## **TEMPERATURE SENSORS**

## NTC & PTC THERMISTORS



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**IP65 STAINLESS STEEL SHEATHED NTC** 

Thermistors are low-cost temperature sensors based on the principle that electrical resistance changes with a change in temperature. These devices are based on a semiconductor material whose resistance shows a large change with a comparatively small temperature change.

Thermistors either have a negative temperature coefficient (NTC - resistance decreases with increased temperature) or a positive temperature coefficient (PTC - resistance increases with increased temperature).

NTC thermistors have an effective operating range of -50 to +110°C, whilst PTC thermistors will operate from -50 to +150°C

Our standard NTC probes are based on a 10K  $\pm 1\%$  @ 25°C sensor - i.e the resistance at 25°C is 10K , and our PTC probes use a 1K  $\pm 1\%$  @ 25°C sensor. Other, non-standard sensors are also available for special applications.

## STANDARD THERMISTOR RESISTANCE CHARACTERISTICS

| Temperature | NTC sensor<br>Resistance K |        | PTC sensor<br>Resistance |        |
|-------------|----------------------------|--------|--------------------------|--------|
| °C          | Min                        | Max    | Min                      | Мах    |
| -50         | 314.70                     | 344.40 | 500.9                    | 536.2  |
| -40         | 181.10                     | 195.90 | 545.1                    | 579.4  |
| -30         | 107.50                     | 115.10 | 597.4                    | 630.6  |
| -20         | 65.80                      | 69.74  | 656.9                    | 688.7  |
| -10         | 41.43                      | 43.50  | 720.4                    | 750.4  |
| 0           | 26.74                      | 27.83  | 788.1                    | 815.7  |
| 10          | 17.67                      | 18.24  | 859.8                    | 884.7  |
| 20          | 11.95                      | 12.23  | 935.8                    | 957.1  |
| 25          | 9.90                       | 10.10  | 975.0                    | 995.0  |
| 30          | 8.21                       | 8.41   | 1012.9                   | 1035.2 |
| 40          | 5.73                       | 5.92   | 1091.4                   | 1118.5 |
| 50          | 4.08                       | 4.24   | 1173.5                   | 1205.8 |
| 60          | 2.95                       | 3.09   | 1259.2                   | 1297.1 |
| 70          | 2.17                       | 2.28   | 1348.5                   | 1392.2 |
| 80          | 1.62                       | 1.71   | 1441.4                   | 1491.3 |
| 90          | 1.22                       | 1.30   | 1537.9                   | 1594.4 |
| 100         | 0.94                       | 1.00   | 1638.0                   | 1701.4 |
| 110         | 0.72                       | 0.78   | 1741.0                   | 1813.0 |
| 120         | -                          | -      | 1847.4                   | 1928.8 |
| 130         | -                          | -      | 1957.4                   | 2048.6 |
| 140         | -                          | -      | 2046.1                   | 2146.4 |
| 150         | -                          | -      | 2146.0                   | 2256.1 |

NTC and PTC probes are normally supplied with plastic or stainless steel sheaths and Tefzel cable, rated for use between -75 and +155°C. These probes can be supplied with other cable types or with special fittings and terminations. Please contact our sales office for further details.