

Resistance Temperature Sensor

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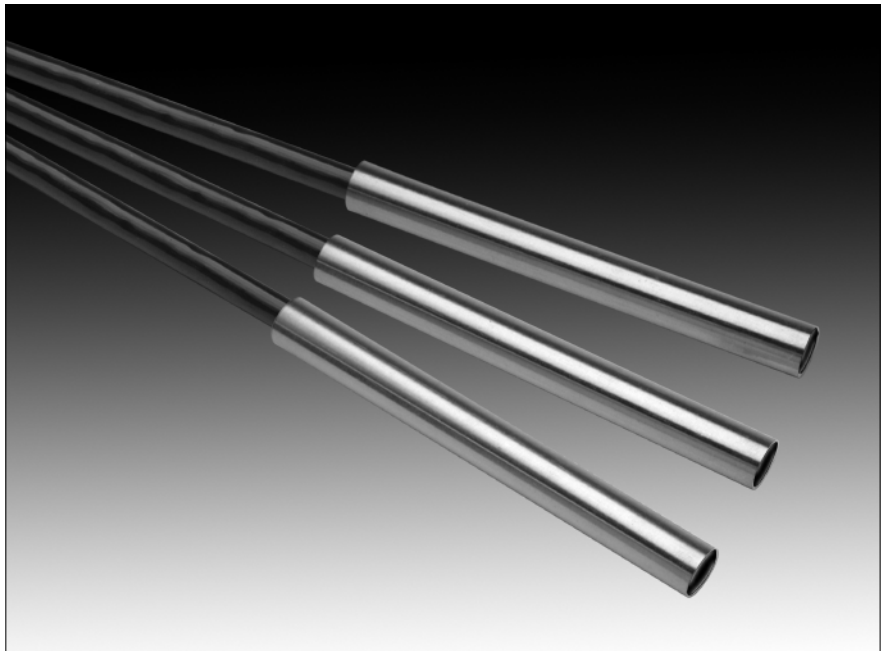
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Introduction

Applications Resistance temperature sensors are used to monitor the heat of hydration in mass concrete.

Operation The temperature sensor consists of a stainless steel body, an RTD or thermistor inside the body, and a signal cable.

The resistance of the RTD or thermistor varies with temperature. The readout unit or data logger converts the resistance reading to degrees C



Installation Suggestions

- Sensor**
- When a temperature sensor is mounted in a particularly vulnerable position, consider spraying the area with marker paint, covering the gauge with a protective wire mesh, or placing some non-structural steel to protect the gauge. Damage is most likely to occur when the reinforcing gauge is lifted and then placed and also when the tremie pipe places the cement.

- Signal Cable**
- Mark cables before installation to help you identify the sensor and cable at the end of the installation process. Add extra identification marks at locations where the cable is vulnerable or must be spliced. This precaution may make it possible to reconnect a bundle of broken cables. Also add extra marks toward the end of the cable, where excess cable length may be cut off.
 - Start with the sensor farthest from the readout station and run the cable along the reinforcement, picking up cables from other sensors along the way. Use nylon cable ties to strap the cables to the reinforcement at least every 300 to 400 mm.
 - Run cables along the underside of any reinforcements gain some protection from the poured concrete and the use of vibrators. Never run cables diagonally or unsupported through the reinforcement.
 - Leave sufficient slack in the cables where there is likely to be any movement in the reinforcement. Check that slack cable cannot be damaged.
 - Protect the cables where they exit the concrete with a short length of conduit.

Taking Readings

VW Data Recorder

1. Connect signal cable to the data recorder:


Binding Posts	Cable Part Numbers and Color Coding		
	50613524	52602320	52602300
RTD/Therm	Blue	Red	Red
RTD/Therm	White & Blue	Black	Black

2. Choose Hz + RTD -or- Hz + Thermistor.
3. Press the Enter key (the sweep range has no effect).
4. The recorder displays a RTD or Thermistor reading in degrees C. The Hz reading is not valid and should be ignored.

DataMate MP

1. Connect the DataMate to the sensor (see connection table below).

Terminals on Bare Wire Adaptor	Cable Part Numbers and Color Coding			Function
	50613524	52602320	52602300	
5	Blue	Red	Red	RTD/Therm
7	White & Blue	Black	Black	RTD/Therm

2. Switch on. Press (Manual Mode).
3. Scroll through the list to find “RTD” or “Thermistor.”
4. Press  to excite the sensor and display a reading in degrees C.

VWP Indicator

1. The VWP Indicator reads only RTDs. Use jumper #52611950, which is supplied with the indicator. Connect the clips of the jumper to signal cable from the sensor, as shown in the table below.

Clips	Cable Part Numbers and Color Coding			Function
	50613524	52602320	52602300	
Black	Blue	Red	Red	RTD
Black	White & Blue	Black	Black	RTD

2. Read the RTD: Select °C with the Data key.

CR10 Data Logger

See tech-notes for the CR10 on Slope Indicator’s website.

Diagnostics

No Reading

Set your handheld multimeter to a low-ohm range (5k ohm).

- Measure the resistance between the RTD/Thermistor wires (blue and white). Thermistors should read about 3000 ohms. RTDs should read about 2000 ohms. If the reading is very high or infinite, the temperature device is damaged (or the cable is severed). If the reading is very low, the cable may have been crushed and a short has developed.

Unstable Reading

Set your handheld multimeter to a high range (10 or 20 M ohm).

- Measure the resistance between any of the colored wires and the drain (shield) wire. The reading should be infinite or out of range.