

Thermocouples



We are able to supply individual components for all types of thermocouples as well as whole thermocouple units, with any combination of probe diameter and probe length that is required. Our thermocouples are made from high class materials and are extremely accurate. The list below shows each type of thermocouple available along with the relevant data for easy comparison.

What is a thermocouple?





















A thermocouple is a junction between two different metals that produces a voltage related to a temperature difference. Thermocouples are a widely used type of temperature sensor for measurement and control and can also be used to convert heat into electric power. They are inexpensive and interchangeable.

Any junction of dissimilar metals will produce an electric potential related to temperature. Thermocouples for practical measurement of temperature are junctions of specific alloys which have a predictable and repeatable relationship between temperature and voltage. Different alloys are used for different temperature ranges.

Properties such as resistance to corrosion may also be important when choosing a type of thermocouple. Where the measurement point is far from the measuring instrument, the intermediate connection can be made by extension wires which are less costly than the materials used to make the sensor.



Thermocouple Comparison

Type	Temperature range °C (continuous)	Temperature range °C (short term)	Tolerance class one (°C)	Tolerance class two (°C)	IEC Color code	BS Color code	ANSI Color code
K	0 to +1100	-180 to +1300	±1.5 between -40 °C and 375 °C ±0.004×T between 375 °C and 1000 °C	±2.5 between -40 °C and 333 °C ±0.0075×T between 333 °C and 1200 °C			
J	0 to +700	-180 to +800	±1.5 between -40 °C and 375 °C ±0.004×T between 375 °C and 750 °C	±2.5 between -40 °C and 333 °C ±0.0075×T between 333 °C and 750 °C			
N	0 to +1100	-270 to +1300	±1.5 between -40 °C and 375 °C ±0.004×T between 375 °C and 1000 °C	±2.5 between -40 °C and 333 °C ±0.0075×T between 333 °C and 1200 °C			
R	0 to +1600	-50 to +1700	±1.0 between 0 °C and 1100 °C ±[1 + 0.003×(T - 1100)] between 1100 °C and 1600 °C	±1.5 between 0 °C and 600 °C ±0.0025×T between 600 °C and 1600 °C			Not defined.
S	0 to 1600	-50 to +1750	±1.0 between 0 °C and 1100 °C ±[1 + 0.003×(T - 1100)] between 1100 °C and 1600 °C	±1.5 between 0 °C and 600 °C ±0.0025×T between 600 °C and 1600 °C			Not defined.
B	+200 to +1700	0 to +1820	Not Available	±0.0025×T between 600 °C and 1700 °C	No standard use copper wire	No standard use copper wire	Not defined.
T	-185 to +300	-250 to +400	±0.5 between -40 °C and 125 °C ±0.004×T between 125 °C and 350 °C	±1.0 between -40 °C and 133 °C ±0.0075×T between 133 °C and 350 °C			
E	0 to +800	-40 to +900	±1.5 between -40 °C and 375 °C ±0.004×T between 375 °C and 800 °C	±2.5 between -40 °C and 333 °C ±0.0075×T between 333 °C and 900 °C			
Chromel/AuFe	-272 to +300	n/a	Reproducibility 0.2% of the voltage; each sensor needs individual calibration.				

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