

Thermocouple and RTD Sensors

Thermocouples

- J, K, T, and E types

RTDs

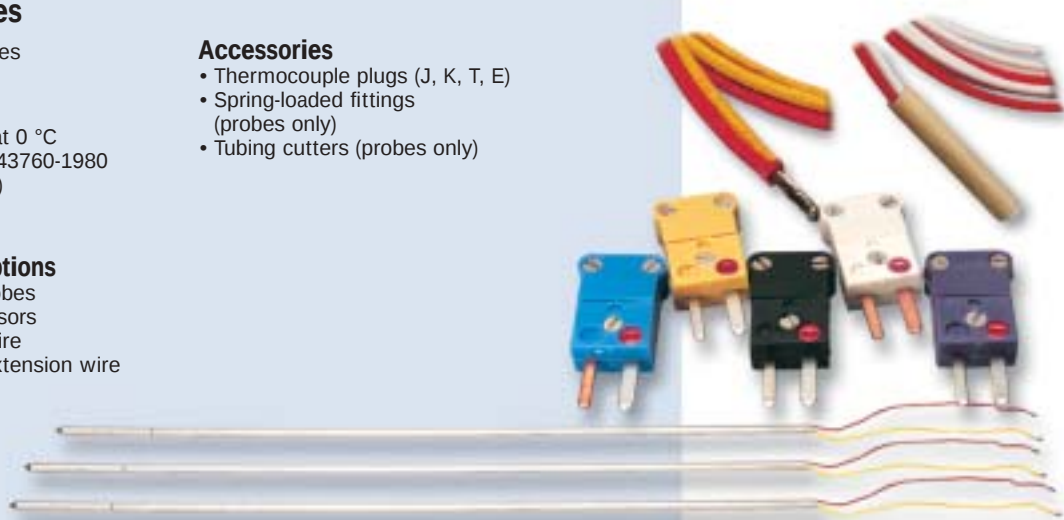
- Platinum 100 Ω at 0 °C
- Conform to DIN 43760-1980 (alpha = 0.00385)
- 3-wire

Configuration Options

- Field-cutable probes
- Ready-made sensors
- Thermocouple wire
- Thermocouple extension wire

Accessories

- Thermocouple plugs (J, K, T, E)
- Spring-loaded fittings (probes only)
- Tubing cutters (probes only)



Overview

NI offers thermocouples and RTDs for your measurement and automation systems. These sensors are available in versatile configurations – field-cutable probes and ready-made sensors. NI also offers spools of thermocouple wire and extension wire.

Thermocouples

Thermocouples are the most popular temperature measurement transducers available. Because of their low cost and wide temperature acceptance range, you can use thermocouples for a wide variety of applications in all industries. All NI thermocouples and extension wires are available in J, K, T, and E types and follow ANSI color coding specifications.

Field-Cutable Thermocouples

NI field-cutable thermocouples suit a wide variety of temperature applications. With field-cutable thermocouples, you can cut the metal sheathed probe to the desired length – from 8.9 to 61 cm (3.5 to 24 in.)

Ready-Made Thermocouples

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

Thermocouple and Extension Wire

For large-scale or custom temperature measurement applications, NI offers spools of thermocouple and extension wire. You are responsible for making the thermocouple junction.

Thermocouple Miniconnector Plugs

For applications requiring fast, easy connection and disconnection of thermocouples, we suggest thermocouple miniconnectors. These plugs work with any standard thermocouple miniconnector jack, including those available with the TC-2095, SCXI-1112, SC-2311, SC-2345, and CA-1000 Series connector panellets. Thermocouple miniconnector plugs come in quantities of 10, and are available for J, K, T, and E types.

RTDs

RTDs are popular for high-accuracy temperature measurement applications. NI offers 3-wire, 100 Ω platinum RTDs that conform to the DIN 43760-1980 (European) standard curve ($\alpha = 0.00385$). These RTDs are available as field-cutable metal sheathed probes and ready-made element configurations.

Field-Cutable RTDs

NI field-cutable RTDs are ideal for a wide variety of temperature applications. With field-cutable RTDs, you can cut the metal sheathed probe to the desired length – from 8.9 to 61 cm (3.5 to 24 in.).

Ready-Made RTDs

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).

INFO CODES

For more information, or to order products online visit ni.com/info and enter:

tempsensors

BUY ONLINE!

Thermocouple and RTD Sensors

Ordering Information

Field-Cuttable Thermocouples

J-type	
Grounded	745685-J01
Ungrounded	745685-J02
K-type	
Grounded	745685-K01
Ungrounded	745685-K02
T-type	
Grounded	745685-T01
Ungrounded	745685-T02
E-type	
Grounded	745685-E01
Ungrounded	745685-E02

Ready-Made Thermocouples

J-type	
1 m	745690-J001
2 m	745690-J002
K-type	
1 m	745690-K001
2 m	745690-K002
T-type	
1 m	745690-T001
2 m	745690-T002
E-type	
1 m	745690-E001
2 m	745690-E002

Thermocouple Wire

J-type	
30 m	745687-J030
300 m	745687-J300
K-type	
30 m	745687-K030
300 m	745687-K300

T-type	
30 m	745687-T030
300 m	745687-T300

E-type	
30 m	745687-E030
300 m	745687-E300

Thermocouple Extension Wire

Jx-type	
30 m	745689-J030
300 m	745689-J300

Kx-type	
30 m	745689-K030
300 m	745689-K300

Tx-type	
30 m	745689-T030
300 m	745689-T300

Ex-type	
30 m	745689-E030
300 m	745689-E300

Accessories

Thermocouple Miniconnector Plugs (Quantity 10)

J type	745688-J10
K type	745688-K10
T type	745688-T10
E type	745688-E10

Uncompensated

Spring-loaded fitting

Tubing cutter

RTDs

Field-Cuttable RTD

 100 Ω , Pt, 3-wire

Ready-Made RTDs

1 m	745691-01
2 m	745691-02

Specifications

Thermocouple Characteristics

Extension Wire

Temperature range..... -20 to 221 °F (-6.7 to 105 °C)

RTD Characteristics

Type	Platinum
Resistance	100 Ω at 0 °C
Probe range	-58 to 900 °F (-50 to 482 °C)
Ready-made range	-58 to 400 °F (-50 to 204 °C)
Calibration	DIN 43760-1980 (European) Standard Curve (a = 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

Probe and Ready-Made Thermocouple Calibrations

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

Calibration	Conductor		Temp. Range	Limits of Error ¹ (whichever is greater)
	Positive	Negative		
J-type	Iron (White)	Constantan (Red)	32 to 900 °F (0 to 482 °C)	± 2.2 °C (4.0 °F) or $\pm 0.75\%$
K-type	Chromel (Yellow)	Alumel (Red)	32 to 900 °F (0 to 482 °C)	± 2.2 °C (4.0 °F) or $\pm 0.75\%$
T-type (probe only)	Copper (Blue)	Constantan (Red)	-328 to 32 °F (-200 to 0 °C) 32 to 500 °F (0 to 260 °C)	± 2.2 °C (4.0 °F) or $\pm 0.75\%$ ± 1.0 °C (2.0 °F) or $\pm 0.75\%$
T-type (ready-made only)	Copper (Blue)	Constantan (Red)	32 to 500 °F (0 to 260 °C)	± 1.0 °C (2.0 °F) or $\pm 0.75\%$
E-type	Chromel (Purple)	Constantan (Red)	32 to 900 °F (0 to 482 °C)	± 1.7 °C (2.0 °F) or $\pm 0.75\%$