

## Multi-function phase control relay - 17.5 mm MWUA Part number 84873025



- 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)
84873025	MWUA	Phase sequence, failure, imbalance, under and overvoltage in window mode	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 <sup>5</sup>
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 <sup>6</sup>
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 <sup>2</sup> - 2 x 2,5 <sup>2</sup> mm <sup>2</sup> 1 x 11 AWG - 2 x 14 AWG Flexible with ferrules : 1 x 2,5 <sup>2</sup> - 2 x 1,5 <sup>2</sup> mm <sup>2</sup> 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

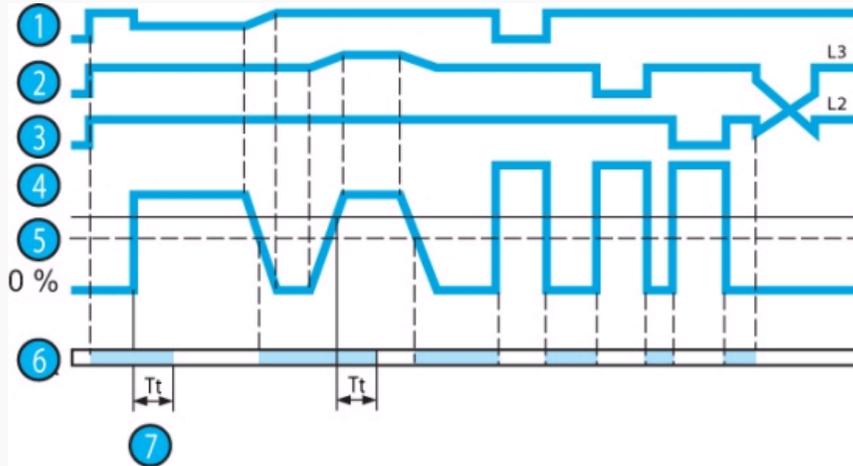
Standards	IEC/EN 50178, IEC/EN 61000-6-2, IEC/EN 61000-6-3
Certifications	CE, UL, CSA, GL
Conformity with environmental directives	RoHS, WEEE

### Comments

### Accessories

Description	Code
Removable sealable cover for 17.5 mm casing	84800000

### Principles



### Operating principle

#### MWUA : Phase controller with voltage regeneration + Asymmetry + Under/Overvoltage

#### 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 ( $U_{\text{measured}} < 0.7 \times U_n$ ).
- asymmetry, adjustable from 5 to 15 % of  $U_n$ ,

and the under and overvoltage drift adjustable from 2 to 20 % of  $U_n$  (-2 to -12 % across the 3 x 208 V AC range, -2 to -17 % across the 3 x 220 V AC range due to the minimum voltage 183 V AC ; +2 to +10 % across the 3 x 480 V AC range due to the maximum voltage 528 V AC).

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

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

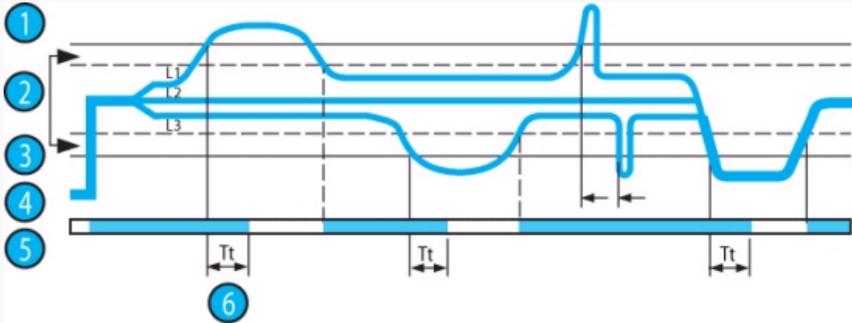
When the unit is powered up with a measured fault, the relay stays open.

Asymmetry is defined as follows :  $(V_{\text{rms max.}} - V_{\text{rms min.}}) / V_{\text{rms mains}}$ .

$V_{\text{rms mains}}$  corresponds to the voltage selected by the switch on the front face.

N°	Legend
1	Phase L1
2	Phase L2
3	Phase L3
4	Asymmetry threshold
5	Hysteresis
6	Relay
7	Delay on threshold crossing (Tt)

**Principles**



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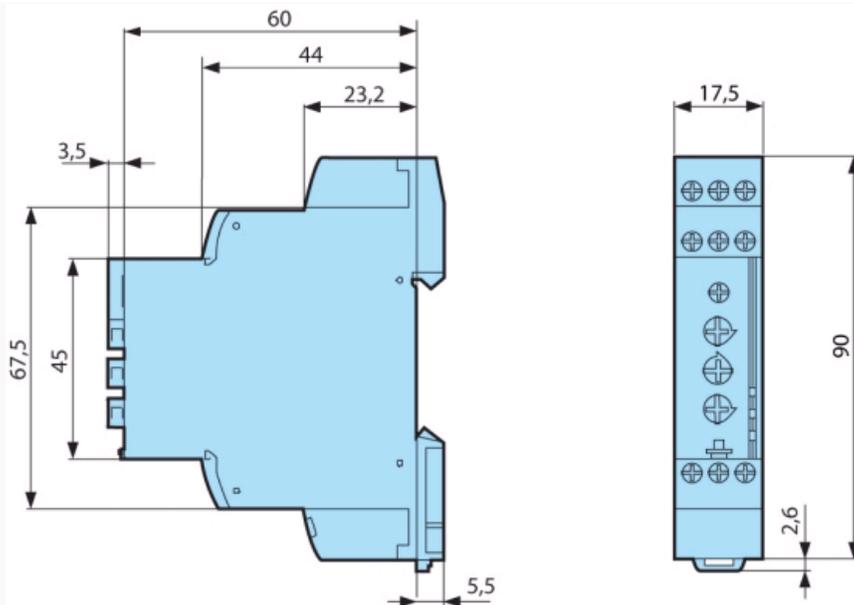
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Vrms mains corresponds to the voltage selected by the switch on the front face.

N°	Legend
1	Overvoltage
2	Hysteresis
3	Undervoltage
4	Phases L1, L2, L3
5	Relay
6	Delay on threshold crossing (Tt)

**Dimensions (mm)**

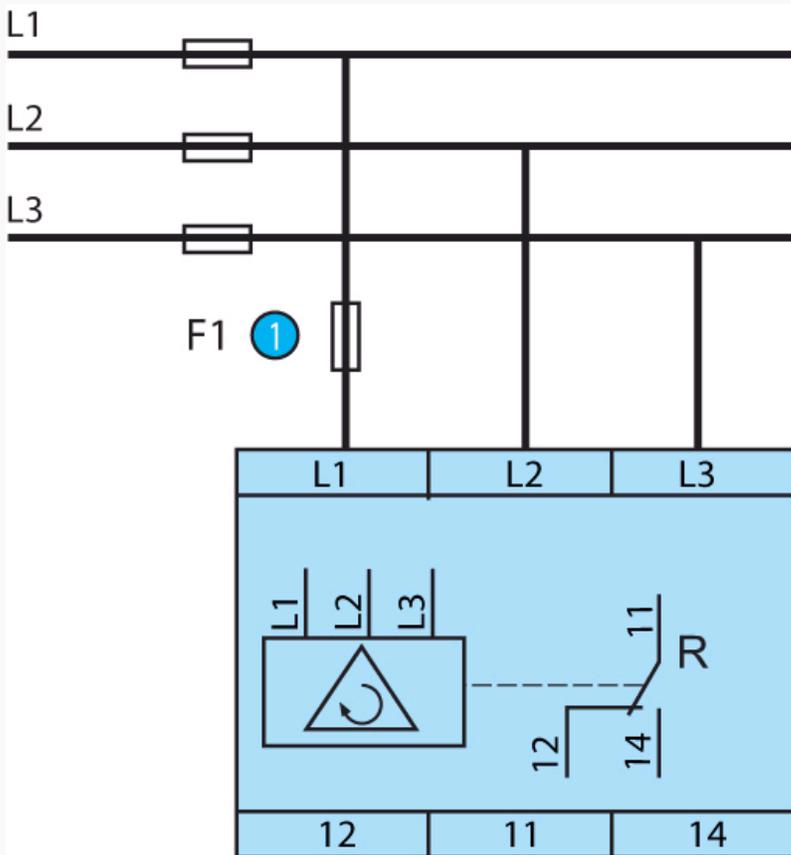
MWG - MWA - MWU - MWUA



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 %

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