



**PTC Over Temperature
Thermistor -
309-201 to 309-212
309-231 to 309-236**

Operating Manual

The range of motor transformer protection thermistors are manufactured to conform to BS4999 Part 72. The sensing component is a doped barium titanate disc approximately 3mm diameter x 1mm thick. The ceramic pellet is provided with flying leads and an electrically insulating coating to provide complete isolation from the motor winding. The rapid increase in electrical resistance is set during manufacture to produce a range of components with "switching" temperatures at 10°C intervals from 70°C through to 180°C.

Specifications

Temperature	Resistance	Test Voltage (D.C.)
Tr	1000 ohms Typical	2.5V
Tr -5°C	550 ohms Max.	2.5V
Tr +5°C	1330 ohms Min.	2.5V
Tr +15°C	4000 ohms Min.	7.5V
-20°C to Tr -20°C	250 ohms Max.	0.1V

Tr is the reference or "switching" temperature of the device. The specification infers a rate of increase of resistance from Tr - 5°C to Tr +5°C of 15% per °C. In practice this will be between 20% and 60%, depending on the type of device.

LeadWire

7/15 silver coated copper conductors, P.T.F.E. insulated to BSG210 Type B (500V working). The lead colours identify the switching temperature of the device. Standard lead length is 200mm, longer leads of 500mm are also available.

Thermistor Bead Insulation

The primary insulation is epoxy resin, with a shrink sleeve for added mechanical and electrical protection. Devices with temperature ranges from 80°C to 160°C have a "Kynar" sleeve, those from 170°C to 190°C have a "PTFE" sleeve.

Insulation Rating

Thermistor leads to thermistor bead insulation 2500V. R.M.S.
Adhesion of soldered joint to ceramic substrate
Without bead insulation - Peel test 500gms
- Shear test 1000gms



Limiting Ratings

Operating Temperature range : 20°C to 180°C (or Tr +20°C whichever is the greatest).

Maximum voltage for temperature sensing : 2.5V DC.

Code No.	Transition Temperature	Lead Colours
309-212	70°C	white/brown
309-201	80°C	white/white
309-211	90°C	green/green
309-202	100°C	red/red
309-210 / 231	110°C	brown/brown
309-203 / 232	120°C	grey/grey
309-204 / 233	130°C	blue/blue
309-205 / 234	140°C	blue/white
309-206 / 235	150°C	black/black
309-207 / 236	160°C	red/blue
309-209	170°C	white/green
309-208	180°C	white/red

Recommended Reference Temperatures for Thermistors

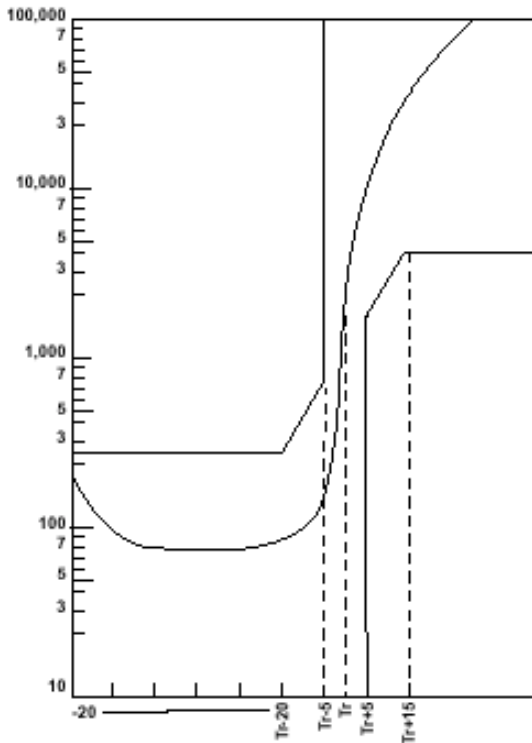
Class	Tripping	Warning
E	130°C	110°C
B	140°C	120°C
F	160°C	140°C

Need a visit from a dedicated representative just phone (01204) 675082



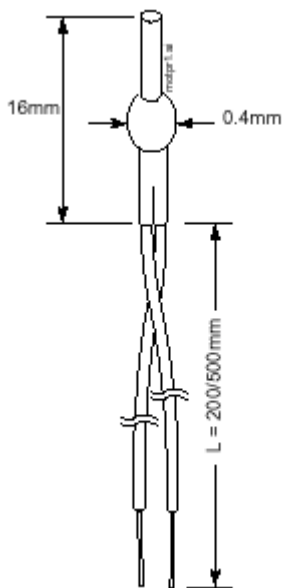
Sales Hotline: 01204 675005 Tech Helpline: 01204 675006
web:www.hawcodirect.co.uk e-mail:catalogue@hawcodirect.co.uk

Typical Resistance - Temperature Characteristic



1 Single Thermistors: 309-201 / 210

Thermistors are available in standard (4mm dia) or miniature (3mm dia) formats with 26 AWG PTFE leads to customers requirements (standard lengths 200mm & 500mm).



2 Multiple Set Thermistors: 309-231 / 236

The "industry standard" triplet thermistor is 3 thermistors wired in series to allow for use in 3 phase windings without additional assembly work. These can also be produced with lead lengths to customers requirements. Other multiples are available in 2, 4 and 6 lead assemblies in standard or miniature formats, to order. The overall resistance of a multiple set is as per Table 1 multiplied by the number of beads.

