TC24- Ring / Gasket Style Thermocouple with Lead Wire and Connector

TEMPERATURE SENSOR

TC 24 is a surface measurement thermocouple in applications such as tube surface, barrel or mold. The ring or lug is bolted on to a threaded stud. A ring or lug thermocouple is commonly connected in parallel with another thermocouple to control at average temperature between the surface and inside the tube/barrel or tank.This arrangement helps in precise control for more uniform temperature of molten plastic.

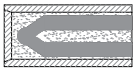
Key Feature:

- Available in type J, K, T .
- Available in copper or stainless steel ring material.
- Welded or Nickel Brazed Ring for High Temperature Applications.
- Grounded, Ungrounded junction to meet application requirement.
- Available with low temp and high temp connectors.
- Available in IEC 60584 & ANSI MC 96.1 standard tolerances

Copper Lug Style

Ring Style

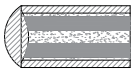
Thermocouple Junction options for TC24



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

Thermocouple Type	°C (F)	°C (F)	°C (F)	Style
Probe OD	1/8"	3/16"	1/4"	
T	315(600)	370 (700)	370 (700)	Lug Type
J	450(842)	450(842)	450(842)	
K	450(842)	450(842)	450(842)	
T	315 (600)	370 (700)	370 (700)	Ring Type
J	520 (970)	620(1150)	720 (1330)	
K	520 (970)	1150 (2100)	1150 (2100)	

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 without Ring or Lug

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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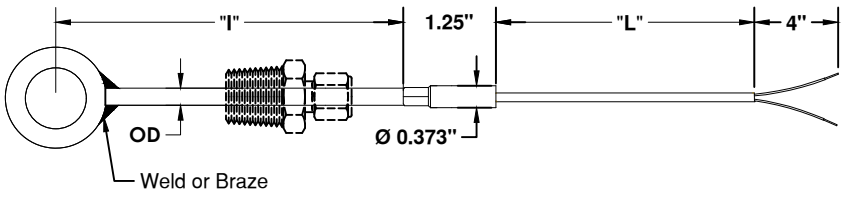
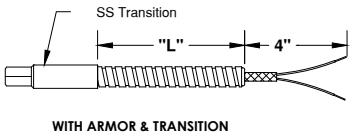
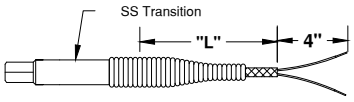
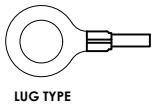


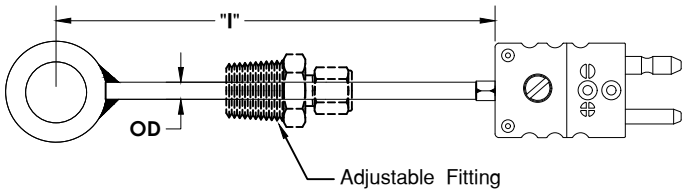


WITH ARMOR & TRANSITION

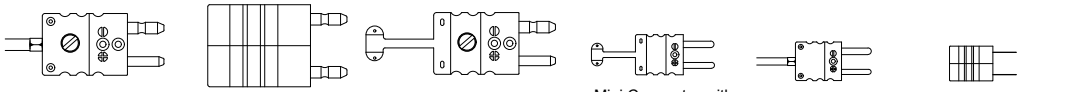


WITH STRAIN RELIEF SPRING & TRANSITION





Termination Options-



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TC24															

For Example- TC24-K-UG-02-MGO-3-8-6i-24i-0-3Z-STP-0-0-WC

1. THERMOCOUPLE TYPE	
CODE	
J	Iron(+) vs Constantan(-)
K	Chromel(+) vs Alumel(-)
T	Copper(+) vs Constantan(-)
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
NOTE:- Duplex not available in ⅛" and 3mm OD Sheath	

3. MOUTING TYPE	
CODE	
01	Lug
02	Gasket

4. LUG/GASKET SIZE		
CODE	LUG	GASKET
01		#8 screw(.173" ID)
02		#10 screw(.204" ID)
03		¼" screw (6mm)
04		5/16" screw (8mm)
05		⅜" screw(9mm)
06		½" screw(12mm)
10	⅜" screw(9mm)	
11	#8 screw	
12	#10 screw	

5. PROBE CONSTRUCTION	
CODE	
MGO	Magnesium Oxide
TW	Tube and wire

6. SHEATH OD		
CODE	IMPERIAL SIZE	METRIC SIZE
2	⅛"	3.2 mm
3	3/16"	4.76 mm
4	¼"	6.35 mm
5	5/16"	7.9mm
6	⅜"	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

7. SHEATH MAT.	
CODE	
8	SS 316
3	INCONEL 600
4	SS 310
9	SS 304
6	SS 321

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

9. LEAD LENGTH (L)	
0	No lead wire required
Lead length - use "I" for inches and "M" for millimetre	

10. PROCESS FITTING	
CODE	
0	Not Required
10-1. MATERIAL	
S	Stainless Steel
B	Brass
M	Mild Steel
10-2. SIZE	
2	⅛"
4	¼"
6	⅜"
8	½"
18	M18 X 1.5
20	M20 X 1.5
10-3. THREAD TYPE	
N	NPT
B	BSP
Leave blank for metric thread	
10-4. FERRULE MATERIAL	
	Leave Blank for SS
T	Teflon

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TC-24 Ring / Gasket Style Thermocouple with Lead Wire and Connector

TEMPERATURE SENSOR

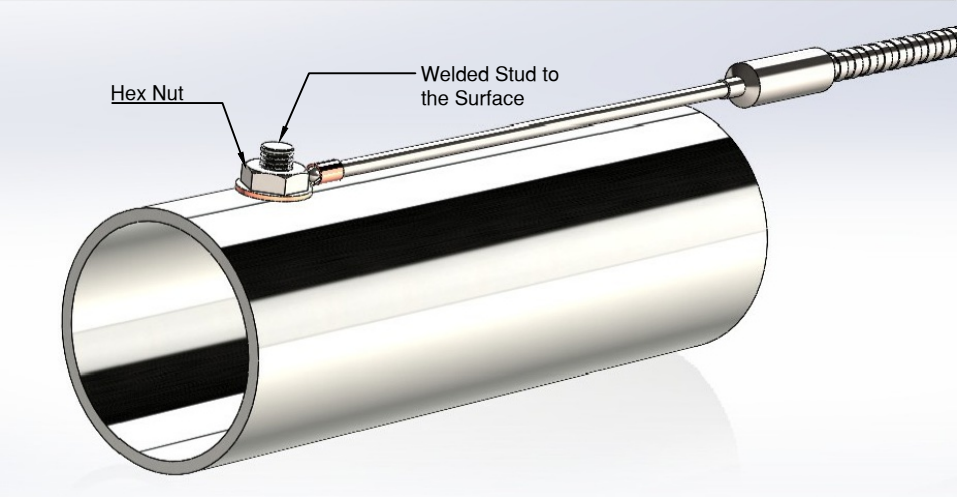
11. WIRE TYPE	
CODE	
0	When ordering with Connector
1	PVC (105° C)
2	TEFLON (205° C)
6	TEFLON (260° C)
3	FIBRE GLASS (510° C)
4	High Temp Fiberglass (704° C)
NOTE:- Add "O" for no jacketing. Add "X" for SS braiding & "Z" for Armor	

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

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

14. OPTIONAL ACCESSORY	
CODE	
0	Not required
02	Strain relief spring (Only for lead wire without Armour)

15. OPTIONAL ACCESSORY	
CODE	
0	Not required
WC	Wire clamp
Only choose when ordering with connector	



TYPICAL INSTALLATION