THERMOCOUPLES
AND THERMOCOUPLE PROBES

REDFISH SENSORS

+ TOLL FREE
(877) 253-5755
+ PHONE
(208) 475-3587
+ FAX
(877) 786-4698
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REDFISHSENSORS.COM

COMMON THERMOCOUPLE TEMPERATURE RANGES

CALIBRATION	TEMPERATURE RANGE	STD. LIMITS OF ERROR	SPEC. LIMITS OF ERROR
J	0 °C to 750 °C (32 °F to 1382 °F)	Greater of 2.2 °C 0r 0.75%	Greater of 1.1 °C or 0.4%
K	-200 °C to 1250 °C (328 °F to 2282 °F)	Greater of 2.2 °C 0r 0.75%	Greater of 1.1 °C or 0.4%
E	-200 °C to 900 °C (-328 °F to 1652 °F)	Greater of 1.7 °C 0r 0.5%	Greater of 1.0 °C or 0.4%
T	-250 °C to 350 °C (-328 °F to 662 °F)	Greater of 1.0 °C 0r 0.75%	Greater of 0.5 °C or 0.4%

+ BEADED WIRE THERMOCOUPLE

+ WASHER STYLE THERMOCOUPLE

+ TUBE AND WIRE PROBE

+ BAYONET THERMOCOUPLE

+ STANDARD AND MINI PLUG THERMOCOUPLE

+ TRANSITION THERMOCOUPLE

+ INDUSTRIAL HEAD THERMOCOUPLE

+ CEMENT AND STICK ON THERMOCOUPLES

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MINERAL INSULATED THERMOCOUPLES

THERMOCOUPLE TIP STYLES

GROUNDED THERMOCOUPLE | UNGROUNDED THERMOCOUPLE | EXPOSED THERMOCOUPLE

- Useable under severe conditions
- Withstands temperatures up to metal melting point
- Withstands corrosive conditions limited only by the choice of sheath material
- Can be formed to a minimum radius of twice the sheath diameter without loss of integrity
- Available in a wide variety of diameters from .010" to .500"
- Available in standard and special limits of error
- Can withstand external pressures up to 50,000 psi
- Dual element cable is available

SHEATH MATERIALS

Sheath Material	Code	Max. Temp. In Air	Melting Point
304SS	A	1650 °F (900 °C)	2550 °F (1400 °C)
310SS	D	2000 °F (1090 °C)	2550 °F (1400 °C)
316SS	F	1650 °F (900 °C)	2500 °F (1370 °C)
Inconel® 600*	Q	2000 °F (1090 °C)	2470 °F (1350 °C)
Hastelloy® C-276	H	1900 °F (1037 °C)	2415 °F (1320 °C)
Hastelloy® B2	I	2500 °F (1370 °C)	
Hastelloy® X	L	2470 °F (1355 °C)	
Titanium**	T	600 °F (315 °C)	3135 °F (1725 °C)
Tantaium	O	900 °F (480 °C)	5425 °F (2995 °C)
Molybdenum***	P	500 °F (260 °C)	4730 °F (2610 °C)
Pit. 10% Rhodium	X	2825 °F (1550 °C)	3362 °F (1850 °C)
Pit. 20% Rhodium	Y	3000 °F (1650 °C)	3452 °F (1900 °C)
Monel®	M	2372 °F (1300 °C)	2462 °F (1350 °C)

**Calibration	Symbol
Chromel-Alumel	K
Iron-Constantan	J
Copper-Constantan	T
Chromel-Constantan	E
90% Platinum - 10% Rhodium vs. Platinum	S
70% Plantinum - 30% Rhodium vs. 94% Plantinum 6% Rhodium	B
Tungsten 5% Rhenium vs. Tungsten 26% Rhenium	C

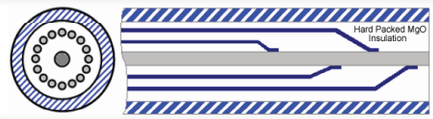
*** Other calibrations available. Consult sales.*

**Not recommended for use in Sulfur atmospheres.*
***Titanium is not recommeded for use in air above 600 °F due to oxidation.*
****Refractory metals are extremely sensitive to Oxygen and must be used in vacuum or inert gas such as Helium or Argon.*

MULTIPOINT THERMOCOUPLES

STANDARD OUTSIDE DIAMETER & MAXIMUM LENGTHS

O.D.	Tolerance	Max. # of Points	Normal Length	Max Length	Notes
.313"	+/- .003" (7.95mm)	Up to 19	250 feet	500 feet	Type K Max 2100 °F
.250"	+/- .002" (6.35mm)	Up to 13	400 feet	800 feet	Type K Max 2100 °F
.188"	+/- .002" (4.78mm)	Up to 10	700 feet	1400 feet	Type K Max 2100 °F
.125"	+/- .002" (7.95mm)	Up to 7	1600 feet	3200 feet	Type K Max 1960 °F



WALL THICKNESS & WIRE DIAMETERS

Number of Thermocouple Measuring Points	Wall Thickness (% of Diameter)	Outer Wire Diameter (% of Diameter)	Inner Wire Diameter (% of Diameter)
2-4	11.8%	11.0%	15.5%
5-7	11.8%	8.5%	11.7%
8-10	11.8%	8.0%	10.3%
11-13	11.8%	7.6%	11.4%
14-16	11.8%	7.2%	12.1%
17-19	7.8%	7.3%	14.3%