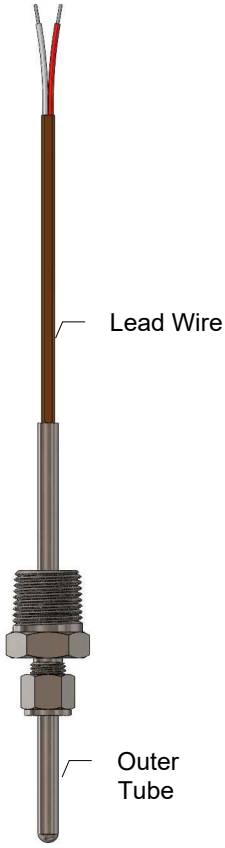
TC-13 Tube and Wire Thermocouple with Cut to Length Style

TEMPERATURE SENSOR

TC13 is a direct immersion type thermocouple, available in tube and wire construction, designed for various applications in process temperature measurement.. Tube and wire thermocouples are economical and good option to use in medium temperature application.It can be ordered with cut to length option for onsite sizing.

Key Feature:

- Available in type J, K, E, N, T .
- A wide selection of sheath material to suit application requirement, 304ss, 316ss
- Cut to Length option
- Sheath diameter is available from 0.125″ to 0.375″.
- Grounded, Ungrounded and Exposed junction to suite application requirement.
- Available with low temp and high temp connectors.
- Available in IEC 60584 & ANSI MC 96.1 standard tolerances

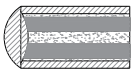


Thermocouple Junction options for TC13

Ungrounded Junction: Junction is similar to grounded junction except wire are fuse welded, which is then insulated with Mgo powder and formed cap by welding without incorporating thermocouple wires. Thus, the junction is called the ungrounded junction.

Key Benefits :

· Wires are protected from any mechanical damage
· Offers rugged construction, the same as the grounded junction.
· Strain due to differential expansion between wire and sheath is minimized with insulated wires.



Grounded Junction: In grounded junction thermocouple wires and sheath of the mineral insulated cable is welded together to form a junction. Thermocouple wires and sheath becomes an integral part of the junction. Thus, the wire is grounded to the sheath.

Key Benefits:

- Slower response than Exposed junction, but offers rugged construction.
- Can hold higher pressure than exposed junction and Ungrounded junction.

Suggested Maximum Temperature Limit

Wire Insulation	Maximum Rating
Teflon	205°C
Fiberglass	510°C
Hightemp Fiberglass	704°C

The suggested maximum temperature limit is based on information available in the ASTM standard and test performed in our facility. The maximum temperature limit may change based on the type of process and material/ liquid it is going to be used in. These limits apply to protected thermocouples.

Response Time

Thermocouple OD	Junction		
	Exposed	Grounded	Ungrounded
1/25"	0.005	0.1	0.3
1/16"	0.02	0.2	0.5
1/8"	0.03	0.7	1.3
3/16"	0.07	1.1	2.2
1/4"	0.1	2.2	4.5
3/8"	0.9	2.7	7.5

Response time is measured in liquid by inserting thermocouple into the temperature-controlled circulating bath. Time taken to reach 63.2% of a step temperature change is noted as the response time of thermocouple. For a fast response, the exposed tip is recommended, but the exposed junction is not as rugged as ungrounded and grounded junctions for industrial use.

Temperature Accuracy As per ASTM E608/608M/ IEC 60584 & ANSI MC 96.1 standard tolerances

Type	Temperature	Standard Limit	Special Limit
T	-200 °C to 0 °C	± 1 °C or 1.5% Whichever is greater	N/A
	0 °C to 350 °C	± 1 °C or .75% Whichever is greater	± 0.5 °C or 0.4% Whichever is greater
J	0 °C to 750 °C	± 2.2 °C or .75% Whichever is greater	± 1.1 °C or 0.4% Whichever is greater
E	-200 °C to 0 °C	± 1.7 °C or 1.0% Whichever is greater	N/A
	0 °C to 900 °C	± 1.7 °C or .5% Whichever is greater	± 1 °C or 0.4% Whichever is greater
KORN	-200 °C to 0 °C	± 2.2 °C or 2.0 % Whichever is greater	N/A
	0 °C to 1250 °C	± 2.2 °C or .75% Whichever is greater	± 1.0 °C or 0.4% Whichever is greater

Notes:
-All the thermocouples are manufactured as ASTM E608/608M
-Calibration is available as per ASTM E220 on request

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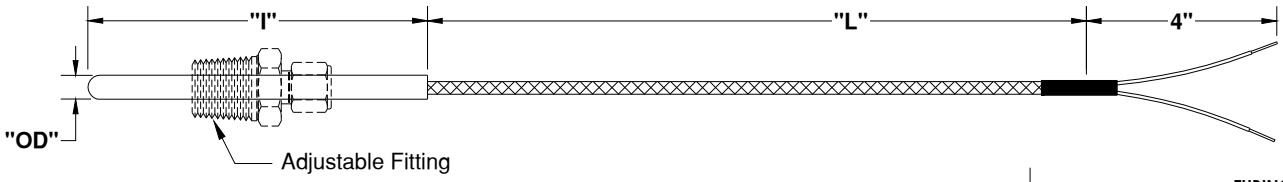
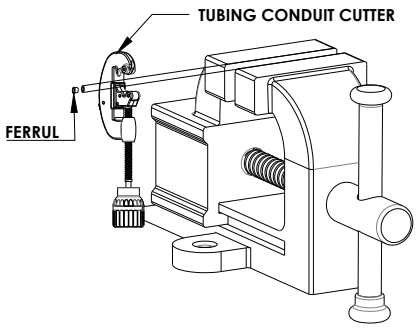
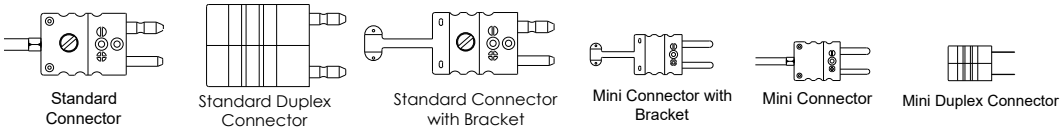




Termination Options-



	1	2	3	4	5	6	7	8	9	10	11	12
TC13												

For Example- TC13-J-UG-4-8-24i-72i-0-3-Z-0-0-0

1. THERMOCOUPLE TYPE	
CODE	
J	Iron(+) vs Constantan(-)
K	Chromel(+) vs Alumel(-)
T	Copper(+) vs Constantan(-)
E	Chromel(+) vs Constantan(-)
N	Nicrosil(+) vs Nisil(-)
Use "S" for Special limit of Error	

2. MEASURING JUNCTION	
CODE	
G	Simplex / Grounded Junction
UG	Simplex / Un- Grounded Junction
DG	Duplex / Grounded
DUG	Duplex / Un-Grounded

3.SHEATH OD		
CODE	IMPERIAL SIZE	METRIC SIZE
1	1/16"	1.5 mm
2	1/8"	3.2 mm
3	3/16"	4.76 mm
4	1/4"	6.35 mm
5	5/16"	7.9mm
6	3/8"	9.5 mm
7	0.215"	5.46 mm
2M	0.079	3.0mm
3M	0.197"	5.0mm
4M	0.236"	6.0 mm
5M	0.315"	8.0mm
6M	0.354"	9.0 mm
7M	0.394"	10.0 mm

4. SHEATH MAT.	
CODE	
8	SS 316
4	SS 310
9	SS 304
6	SS 321

5. IMMERSION LENGTH (I)
Immersion length:- use "I" for inches and "M" for millimetre

6. LEAD LENGTH (L)
Lead length:- use "I" for inches and "M" for millimetre

7. PROCESS FITTING	
CODE	
0	Not Required
7-1. MATERIAL	
S	Stainless Steel
B	Brass
M	Mild Steel
7-2. SIZE	
2	1/8"
4	1/4"
6	3/8"
8	1/2"
18	M18 X 1.5
20	M20 X 1.5
7-3. THREAD TYPE	
N	NPT
B	BSP
Leave blank for metric thread	
7-4. FERRULE MATERIAL	
	Leave Blank for SS
T	Teflon

8. WIRE TYPE	
CODE	
1	PVC (105° C)
2	TEFLON (205° C)
6	TEFLON (260° C)
3	FIBRE GLASS (510° C)
4	High Temp Fiberglass (704° C)
NOTE:- Add "O" for no jacketing. Add "X" for SS braiding & "Z" for Armor	

9. CODES FOR TERMINATION	
CODE	
Z	Bare ends
STP	Standard Plug
MP	Miniature Plug
HTP	High Temperature Plug
UTP	Ultra Temperature Plug

10. CODES FOR TERMINATION (JACK)	
CODE	
0	Not required
STJ	Standard Jack
MJ	Miniature Jack
HTJ	High Temperature Jack
UTJ	Ultra Temperature Jack

11. OPTIONAL ACCESSORY	
CODE	
0	Not required
WC	Wire clamp
BT	Silicon rubber boot for connector
Only choose when ordering with connector	

12. CUSTOM	
CODE	
0	Standard
CTL	Cut to Length
NOTE:- Standard Tube Length only Available in 3/16", 1/4", 3/8" OD	