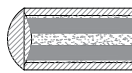


TC21- A bolt-style thermocouple is a specialized temperature sensor that incorporates a thermocouple junction within a bolt or screw, enabling precise surface temperature measurement. This design allows for secure installation onto equipment, ensuring direct contact with the monitored surface. This construction is most widely used in industrial and automotive applications to provides reliable temperature monitoring for critical components.

Key Feature:

- Thermocouple sensor integrated with bolt for easy, direct and secure mounting.
- Ensures accurate temperature measurement of metal surfaces with direct contact.
- Available in Type J to match specific temperature requirements.
- Available in different thread sizes and lengths to suit multiple applications.
- Quickly detects temperature changes for effective monitoring and ensure fast response time.
- Available with different wire lengths and insulation types for various environments.
- Suitable for temperature measurement of high vibration applications
- Available in IEC 60584 & ANSI MC 96.1 standard tolerances

Thermocouple Junction options for TC21



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

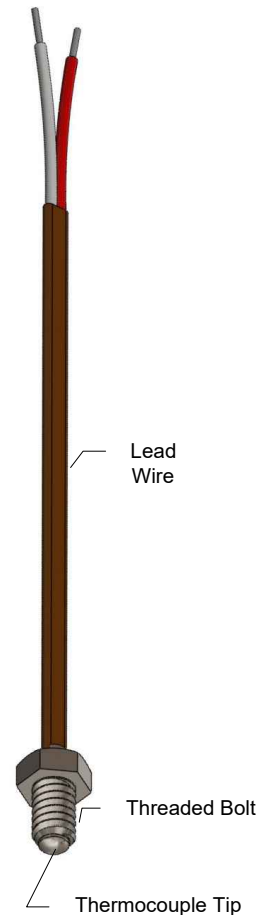
Wire Insulation	Maximum Rating
Teflon	260°C
Fiberglass	510°C

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.

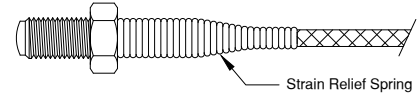
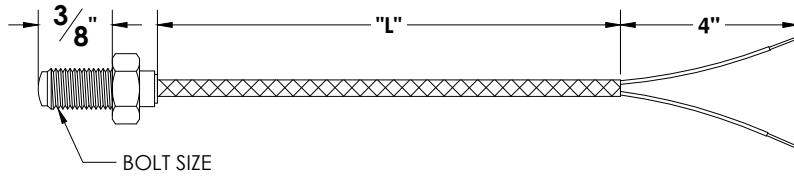


Temperature Accuracy As per ASTM E608/608M/ IEC 60584 & ANSI MC 96.1 standard tolerances

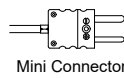
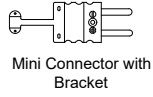
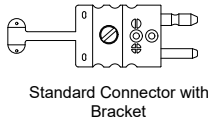
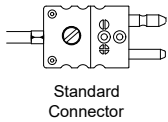
Type	Temperature	Standard Limit	Special Limit
T	-200 °C to 0 °C	± 1 °C or 1.5% Whichever is greater	N/A
	0 °C to 350 °C	± 1 °C or .75% Whichever is greater	± 0.5 °C or 0.4% Whichever is greater
J	0 °C to 750 °C	± 2.2 °C or .75% Whichever is greater	± 1.1 °C or 0.4% Whichever is greater
E	-200 °C to 0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



Termination Options-



	1	2	3	4	5	6	7	8
TC21								

For Example- TC21-J-G-8-48i-01-3-STP-0-0-WC

1. THERMOCOUPLE TYPE

CODE	
J	Iron(+) vs Constantan(-)

2. MEASURING JUNCTION

CODE	
G	Simplex / Grounded Junction

3. SHEATH MAT.

CODE	
8	SS 316 / SS 304

4. LEAD LENGTH (L)

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

5. BOLT SIZE

CODE	
01	1/4" - 20
02	M6 X 1.75
09	Specify if any other size

6. WIRE TYPE

CODE	
6	TEFLON (260° C)
3	FIBRE GLASS (510° C)
NOTE:- Add "O" for no jacketing. Add "X" for SS braiding & "Z" for Armor	

7. CODES FOR TERMINATION

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

8. CODES FOR TERMINATION (JACK)

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

9. OPTIONAL ACCESSORY

CODE	
0	Not required
02	Strain relief spring

10. OPTIONAL ACCESSORY

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