

RPN-1TMP-A230

- **Single-functions monitoring relays (motor temperature monitoring)** • Short circuit monitoring of the thermistor line
- Fault latch mode • Switching/tripping delay
- Test functions: built-in TEST/RESET button, connection of the external RESET button (optional)
- Cadmium - free contacts 1 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 60947-8
- Recognitions, certifications, directives: RoHS, CE UKCA

Output circuit - contact data

Number and type of contacts		1 CO
Contact material		$AgSnO_2$
Max. switching voltage		300 V AC
Rated load	AC1	12 A / 250 V AC
	DC1	12 A / 24 V DC
	DC1	0,3 A / 250 V DC
Rated current		12 A / 250 V AC
Max. breaking capacity	AC1	3 000 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	230 V
Rated voltage	50/60 Hz AC	230 V terminals A1-A2
Must release voltage		AC: ≥ 0,1 U_n
Operating range of supply voltage		0,85...1,15 U_n
Rated power consumption		0,6 W
Range of supply frequency	AC	48...63 Hz
Measuring circuit		
• measured value		resistance ❶
• measuring sensor		max. 6 PTC thermistor sensors, connected in series
• measuring terminals		T1, T2
• input resistance		≤ 4 kΩ
• measuring voltage		≤ 7,5 V EN 60947-8
• rated resistance of the measuring sensor		≤ 1,5 kΩ
• switching thresholds		MIN: 1,65 kΩ WARNING: 3,3 kΩ MAX: 3,6 kΩ
• short-circuit detection		≤ 10 Ω
• the ability to reset after a short-circuit		≥ 20 Ω
• correct operation range		20 Ω ≤ R ≤ 3,6 kΩ
• measurement accuracy for threshold limits		± 5% in the range of 1,5...4 kΩ
• sensor galvanic separation		no
External reset button		
• function		Reset
• terminals		R1-R2
• load		no
• min. time of pulse duration ❷		≥ 50 ms
• max. length of control line		10 m

Insulation according to EN 60664-1

Insulation rated voltage		250 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 indirect measurement of the motor winding temperature through resistance measurement of the standardised measurement sensor (acc. to DIN 44081, characteristics acc. to EN 60947-8). ❷ Where the control signal is recognizable.

04.12.2025

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General data

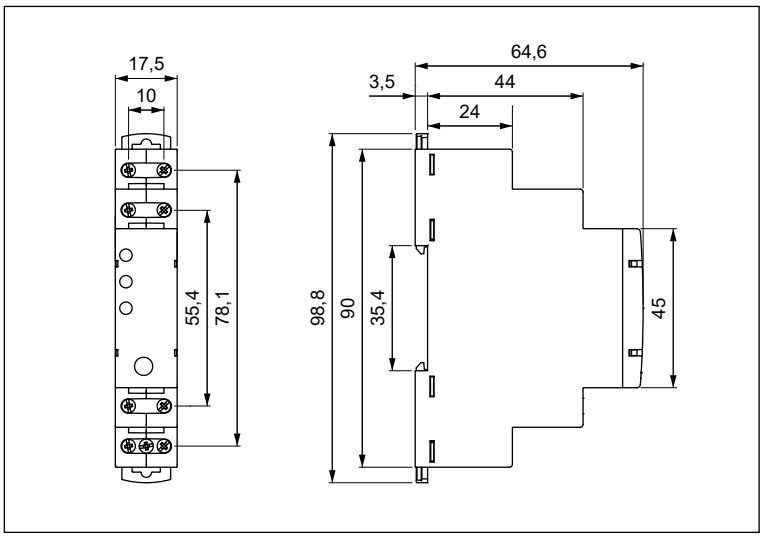
Electrical life	• resistive AC1	> 0,5 x 10^5	12 A, 250 V AC
Mechanical life (cycles)		> 3 x 10^7	
Dimensions (L x W x H)		90 ❸ x 17,5 x 64,6 mm	
Weight		70 g	
Ambient temperature	• storage	-40...+70 °C	
(non-condensation and/or icing)	• operating	-20...+60 °C	
Cover protection category		IP 20	EN 60529
Relative humidity		up to 85%	
Shock resistance		15 g	
Vibration resistance		0,35 mm DA	10...55 Hz

Meassuring circuit data

Functions	TEMP - temperature monitoring of the motor winding fault latch mode test functions: built-in TEST/RESET button, connection of the external RESET button (optional)
Switching/tripping delay	1 s
Recovery time	250 ms
LED indicator ❹	green LED U - indication of supply voltage U, fault latch red LED °C - indication of error yellow LED R - output relay status

❸ Length with 35 mm rail catches: 98,8 mm. ❹ LED indication - see "Additional functions", page 3.

Dimensions



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.

Functions

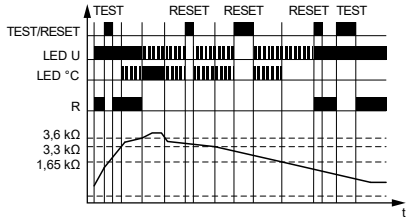
TEMP - Temperature monitoring of the motor winding with fault latch (with delayed connection/disconnection of contact R).

If the supply voltage U is switched on and the total resistance of the PTC sensor circuit is less than 3,6 kΩ (standard motor temperature), the operational relay R switches on. In these conditions pressing the built-in TEST/RESET button will activate the "Test" function - switching off the operational relay R. The operational relay R will remain switched on as long as the TEST/RESET button is pressed, activating the "Test" function. The test function does not work with the use of the external RESET button.

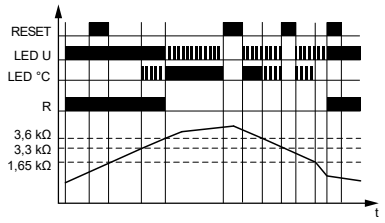
When the total resistance of the PTC circuit exceeds 3,6 kΩ (temperature increases), the operational relay R will be disconnected. The operational relay R will be switched back on when the total resistance of the sensors falls below 1,65 kΩ (the system is cooled) and one of the three conditions below is met:
- the TEST/RESET button is pressed (the "Reset" function),
- the external RESET button is pressed (NO type, connected between the R1, R2 terminals),
- the supply voltage is switched off and back on again.

In case of a sensor short-circuit, when the resistance of the connected sensors falls below 10 Ω, the operational relay R will be disconnected. The operational relay R will be switched back on the moment the sensor resistance increases back above 20 Ω and one of the three conditions below is met:
- the TEST/RESET button is pressed (the "Reset" function),
- the external RESET button is pressed (NO type, connected between the R1, R2 terminals),
- the supply voltage is switched off and back on again.

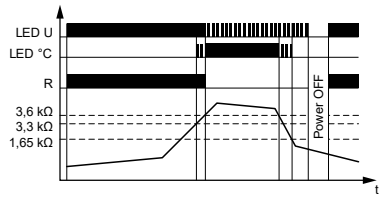
Application of built-in **TEST/RESET** button.



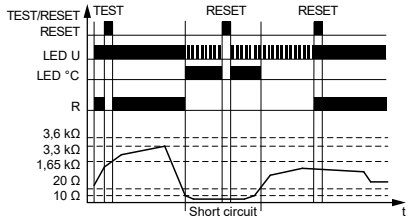
Application of an external **RESET** button.



Reset by power supply voltage.



Sensor short-circuit.



Additional functions

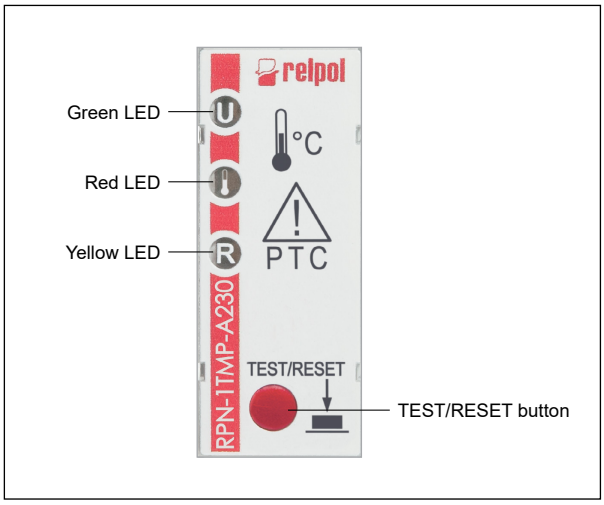
LEDs: green U, red °C - are lit permanently or flashes at 250 ms period where it is lit for 50% of the time, and off for 50% of the time. Yellow R is lit permanently.

Supply: the relay may be supplied with AC voltage 48...63 Hz of 195,5...264,5 V.

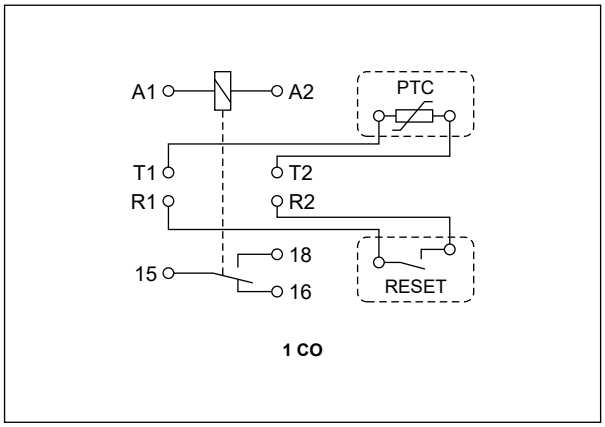
LED indication	U	°C	R
green does not light up	power supply turned off	–	–
green lights up all the time	correct power supply	–	–
green flashes	necessary error memory reset (power off and on)	–	–
red does not light up	–	no error ❺	–
red lights up all the time	–	temperature above the MAX threshold	–
red flashes	–	temperature close to MAX threshold ❻	–
yellow does not light up	–	–	contact R disconnected
yellow lights up all the time	–	–	contact R connected

❺ Total resistance of the PTC circuit below a value of 3,6 kΩ.
❻ Total resistance of the PTC circuit between 3,3 kΩ and 3,6 kΩ (WARNING threshold - increased temperature condition).

Front panel description

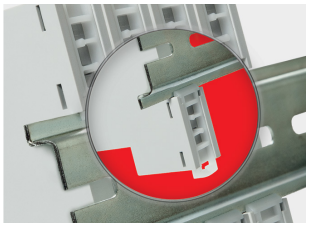


Connection diagram

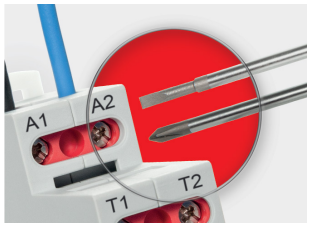


Mounting

Relays **RPN-1TMP-A230** 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.

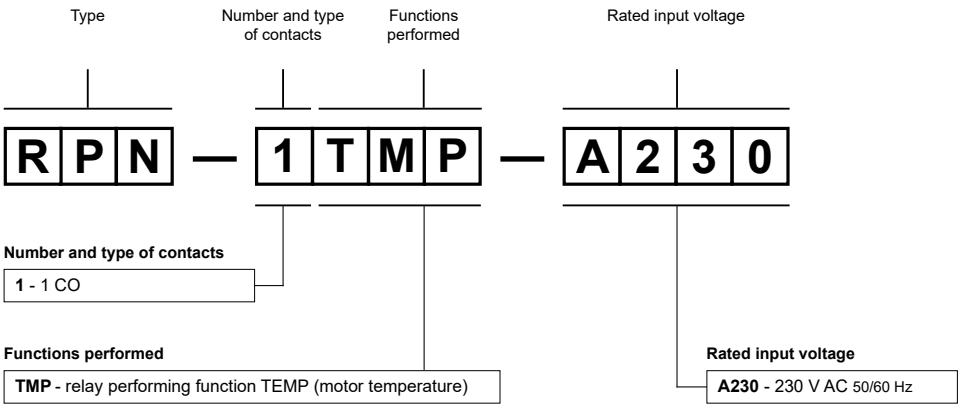


Two catches: easy mounting on 35 mm rail, firm hold (top and bottom).



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

Ordering codes



Example of ordering codes:

RPN-1TMP-A230 monitoring relay **RPN-1TMP-A230**, single-function (relay perform function TEMP), cover - modular, width 17,5 mm, one changeover contact, contact material $AgSnO_2$, rated input voltage 230 V AC 50/60 Hz