

TC-32 A Weld Pad Thermocouple is a type of surface thermocouple designed specifically for measuring temperatures on metal surfaces. It ensures precise thermal contact and accurate temperature readings by featuring a flat, flexible sensing tip that can be directly welded or brazed onto a metallic surface. This type of thermocouple is widely used in applications requiring permanent or semi-permanent temperature monitoring of pipes, vessels, and equipment in harsh industrial environments.

Key Feature:

- Thermocouple sensing tip is welded to flat metal pad ensuring excellent thermal conductivity and minimize temperature lag.
- Available in Type J, K, E, N
- A wide selection of sheath material to suit application requirement, 304ss, 316ss, 321ss, Inconel® 600, Incolloy 800, Monel, Pyrosil D etc.
- Available in grounded and ungrounded junctions.
- Metal pad is welded to the surface providing a permanent or semi permanent installation.

Thermocouple Junction options for TC32



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 As per ASTM E608/608M

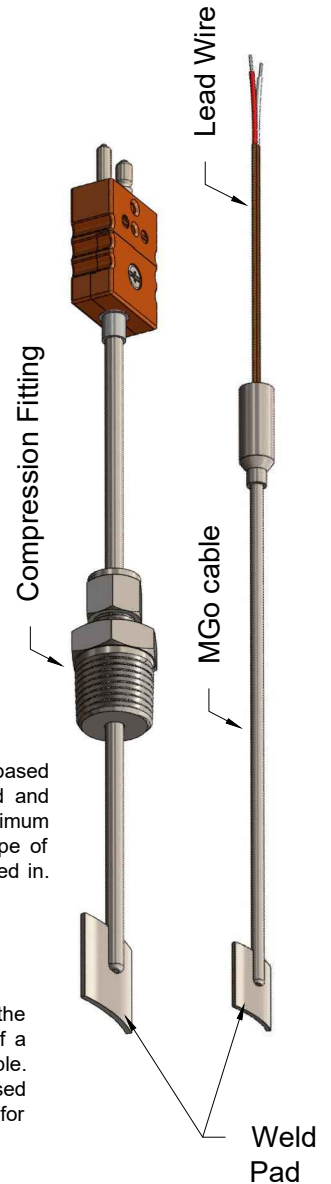
Thermocouple Type	1/25"	1/16"	1/8"	3/16"	1/4"	3/8"
OD	1/25"	1/16"	1/8"	3/16"	1/4"	3/8"
T	260(500)	260(500)	315(600)	370 (700)	370 (700)	370 (700)
J	260 (500)	440(825)	520 (970)	620(1150)	720 (1330)	720 (1330)
K	700(1290)	920 (1690)	1070 (1960)	1150 (2100)	1150 (2100)	1150 (2100)
E	300(570)	510(950)	650 (1200)	730 (1350)	820(1510)	820(1510)

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
	-200 °C to 0 °C	± 1.7 °C or 1.0% Whichever is greater	N/A
E	0 °C to 900 °C	± 1.7 °C or .5% Whichever is greater	± 1 °C or 0.4% Whichever is greater
	-200 °C to 0 °C	± 2.2 °C or 2.0 % Whichever is greater	N/A
KORN	0 °C to 1250 °C	± 2.2 °C or .75% Whichever is greater	± 1.0 °C or 0.4% Whichever is greater
	-200 °C to 0 °C	± 2.2 °C or 2.0 % Whichever is greater	N/A

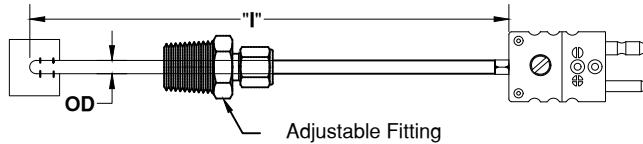
Notes:

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

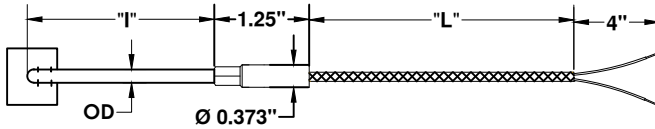
TC32- Surface Mount Weld Pad Style Thermocouple with Lead Wire and Connector

**TEMPERATURE
SENSOR**

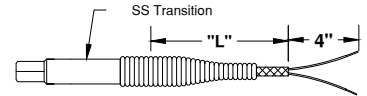
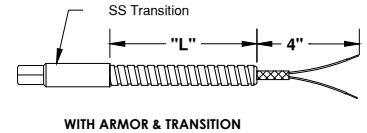
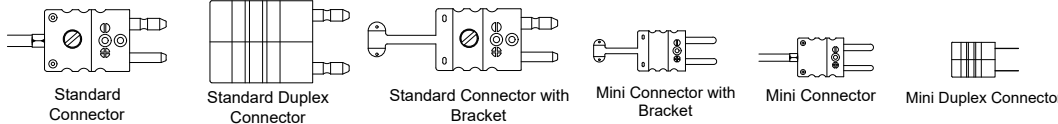
WITH CONNECTOR



WITH LEADS



Termination Options-



WITH STRAIN RELIEF SPRING
& TRANSITION

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
TC32														

For Example- TC32-K-G-01-8-2-8-12i-48i-S8N-3X-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. PAD SIZE

CODE	
01	1" X 1" X 1/8"
09	Specify

4. PAD MATERIAL

CODE	
8	SS 316

5. SHEATH OD

CODE	IMPERIAL SIZE	METRIC SIZE
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
2M	0.079	3.0mm
3M	0.197"	5.0mm
4M	0.236"	6.0 mm
5M	0.315"	8.0mm
CODE	IMPERIAL SIZE	METRIC SIZE
6M	0.354"	9.0 mm
7M	0.394"	10.0 mm

6. SHEATH MAT.

CODE	
8	SS 316
3	INCONEL 600 (For High Temp RTD)

7. IMMERSION LENGTH (I)

Immersion length - use "I" for inches and "M" for millimetre

8. LEAD LENGTH (L)

CODE	
0	No lead wire required
Lead length - use "I" for inches and "M" for millimetre	

9. PROCESS FITTING

CODE	
0	Not Required
9-1. MATERIAL	
S	Stainless Steel
B	Brass
M	Mild Steel
9-2. SIZE	
2	1/8"
4	1/4"
6	3/8"
8	1/2"
18	M18 X 1.5
20	M20 X 1.5
9-3. THREAD TYPE	
N	NPT
B	BSP
Leave blank for metric thread	
9-4. FERRULE MATERIAL	
Leave Blank for SS	
T	Teflon

10. 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	

11. CODES FOR TERMINATION

CODE	
Z	Bare ends
STP	Standard Plug
MP	Miniature Plug
HTP	High Temperature Plug
UTP	Ultra Temperature Plug

12. CODES FOR TERMINATION (JACK)

CODE	
0	Not required
STJ	Standard Jack
MJ	Miniature Jack
HTJ	High Temperature Jack
UTJ	Ultra Temperature Jack

13. OPTIONAL ACCESSORY

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

14. OPTIONAL ACCESSORY

CODE	
0	Not required
WC	Wire clamp
Only choose when ordering with connector	