

# MR-ET1P

## monitoring relays



- **Single-functions monitoring relays (motor temperature monitoring)** • Short circuit monitoring of the thermistor line or thermal contact monitoring ❶ • Test functions: built-in Test/Reset button, connection of the external Reset button (optional)
- Insulation rated voltage on the sensor circuit: 690 V • Output: 1 CO (1 changeover contact) • Cover - modular, width 35 mm
- Direct mounting on 35 mm rail mount acc. to EN 60715
- Recognitions, certifications, directives: RoHS, CE

### Output circuit - contact data

Number and type of contacts	1 CO	
Rated voltage	250 V AC	
Max. breaking capacity	AC1	1 250 VA (thermal constant current 5 A)
Max. operating frequency	3 600 cycles/hour	
• at resistive load 100 VA	360 cycles/hour	
• at resistive load 1 000 VA		
<b>Input circuit</b>		
Supply voltage	AC	230 V terminals A1-A2
Rated voltage	AC	230 V
Must release voltage	AC: $\geq 0,3 U_n$	
Operating range of supply voltage	0,85...1,1 $U_n$	
Rated power consumption	AC	1,3 VA / 1,0 W
Range of supply frequency	AC	48...63 Hz
Duty cycle	100%	
<b>Measuring circuit</b>	<ul style="list-style-type: none"> <li>• terminals</li> <li>• initial resistance</li> <li>• response value</li> <li>• release value</li> <li>• disconnection ❷</li> <li>• measuring voltage T1-T2</li> </ul>	T1-T2 or T1-T3 $< 1,5 \text{ k}\Omega$ relay in OFF-position: $\geq 3,6 \text{ k}\Omega$ relay in ON-position: $\leq 1,65 \text{ k}\Omega$ T1-T2: yes T1-T3: no $\leq 7,5 \text{ V}$ at $R \leq 4 \text{ k}\Omega$ EN 60947-8
<b>Control contact</b>	<ul style="list-style-type: none"> <li>• function</li> <li>• load</li> <li>• max. line length</li> <li>• control pulse length</li> <li>• Reset</li> </ul>	connection of an external Reset button no R1-R2: 10 m (twisted pair) min. 50 ms contact 1 NO; terminals R1-R2 ❸
<b>Insulation according to EN 60664-1</b>		
Rated surge voltage	6 000 V 1,2 / 50 $\mu\text{s}$	
Overvoltage category	III	
Insulation pollution degree	2 if built-in: 3	
<b>General data</b>		
Electrical life	• resistive AC1	$> 2 \times 10^5$ 1 000 VA
Mechanical life (cycles)	$> 2 \times 10^7$	
Dimensions (L x W x H)	87 x 35 x 65 mm	
Weight	100 g	
Ambient temperature	<ul style="list-style-type: none"> <li>• storage</li> <li>• operating</li> </ul>	-25...+70 °C
(non-condensation and/or icing)	-25...+55 °C	
Cover protection category	IP 20 EN 60529	
Relative humidity	15...85%	
<b>Measuring circuit data</b>		
Functions	temperature monitoring of the motor winding, with fault latch (max. 6 PTC - temperature sensors DIN 44081) short circuit monitoring of the thermistor line or thermal contact ❶ test functions: built-in Test/Reset button, connection of the external Reset button (optional)	
Base accuracy	$\pm 5\%$ (calculated from the final range values)	
Repeatability	$\pm 1\%$	
Temperature influence	$\pm 0,15\% / ^\circ\text{C}$	
Recovery time	250 ms	
LED indicator	green LED U ON - indication of supply voltage U red LED ON/OFF - indication of failure	

❶ Only one of this circuit versions (either short circuit monitoring of the thermistor line or thermal contact monitoring) can be executed.

❷ At short circuit.

❸ Terminals R2-T2 are internal affiliated with each other.

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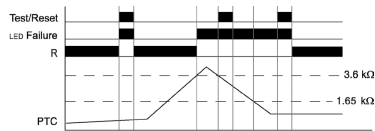
## monitoring relays

### Functions

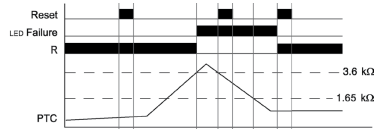
#### Motor temperature monitoring with fault latch.

If the supply voltage  $U$  is applied (green LED illuminated) and the cumulative resistance of the PTC-circuit is less than  $3,6\text{ k}\Omega$  (standard temperature of the motor), the output relay  $R$  switches into on-position. Pressing the Test/Reset button under this conditions forces the output relay  $R$  to switch into off-position. It remains in state as long as the Test/Reset button is pressed and thus the switching function can be checked in case of fault. The test function is not effective by using an external Reset button. When the cumulative resistance of the PTC-circuit exceeds  $3,6\text{ k}\Omega$  (at least one of the PTCs has reached the cut-off temperature), the output relay  $R$  switches into off-position (red LED illuminated). The output relay  $R$  switches into on-position again (red LED not illuminated), if the cumulative resistance drops below  $1,65\text{ k}\Omega$  by cooling down of the PTC and either a Reset button (internal or external) was pressed or the supply voltage was disconnected and re-applied.

#### Application of built-in Test/Reset button.

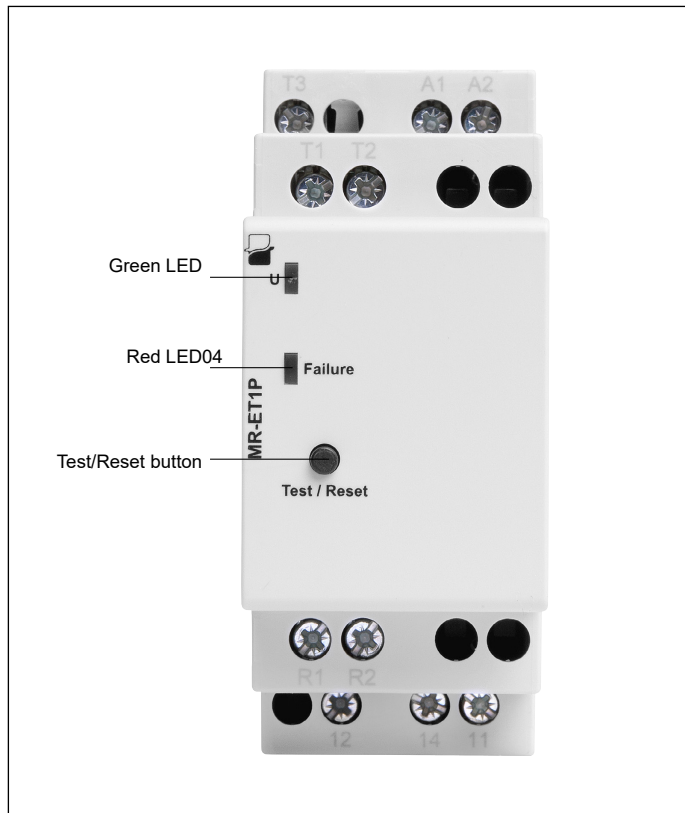


#### Application of an external Reset button.

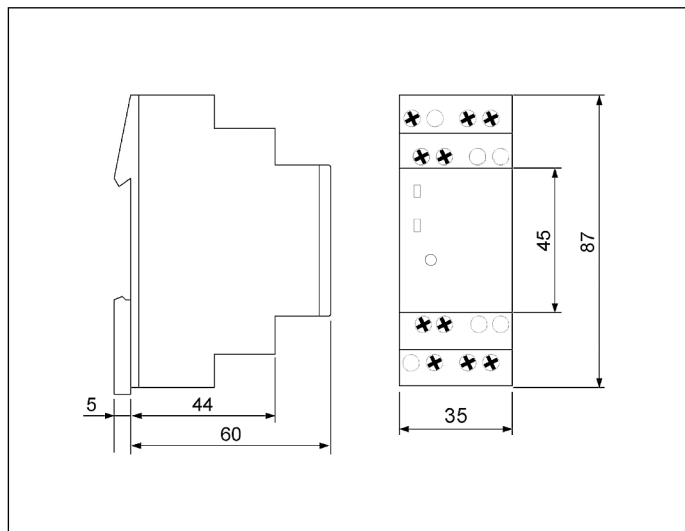


**U** - supply voltage; **R** - output state of the relay;  
**PTC** - state of sensors; **Failure** - fault latch

### Front panel description



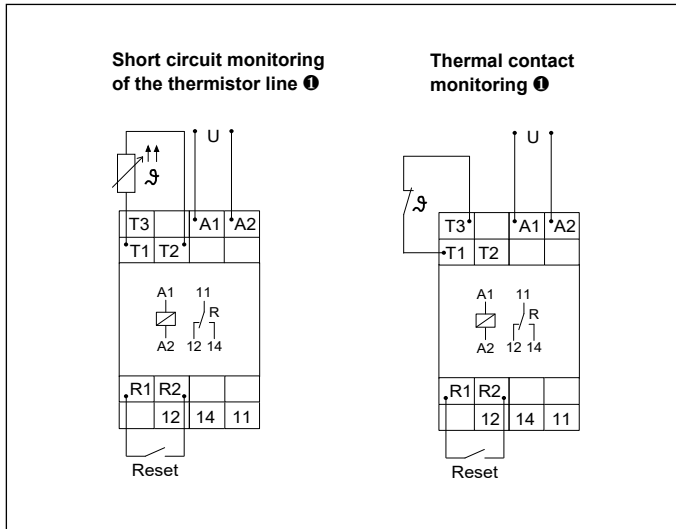
### Dimensions



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### Connection diagrams

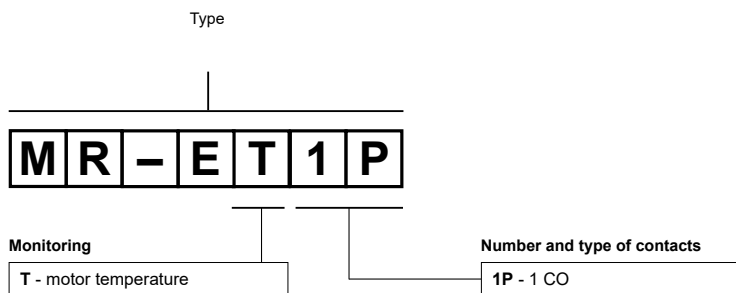


### Mounting

Relays **MR-ET1P** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Terminals - cross section of the connection cables:** 1 x 0,5 ... 2,5 mm<sup>2</sup> with/without multicore cable end, 1 x 4 mm<sup>2</sup> without multicore cable end, 2 x 0,5 ... 1,5 mm<sup>2</sup> with/without multicore cable end, 2 x 2,5 mm<sup>2</sup> flexible without multicore cable end.

❶ Only one of this circuit versions (either short circuit monitoring of the thermistor line or thermal contact monitoring) can be executed.

### Ordering codes



Example of ordering code:

**MR-ET1P** monitoring relay **MR-ET1P**, single-function (relay monitors the motor temperature), cover - modular, width 35 mm, one changeover contact, rated input voltage (supply): AC - 230 V

### 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.