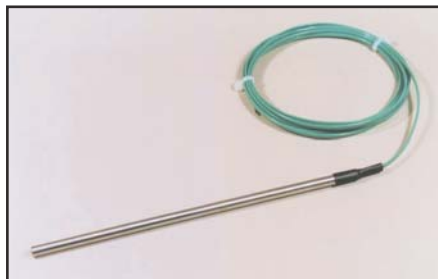


THERMOCOUPLES



EXPOSED JUNCTION



STAINLESS STEEL SHEATHED



KNE TYPE INDUSTRIAL HEAD

Thermocouples utilise the Seebeck effect - that the difference in temperature between two junctions of dissimilar metals or alloys in the same circuit will produce an EMF in that circuit. To function correctly, a thermocouple needs two junctions; a measuring junction and a reference junction. In practice the reference or cold junction is usually provided within the measuring instrument. If a thermocouple is to be extended, wire of the same composition as the thermocouple or special compensating cables must be used to avoid errors in readings.

Whilst any combination of metals will produce an EMF, certain types that produce significant mV EMFs have evolved as standards. Each of these has its own operating temperature range and accuracy :-

THERMOCOUPLE SELECTION GUIDE

Type	Materials	Range °C		Accuracy			
		Min	Max	Class 1		Class 2	
J	Fe/Cu-N	-40	700	-40 to 375°C 375 to 700°C	±1.5°C ±2.5°C	-40 to 333°C 333 to 700°C	±0.4% ±0.75%
K	Ni-Cr/Ni-Al	-40	1200	-40 to 375°C 375 to 1200°C	±1.5°C ±2.5°C	-40 to 333°C 333 to 1200°C	±0.4% ±0.75%
N	Ni-Cr-Si/Ni-Si	-40	1250	-40 to 375°C 375 to 1250°C	±1.5°C ±0.4%	-40 to 333°C 333 to 1250°C	±2.5°C ±0.75%
S	Pt10%-Rh/Pt	0	1500	0 to 1100°C 1100 to 1500°C	±1°C ±2°C	0 to 600°C 600 to 1500°C	±1.5°C ±0.25%
R	Pt13%-Rh/Pt	0	1600	0 to 1100°C 1100 to 1600°C	±1°C ±2°C	0 to 600°C 600 to 1600°C	±1.5°C ±0.25%
T	Cu/Cu-Ni	-150	350	-40 to 125°C 125 to 350°C	±0.5°C ±0.4%	-40 to 133°C 133 to 350°C	±1°C ±0.75%

THERMOCOUPLE ASSEMBLY OPTIONS

Thermocouples can be assembled using a variety of cable types and fittings to suit any application. The more common variations are as shown below.

Type	Junction	Accuracy	Sheath	Cable type/temp range	Termination	Fitting
J	Exposed	1	None	PVC -10 to 105°C	Stripped tails	1/8BSP(T)
K	Insulated	2	Stainless steel	PTFE -75 to 250°C	Spade terminals	1/4BSP(T)
T	Grounded		PVC	Glass Fibre -60 to 350°C	Mini plug	1/2BSP(T)
N			PTFE	GF S/S braid -60 to 350°C	Standard plug	
R				Mineral insulated s/s up to 800°C	Standard socket	
S				Mineral Insulated Inconel up to 1100°C	Industrial head	

We can also manufacture special thermocouples to suit any application - please contact our sales office for details