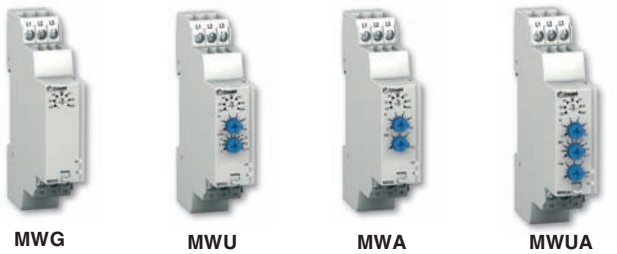
➜ Multi-function phase control relay - 17.5 mm

- 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 ~
- Controls its own supply voltage
- True RMS measurement
- LED status indication



MWG MWU MWA MWUA

Part numbers

Type	Functions	Nominal voltage (V)	Code
MWG	Phase sequence and failure	3 x 208 → 3 x 480 V ~	84873022
MWU	Phase sequence, failure, undervoltage	3 x 208 → 3 x 480 V ~	84873023
MWA	Phase sequence, failure and imbalance	3 x 208 → 3 x 480 V ~	84873024
MWUA	Phase sequence, failure, imbalance, under and overvoltage in window mode	3 x 208 → 3 x 480 V ~	84873025

Product adaptations

custom'able

- 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

Dedicated adaptations 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 %

Accessories

Description	Code
Removable sealable cover for 17.5 mm casing	84800000

General characteristics

	MWG / MWU / MWA / MWUA
Supply	
Supply voltage Un	3 x 208 → 3 x 480 V ~ *
Voltage supply tolerance	-12% / +10%
Operating range	183 → 528 V ~
~ supply voltage frequency	50 / 60 Hz ±10%
Galvanic isolation of power supply/measurement	No
Power consumption at Un	1.8 VA in ~
Immunity from micro power cuts	10 ms

General characteristics

Inputs and measuring cicuit	
Measurement ranges	183 → 528 V ∼
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 ∼ range / -2 to -17% across the 3 x 220 V ∼ range / 2 to 10% across the 3 x 480 V ∼ range)
Voltage threshold hysteresis	2% of fixed Un
Asymmetry threshold hysteresis	2% of fixed Un
Asymmetry threshold adjustment	5 to 15% of fixed 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	500 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 ∼
Max. breaking current	5 A ∼
Min. breaking current	10 mA / 5 V ⎓
Electrical life (number of operations)	1 x 10^5
Breaking capacity (resistive)	1250 VA ∼
Maximum rate	360 operations/hour at full load
Operating categories acc. to IEC 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 60664-1	400 V
Insulation coordination (IEC 60664-1 / 60255-5)	Overvoltage category III: degree of pollution 3
Rated impulse withstand voltage IEC 60664-1/60255-5	4 KV (1.2 / 50 µs)
Dielectric strength IEC 60664-1/60255-5	2 kV AC 50 Hz 1 min
Insulation resistance IEC 60664-1 / 60255-5	> 500 MΩ / 500 V ⎓
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 60529)	Terminal block: IP20 Casing: IP30
Weight	80 g
Connecting capacity IEC 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 60947-1	0.6 Nm → 1 / 5.3 → 8.8 Lbf.In
Operating temperature IEC 60068-2	-20 → +50°C
Storage temperature IEC 60068-2	-40 → +70°C
Humidity IEC 60068-2-30	2 x 24 hr cycle 95% RH max. without condensation 55°C
Vibrations according to IEC/EN60068-2-6	10 → 150 Hz, A = 0.035 mm
Shocks IEC 60068-2-6	5 g
Standards	
Marking	CE (LVD) 73/23/EEC - EMC 89/336/EEC
Product standard	NF EN 60255-6 / CEI 60255-6 / UL 508 / CSA C22.2 N°14
Electromagnetic compatibility	Immunity EN 61000-6-2/IEC 61000-6-2 Emission EN 61000-6-4/EN 61000-6-3 IEC 61000-6-4/IEC 61000-6-3 Emission EN 55022 class B
Certifications	UL, CSA, GL pending
Conformity with environmental directives	RoHS, WEEE
Comments	
	* 3-phase mains with earth

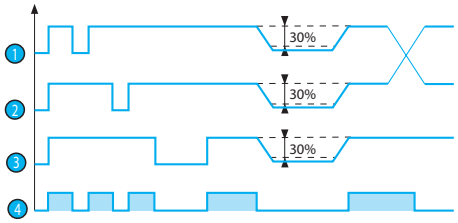
Phase control

Principles

Overview
3-phase network control relays monitor:
- The correct sequence of phases L1, L2, L3
- Total phase failure
- Undervoltage and overvoltage from 2 to 20 % of Un
- Asymmetry rate from 5 to 15% of Un
- LEDs are used for fault signalling.

If a fault persists for longer than the threshold crossing delay configured by the user, the output relay opens and the LED R is extinguished.

MWG - Phase failure and sequence (with regeneration)



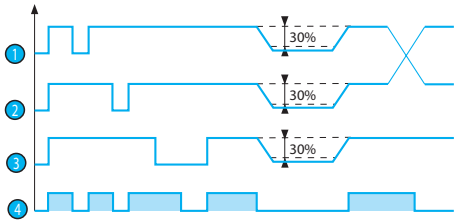
1 Phase L1
2 Phase L2
3 Phase L3
4 Relay

Operating principle
MWG: Phase controller with voltage regeneration
Voltage selector switch:
Set the selector switch to the 3-phase network voltage Un.
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 x Un).

In the event of a phase sequence or failure fault, the relay opens instantaneously.
When the unit is powered up with a measured fault, the relay stays open.

MWU - Phase failure and sequence (with regeneration)



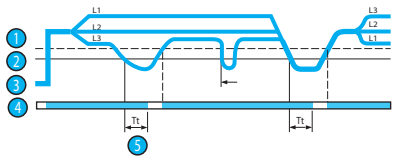
1 Phase L1
2 Phase L2
3 Phase L3
4 Relay

Operating principle
MWU: Phase controller with voltage and undervoltage regeneration
Voltage selector switch:
Set the selector switch to the 3-phase network voltage Un.
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 x Un).
- undervoltage, adjustable from -2 to -20% of Un (-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 ∼).

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.

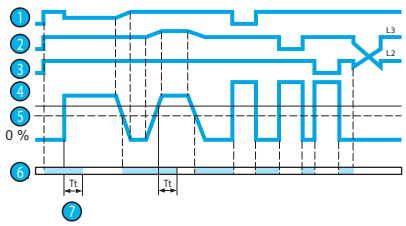
MWU - Undervoltage



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

Principles

MWA - Failure, phase sequence and asymmetry

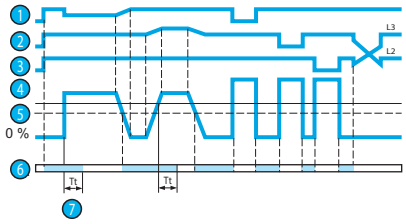


1. Phase L1
2. Phase L2
3. Phase L3
4. Asymmetry threshold
5. Hysteresis
6. Relay
7. Delay on threshold crossing (Tt)

Operating principle
MWA: Phase controller with voltage and asymmetry regeneration
Voltage selector switch:
Set the selector switch to the 3-phase network voltage Un.
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.
Definition of asymmetry setting = Nominal voltage between phases (Un) x asymmetry rate (%) displayed on front face.
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 x Un).
- asymmetry, adjustable from 5 to 15% of Un.

In the event of a phase sequence or failure fault, the relay opens instantaneously.
In the event of an asymmetry 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: (Vrms max. - Vrms min.) /Vrms mains.
Vrms mains corresponds to the voltage selected by the switch on the front face.

MWUA - Failure, phase sequence and asymmetry

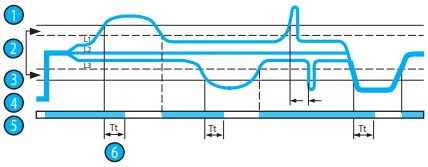


1. Phase L1
2. Phase L2
3. Phase L3
4. Asymmetry threshold
5. Hysteresis
6. Relay
7. Delay on threshold crossing (Tt)

Operating principle
MWUA: Phase controller with voltage regeneration + Asymmetry + Under/Overvoltage
Voltage selector switch:
Set the selector switch to the 3-phase network voltage Un.
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 x Un).
- asymmetry, adjustable from 5 to 15% of Un,

and the under and overvoltage drift adjustable from 2 to 20% of Un (-2 to -12% across the 3 x 208 V ∼ range, -2 to -17% across the 3 x 220 V ∼ range due to the minimum voltage 183 V ∼ ; +2 to +10 % across the 3 x 480 V ∼ range due to the maximum voltage 528 V ∼).
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: (Vrms max. - Vrms min.) /Vrms mains.
Vrms mains corresponds to the voltage selected by the switch on the front face.

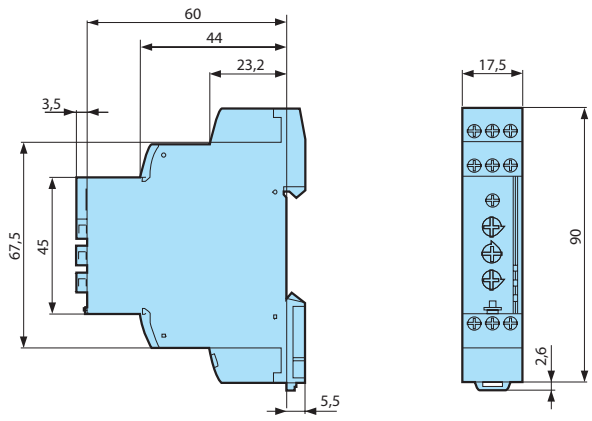
MWUA - Under and overvoltage in window mode



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

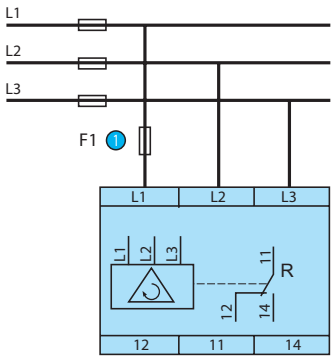
Dimensions (mm)

MWG - MWA - MWU - MWUA



Connections

MWG - MWA - MWU - MWUA



1. 100 mA fast-blow fuse