

## Thermistors

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## Overview



Thermistors provide accurate and reliable long-term temperature measurements and are used widely in the extremely harsh environments found within Geotechnical monitoring.

They are available in two types:

**Probe** – A single point sensor mounted within a PVC or stainless steel housing which is attached to a cable length.

**String** – A series of sensors mounted along a multi-core cable which provide a temperature profile and is manufactured to customer requirements in terms of the number and spacing of each sensor.

The NTC (negative temperature coefficient) thermistor sensor has a resistance that decreases with increasing temperature and with a coefficient  $>4\%/^{\circ}\text{C}$  allows it to detect very small changes in temperature. They have a non-linear output that is represented by the Steinhart–Hart equation.

$$T = \left( \frac{1}{A + B(\ln R) + C(\ln R)^3} \right) - 273.2$$

Where: T = Temperature in degrees Centigrade

LnR = Natural log of Thermistor resistance in ohms

Readings can be made with a wide range of readout units including the VW2106 and the MP12 which display the reading directly in engineering units (degrees Celsius) or by an ohmmeter in combination with look-up tables. Readings can also be automated using an automatic data acquisition unit.

### APPLICATIONS

For monitoring temperature in:

Concrete (particularly RCC dams)

Soil

Rock

Ice caps

Glaciers

Landfill

### FEATURES

Fast Response

High accuracy

Excellent long term stability

Operating range -50 to 150 °C

Waterproof to IP68 (16 bar)

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## Specifications

### PROBE

Model	TP-1	TP-2
Temperature range*	-50 to +150 °C	-50 to +150 °C
Accuracy	± 0.2 °C	± 0.2 °C
Resolution**	0.1 °C	0.1 °C
Housing	PVC	Stainless steel
Housing diameter (mm)	31	16
Housing length (mm)	85	85
Cable (mm)	4 core PUR	4 core PUR

### STRINGS

Model	TS-1	TS-2	TS-3	TS-4	TS-5	TS-6
Temperature range*	-50 to +150 °C	-50 to +150 °C	-50 to +150 °C	-50 to +150 °C	-50 to +150 °C	-50 to +150 °C
Accuracy	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.2 °C	± 0.2 °C
Resolution**	0.1 °C	0.1 °C	0.1 °C	0.1 °C	0.1 °C	0.1 °C
Points	1-2	3-4	5-7	8-10	11-15	16-25
Cable diameter	7	8.9	9.8	11.4	12.5	14.8
Housing diameter (mm)	19, 31	19, 31	31	31	31	31
Housing length (mm)	85	85	85	85	85	85
Cable	Single: Type 900 - VW Sensor with Foil Screen & Drain Wire String: Type 910 - Multi-Core with Foil Screen & Drain Wire					

### ORDERING INFORMATION

Number of points

Spacing of points

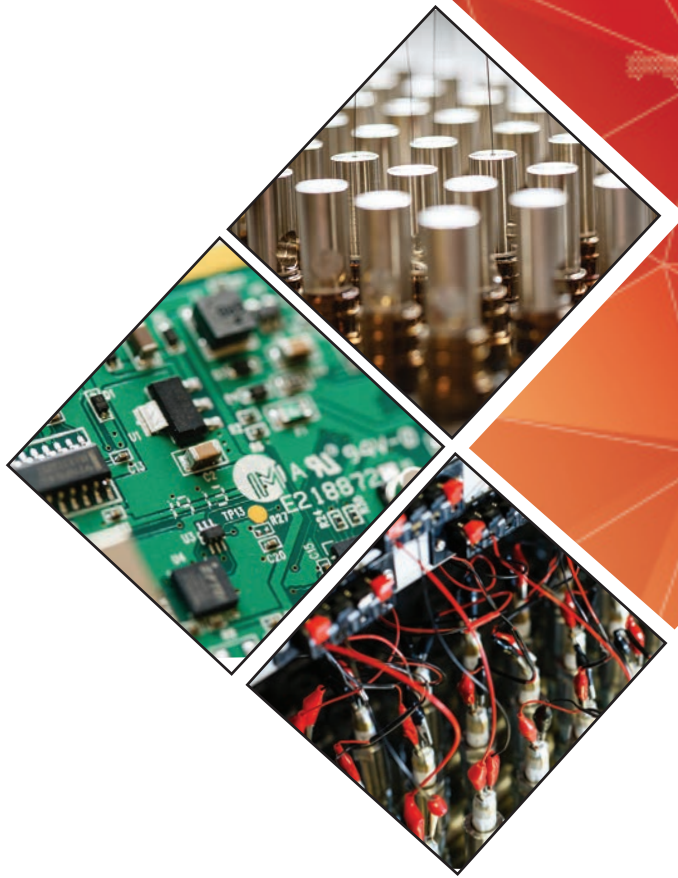
Cable length

Cable termination enclosures

Readout and data logger

\* Other ranges available on request

\*\* Readout dependent



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