

Motor Winding Thermostat Relays PMM/T DIN-rail mounted

Introduction

This unit monitors the temperature of a motor using the PTC sensor (positive temperature coefficient resistor) or thermostat (TK) switch built in to the motor winding. Relay contacts can be used to disconnect the supply to the motor if it overheats. LEDs indicate mains on and fault status.

Switches on the front panel select sensor type and latching (memory) on/off. In latching mode, the unit must be reset after a trip by means of the front panel Reset button or an external switch.

These instructions contain important safety information. Please read them thoroughly before commissioning, operating or maintenance of the unit.

Specification

Parameter	PMM/T
Supply voltage	24-240V a.c.(50-60Hz) or d.c.
Supply voltage tolerance	-15/+10%
Burden on supply	2 VA max
PTC sensor ranges:	
Cold	50Ω - 1.5 kΩ
Lower limit	1.8 kΩ
Upper limit	3.3 kΩ
Sensor failure indication	Red LED flashes
Repetition accuracy (mech)	<5%
Switching error	±5%
Temperature dependence	<0.1%/°C
Relay contacts: for general switching operations	2 x changeover, volt-free
Load capacity - a.c.	250V @ 8A, 2 kVA
Load capacity - d.c.	24V 8A 500 mW min.
Insulation	4 kV/1 min
Mechanical endurance	30x10 ⁶ operations
Electrical life (AC1)	7 x 10 ⁴
Other Data:	
Dimensions	90 x 17.6 x 64 mm
Weight	83g
Maximum conductor size	2 x 1.5 mm ² or 1 x 2.5 mm ²
Operating temperature	-20 to +55 °C
Storage temperature	-30 to +70 °C
Over-voltage category	III
Pollution degree	2
Environmental protection	IP40 for front panel IP20 for terminals.
Standards	EN 60255-6, EN 60255-27, EN 61000-6-2, EN 61000-6-4
	Insulation Class: Ensure any external circuits connected to the relay are provided with double or reinforced insulation.

Operation

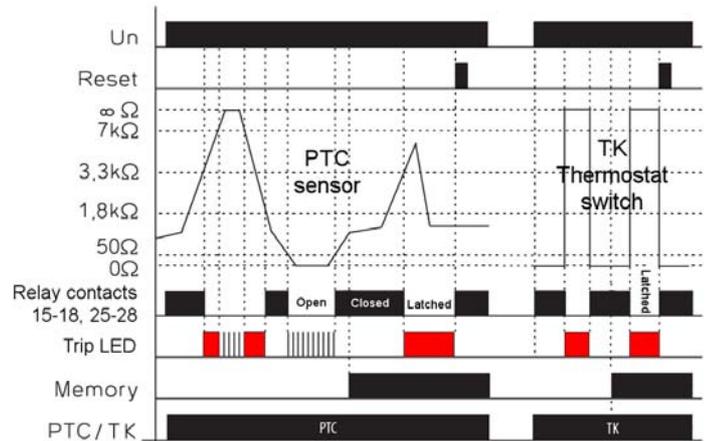
The green  LED lights shows when the power supply is on.

With the motor running at its normal temperature, the red LED will be off and relay contacts 15-18 and 25-28 will be closed.

PTC mode

Select this mode if the motor is fitted with a PTC sensor.

If the motor overheats and PTC resistance goes above 3.3 kΩ, relay contacts 15-18 and 25-28 open. These contacts can be used to disconnect the supply to the motor.



The differential 1.8k/3.3k trip levels prevent relay chatter as the monitored temperature varies.

As the relays have changeover contacts, the relay outputs can be inverted by wiring to the alternative terminals 15-18 or 25-28.

With the Memory switch set to Off, the red LED lights and the contacts stay open until the motor has cooled and the PTC resistance has fallen to below 1.8 kΩ.

With Memory (latching) On, the red LED lights and the relay contacts stay open until the Reset button is pressed or an external reset switch closes.

The red LED flashes if the PTC sensor fails open- or short-circuit.

TK mode

Select this mode if the motor is fitted with a thermostat switch.

If the motor overheats, the thermostat switch opens, the red LED lights and the relay contacts 15-18 and 25-28 open.

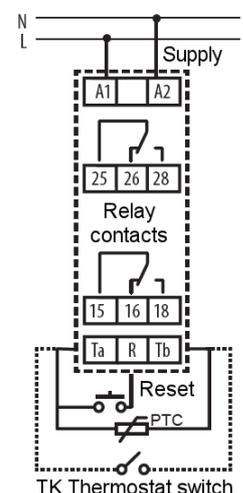
With the Memory switch set to Off, the red LED goes off and the relay contacts close when motor cooling causes the thermostat to close again.

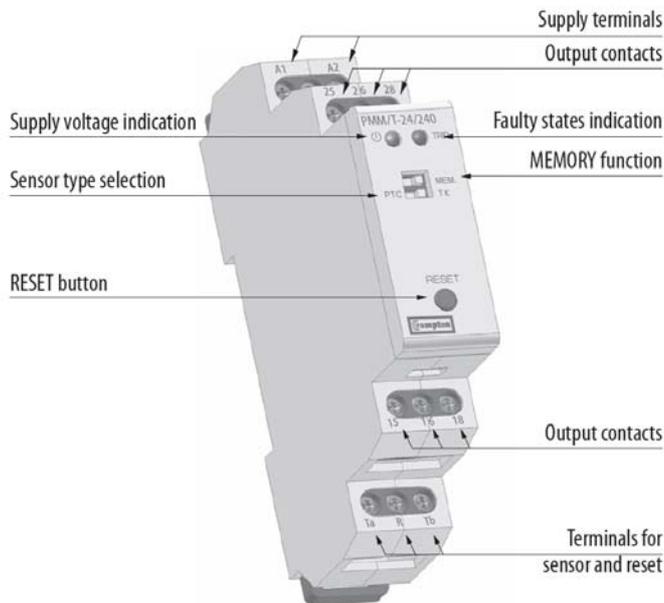
With Memory (latching) On, the LED stays on and the relay contacts remain open until the Reset button is pressed or an external reset switch closes.

Installation

The unit is intended for mounting on a standard DIN rail. Hook the unit on the top of the rail and press the bottom of the unit until it locks in place. To remove the unit from the rail, lever down the black tab at the bottom of the unit to release it from the rail.

The unit is intended for use in a reasonably stable ambient temperature within the range -20 to +55°C. Do not mount the unit where there is excessive vibration or in excessive direct sunlight.





EMC Installation Requirements

This unit has been designed to provide protection against EM (electromagnetic) interference in line, in accordance with BS EN 61000-6-2 and -6-4. Precautions necessary to provide proper operation of this and adjacent equipment will be installation dependent and so the following can only be general guidance:

- Avoid routing wiring to this unit alongside cables and products that are, or could be, a source of interference.
- To protect the product against incorrect operation or permanent damage, surge transients must be controlled. It is good EMC practice to suppress differential surges to 2kV or less at the source. The unit has been designed to automatically recover from typical transients, however in extreme circumstances it may be necessary to temporarily disconnect the auxiliary supply for a period of greater than 5 seconds to restore correct operation.
- Screened communication leads are recommended and may be required. These and other connecting leads may require the fitting of RF suppression components, such as ferrite absorbers, line filters etc., if RF fields cause problems.
- It is good practice to install sensitive electronic instruments that are performing critical functions in EMC enclosures that protect against electrical interference causing a disturbance in function.

Wiring

All connections are made to screw clamp terminals. Terminals are suitable for copper wires only and will accept one stranded 0.05 - 2.5mm² (30 - 12 AWG) stranded or solid core cables. Terminal screws should be tightened to 0.5 Nm. Choice of cable should meet local regulations.

For UL approved installation, use National Electrical Code (NEC) Class 1 wiring, rated at 300V / 60°C min rating.

Fusing

A suitable switch or circuit breaker conforming to the relevant parts of IEC 60947-1 and IEC 60947-3 should be included in the building installation. It should be positioned so as to be easy to operate, in close proximity to the equipment, and clearly identified as the disconnecting device.

This unit must be fitted with an external fuse in voltage supply line. Line must be fused with a quick blow fuse 1A maximum. Choose fuse of a type and with a breaking capacity appropriate to the supply and in accordance with local regulations.

For UL approved installations:

UL listed branch circuit fuses, suitable for the installation voltage, shall be provided and installed in accordance with national installation code – 1A fast acting AC rated at the input.

Maintenance

In normal use, little or no maintenance is needed. Where used, ensure any CT secondary circuits are short circuited prior to carrying out installation or maintenance of the unit. As appropriate for service conditions, isolate electrical power, inspect the unit and remove any dust or other foreign material present. Periodically check all connections for freedom from corrosion and screw tightness, particularly if vibration is present.



Warnings:

- During normal operation, voltages hazardous to life may be present at some of the terminals of this unit. Installation and servicing should be performed only by qualified, properly trained personnel abiding by local regulations. Ensure all supplies are de-energised before attempting connection or other procedures.
- It is recommended adjustments be made with the supplies de-energised, but if this is not possible, then extreme caution should be exercised.
- Terminals should not be user accessible after installation and external installation provisions must be sufficient to prevent hazards under fault conditions.
- This unit is not intended to function as part of a system providing the sole means of fault protection - good engineering practice dictates that any critical function be protected by at least two independent and diverse means.
- The unit does not have internal fuses therefore external fuses must be used for protection and safety under fault conditions.
- If this equipment is used in a manner not specified by the manufacturer, protection provided by the equipment may be impaired.

Safety

The unit was designed in accordance with BS EN 600255-6 and -27 – Permanently connected use, Normal condition. Insulation category III, pollution degree 2, basic insulation for rated voltage. Measurement Category III.

All of the above information, including drawings, illustrations and graphic designs, reflects our present understanding and is to the best of our knowledge and belief correct and reliable. Users, however, should independently evaluate the suitability of each product for the desired application. Under no circumstances does this constitute an assurance of any particular quality or performance. Such an assurance is only provided in the context of our product specifications or explicit contractual arrangements. Our liability for these products is set forth in our standard terms and conditions of sale.

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