Surface Temperature Measurement

MICROCOIL™

Accurate, Repeatable, Fast Response in Perpendicular Surface Measurement

Watlow's MICROCOIL miniature thermocouple provides surface temperature measurements with an unparalleled degree of accuracy. This patented technology achieves critical isothermal surface temperature measurement and offers superior design flexibility. Typical sensor-to-sensor repeatability of one to two percent (DT) can be achieved with the MICROCOIL because the areas of the sensor that are vulnerable to normal production variances are not in the thermal gradient. Weld location, insulation thickness and welded tip thickness no longer impact measurement in an isothermal environment. Therefore, the inherent challenges of measuring surface temperatures are no longer a problem with the MICROCOIL.
The MICROCOIL thermocouple utilizes Watlow's XACTPAK® mineral insulated thermocouple cable, which with an ungrounded junction, will electrically isolate the sensor from the surface being measured. For higher voltage applications, the aluminum nitride sensor disc option can be used for additional protection.
The helix design of the MICROCOIL demonstrates a faster response time because the surface temperature needs to conduct only through the diameter of the cable and the thickness of the sensor disk.

The thermal analysis demonstrates the superior performance of the MICROCOIL technology. This patented method achieves the critical isothermal area for a long length of the very small cable, therefore insuring accurate and repeatable measurement. Standard straight sensors exhibit problems including poor accuracy response time and non-repeatable results as well as errors of 20, 30 percent or more.

Features and Benefits

Miniature size
- Allows for precision measurement in tight spaces

XACTPAK mineral insulated thermocouple cable
- Electronically isolated and shielded

700°C (1292°F) maximum continuous temperature
- Offers exact measurement for demanding applications

Self leveling and loading
- Provides superior repeatability of measurement for a wide variety of surfaces

Applications

- Environmental chambers
- Chip cases
- Heat sinks
- Packaging
- Platens

Thermocouples

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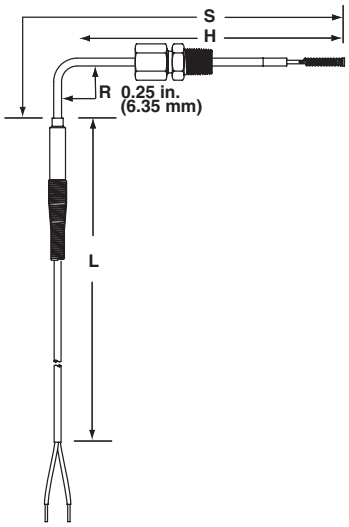

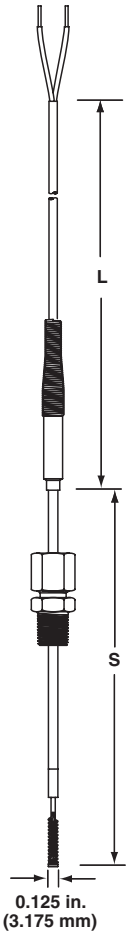

150˚C standard surface calibration supplied.

Ordering Information—To order, complete the part number on the right with the information below:

1	2	3	4	5	6	7	8	9	10	11	12
M	C										

Type K Calibration
0.020 inch diameter Alloy 718 thermocouple sheath
0.125 inch coil diameter
12.5 oz approx. spring force for 0.050 inch compression

3. Temperature Rating
C = Copper tip 350°C (662°F) max
N = Aluminum nitride 700°C (1292°F) max

4. Junction Type
G = Grounded single junction
U = Ungrounded single junction

5-6. Sheath Length "S"
XX = 02 to 18 inch

7. Hot Leg Length "H", if 90˚ bend (inch)

0	=	n/a, straight sheath			
A	=	1.125	J	=	2.125
B	=	1.250	K	=	2.250
C	=	1.375	L	=	2.375
D	=	1.500	M	=	2.500
E	=	1.625	N	=	2.625
F	=	1.750	P	=	2.750
G	=	1.875	R	=	2.875
H	=	2.000	S	=	3.000

Notes: Bend radius is 0.25 inch
Cold leg length (1.0 inch minimum) = S - H - 0.4 inch
If a fitting is ordered, it will be installed hand tightened onto the hot leg
If a fitting is ordered, the minimum hot leg length "H" is 2.500 in.

8. Fitting, Optional
0 = None
C = Compression fitting, adjustable, ⅛ inch NPT, TFE gland

9. Lead Length Construction, solid conductors

1	=	24 Ga. Fiberglass	3	=	26 Ga. FEP with shield and ground not common to sheath
2	=	26 Ga. FEP with shield and drain not attached	4	=	26 Ga. FEP with shield and ground common to sheath
			5	=	24 Ga. FEP with stainless steel overbraid

10-11. Lead Length "L"
XX = 03 to 99 inch

12. Lead Wire Terminations
A* = Standard male plug
B* = Standard female jack
C* = Standard plug with mating connector
F = Miniature male plug
G = Miniature female jack
H = Miniature plug with mating connector
T = Standard, 1.5 inch split leads
U = 1.5 inch split leads with spade lugs

* Not available with lead wire construction options 3 and 4.