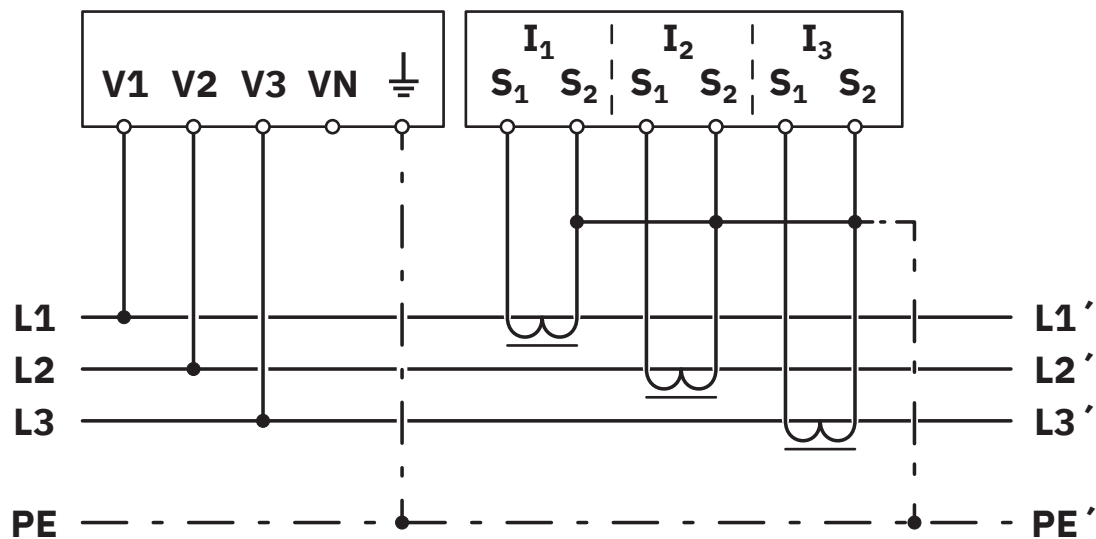
Network type: 3PH-4W-3CT

Connection diagram



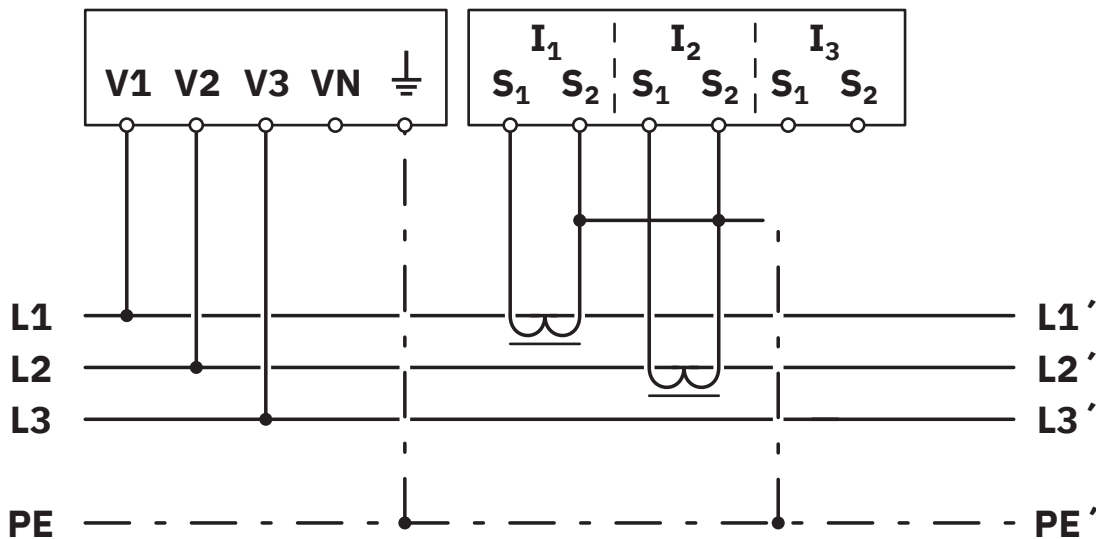
Network type: 3PH-4W-1CT

Connection diagram



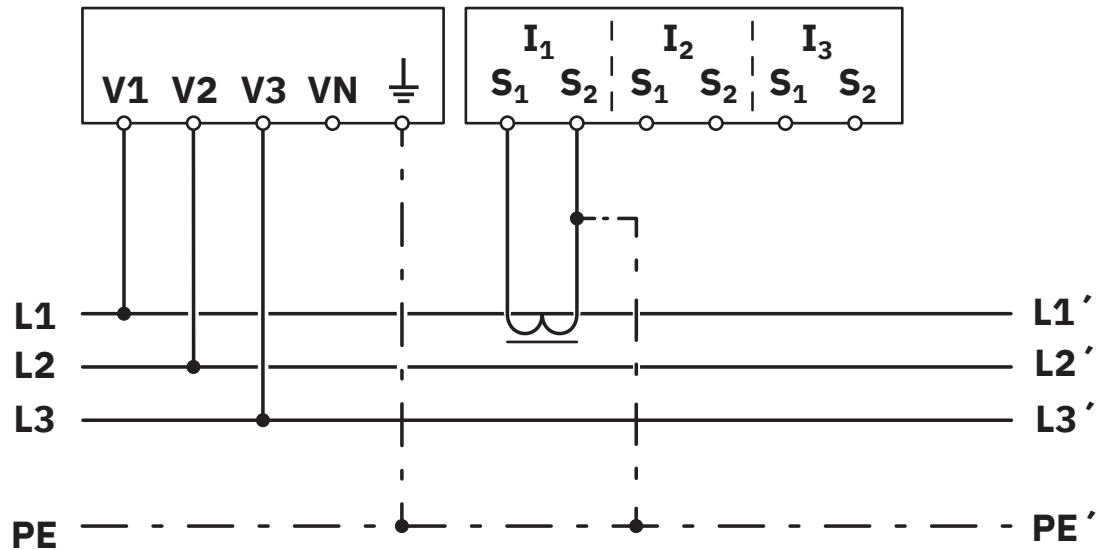
Network type: 3PH-3W-3CT

Connection diagram



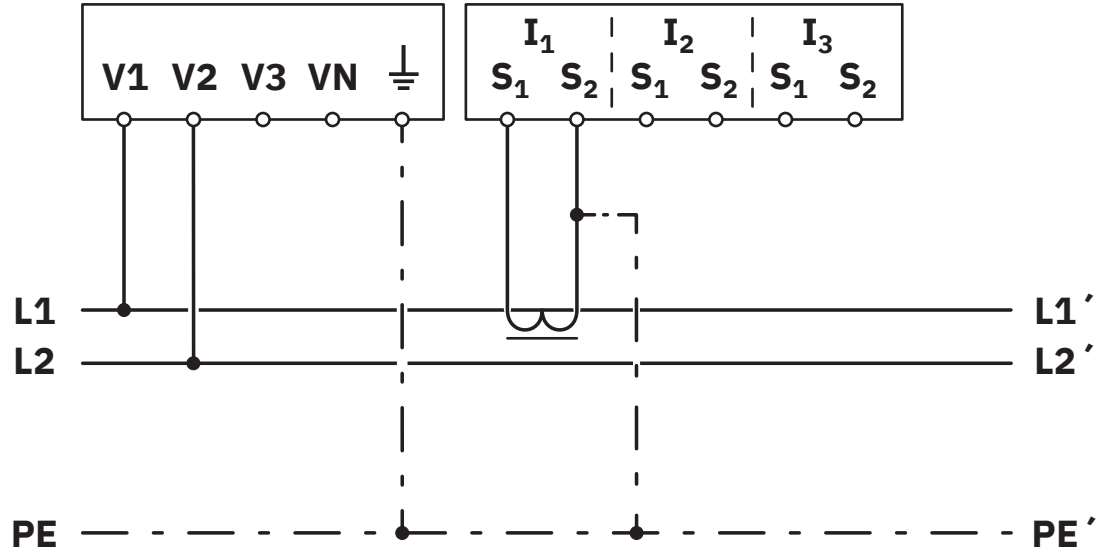
Network type: 3PH-3W-2CT

Connection diagram



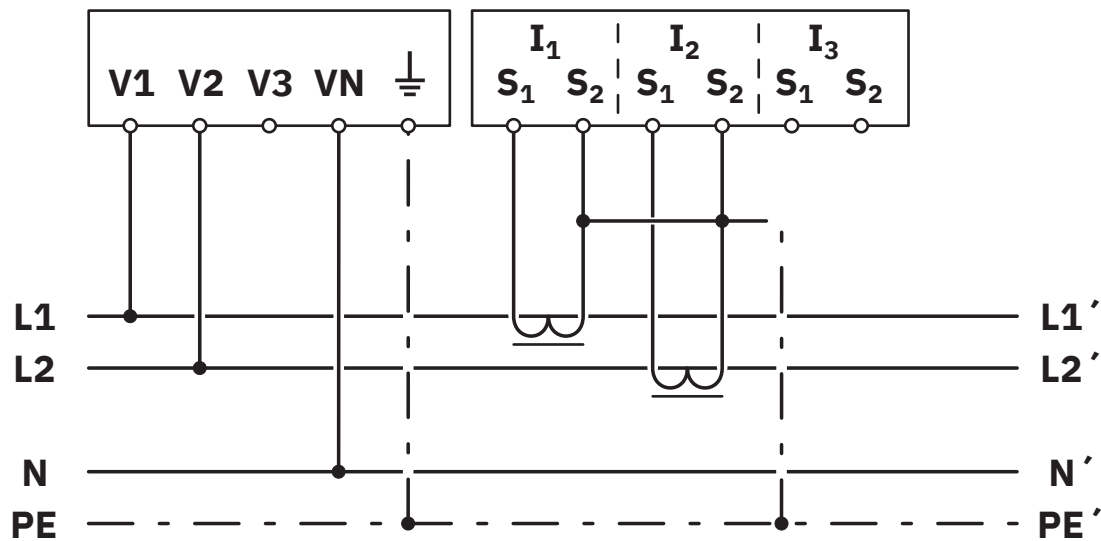
Network type: 3PH-3W-1CT

Connection diagram



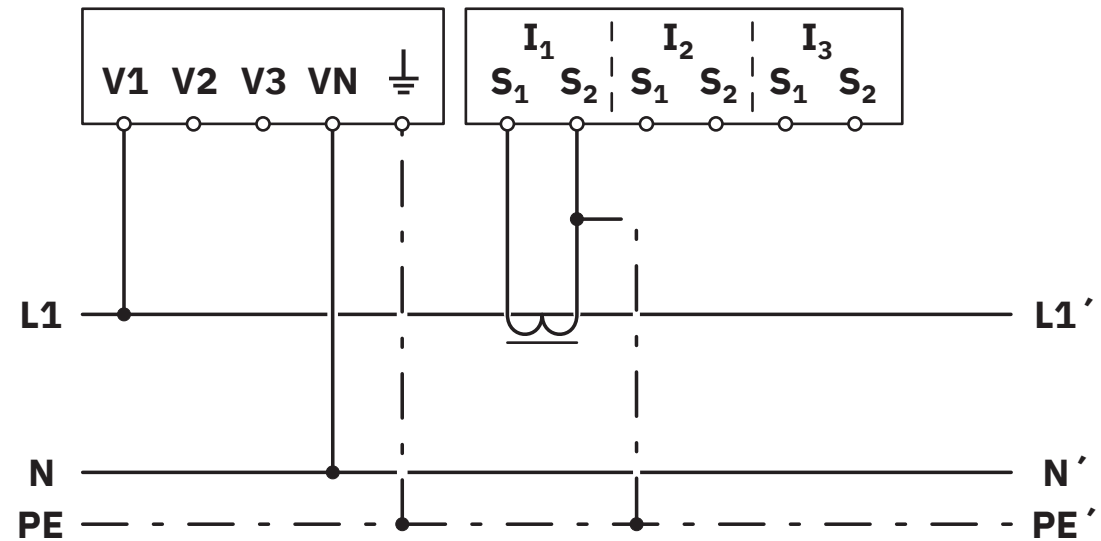
Network type: 2PH-2W-1CT

Connection diagram



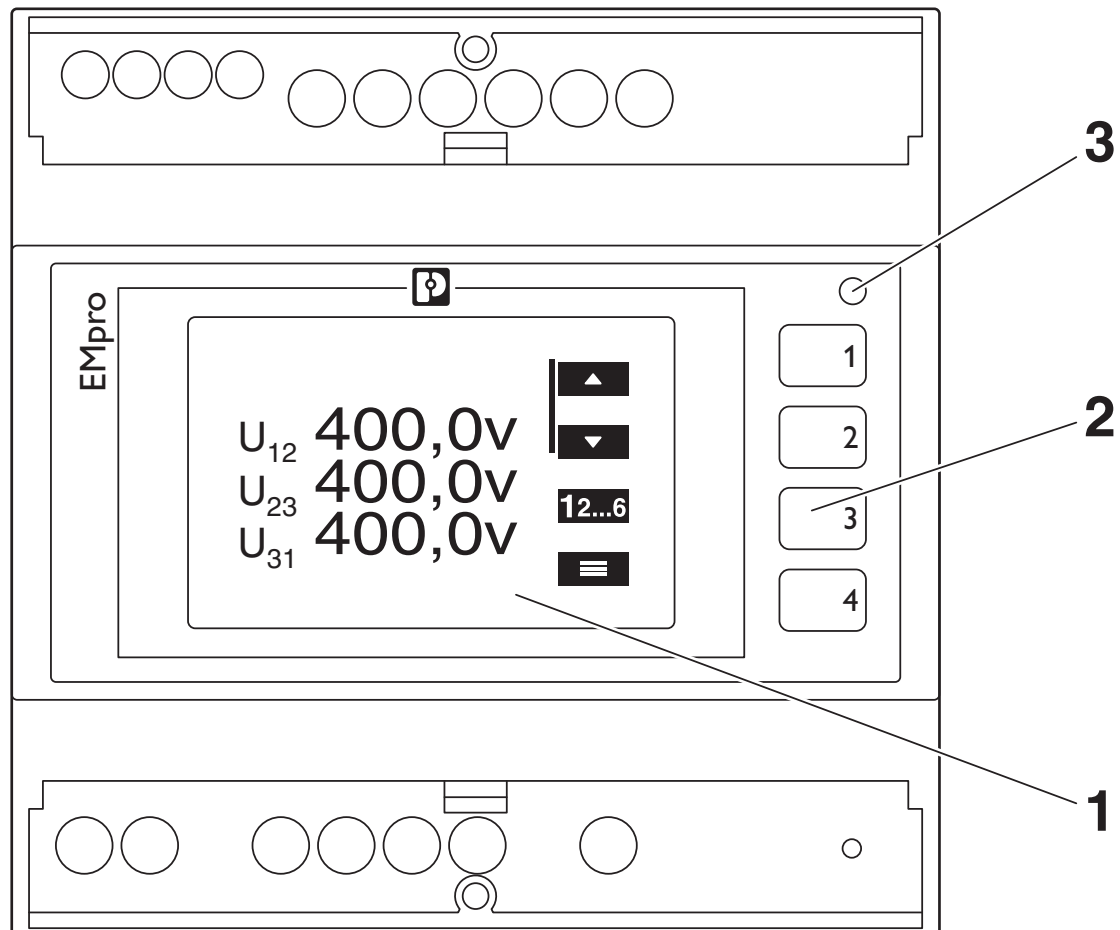
Network type: 2PH-3W-2CT

Connection diagram



Network type: 1PH-2W-1CT

Schematic diagram



## Operating and indication elements

1 LCD, backlit

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

3 Pulse LED

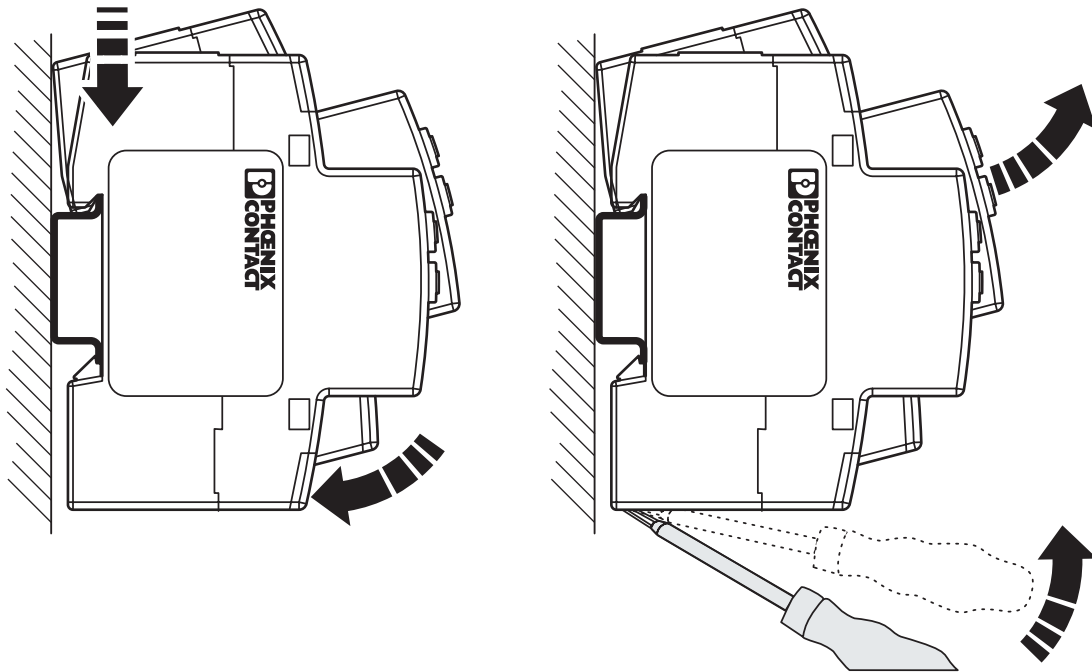
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Schematic diagram



Mounting

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## Approvals

 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2907983>



**EAC**

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



**cULus Listed**

Approval ID: E357804

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27142330 |
|-------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002301 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 41113600 |
|-------------|----------|

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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                                | 149b1378-60de-4c73-9f91-59b806c680d4                         |

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