

Phase control

→ Multi-function phase control relay 35 mm



- Control of 3-phase networks: phase sequence, phase failure, asymmetry, under and overvoltage with independent settings
- Multi-function/Multi-voltage product
- Controls its own supply voltage
- True RMS measurement
- LED status indication



HWUA

Part numbers

Type	Functions	Nominal voltage (V)	Code
HWUA	Phase sequence, failure, asymmetry, under/overvoltage	3 x 220 → 3 x 480 V ~	84873026

Product adaptations



- Customisable colours and labels
- Single voltage in the generic range
- 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 %
- Fixed or adjustable time delay

Accessories

Description Code	Description	Description Code
	Removable sealable cover for 35 mm casing	84800001

General characteristics

Supply	
Supply voltage Un	3 x 220 → 3 x 480 V ~ *
Voltage supply tolerance	-12% / +10%
Operating range	194 → 528 V
~ supply voltage frequency	50 / 60 Hz ± 10%
Galvanic isolation of power supply/measurement	No
Power consumption at Un	2.9 VA in ~
Immunity from micro power cuts	10 ms
Inputs and measuring circuit	
Measurement ranges	194 → 528 V
Selection of phase-phase nominal voltage Un	220 - 380 - 400 - 415 - 440 - 480 V
Frequency of measured signal	50 → 60 Hz ± 10%
Max. measuring cycle time	140 ms/True RMS measurement
Voltage threshold adjustment	2 → 20% of selected Un (+2 → +10% across the 3 x 480 V ~ range -12 to -2% across the 3 x 220 V ~ range)
Asymmetry threshold adjustment	5 → 15% of fixed Un
Fixed hysteresis	Under or overvoltage, asymmetry: 2% of the Un value of the selected network Asymmetry: 2% of the Un value of the selected network
Display precision	± 3% of the displayed value
Repetition accuracy with constant parameters	± 0.5%
Measuring error with voltage drift	< 1%
Measuring error with temperature drift	0.05%/°C

General characteristics

Timing

Delay on threshold crossing	0.1 → 10s (0, +10%)
Repetition accuracy with constant parameters	± 0.3%
Reset time	1.5 s
Delay on pick-up	500 ms
Alarm on delay time max.	< 200 ms

Output

Type of output	1 double changeover relay
Type of contacts	No cadmium
Maximum breaking voltage	250 V \sim
Max. breaking current	5 A \sim
Min. breaking current	10 mA / 5 V ---
Electrical life (number of operations)	1 x 10 ⁵
Breaking capacity (resistive)	1250 VA \sim
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 μ s)
Dielectric strength IEC 60664-1/60255-5	2 kV AC 50 Hz 1 min
Insulation resistance IEC 60664-1 / 60255-5	> 500 M Ω / 500 V ---

General characteristics

Display power supply	Green LED Extinguished in the event of phase failure
Display relay	Yellow LED Flashes during the threshold crossing delay
"Fault" indication	Yellow LED Lights up in the event of asymmetry Flashes in the event of under or overvoltage
Casing	35 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: IP 20 Casing: IP 30
Weight	130 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 → 1 Nm / 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 / IEC 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

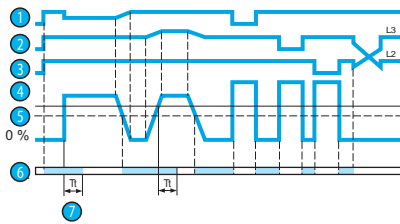
Overview

The HWUA 3-phase network control relay monitors:

- The correct sequence of phases L1, L2, L3
- Total phase failure
- Undervoltage and overvoltage from 2 to 20 % of U_n
- Asymmetry rate from 5 to 15% of U_n
- Faults are signalled via LEDs, distinguishing the origin of the fault.

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

HWUA - 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 (T_t)

Operating principle

HWUA: Phase + Asymmetry + Under/Overvoltage controller

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.

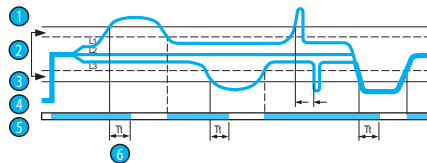
The relay controls:

- correct sequencing of the three phases,
- failure of one of the three phases (U measured $< 0.7 \times U_n$),
- asymmetry, adjustable from 5 to 15% of U_n ,
- undervoltage adjustable from - 2 to - 20% of U_n , (-2 to -12% for the 220 V range) and overvoltage adjustable from +2 to +20% (+2 to +10% over the 3 x 480 V range due to the maximum voltage 528 V \sim).

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

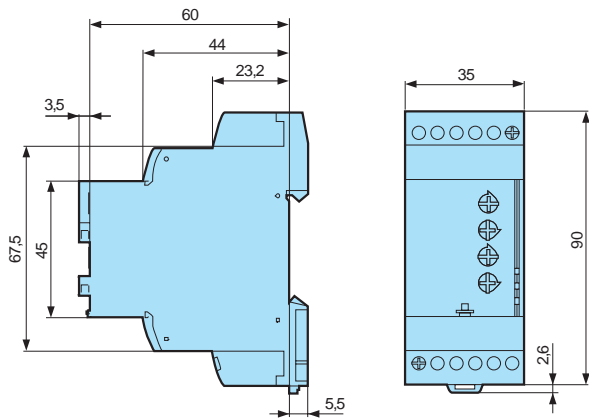
HWUA - Under/Overvoltage



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

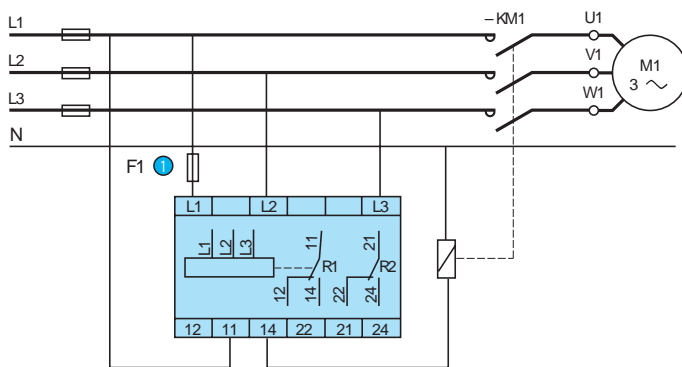
Dimensions (mm)

HWUA



Connections

HWUA



① 100 mA fast-blow fuse