

# EEM-MB371-24DC - Measuring device



1127055

<https://www.phoenixcontact.com/us/products/1127055>

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Multi-functional energy measuring device without display with 24 V DC supply, with direct Rogowski connection and 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                          | 1127055       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | C446          |
| Product key                          | CMMC21        |
| GTIN                                 | 4063151055127 |
| Weight per piece (including packing) | 262.5 g       |
| Weight per piece (excluding packing) | 310 g         |
| Customs tariff number                | 90303100      |
| Country of origin                    | DE            |

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## Technical data

### Product properties

|                         |                         |
|-------------------------|-------------------------|
| Product type            | Energy measuring device |
| Product family          | EMpro                   |
| Number (Ethernet ports) | 1                       |

### Display

|              |                                           |
|--------------|-------------------------------------------|
| Display type | LCD display, backlit, 2-color, multi-line |
|--------------|-------------------------------------------|

### 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)        |
|                       | II (600 V AC)         |
| Insulation            | Reinforced insulation |

### Electrical isolation Supply voltage

|            |                       |
|------------|-----------------------|
| Insulation | Functional 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)        |
|                       | II (600 V AC)         |
| Insulation            | Reinforced insulation |

### Electrical isolation Digital I/Os

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

### Electrical isolation Communication interface

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

### Supply

|                      |                     |
|----------------------|---------------------|
| Supply voltage       | 24 V DC $\pm 25\%$  |
| Supply voltage range | 18 V DC ... 30 V DC |
| Power consumption    | < 4 W               |

## Input data

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## General

|                          |                                                          |
|--------------------------|----------------------------------------------------------|
| Measuring principle      | True r.m.s. value measurement                            |
| 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                             | < 0.5 VA                                                                             |

## Measurement: Current

|                                                       |                                                                                                                                         |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Input name                                            | Current measurement RC1, RC2, RC3                                                                                                       |
| Input current                                         | ≤ 400 A (Measurement level 1)<br>≤ 4000 A (Measurement level 2)<br>Transmission factor: 100 mV/1000 A when using a Phoenix Contact coil |
| Input measuring range voltage                         | 500 µV ... 400 mV                                                                                                                       |
| Response threshold from measuring range nominal value | 5 A                                                                                                                                     |
| Operate threshold                                     | 500 µV (5 A)                                                                                                                            |
| Precision                                             | 0.5 %                                                                                                                                   |

## Measurement: Power

|                               |         |
|-------------------------------|---------|
| Precision                     | 1 %     |
| Real energy (IEC 62053-21)    | Class 1 |
| Reactive power (IEC 62053-23) | Class 2 |

## 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 <sup>2</sup> ... 6 mm <sup>2</sup> |
| Conductor cross-section flexible | 0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup> |
| 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 <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross-section flexible | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| 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

### Item dimensions

|                  |         |
|------------------|---------|
| Width            | 90 mm   |
| Height           | 90 mm   |
| Depth            | 71.7 mm |
| Horizontal pitch | 5 Div.  |

## Material specifications

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

## Environmental and real-life conditions

### Ambient conditions

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

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## 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

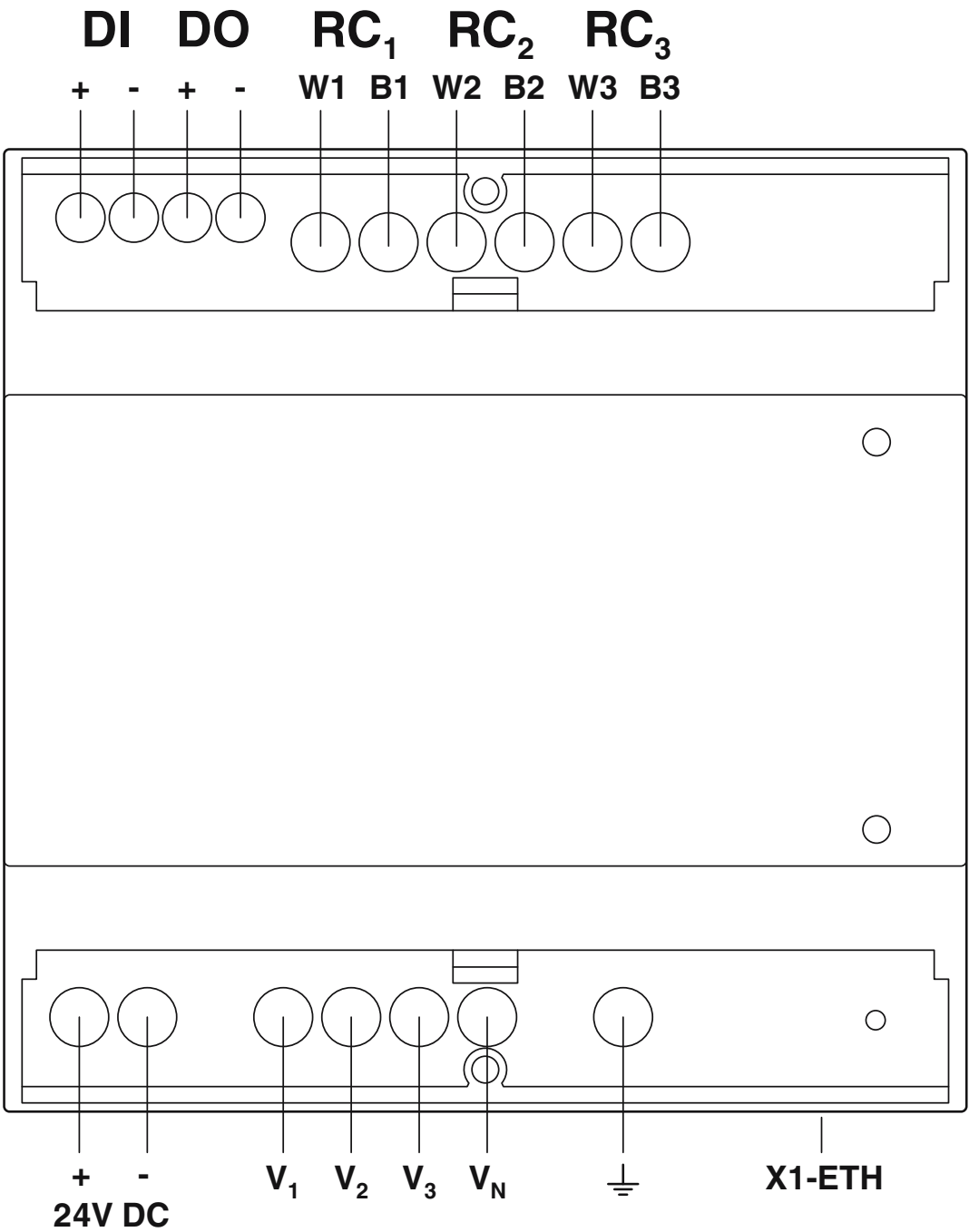
|                       |              |
|-----------------------|--------------|
| Standards/regulations | IEC 61010-1  |
|                       | IEC 61326-1  |
|                       | IEC 61557-12 |

## Mounting

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

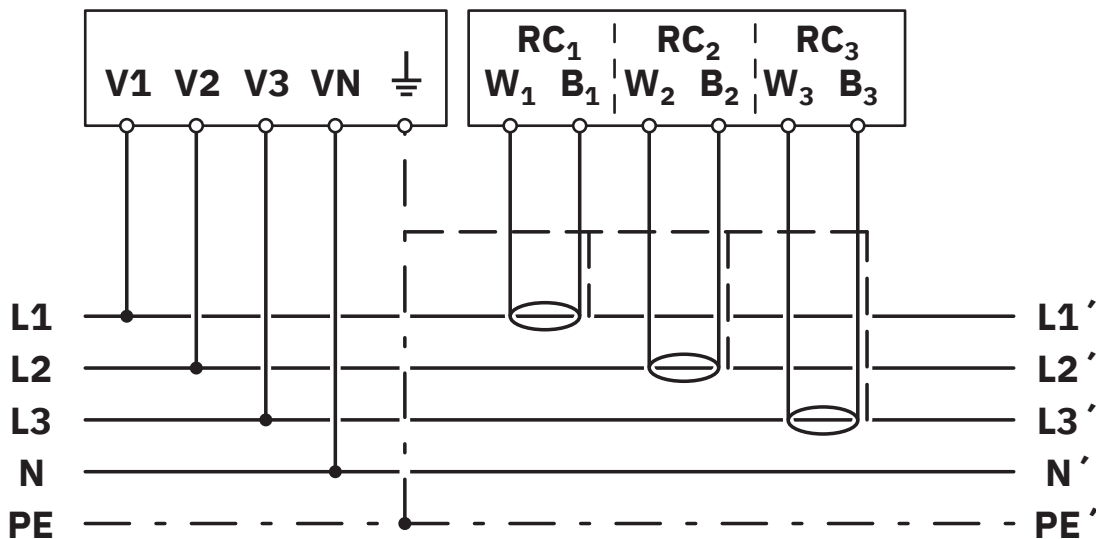
Drawings

Connection diagram



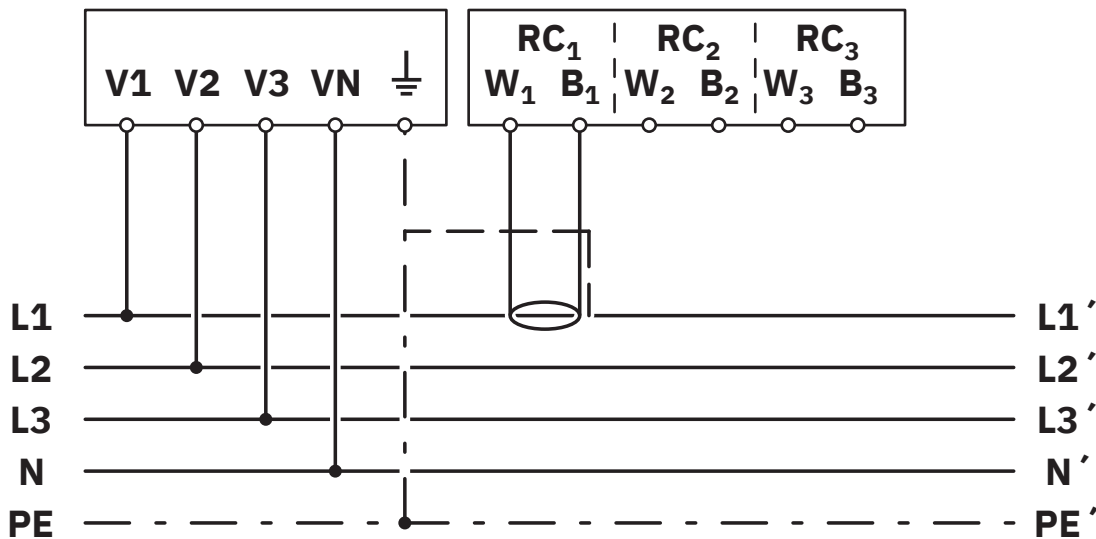
Connection assignment

Connection diagram



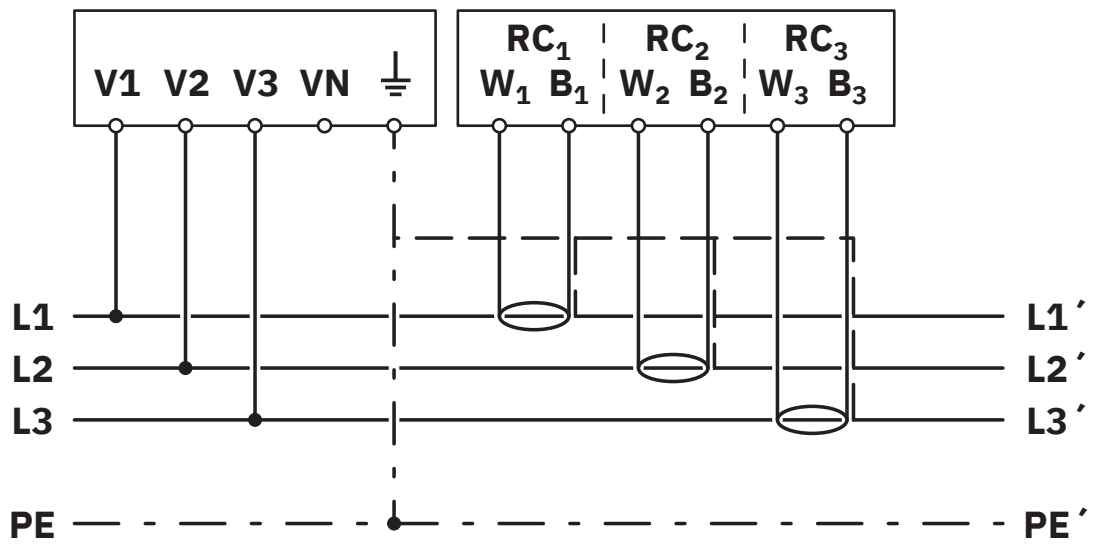
Network type: 3PH-4W-3RC

Connection diagram



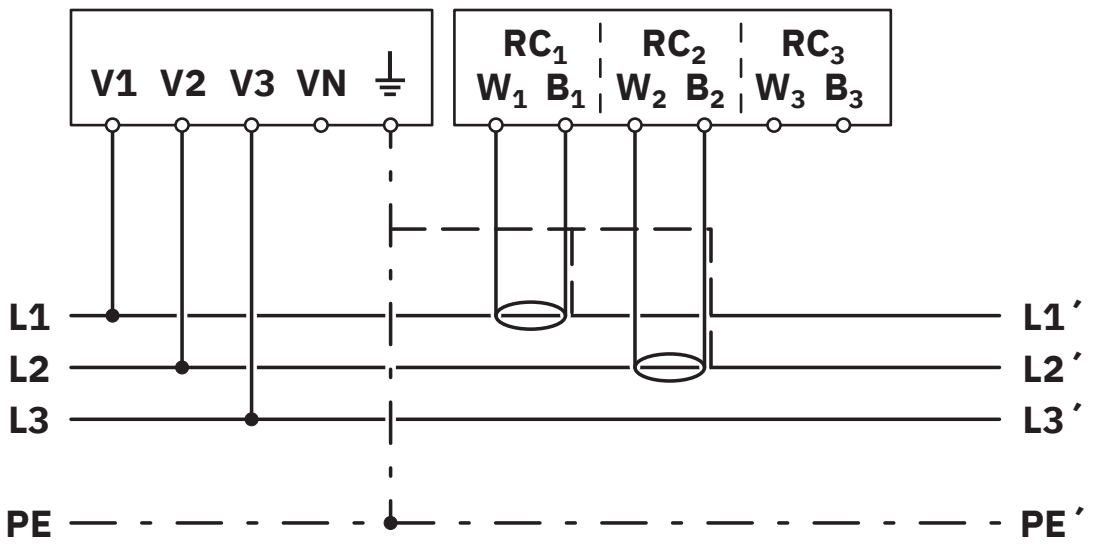
Network type: 3PH-4W-1RC

Connection diagram



Network type: 3PH-3W-3RC

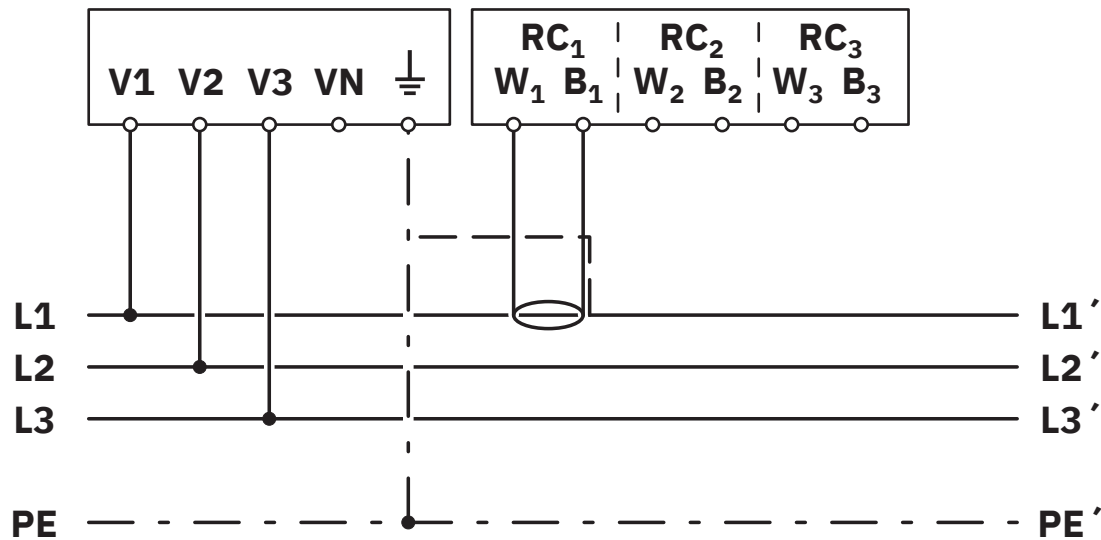
Connection diagram



Network type: 3PH-3W-2RC

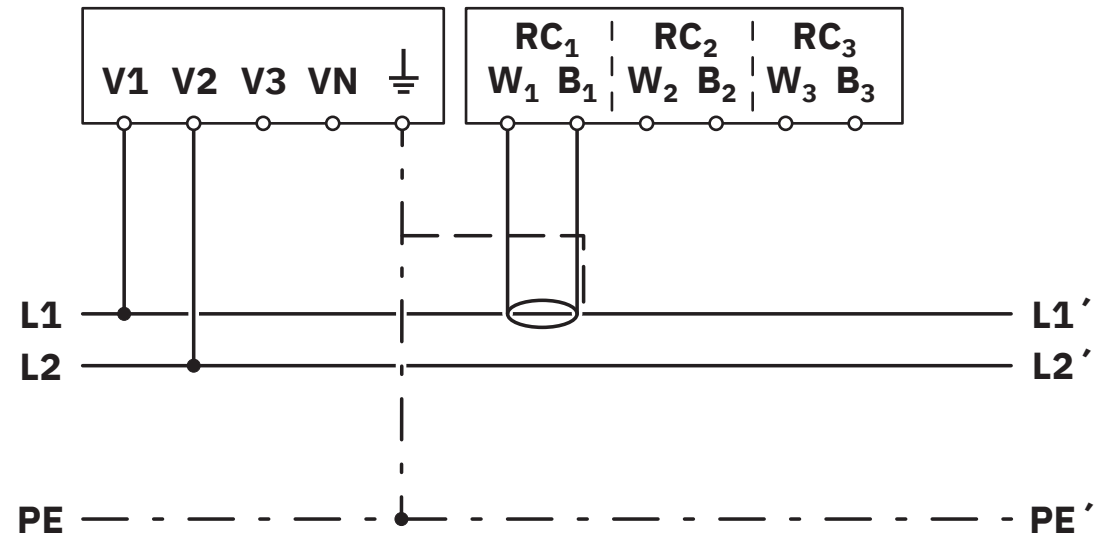


Connection diagram



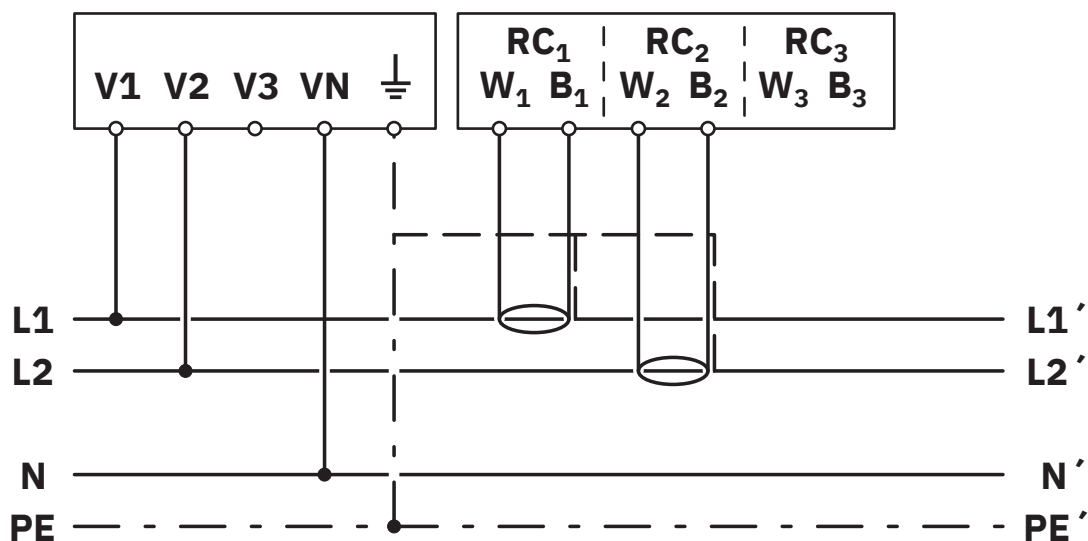
Network type: 3PH-3W-1RC

Connection diagram



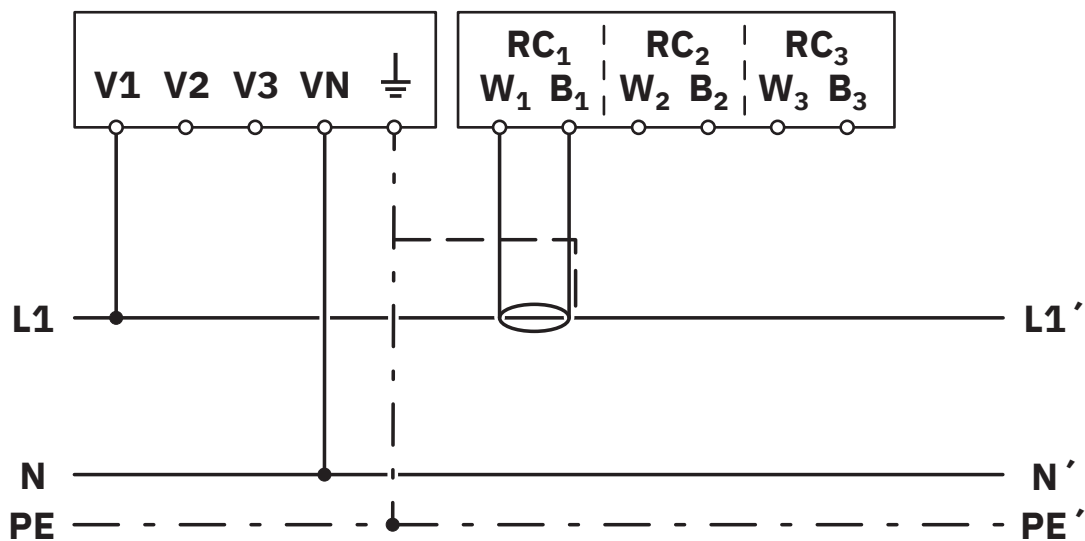
Network type: 2PH-2W-1RC

Connection diagram



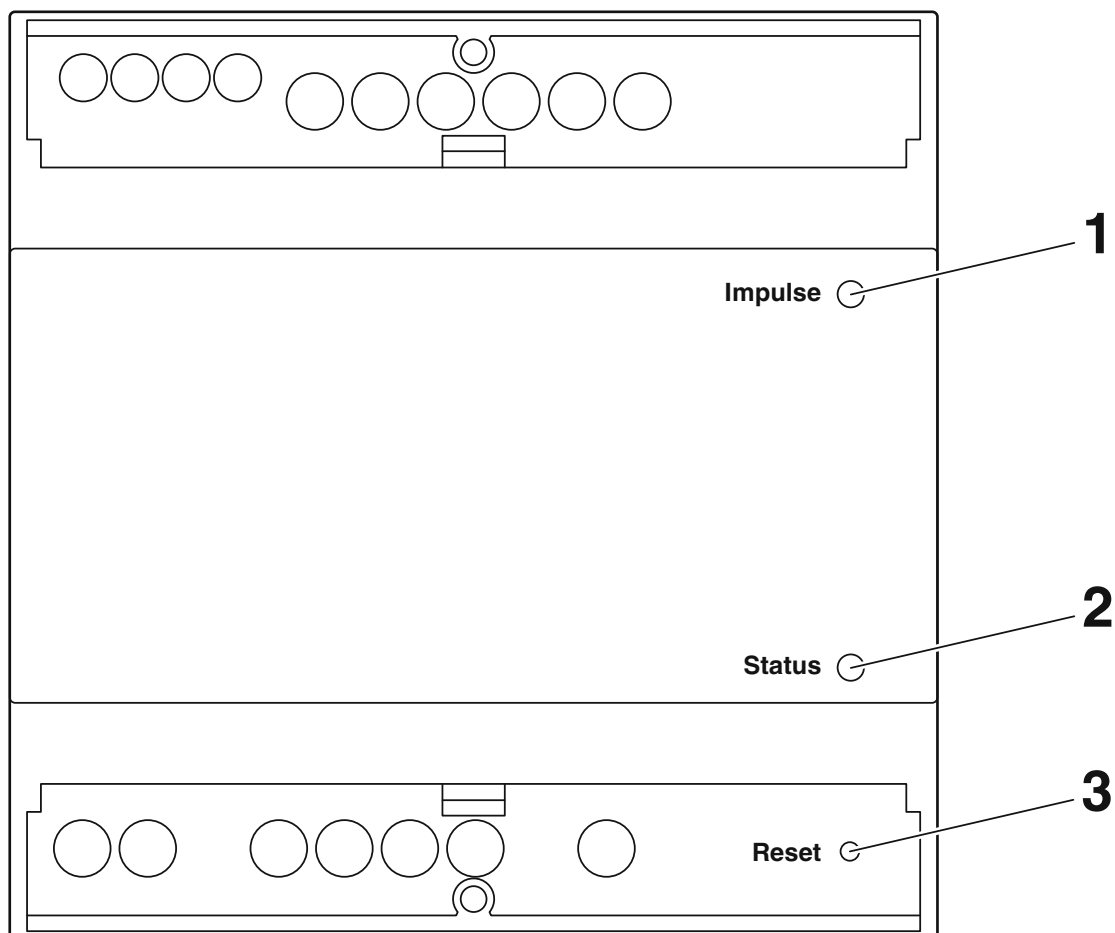
Network type: 2PH-3W-2RC

Connection diagram



Network type: 1PH-2W-1RC

Schematic diagram



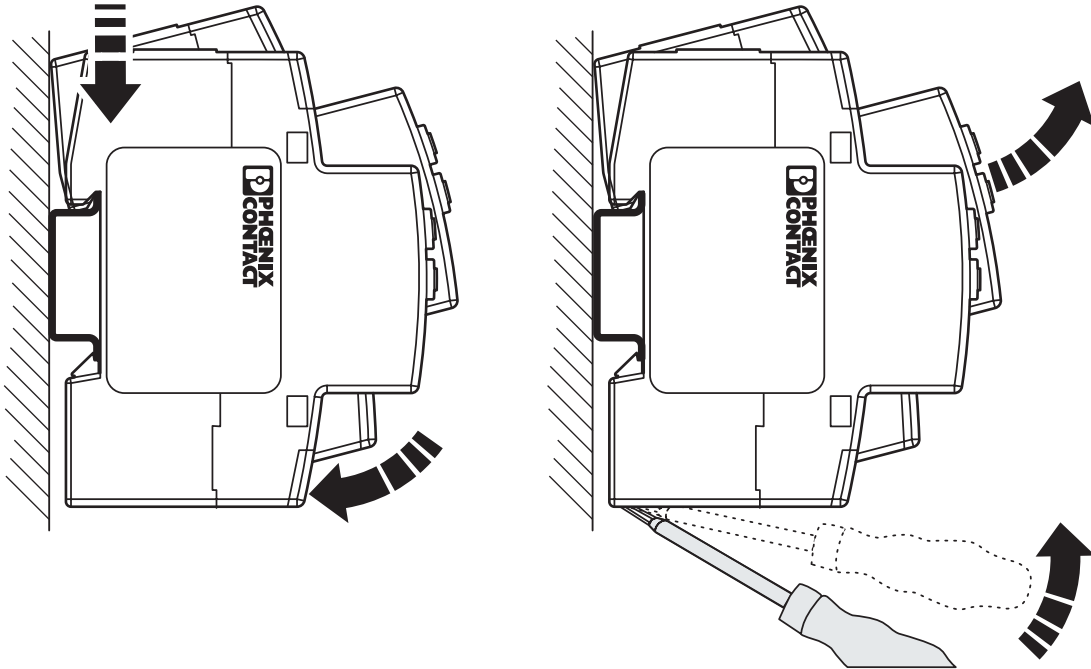
Operating and indication elements

- 1 Reset button
- 2 Status LED
- 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/1127055>



**UL Listed**

Approval ID: E357804



**cUL Listed**

Approval ID: E357804



**cULus Listed**

Approval ID: E357804

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27142330 |
| ECLASS-15.0 | 27142330 |

### ETIM

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

### UNSPSC

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

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                                | 744b512c-cb15-44b9-8b32-f087f0503bb3                         |