EMD-SL-PTC

Monitoring relay for monitoring the temperature of the motor winding



Data sheet
101749_en_05

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1 Description

Increasingly higher demands are being placed on safety and system availability – across all sectors. Processes are becoming more and more complex, not only in mechanical engineering and the chemical industry, but also in plant and automation technology. Demands on power engineering are also increasing constantly.
Error-free and therefore cost-effective operation can only be achieved through continuous monitoring of important network and system parameters. Electronic monitoring relays in the EMD series are available for a wide range of monitoring tasks to avoid the consequences of errors or to keep them within limits.
The operating states are indicated using colored LEDs, errors that may occur can be sent to a control system via a floating contact or can shut down a part of the system. Some device versions are equipped with startup and response delays in order to briefly tolerate measured values outside the set monitoring range.

Features

- Temperature monitoring of the motor winding (6 PTC, maximum) with error memory for temperature sensors according to DIN 44081
- Test function with integrated test/reset button
- Power supply via power module can be selected

WARNING: Risk of electric shock
Never carry out work when voltage is present.

Make sure you always use the latest documentation.
It can be downloaded from the product at www.phoenixcontact.net/products.

2 Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Monitoring relay for monitoring the temperature of the motor winding	EMD-SL-PTC	2866093	1

Accessories	Type	Order No.	Pcs. / Pkt.
Power modules, pluggable, for EMD-SL-..., supply voltage: 20 V DC ... 30 V DC	EMD-SL-PS- 24DC	2885359	1
Power modules, pluggable, for EMD-SL-..., supply voltage: 20.2...26.4 V AC	EMD-SL-PS- 24AC	2866103	1
Power modules, pluggable, for EMD-SL-..., supply voltage: 88...121 V AC	EMD-SL-PS-110AC	2866116	1
Power modules, pluggable, for EMD-SL-..., supply voltage: 108 V AC ... 132 V AC	EMD-SL-PS-120AC	2885731	1
Power modules, pluggable, for EMD-SL-..., supply voltage: 195...264 V AC	EMD-SL-PS-230AC	2866129	1

3 Technical data

Input data	
Input name	Measuring input
Maximum input voltage	max. 7.5 V DC (connection terminal blocks: T1 and T2)
Maximum temperature coefficient	< 0.1 %/K
Function	Winding temperature monitoring
Basic accuracy	± 10 % (of scale end value)
Repeat accuracy	≤ 2 %
Total cold resistance	< 1.5 kΩ
Response value	≥ 3.6 kΩ (Relay drops out)
Release value	≤ 1.8 kΩ (Relay picks up)
Short-circuit detection	< 20 Ω
Voltage influence	≤ 1 %
Recovery time	500 ms

Output data	
Contact type	2 floating PDT contacts
Nominal insulation voltage	250 V AC (in acc. with IEC 60664-1)
Interrupting rating (ohmic load) max.	750 VA (3 A/250 V AC, module aligned, ≤ 5 mm spacing) 1250 VA (5 A/250 V AC, module not aligned, ≥ 5 mm spacing)
Output fuse	5 A (fast-blow)

Control contact	
Control contact	Connection of an external reset button (floating controlled N/O contact)
Load capacity	Cannot carry load
Cable length	max. 10 m

Supply	
Supply voltage range	24 V AC ... 230 V AC (see Power modules) 24 V DC (see Power modules)
Frequency range	50 Hz ... 60 Hz
Nominal power consumption	2 VA (1.5 W)

General data

Mechanical service life	Approx. 2 x 10^7 cycles
Service life, electrical	2 x 10^5 cycles at ohmic load, 1000 VA
Switching frequency	max. 60 (per minute at 100 VA ohmic load) max. 6 (per minute at 1000 VA ohmic load)
Voltage drop	> 30 % (Relative to the supply voltage)
Operating mode	100% operating factor
Degree of protection	IP40 (housing) / IP20 (connection terminal blocks)
Pollution degree	2 (according to EN 50178)
Surge voltage category	III, basic insulation (as per EN 50178)
Rated insulation voltage	300 V (According to EN 50178)
Mounting	on standard DIN rail NS 35 in accordance with EN 60715
Mounting position	Any
Width	22.5 mm
Height	90 mm
Type of housing	Polyamide PA, self-extinguishing
Color	green
Weight	160 g

Connection data

Conductor cross section, solid	0.5 mm^2 ... 2.5 mm^2
Conductor cross section, stranded	0.25 mm^2 ... 2.5 mm^2
Stripping length	8 mm
Connection method	Screw connection

Ambient conditions

Ambient temperature (operation)	-25 °C ... 55 °C -25 °C ... 40 °C (corresponds to UL 508)
Ambient temperature (storage/transport)	-25 °C ... 70 °C
Permissible humidity (operation)	15 % ... 85 %
Climatic class	3K3 (in acc. with EN 60721)

Conformance / approvals

Conformance	CE-compliant
UL, USA / Canada	UL/C-UL listed UL 508

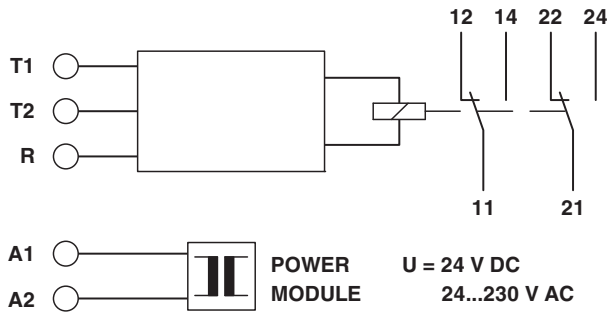
Conformance with EMC Directive 2004/108/EC

Noise immunity according to	EN 61000-6-2
Noise emission according to	EN 61000-6-3

Conformance with LV directive 2006/95/EC

Electronic equipm. for electrical power installations according to	EN 50178

4 Block diagram

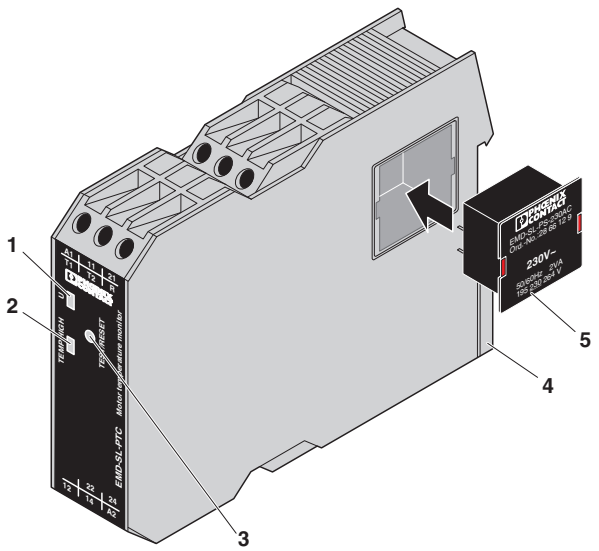


5 Safety notes

WARNING: Risk of electric shock

Never carry out work when voltage is present.

6 Structure



1 "U" LED: Supply voltage
2 "TEMP HIGH" LED: Temperature
3 Test/reset button
4 Universal snap-on foot for EN DIN rails
5 Power module

7 Power supply

The power module for power supply is supplied in a transport casing to prevent the connection legs from being bent.
To install the power module in the relay housing, remove the transport casing and position the power module in the recess in the side of the housing (ensure that it is the right way round). The red locking latches snap in with an audible click when the power module is securely positioned.
To remove the power module, press the two red locking latches together and pull out the power module.

8 Installation



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The module can be snapped onto all 35 mm DIN rails according to EN 60715.

9 Diagnostics

The LEDs indicate the following error states:

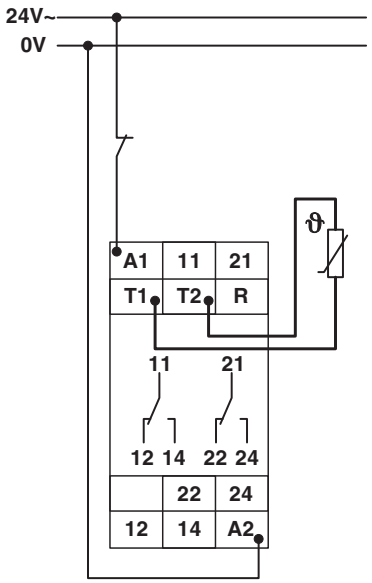
"U" LED (Green)

– LED ON: Supply voltage present

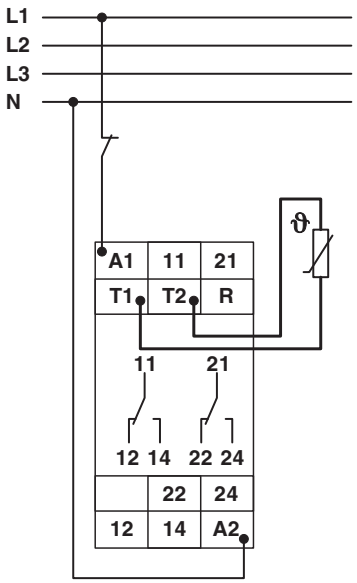
"TEMP HIGH" LED (Red)

– LED ON: Output relay has dropped out
– LED OFF: Output relay has picked up

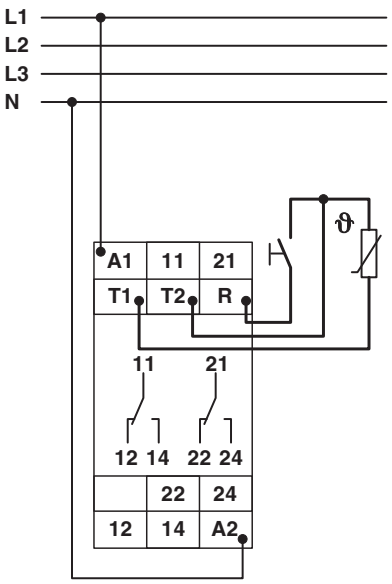
10 Connection examples



PTC temperature sensor with 24 V AC power module

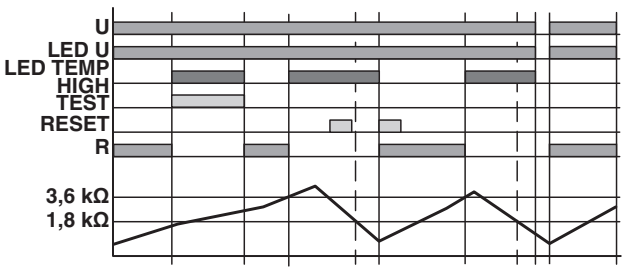


PTC temperature sensor with 230 V AC power module



PTC temperature sensor and external reset button with 230 V AC power module

11 Function



Temperature Monitoring of the Motor Winding

If the total resistance is less than 3.6 kΩ (normal temperature of the motor) when the supply voltage is applied (green LED "U" lights up), the output relay "R" picks up.

Test Function

The output relay "R" drops out in this state as long as the internal test/reset key is pressed. This way, the switching function can be tested in the event of an error. The test function does not work with an external reset button.
If the total resistance rises above 3.6 kΩ (at least one of the PTCs reaches the nominal switch off temperature), the output relay "R" drops out (red LED "TEMP HIGH" lights up).
The output relay "R" picks up again (red LED "TEMP HIGH" does not light up) when the total resistance has dropped to below 1.8 kΩ again after the PTC has cooled down, and either a reset button (internal or external) has been pressed or the power supply interrupted.