



NEW
product

- Voltage monitoring in 3-phase and 1-phase mains ❶
- Multifunctions monitoring relays
- Monitoring of phase sequence ❷ and phase failure
- Connection of neutral wire optional
- Supply voltage = measuring voltage
- 1 changeover contact: 1 C/O
- Rated load: 5 A / 250 V AC at cat. AC1
- Installation design: width 17,5 mm
- Recognitions, certifications, directives:

Type of relay

MR-EU31UW1P

Output circuit

Number and type of contacts		1 C/O - changeover	
Rated load	AC1	5 A / 250 V AC	
Max. breaking capacity	AC1	1 250 VA	
Max. operating frequency		3 600 cycles/hour	PN-EN 60947-5-1
• at 100 VA resistive load		360 cycles/hour	
• at 1 000 VA resistive load			

Input circuit

Supply voltage U		= measuring voltage; terminals (N)-L1-L2-L3	
Rated voltage U _n		3(N)-400/230 V	
Drop-out voltage		AC: $\geq 0,2 U_n$	
Operating range of supply voltage		$0,7 < U_n < 1,3$	
Rated power consumption		8,0 VA / 1,0 W	
Rated frequency		AC: 48...63 Hz	
Duty cycle		100%	
Measuring circuit	<ul style="list-style-type: none"> • terminals • measuring variable • measuring input • overload capacity • switching threshold U_s 	(N)-L1-L2-L3 3(N)-, sinus, 48...63 Hz = supply voltage determined by tolerance specified for supply voltage max.: $0,8 < U_n < 1,3$ min.: $0,7 < U_n < 1,2$	

Insulation

Rated surge voltage	4 000 V AC
Overvoltage category	III PN-EN 60664-1
Insulation pollution degree	2, if built-in 3 PN-EN 60664-1

General data

Electrical life	• resistive AC1	$\geq 2 \times 10^5$ 1 000 VA
Mechanical life (cycles)		$\geq 2 \times 10^7$
Dimensions (L x W x H)		87 x 17,5 x 60 mm
Weight		72 g
Ambient temperature	<ul style="list-style-type: none"> • storage, transport • operating 	-25...+70 °C -25...+55 °C PN-EN 60068-1
Housing protection category		IP40
Relative humidity		15...85% PN-EN 60721-3-3 class 3K3
Shock resistance		15 g 11 ms PN-EN 60068-2-27
Vibration resistance		0,35 mm DA 10...55 Hz PN-EN 60068-2-6

Measuring circuit data

Functions	UNDER, UNDER+SEQ, WIN, WIN+SEQ ❸ monitoring of phase sequence ❷ and phase failure, connection of neutral wire optional
Time intervals (timing adjustment)	tripping delay (0,1...10 s)
Base accuracy	$\pm 5\%$ (calculate from final range value)
Setting accuracy	$\pm 5\%$ (calculate from final range value)
Repeatability	$\pm 2\%$
Temperature influence	$\pm 0,05\% / ^\circ\text{C}$
Recovery time	500 ms
LED indicator	red LED ON/OFF - indication of failure ❹ red LED flashes - indication of tripping delay ❹ yellow LED R ON/OFF - indication of output relay

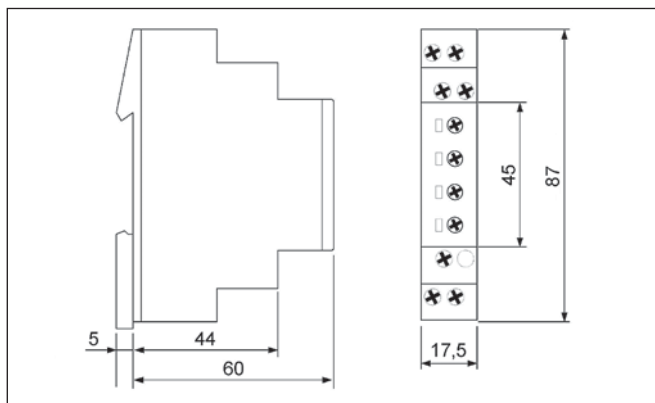
❶ With adjustable thresholds.

❷ Selectable.

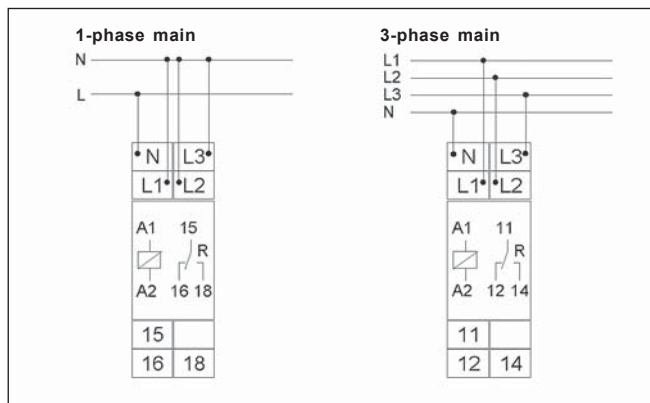
❸ Selectable by means of rotary switch.

❹ Of the corresponding threshold.

Dimensions



Connections diagrams



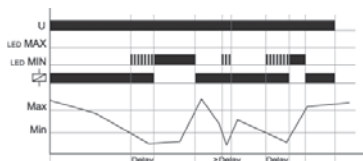
Mounting, mechanical design

Relays **MR-EU31UW1P** are designed for direct mounting on 35 mm DIN rail mount, EN 50022. Mounting position: any. Self-extinguishing plastic housing, IP 40. Shockproof terminal connection according to VBG 4 (PZ1 required), IP 20. Maximum screw torque: 1,0 Nm. Terminal capacity: 1 x 0,5 do 2,5 mm² with/without multicore cable end, 1 x 4 mm² without multicore cable end, 2 x 0,5 do 1,5 mm² with/without multicore cable end, 2 x 2,5 mm² flexible without multicore cable end.

Functions

For all functions the LED's MIN and MAX are flashing alternating (the relay is fallen off), when the minimum value for the measured voltage was chosen to be greater than the maximum value. If a failure already exists, when the device is activated, the output relay R remains in off-position and the LED for the corresponding threshold is illuminated. The device includes separately every phase voltage (L-N) and monitors it according to the selected function (UNDER or WINDOW).

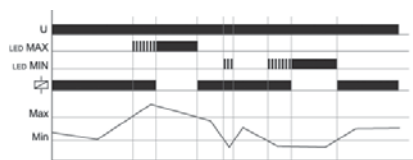
UNDER, UNDER+SEQ - undervoltage monitoring, undervoltage monitoring and monitoring of phase sequence



When the measured voltage (one of the phase voltages) falls below the value adjusted at the MIN-regulator, the set interval of the tripping delay (Delay) begins (red LED MIN flashes). After the interval has expired (red LED MIN illuminated), the output relay R switches into off-position (yellow LED not illuminated). The output relay R switches into on-position again (yellow LED illuminated), when the measured voltage (all phase voltages) exceeds the value adjusted at the MAX-regulator.

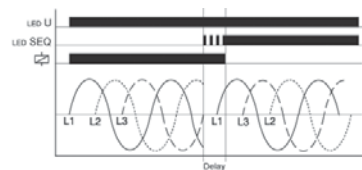
U - supply voltage; R - output relay

WIN, WIN+SEQ - voltage monitoring in windowfunction between MIN and MAX values, voltage monitoring in windowfunction between MIN and MAX values and monitoring of phase sequence



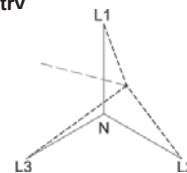
The output relay R switches into on-position (yellow LED illuminated), when the measured voltage (all phase voltages) exceeds the value adjusted at the MIN-regulator. When the measured voltage (one of the phase voltages) exceeds the value adjusted at the MAX-regulator, the set interval of tripping delay (Delay) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated) the output relay R switches into off-position (yellow LED not illuminated). The output relay switches into on-position again (yellow LED illuminated) when the measured voltage falls below the value adjusted at the MIN-regulator (red LED MAX not illuminated). When the measured voltage (one of the phase voltage) falls below the value adjusted at the MAX-regulator, the set interval of tripping delay (Delay) begins again (red LED MIN flashes). After the interval has expired (red LED MIN illuminated), the output relay R switches into off-position (yellow LED not illuminated).

SEQ - phase sequence monitoring



Phase sequence monitoring is selectable for all functions. In single phase circuit, the phase sequence monitoring must be disconnected. If a change in phase sequence is detected (red LED SEQ illuminated), the output relay R switches into off-position after the set interval of tripping delay (Delay) has expired (yellow LED not illuminated).

Loss of neutral wire by means of evaluation of asymmetrv



The device monitors every phase (L1, L2 and L3) against the neutral wire N. A shift of neutral point occurs by an asymmetrical phase load if the neutral wire breaks in the power line. If one of the phase voltages exceeds the value adjusted at the trip point, the set interval of tripping delay (Delay) begins (red LED MIN or MAX flashes). After the interval has expired (red LED MIN or MAX illuminated), the output relay switches into off-position (yellow LED not illuminated).