DATASHEET

# Thermistors

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GEOSENSE

# Thermistors

## 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%/ºC allows it to detect very small changes in temperature. They have a non-linear output that is represented by the Steinhart–Hart equation.

$T = (1 / (A + B (LnR) + C(LnR) 3)) - 273.2$

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 ºC
- Waterproof to IP68 (10 bar)

# Thermistors

## Specifications

### PROBE

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

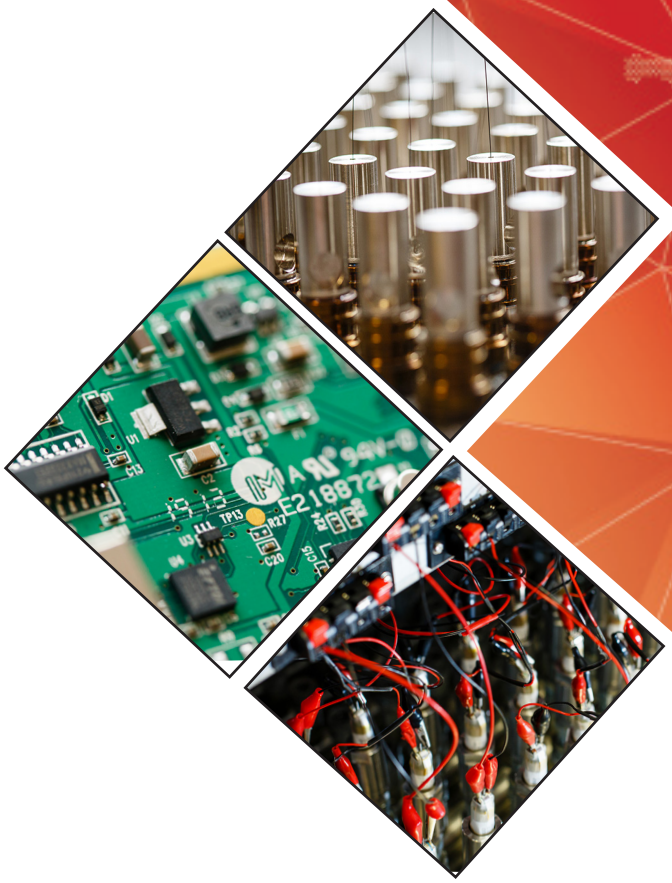
### STRINGS

| Model | TS-1 | TS-2 | TS-3 | TS-4 | TS-5 | TS-6 |
|---|---|---|---|---|---|---|
| Temperature range* | -50 to 150 ºC | -50 to 150 ºC | -50 to 150 ºC | -50 to 150 ºC | -50 to 150 ºC | -50 to 150 ºC |
| Accuracy | ± 0.2 ºC | ± 0.2 ºC | ± 0.2 ºC | ± 0.2 ºC | ± 0.2 ºC | ± 0.2 ºC |
| Resolution** | 0.1 ºC | 0.1 ºC | 0.1 ºC | 0.1 ºC | 0.1 ºC | 0.1 ºC |
| 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<br>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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