

3-phase monitoring relay with fault diagnostic

1. Device description

Device is designed to monitor succession of phases (L1, L2, L3), phase failure of any of phases and to control phase asymmetry. Relay is equipped with visual fault diagnosis. MRA3P is mainly designed for protection of three-phase motors. Relay has one output double-throw contact 8 A.

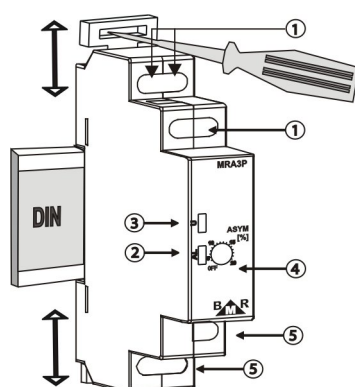
! Important

In the case of 3 wire connection, internal over-voltage protection does not work and lifetime of the device can be reduced. However, if this is the way how relay is connected, then it is recommended to use external phase over-voltage fault protection, but not in the system with insulated tie-down point.

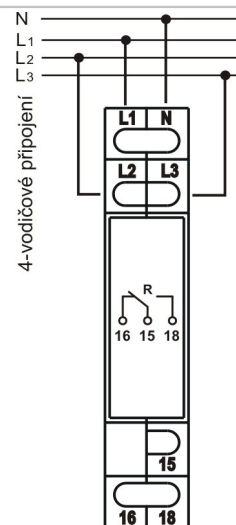
Terminal description:

- 1 Supply / controlled voltage
- 2 Fault diagnostic
- 3 Supply voltage indication
- 4 Phase asymmetry setting. Position "OFF" disconnects asymmetry detection.
- 5 Outputs

Terminal placement:

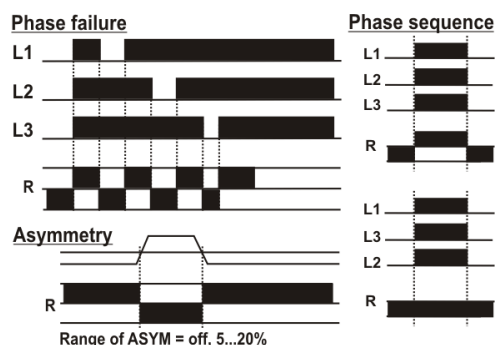


Connection diagram:



2. Function

After connection to the supply voltage green LED turns ON. If all phases are present, together with correct sequence and if the asymmetry is within the preset limit, then relay will switch the output (contact No. 15 – 18) and red LED will turn off. In the case there is a fault of any of phases or asymmetry is over preset limit, red LED signalizes error type and relay will switch off the output (contact No. 15 – 16). Any voltage drop below 165 V is considered to be a phase failure. Detection and failure reaction is shorter then 100 ms.



3. LED diagnostic

Green LED on:	Presence of supply voltage.
Green LED off:	Supply voltage is not present.
Red LED on:	Fault condition detected: irregular phase sequence . Contact No.15-16 closed.
Red LED blinking:	Fault condition detected: phase asymmetry . Contact No.15-16 closed.
Red LED blinking 1x:	Fault condition detected: phase 1 failure . Contact No.15-16 closed.

Red LED blinking 2x:	Fault condition detected: phase 2 failure . Contact No.15-16 closed.
Red LED blinking 3x:	Fault condition detected: phase 3 failure . Contact No.15-16 closed.
Red LED off:	Error condition not detected. Contact No. 15-18 closed.

4. Technical features

Parameter	Value
Supply / controlled terminals:	L1, L2, L3, N
Supply / controlled voltage:	3 x 400 V / 230 V
Power consumption:	max. 1,5 VA
Supply voltage indication:	green LED
Maximum controlled voltage (to N):	269 V
Toggle level (fix):	165 V
Hysteresis:	fix 5 %
Asymmetry (adjustable):	5 - 20 %
Asymmetry disconnection (adjustable):	OFF position
Output parameters:	
Number and type of contacts:	1x changeover contact
Nominal current:	8 A
Switching power:	max. AC 2000 VA
Trigger current:	30 A
Nominal voltage / max. switching voltage:	250 VAC / 440 VAC
Mechanical lifetime:	3 x 10 ⁷
Electrical lifetime:	1 x 10 ⁵ 250 VAC, 8 A
Others:	
Working temperature:	-20 .. +55 °C
Storage temperature:	-40 .. +70 °C
Working position:	any
Mounting:	IEC 60715 (DIN 35)
Protection degree:	IP 40 on panel / IP 20 terminals
Electrical strength:	4 kV
Input wire diameter with/without cavern:	max. 2x1,5mm ² ; 1x2,5mm ² / max. 2x1,5mm ² ; 1x2,5mm ²
Weight:	75 g
Dimensions:	90 x 18 x 65 mm
Standards:	IEC 60255-6, IEC 61010