

Optimized Multipoint (OMP) Thermocouple Design

The optimized multi-point thermocouple (OMP) is made with a common ungrounded (aka. Isolated from the sheath) junction design. Multiple measuring points can be arranged along the length of the probe with great accuracy.

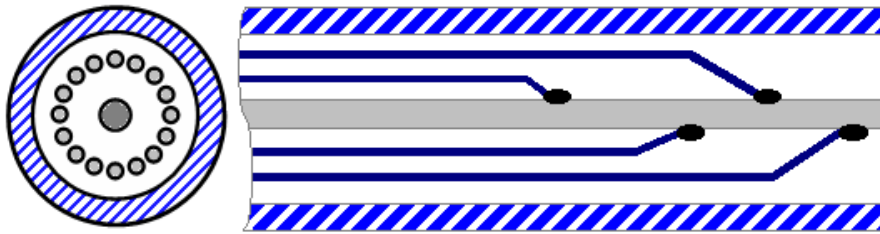


Figure 1. The illustration above shows cross-sections of cable and of the junctions.

The standard configuration is described below. Other configurations can be made upon request.

SPECIFICATIONS:

High-purity MgO Insulation per ASTM E1652 Table 1

Insulation Resistance: 1000 megohms at 500 VDC minimum

Thermocouple Calibration Types Offered:

Type "K" and "N" Standard or Special Limits of Error (Class I & II)

Type "J" and "E" are available by special order

Standard Sheath Materials Offered:

SST 316, SST 310, and Inconel™ 600; with other alloys available as special order

Design Rules:

Number of Points: up to 16 points (depends on OD of cable, see table below)

Minimum distance between measuring points (junctions): 1.0" (25.4mm).

Point Location Tolerance: +/- 1" or 0.3% of length, whichever is greater.

First junction location: 1" from cap unless otherwise specified

Positive wire is the larger inner wire, the smaller outer wire is the negative leg

Minimum Bend Radius = 10 times the sheath diameter.

Standard shipment is in a 24" diameter coil,

Pressure rating is 1000 psi

Standard Outside Diameter, Points and Maximum Lengths

O.D.	Tolerance	Max # of Points	Max Length	*Notes
.313"	+/- .003" (7.95mm)	up to 16	250 feet	Type K or N max 2100°F
.250"	+/- .002" (6.35mm)	up to 16	400 feet	Type K or N max 2100°F
.188"	+/- .002" (4.78mm)	up to 10	700 feet	Type K or N max 2100°F
.125"	+/- .002" (3.18mm)	up to 7	1600 feet	Type K or N max 1960°F

*Max temperatures per ASTM E-608, sheath material and type will determine temperature ratings.

Dimensional Information: Wall Thickness & Wire Diameters

Number Of Thermocouple Measuring Points	Wall Thickness (% of Diameter)	Outer Wire Size (% of Diameter)	Inner Wire Size (% of Diameter)	Transition Size from MI Cable to Leadwire*
2 – 4	11.8%	11.0%	15.5%	.50" x 1.5"
5 – 7	11.8%	8.5%	11.7%	.75" x 3.0"
8 – 10	11.8%	8.0%	10.3%	.75" x 3.0"
11 - 13	11.8%	7.6%	11.4%	.75" x 3.0"
14 – 16	11.8%	7.2%	12.1%	1.0" x 3.0"

*Epoxy potting temperature rating 300°F/150 C. with 600°F /320°C epoxy available upon request.