RPN-1VF-A400

RPN-2VF-A400

NEW

- **Multifunctions monitoring relays**
  (AC voltage monitoring in 3-phase network - 3(N)~ 400/230 V)
- Monitoring of phase failure, asymmetry
- Histeresis mode • Tripping delay
- Cadmium - free contacts 1 CO and 2 CO • AC input voltages
- Cover - modular, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to EN 60715
- Compliance with standard EN 50178
- Recognitions, certifications, directives: RoHS,

Output circuit - contact data

Number and type of contacts		1 CO	2 CO
Contact material		$AgSnO_2$	
Max. switching voltage		300 V AC	
Rated load	AC1	12 A / 250 V AC	6 A / 250 V AC
	DC1	12 A / 24 V DC	6 A / 24 V DC
	DC1	0,3 A / 250 V DC	0,1 A / 250 V DC
Rated current		12 A / 250 V AC	6 A / 250 V AC
Max. breaking capacity	AC1	3 000 VA	1 500 VA
Min. breaking capacity		1 W 10 mA	
Contact resistance		≤ 100 mΩ	
Max. operating frequency			
• at rated load	AC1	600 cycles/hour	

Input circuit

Supply voltage	AC	= monitoring voltage
Rated voltage	50/60 Hz AC	3(N)~ 400/230 V terminals (N)-L1-L2-L3
Must release voltage		AC: ≥ 0,2 U_n
Operating range of supply voltage		when supplied from at least two phases: 0,7...1,15 U_n when supplied from single phase: 0,85...1,15 U_n
Rated power consumption		1,2 W
Range of supply frequency	AC	48...63 Hz
Measuring circuit ❶		
• measured value		electrical voltage, RMS value, 50 Hz 3(N)~, sinus, 48...63 Hz
• measuring inputs		= supply voltage AC: 3(N)~ 400/230 V
• measuring terminals		(N)-L1-L2-L3
• measuring range		0,7...1,15 U_n
• overload capacity		≥ 1,2 U_n
• hysteresis H		5 V
• switching thresholds for single phase		ERROR: ≤ 175 V AC OK: > 175 V AC OK (when returning after an error): ≥ 180 V AC
• switching thresholds for asymmetry		fixed value: ERROR: ≥ 55 V AC OK: < 55 V AC OK (when returning after an error): ≤ 50 V AC

Insulation according to EN 60664-1

Insulation rated voltage		400 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		2
Flammability class		V-0 for modular cover, UL 94
Dielectric strength		
• input - output		4 000 V AC type of insulation: basic
• contact clearance		1 000 V AC type of clearance: micro-disconnection

❶ The measuring circuit is not galvanically insulated from the relay supply circuit.

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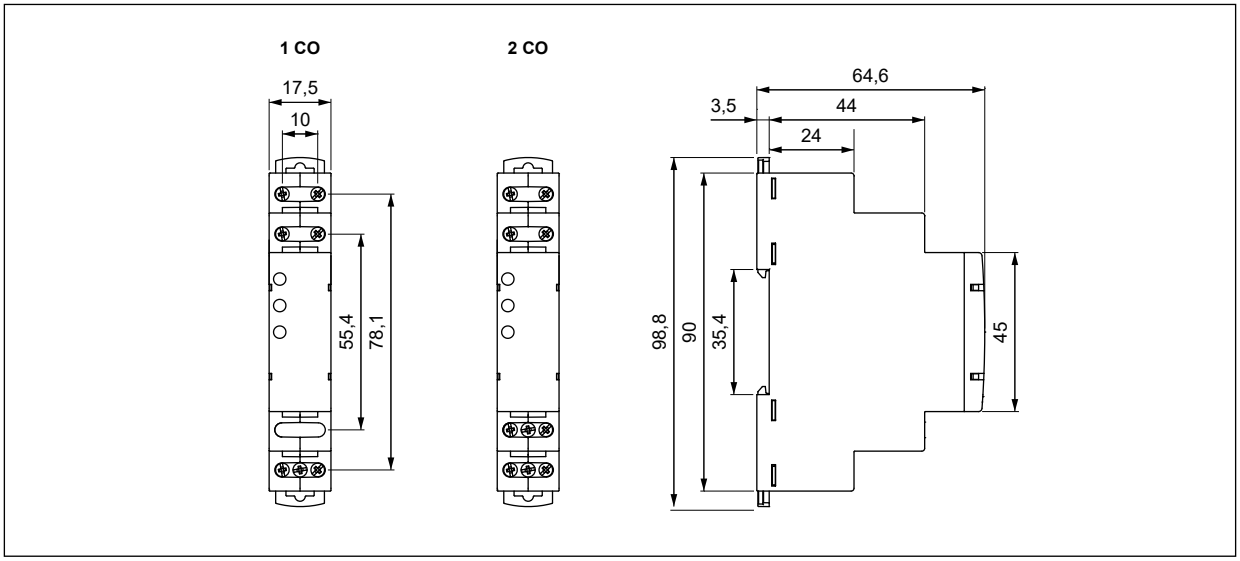
General data

Electrical life	• resistive AC1	> 0,5 x 10^5	12 A, 6 A, 250 V AC
Mechanical life (cycles)		> 3 x 10^7	
Dimensions (L x W x H)		90 ❷ x 17,5 x 64,6 mm	
Weight		contact 1 CO: 72 g	contacts 2 CO: 75 g
Ambient temperature (non-condensation and/or icing)	• storage • operating	-40...+70 °C -20...+60 °C	
Cover protection category		IP 20	EN 60529
Relative humidity		up to 85%	
Shock resistance		15 g	
Vibration resistance		0,35 mm DA	10...55 Hz
Meassuring circuit data ❶			
Functions		LOST D - phase failure monitoring ASYM D - asymmetry monitoring histeresis mode	
Ranges of asymmetry		fixed value: 55 V	
Tripping delay		fixed value: 4 s	
Base accuracy		voltage measurement: ± 5% ❸	
Recovery time		200 ms	
LED indicator ❹		two-colour LEDs (green/red) L1, L2, L3: indication of supply voltage U, error, tripping delay	

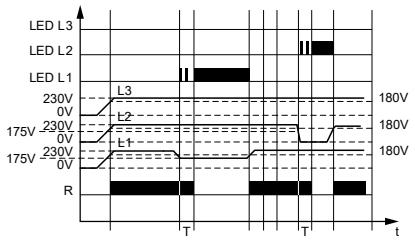
❶ The measuring circuit is not galvanically insulated from the relay supply circuit. ❷ Length with 35 mm rail catches: 98,8 mm. ❸ From a measured value in the range of 100...230 V. ❹ LED indication - see "Additional functions", page 3.

Dimensions



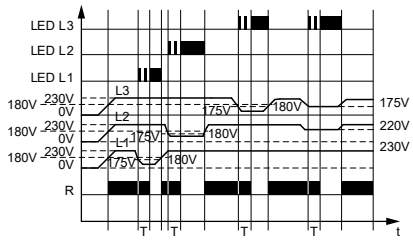
Functions

LOST D - Phase failure monitoring (with delayed disconnection of contact R).



If the voltage at all phases will exceed 175 V and no error condition occurred earlier, then the operational relay R is switched on. If voltage at one of the three phases, L1, L2, L3 falls to a value of 175 V, then after applying a delay time 4 s, the R contact is switched off. The operational relay R will be switched back on when the voltage value at the given phase rises to 180 V.

ASYM D - Asymmetry monitoring (with delayed disconnection of contact R).



The operational relay R switches to the off position when the asymmetry exceeds the value 55 V. The asymmetry caused by the return voltage of the receiver (e.g. a motor that still operates in only two phases) does not disconnect.

L1, **L2**, **L3** - phase supply voltages; **R** - output state of the relay; **T** - delay time; t - time axis

Additional functions

LEDs: two-colour (green/red) L1, L2, L3 - are lit permanently or flashes at 500 ms period where it is lit for 50% of the time, and off for 50% of the time.

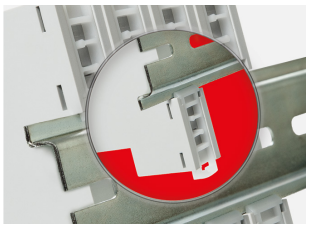
Supply: the relay may be supplied with AC voltage 48...63 Hz of 161...264,5 V.

LED indication	L1	L2	L3
green lights up all the time	power supply and asymmetry are correct		
red lights up all the time	ERROR power supply or asymmetry		
red flashes	ERROR power supply or asymmetry ❺		

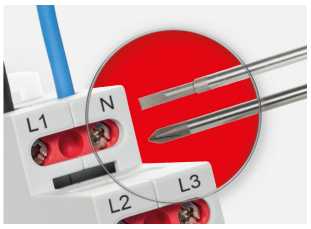
❺ Measurement of the tripping delay time (disconnection of contact R) after has occurred a phase failure or asymmetry error.

Mounting

Relays **RPN-.VF-A400** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

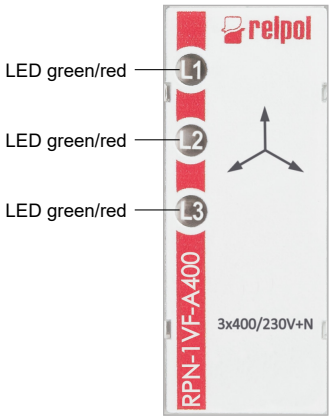


Two catches: easy mounting on 35 mm rail, firm hold (top and bottom).

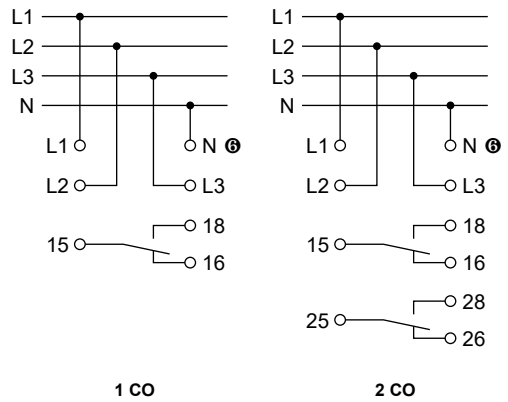


Mounting wires in clamps: universal screw (cross-recessed or slotted head).

Front panel description



Connection diagrams



❻ Requires terminal (N) connection to the neutral wire.

Ordering codes

Type	Number and type of contacts	Functions performed		Rated input voltage			
R	P	N	—		V	F	—	A	4	0	0

Number and type of contacts

1 - 1 CO
2 - 2 CO

Functions performed

VF - relay performing functions LOST D, ASYM D

Rated input voltage

A400 - 3(N)~ 400/230 V AC 50/60 Hz

Examples of ordering codes:

RPN-1VF-A400 monitoring relay **RPN-1VF-A400**, multifunction (relay perform 2 functions), cover - modular, width 17,5 mm, one changeover contact, contact material $AgSnO_2$, rated input voltage = monitoring 3(N)~ 400/230 V AC 50/60 Hz

RPN-2VF-A400 monitoring relay **RPN-2VF-A400**, multifunction (relay perform 2 functions), cover - modular, width 17,5 mm, two changeover contacts, contact material $AgSnO_2$, rated input voltage = monitoring 3(N)~ 400/230 V AC 50/60 Hz

PRECAUTIONS:
1. Ensure that the parameters of the product described in its specification provide a safety margin for the appropriate operation of the device or system and never use the product in circumstances which exceed the parameters of the product. **2.** Never touch any live parts of the device. **3.** Ensure that the product has been connected correctly. An incorrect connection may cause malfunction, excessive heating or risk of fire. **4.** In case of any risk of any serious material loss or death or injuries of humans or animals, the devices or systems shall be designed so to equip them with double safety system to guarantee their reliable operation.