

# Series 100 Thermocouples

## Overview and Specifications

### Series 100 Overview

Series 100 thermocouples are highly configurable to meet your specific process needs. With styles including direct immersion for easy installation, spring loaded to ensure positive contact in the thermowell, and capsule for ultimate installation flexibility. These all purpose sensors provide exceptional performance with a proven track record of durability.

The Series 100 offers 5 thermocouple types; E, J, K, N, and T all with Special Limits tolerance class (typical tolerance is ½ the standard limits thermocouple). Designed with mineral insulated metal sheaths, in both grounded and ungrounded options, these thermocouples provide accurate measurements and long life expectancy.

Multiple configurations are approved through Factory Mutual (FM) for hazardous environments:

EXPLOSION PROOF: CLASS I, DIV. 1, GROUPS A, B, C, D

DUST IGNITION PROOF: CLASS II & III, DIV. 1, GROUPS E, F, G

NEMA 4X (CARBON STEEL THERMOWELLS ARE APPROVED FOR NEMA 4 ONLY)

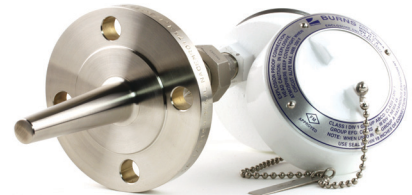
Configurations available include:



Fast Response Design



Union for Ease of Removal



Classic Flanged Thermowell

Although numerous configurations are available from our catalog or website, if your process needs something a bit different, we will modify or customize to provide the best solution for your measurement need.

# Series 100 Specifications

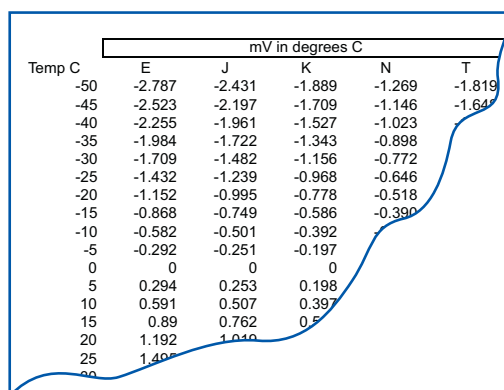
## Thermocouple Types

ANSI Thermocouple Type	Single Element Wire Designations	Wire Material, Generic & Trade Names	Magnetic	Sheath Material	Lead Wire Color Code	
					Individual Wire Insulator	Cable
E	EP EN	Chromel™ Constantan	No No	316SS	Purple Red	Brown
J	JP JN	Iron Constantan	Yes No	316SS	White Red	Brown
K	KP KN	Chromel™ Alumel™	No Yes	Inconel® 600	Yellow Red	Brown
N	NP NN	Nicrosil Nisil	No No	Inconel® 600	Orange Red	Brown
T	TP TN	Copper Constantan	No No	316SS	Blue Red	Brown

Accuracy and thermocouple interchangeability: All materials are in accordance with ANSI MC 96.1, Special Limits of Error.

## Temperature Range & Initial Calibration Tolerances

ANSI Thermocouple Type	Temperature Range	Special Limits (% applies to temperature measure in °C)
E	-200°C to -170°C (-328°F to -274°F) -170°C to 125°C (-274°F to 257°F) 125°C to 870°C (257°F to 1598°F)	±0.8% ±0.5°C (±0.9°F) ±0.4%
J	0°C to 275°C (32°F to 527°F) 275°C to 750°C (527°F to 1382°F)	±1.1°C (±2.0°F) ±0.4%
K	0°C to 275°C (32°F to 527°F) 275°C to 1180°C (527°F to 2156°F)	±1.1°C (±2.0°F) ±0.4%
N	-40°C to 375°C 375°C to 1000°C	±1.5°C ±0.4%
T	-200°C to -62.5°C (-328°F to -80.5°F) -62.5°C to 125°C (-80.5°F to 257°F) 125°C to 350°C (257°F to 662°F)	±0.8% ±0.5°C (±0.9°F) ±0.4%



See page 21 and 22 for Millivolts vs Temperature data for each thermocouple type.

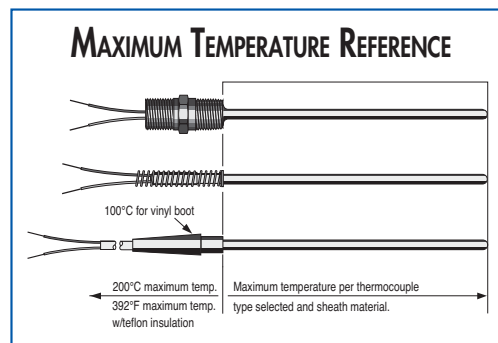
## Sheath Diameter and Wire Gauge

Sheath Diameter	Single Element AWG	Dual Element AWG
1/4"	16	18
3/16"	19	21
1/8"	22	24

### Bend Radius:

Sheath is bendable with a 3/4" minimum radius.

See complete bend criteria on pg 18, Sheath Options.



Note: maximum temperature of standard sealing material at cable/sheath transition is 200°C/392°F