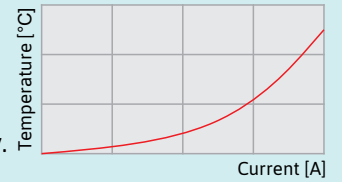




The most commonly used Thermal Protection which protects electric motor winding against overloading:

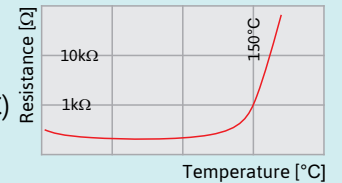
Thermal Cutout (activated by passing current)

This protection is suitable for relatively small motors as these elements are limited by the current which can be passing through. The elements are equipped with bimetallic switch which is activated with the heat caused by passing current. There are automatic Thermal Cutouts which automatically reset when the motor cools down and there are Manual Reset ones for adding safety.



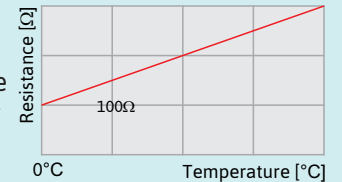
PTC Thermistors (Positive Temperature Coefficient thermistors)

These are relatively inexpensive thermistors suitable for alarm and/or tripping. They do not have ability to measure the actual temperature and are suitable for signalling/tripping purposes only. They reach the required resistance (typically 1kΩ) at the set temperature (typically 145°C or 150°C) and come in sets of 3off (one for each phase) or 6off (3off set for lower temperature - for alarm and 3off set for higher temperature - for tripping).



PT100 are RTDs (Resistance Temperature Detectors or Resistance Thermometers).

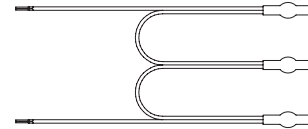
They measure temperature by correlating the resistance of the RTD element with temperature. Platinum type PT100 have resistance 100Ω at 0°C. The linear characteristics is ideal for temperature monitoring. They again come in sets of 3off or 6off and single thermistors are often used for bearing temperature monitoring.



[3x PT100 wiring](#)

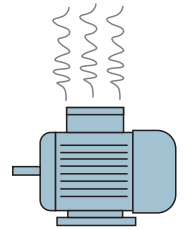
The use of Thermal Protection is recommended for VSD (variable Speed Drive) applications. The use of Thermistors is mandatory for ATEX motors when they are used for VSD applications.

PTCs Thermistors setting for:	Alarm	Tripping
Insulation class F	145°C	155°C
Insulation class H	170°C	180°C



Colour Coding of Thermistor Leads:

3xPTCs	100°C	red-red	Max voltage 30V (Test voltage max 2.5V)
	110°C	brown-brown	
	120°C	gray-gray	
	130°C	blue-blue	
	140°C	white-blue	
	145°C	white-black	
	150°C	black-black	
	155°C	black-blue	
	160°C	blue-red	
	170°C	white-green	
180°C	white-red		
Resistance thermometer	PT100	white-red	Max permitted current 3mA
Resistance thermometer	PT1000	black-red	Max permitted current 3mA
Silicon sensor	KTY	yellow(+)-green(-)	Max permitted current 2mA



Thermistors are usually terminated in terminal connector blocks:

The standard connector blocks are plastic (porcelain connector blocks are available at a request or for high temperature execution)

