



Multi-function phase control relay - 17.5 mm MWU Part number 84873023



- Control of 3-phase networks : phase sequence, phase failure, imbalance (asymmetry), over and undervoltage
- Range includes mono-function product and multi-function product
- Multi-voltage from 3 x 208 to 3 x 480 V AC
- Controls its own supply voltage
- True RMS measurement
- LED status indication

Part numbers

| Type | Functions | Nominal voltage (V) |
|--------------|---------------------------------------|------------------------|
| 84873023 MWU | Phase sequence, failure, undervoltage | 3 x 208 → 3 x 480 V AC |

Specifications

Supply

| | |
|--|--------------------------|
| Supply voltage Un | 3 x 208 → 3 x 480 V AC * |
| Voltage supply tolerance | -12 % / +10 % |
| Operating range | 183 → 528 V AC |
| AC supply voltage frequency | 50 / 60 Hz ± 10 % |
| Galvanic isolation of power supply/measurement | No |
| Power consumption at Un | 22 VA in 400 VAC, 50 Hz |
| Immunity from micro power cuts | 10 ms |

Inputs and measuring circuit

| | |
|--|--|
| Measurement ranges | 183 → 528 V AC |
| Selection of phase-phase nominal voltage Un | 208 - 220 - 380 - 400 - 415 - 440 - 480 V |
| Frequency of measured signal | 50 → 60 Hz ± 10 % |
| Max. measuring cycle time | 150 ms/True RMS measurement |
| Voltage threshold adjustment | 2 → 20 % of selected Un (-2 to -12 % across the 3 x 208 V AC range / -2 to -17 % across the 3 x 220 V AC range / 2 to 10 % across the 3 x 480 V AC range) |
| Voltage threshold hysteresis | 2 % of fixed Un |
| Asymmetry threshold hysteresis | 2 % of fixed Un |
| Asymmetry threshold adjustment | 5 to 15 % of selected Un |
| Display precision | ± 3 % of the displayed value |
| Repetition accuracy with constant parameters | ± 0,5 % |
| Measuring error with voltage drift | < 1 % across the whole range |
| Measuring error with temperature drift | < 0,05 %/ °C |
| Maximum regeneration (phase failure) | 70 % |

Timing

| | |
|--|---------------------|
| Delay on threshold crossing | 0.1 to 10 s 0 +10 % |
| Repetition accuracy with constant parameters | ± 3 % |
| Reset time | 1500 ms |
| Delay on pick-up | ≤ 650 ms |
| Alarm on delay time max. | < 200 ms |

Output

| | |
|---|---|
| Type of output | 1 single pole changeover relay |
| Type of contacts | No cadmium |
| Maximum breaking voltage | 250 V AC/DC |
| Max. breaking current | 5 A AC/DC |
| Min. breaking current | 10 mA / 5 V DC |
| Electrical life (number of operations) | 1 x 10 ⁵ |
| Breaking capacity (resistive) | 1250 VA AC |
| Maximum rate | 360 operations/hour at full load |
| Operating categories acc. to IEC/EN 60947-5-1 | AC 12, AC 13, AC 14, AC 15, DC 12, DC 13, DC 14 |
| Mechanical life (operations) | 30 x 10 ⁶ |

Insulation

| | |
|--|--|
| Nominal insulation voltage IEC/EN 60664-1 | 400 V |
| Insulation coordination (IEC/EN 60664-1) | Overvoltage category III : degree of pollution 3 |
| Rated impulse withstand voltage (IEC/EN 60664-1) | 4 KV (1,2 / 50 μs) |

| | |
|--|---------------------|
| Dielectric strength (IEC/EN 60664-1) | 2 kV AC 50 Hz 1 min |
| Insulation resistance (IEC/EN 60664-1) | > 500 MΩ / 500 V DC |

General characteristics

| | |
|---|---|
| Display power supply | Green LED |
| Display relay | Yellow LED - This LED flashes during the threshold delay |
| Casing | 17,5 mm |
| Mounting | On 35 mm symmetrical DIN rail, IEC/EN 60715 |
| Mounting position | All positions |
| Material : enclosure plastic type VO to UL94 standard | Incandescent wire test according to IEC 60695-2-11 & NF EN 60695-2-11 |
| Protection (IEC/EN 60529) | Terminal block : IP20 Casing : IP30 |
| Weight | 80 g |
| Connecting capacity IEC/EN 60947-1 | Rigid : 1 x 4 ² - 2 x 2,5 ² mm ² 1 x 11 AWG - 2 x 14 AWG Flexible with ferrules : 1 x 2,5 ² - 2 x 1,5 ² mm ² 1 x 14 AWG - 2 x 16 AWG |
| Max. tightening torques IEC/EN 60947-1 | 0,6 Nm → 1 / 5,3 → 8,8 Lbf.In |
| Operating temperature IEC/EN 60068-2 | -20 → +50 °C |
| Storage temperature IEC/EN 60068-2 | -40 → +70 °C |
| Humidity IEC/EN 60068-2-30 | 2 x 24 hr cycle 95 % RH max. without condensation 55 °C |
| Vibrations according to IEC/EN 60068-2-6 | 10 → 150 Hz, A = 0.035 mm |
| Shocks IEC/EN 60068-2-6 | 5 g |

Standards

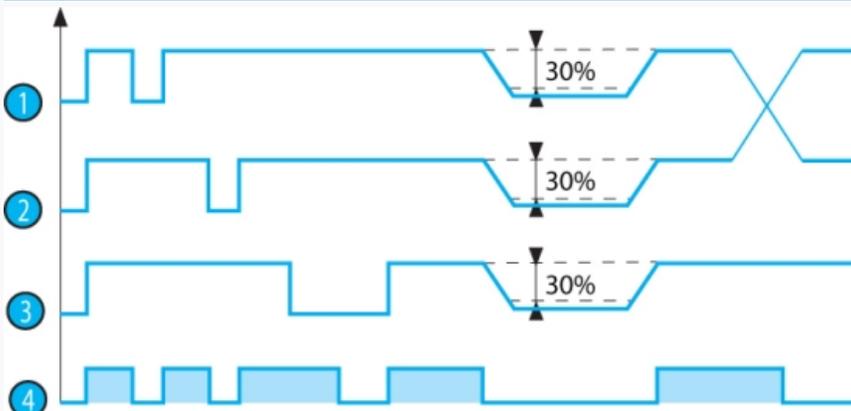
| | |
|--|--|
| Standards | IEC/EN 50178, IEC/EN 61000-6-2, IEC/EN 61000-6-3 |
| Certifications | CE, UL, CSA, GL |
| Conformity with environmental directives | RoHS, WEEE |

Comments

Accessories

| Description | Code |
|---|----------|
| Removable sealable cover for 17.5 mm casing | 84800000 |

Principles



Operating principle

MWU : Phase controller with voltage and undervoltage regeneration

Voltage selector switch :

Set the selector switch to the 3-phase network voltage U_n .

The position of this selector switch is only taken into account when the unit is powered up.

If the switch position changes while the unit is operating, all the LEDs flash but the product continues to work normally with the voltage selected on energisation prior to the change of position.

The LEDs return to their normal state if the switch is reset to its initial position defined before the last energisation.

The relay monitors its own supply voltage.

The relay controls :

- correct sequencing of the three phases
- failure of one of the three phases (U measured $< 0.7 \times U_n$).
- undervoltage, adjustable from -2 to -20 % of U_n (-2 to -12 % across the 3 x 208 V range and -2 to 17 % for the 3 x 220 V range due to the minimum voltage 183 V AC).

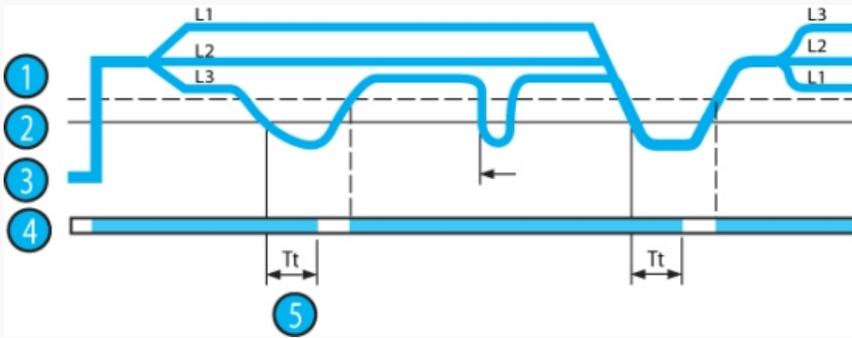
In the event of a phase sequence or failure fault, the relay opens instantaneously.

In the event of a voltage fault, the relay opens at the end of the time delay set by the user.

When the unit is powered up with a measured fault, the relay stays open.

| N° | Legend |
|----|----------|
| ① | Phase L1 |
| ② | Phase L2 |
| ③ | Phase L3 |

Principles



Operating principle

MWU : Phase controller with voltage and undervoltage regeneration

Voltage selector switch :

Set the selector switch to the 3-phase network voltage U_n .

The position of this selector switch is only taken into account when the unit is powered up.

If the switch position changes while the unit is operating, all the LEDs flash but the product continues to work normally with the voltage selected on energisation prior to the change of position.

The LEDs return to their normal state if the switch is reset to its initial position defined before the last energisation.

The relay monitors its own supply voltage.

The relay controls :

- correct sequencing of the three phases
- failure of one of the three phases (U measured $< 0.7 \times U_n$).
- undervoltage, adjustable from -2 to -20 % of U_n (-2 to -12 % across the 3 x 208 V range and -2 to 17 % for the 3 x 220 V range due to the minimum voltage 183 V AC).

In the event of a phase sequence or failure fault, the relay opens instantaneously.

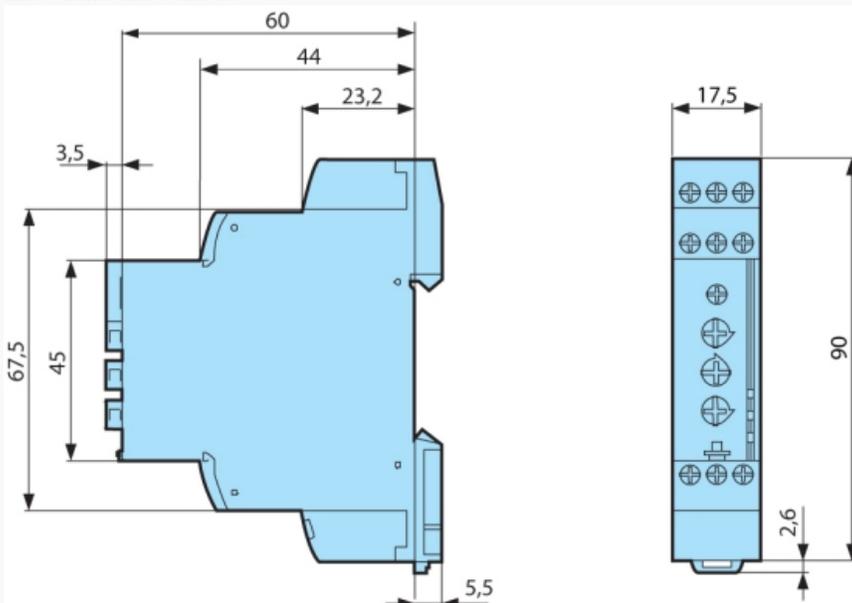
In the event of a voltage fault, the relay opens at the end of the time delay set by the user.

When the unit is powered up with a measured fault, the relay stays open.

| N° | Legend |
|----|---------------------------------------|
| ① | Hysteresis |
| ② | Undervoltage |
| ③ | Phases L1, L2, L3 |
| ④ | Relay |
| ⑤ | Delay on threshold crossing (T_t) |

Dimensions (mm)

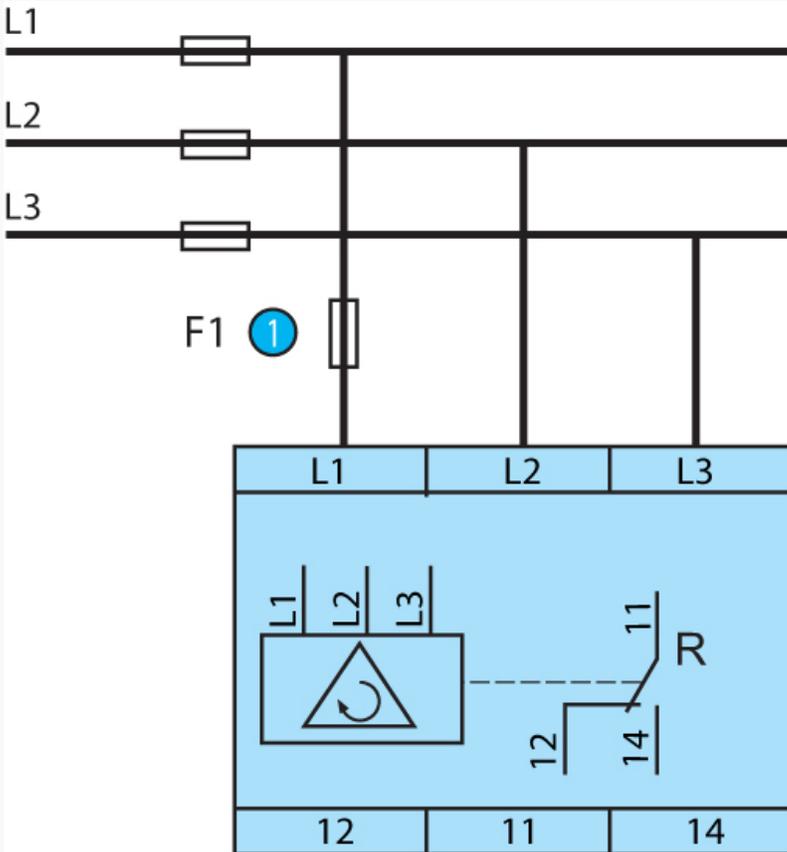
MWG - MWA - MWU - MWUA



mm

Connections

MWG - MWA - MWU - MWUA



| N° | Legend |
|----|-----------------------|
| ① | 100 mA fast-blow fuse |

Product adaptations



- Customisable colours and labels
 - Single voltage in the generic range
 - Adjustable fixed hysteresis
 - Fixed or adjustable time delay except for MWG
- Dedicated adaptation on MWG :
- Adjustable regeneration rate
- Dedicated adaptation on MWU :
- Fixed undervoltage threshold in the generic range
- Dedicated adaptation on MWA :
- Fixed asymmetry threshold in the generic range
- Adaptations dedicated to MWUA :
- Fixed undervoltage threshold in the generic range
 - Fixed overvoltage threshold in the generic range
 - Fixed asymmetry threshold in the generic range or adjustable 5→25 %