

# RPN-1AT-A230

## monitoring relays



RPN-1AT-A230



• Fault latch mode **with self-reset**

- **Single-functions monitoring relays (motor temperature monitoring)** • Short circuit monitoring of the thermistor line
- Switching/tripping delay
- 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,

### Output circuit - contact data

|                             |     |                                   |
|-----------------------------|-----|-----------------------------------|
| Number and type of contacts |     | 1 CO                              |
| Contact material            |     | AgSnO <sub>2</sub>                |
| 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    |     | 600 cycles/hour at rated load AC1 |

### 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 <sub>n</sub>   |
| Operating range of supply voltage |             | 0,85...1,15 U <sub>n</sub> |
| Rated power consumption           |             | 0,6 W                      |
| Range of supply frequency         | AC          | 48...63 Hz                 |

### Measuring circuit

|   |  |
|---|--|
| • measured value                                  | resistance   |
| • 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 self-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   |

### 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 |

### General data

|                           |   |  |
|---------------------------|---|--|
| Electrical life           | • resistive AC1                             | > 0,5 x 10 <sup>5</sup> 12 A, 250 V AC |
| Mechanical life (cycles)  |   | > 3 x 10 <sup>7</sup>                  |
| Dimensions (L x W x H)    |   | 90  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                  |

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). Length with 35 mm rail catches: 98,8 mm.

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### Measuring circuit data

|                          |   |
|--------------------------|---|
| Functions                | TEMP(RESET) - temperature monitoring of the motor winding<br>fault latch mode with self-reset                                       |
| Switching/tripping delay | 1 s   |
| Recovery time            | 250 ms  |
| LED indicator ④          | green LED U - indication of supply voltage U, fault latch<br>red LED °C - indication of error<br>yellow LED R - output relay status |

④ LED indication - see "Additional functions", page 2.

### Functions

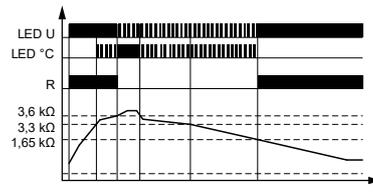
**TEMP(RESET)** - Temperature monitoring of the motor winding with fault latch with self-reset (with delayed connection/disconnection of contact R).

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.

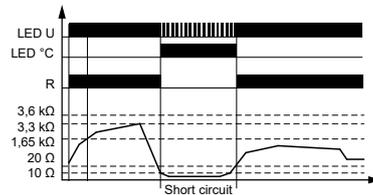
When the total resistance of the PTC circuit exceeds 3,6 kΩ (temperature increases), the operational relay R will be disconnected. The operational relay R will be switched back on when the total resistance of the sensors falls below 1,65 kΩ (the system is cooled).

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.

Self-reset.



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.

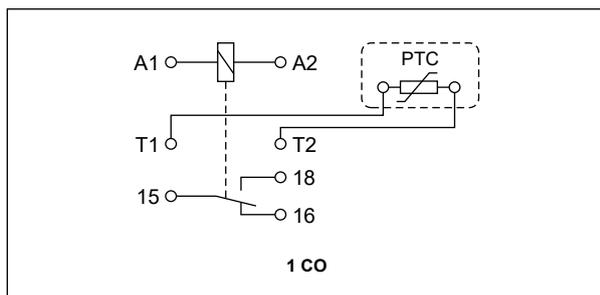
**Supply:** the relay may be supplied with AC voltage 48...63 Hz of 195,5...264,5 V.

| 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                 | self-reset of fault latch | -  | -                      |
| red does not light up         | -                         | no error ④   | -                      |
| red lights up all the time    | -                         | temperature above the MAX threshold  | -                      |
| red flashes                   | -                         | temperature close to MAX threshold ⑤ or self-reset of fault latch is in progress | -                      |
| yellow does not light up      | -                         | -  | contact R disconnected |
| yellow lights up all the time | -                         | -  | contact R connected    |

④ Total resistance of the PTC circuit below a value of 3,6 kΩ.

⑤ Total resistance of the PTC circuit between 3,3 kΩ and 3,6 kΩ (WARNING threshold - increased temperature condition).

### Connection diagram



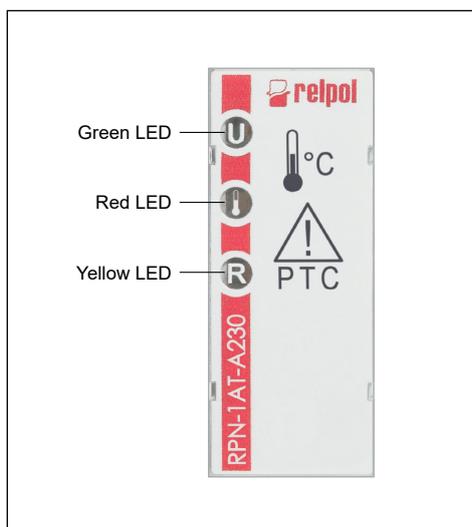
### PRECAUTIONS:

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.

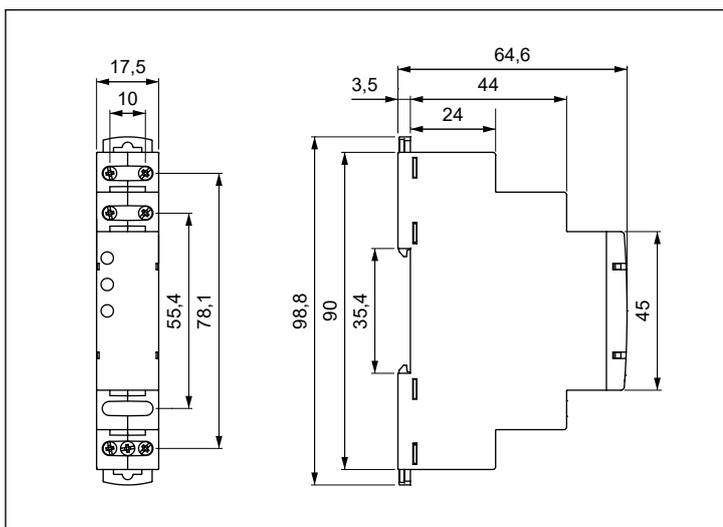
# RPN-1AT-A230

## monitoring relays

### Front panel description

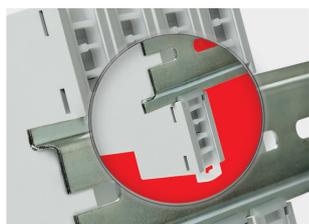


### Dimensions

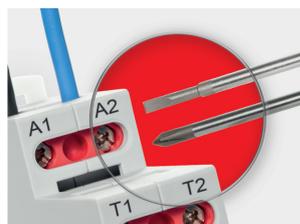


### Mounting

Relays **RPN-1AT-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 mm<sup>2</sup> (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

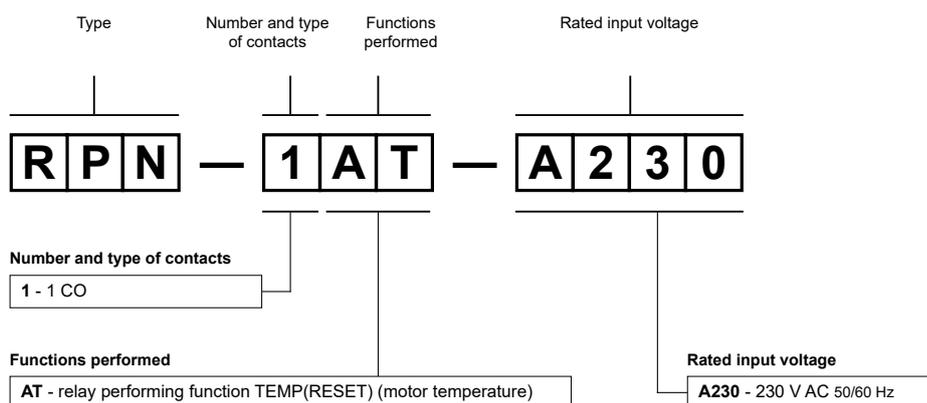


**Two catches:**  
easy mounting  
on 35 mm rail,  
firm hold  
(top and bottom).



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

### Ordering codes



Example of ordering codes:

#### RPN-1AT-A230

monitoring relay **RPN-1AT-A230**, single-function (relay perform function TEMP(RESET)), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO<sub>2</sub>, rated input voltage 230 V AC 50/60 Hz