

Thermocouple and RTD Sensors

General Information & Specifications



Features

Thermocouples

- J, K, T, and E type thermocouples available for a variety of temperature conditions
- 1 meter and 2 meter lengths
- J, K, and T type thermocouple connectors available

Resistance Temperature Detectors (RTDs)

- 3-wire leads
- 1 meter and 2 meter lengths
- Measure up to 204 °C (400 °F)
- Platinum 100 Ω at 0°C ($\alpha=0.00385$)

Overview

Measurement Computing offers thermocouples and RTDs as ready-made sensors for your measurement and automation systems.

Thermocouples

Thermocouples are the most popular temperature measurement transducers available. Because of their low cost and wide temperature-acceptance range, thermocouples can be used for various applications in all industries. All MCC thermocouples are available in J, K, T, and E types, and follow ANSI color-coding specifications.

For cost-sensitive applications, MCC offers ready-made thermocouples – individual packets of thermocouple wire with the measuring junction provided at one end. These thermocouples are ideal for starter or educational applications.

Miniconnector Plugs

To quickly and easily connect and disconnect thermocouples from applications, MCC recommends using thermocouple miniconnectors. These plugs work with any standard thermocouple miniconnector jack, such as those on the USB-2001-TC, USB-5104, USB-501-TC, USB-501-TC-LCD, and USB-600 Series data loggers. Thermocouple miniconnector plugs are available for J-, K-, and T-type thermocouples.



Measurement Computing offers a variety of thermocouples, RTDs, and thermocouple connectors for select devices, including the USB-TEMP.

RTDs

RTDs are another popular sensor used in applications requiring high-accuracy temperature measurement. MCC offers 3-wire, 100 Ω platinum RTDs that conform to the DIN 43760-1980 (European) standard curve ($\alpha = 0.00385$).

These ready-made RTDs offer solutions for cost-sensitive temperature measurement applications. Each RTD element is sealed in an Alumina tube, with three Teflon-coated leads, and can measure up to 204 °C (400 °F).

Specifications

Thermocouple Calibrations

Calibration	Conductor		Temp. Range	Limits of Error ¹ (whichever is greater)
	Positive	Negative		
J-type	Iron (White)	Constantan (Red)	0 °C to 482 °C (32 °F to 900 °F)	±2.2 °C (4.0 °F) or ±0.75%
K-type	Chromel (Yellow)	Alumel (Red)	0 °C to 482 °C (32 °F to 900 °F)	±2.2 °C (4.0 °F) or ±0.75%
T-type	Copper (Blue)	Constantan (Red)	0 °C to 260 °C (32 °F to 500 °F)	±1.0 °C (2.0 °F) or ±0.75%
E-type	Chromel (Purple)	Constantan (Red)	0 °C to 482 °C (32 °F to 900 °F)	±1.7 °C (2.0 °F) or ±0.75%

RTDs

Type: Platinum
Resistance: 100 Ω at 0 °C
Range: -50 °C to 204 °C (-58 °F to 400 °F)
Calibration: DIN 43760-1980 (European) Standard
Curve ($\alpha = 0.00385$)

Accuracy: $\pm(0.3+0.005 |t|)$ °C (where t is the absolute value of the temperature being measured in °C)

Configuration: 3-wire

¹ Where error is given in percent, the percentage applies to the temperature being measured, not the range.

Thermocouple and RTD Sensors

Ordering



Ordering Information

Part No.	Description
745690-E001	E-type thermocouple wire, fiberglass (0 °C to 482 °C, 32 °F to 900 °F) 1 m
745690-E002	E-type thermocouple wire, fiberglass (0 °C to 482 °C, 32 °F to 900 °F) 2 m
745690-J001	J-type thermocouple wire, fiberglass (0 °C to 482 °C, 32 °F to 900 °F) 1 m
745690-J002	J-type thermocouple wire, fiberglass (0 °C to 482 °C, 32 °F to 900 °F) 2 m
745690-K001	K-type thermocouple wire, fiberglass (0 °C to 482 °C, 32 °F to 900 °F) 1 m
745690-K002	K-type thermocouple wire, fiberglass (0 °C to 482 °C, 32 °F to 900 °F) 2 m
745690-T001	T-type thermocouple wire, fiberglass (0 °C to 260 °C, 32 °F to 500 °F) 1 m
745690-T002	T-type thermocouple wire, fiberglass (0 °C to 260 °C, 32 °F to 500 °F) 2 m
745691-01	3-wire, 100 ohm RTD, sealed with alumina tube, 1 m
745691-02	3-wire, 100 ohm RTD, platinum (ready made), 2 m

Thermocouple Connectors

CN-144-JM	Type J male thermocouple connector
CN-144-KM	Type K male thermocouple connector
CN-144-TM	Type T male thermocouple connector