



NEW
product

- Voltage monitoring in 3-phase mains ❶ • Multifunctions monitoring relays
- Monitoring of phase sequence, phase failure and asymmetry ❷
- Timing adjustment for tripping delay ❸
- Connection of neutral wire optional, detection of loss of neutral wire
- Relay supply via the supply transformer of TR2 type ❹ - see page 58
- 2 changeover contacts: 2 C/O
- Rated load: 5 A / 250 V AC at cat. AC1
- Installation design: width 22,5 mm
- Recognitions, certifications, directives: **CE**

Type of relay

MR-GU3M2P-TR2

Output circuit

Number and type of contacts		2 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
• at 100 VA resistive load		360 cycles/hour
• at 1 000 VA resistive load		PN-EN 60947-5-1

Input circuit

Supply voltage U		12...400 V AC; terminals A1-A2 (galvanically separated) ❶
Drop-out voltage		AC: $\geq 0,3 U_n$
Operating range of supply voltage		as per the specification of TR2 supply transformer
Rated power consumption		2,0 VA / 1,5 W
Rated frequency		as per the specification of TR2 supply transformer
Duty cycle		100%
Measuring circuit	<ul style="list-style-type: none"> • fusing • terminals • measuring variable • measuring input • overload capacity • input resistance • swiching threshold U_s • asymmetry 	max. 20 A UL 508 (N)-L1-L2-L3 AC sinus, 48...63 Hz 3(N)-400/230 V 3(N)-600/346 V 3(N)-400/230 V: 1 M Ω max.: $-0,2 < U_n < 0,3$ min.: $-0,3 < U_n < 0,2$ 5...25%

Insulation

Rated surge voltage		4 000 V AC
Overvoltage category		III PN-EN 60664-1
Insulation pollution degree		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)		90 x 22,5 x 103 mm
Weight		100 g
Ambient temperature	<ul style="list-style-type: none"> • storage, transport • operating 	-25...+70 °C
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, phase failure and asymmetry ❷ timing adjustment for tripping delay ❸
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	$\pm 2\%$
Wpływ napięcia	$\pm 0,5\%$
Temperature influence	$\pm 0,1\%$ / °C
Recovery time	500 ms
LED indicator	red LED ON/OFF - indication of failure ❷ red LED flashes - indication of tripping delay ❷ yellow LED ON/OFF - indication of output relay

❶ With adjustable thresholds. ❷ Asymmetry - with adjustable threshold.

❸ Adjustable.

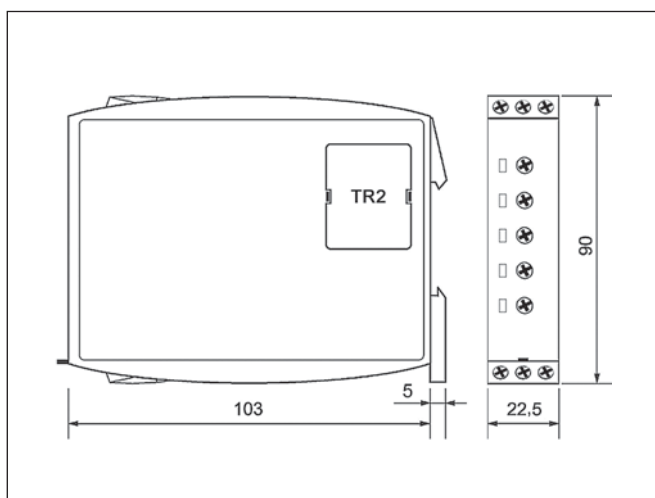
❹ TR2 transformers shall be ordered separately.

❺ Selectable via supply transformers TR2.

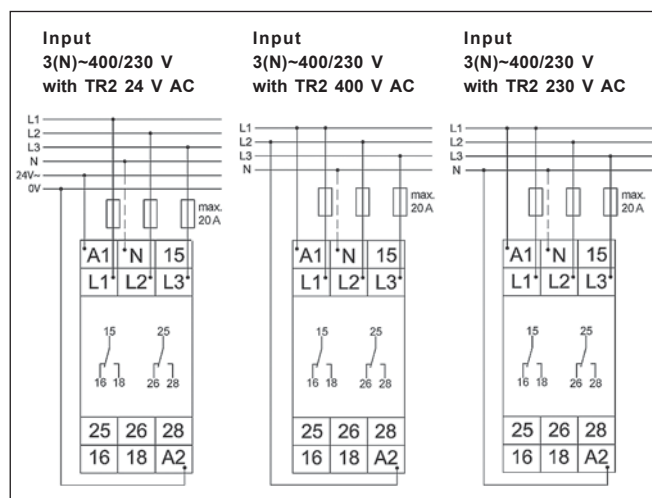
❻ Selectable by means of rotary switch.

❼ Of the corresponding threshold.

Dimensions



Connections diagrams



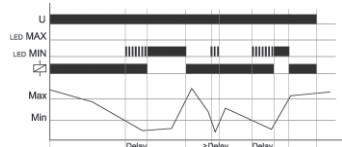
Mounting, mechanical design

Relays **MR-GU3M2P-TR2** 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

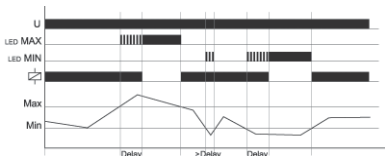
For all functions the LED's MIN and MAX are flashing alternating, when the minimum value for the measured voltage was chosen to be greater than the maximum value. If a failure already exists, when the device is activated, the output relay R remains in off-position and the LED for the corresponding threshold is illuminated.

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



When the measured voltage (mean value of phase-to-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 again switches into on-position (yellow LED illuminated), when the measured voltage exceeds the value adjusted at the MAX-regulator.

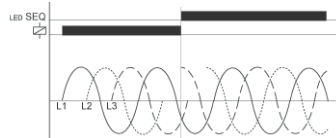
WIN, WIN+SEQ - voltage monitoring in windowfunction between MIN and MAX values, voltage monitoring in windowfunction between MIN and MAX values and monitoring of phase sequence



The output relay R switches into on-position (yellow LED illuminated) when the measured voltage (mean value of phase-to-phase voltages) exceeds the value adjusted at the MIN-regulator.

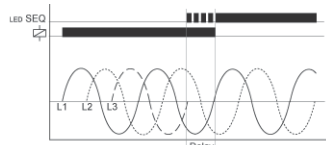
When the measured voltage exceeds the value adjusted at the MAX-regulator, the set interval of the tripping delay (Delay) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated), the output relay R switches into off-position (yellow LED not illuminated). The output relay R again switches into on-position (yellow LED illuminated) when the measured voltage falls below the value adjusted at the MAX-regulator (red LED MAX not illuminated). When the measured voltage falls below the value adjusted at the MIN-regulator, the set interval of the 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. If a change in phase sequence is detected (red LED SEQ illuminated), the output relay R switches into off-position immediately (yellow LED not illuminated).

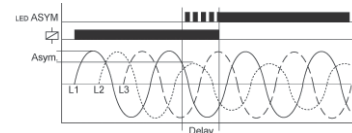
SEQ - phase failure monitoring



If one of the phase voltages fails, the set interval of the tripping delay (Delay) begins (red LED SEQ flashes). After the interval has expired (red LED SEQ illuminated), the output relay R switches into off-position (yellow LED not illuminated). Reverse voltages of a consumer (e.g. a motor which continues to run on two phases only) do not effect

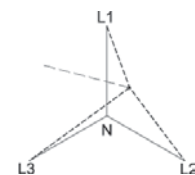
the disconnection but can be monitored by using a proper value for the asymmetry.

Asymmetry monitoring



If the asymmetry of the phase-to-phase voltages exceeds the value set at the ASYM-regulator, the set interval of the tripping delay (DELAY) begins (red LED ASYM flashes). After the interval has expired (red LED ASYM illuminated), the output relays switch into off-position (yellow LED not illuminated). If the neutral wire is connected to the device, the asymmetry of the phase voltages referred to the neutral wire (Y-voltage) is monitored also. In that case both values of the asymmetry are evaluated and if one of the values exceeds the value set at the ASYM-regulator, the set interval of the tripping delay (DELAY) begins (red LED ASYM flashes). After the interval has expired (red LED ASYM illuminated), the output relays switch into off-position (yellow LED not illuminated).

Loss of neutral wire by means of evaluation of asymmetry: a break of the neutral wire between power line and machinery is detected as soon as asymmetry between phase-to-phase voltage and neutral wire occurs. If the asymmetry exceeds the value set at the ASYM-regulator, the set interval of the tripping delay (Delay) begins (red LED ASYM flashes). After the interval has expired (red LED ASYM illuminated), the output relays switch into off-position (yellow LED not illuminated). A break of the neutral wire between our device and the machinery can not be detected.



U - supply voltage; R - output relay