TC-31 Surface Mount Magnet Thermocouple with lead wire

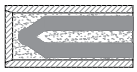
TEMPERATURE SENSOR

TC-31 A Magnet Thermocouple is a specialized type of thermocouple sensor designed to measure surface temperatures by attaching magnetically to ferromagnetic materials. It combines the functionality of a standard thermocouple with the convenience of a magnetic mount, making it ideal for applications where non-invasive, temporary temperature monitoring is required.

Key Feature:

- Built-in magnetic base that securely attaches to metal surfaces, ensuring good thermal contact.
- Available in Type K due to its wide temperature range and Type-J for moderate temperature range.
- Typically measures temperatures from -40°C to 400°C, depending on the magnet's temperature tolerance and the thermocouple type.
- 2 Pole, 4 Pole & 6 Pole magnets are available as per pull strength.
- Commonly used lead wires are Fibre Glass & Teflon with SS overbraid.
- Grounded Junction Recommended for fast response.

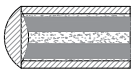
Thermocouple Junction options for TC15



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 : 400 °C (752 F)

Magnet Thermocouples have limited temperature range maximum upto 400°C. A higher temperature weakens a magnet's pull capacity and magnetic field. As temperature increase the magnet's kinetic energy and makes its molecules move faster, they become more and more sporadic.

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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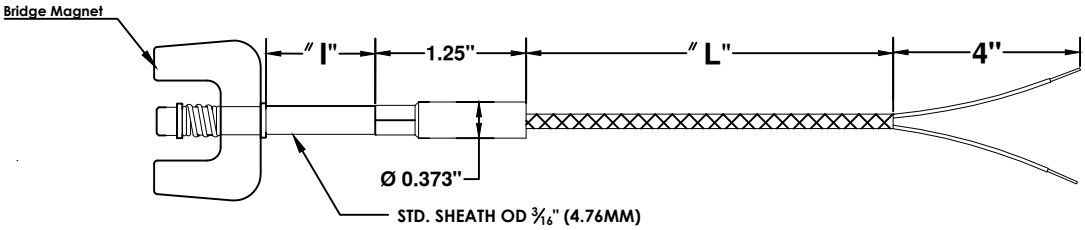

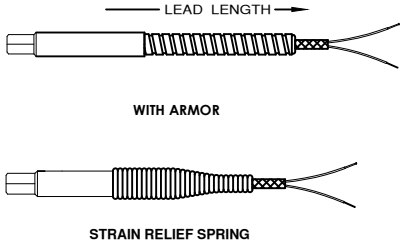

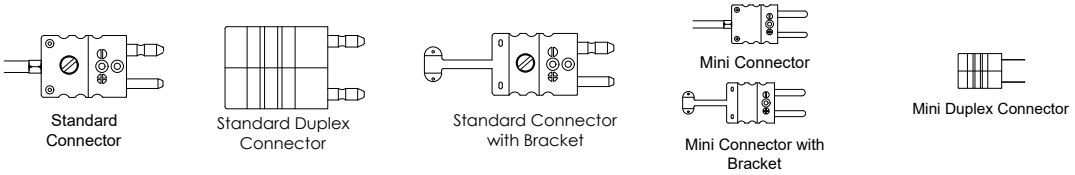

	1	2	3	4	5	6	7	8	9	10	11	12
TC31												

For Example- TC31-K-G-30-3-8-6i-72i-2-Z

1. CALIBRATION	
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. MAGNET STRENGTH	
CODE	
2	2.5 Pound Pull
30	30 Pound Pull
50	50 Pound Pull

4. SHEATH OD		
CODE	IMPERIAL SIZE	METRIC SIZE
3	3⁄16"	4.76 mm

5. SHEATH MAT.	
CODE	
8	SS 316

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

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

8. WIRE TYPE	
CODE	
1	PVC (105° C)
2	TEFLON (200° C)
3	FIBRE GLASS (480° C)
4	High Temp Fiberglass (600° C)
NOTE:- Add "O" for no jacketing. Add "X" for SS braiding & "Z" for Armour	

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	
Leave blank if not required	
STJ	Standard Jack
MJ	Miniature Jack
HTJ	High Temperature Jack
UTJ	Ultra Temperature Jack

11. OPTIONAL ACCESSORY	
CODE	
	Leave blank if not required
02	Strain relief spring (Only for lead wire without Armour)

12. OPTIONAL ACCESSORY	
CODE	
	Leave blank if not required
WC	Wire clamp
Only choose when ordering with connector	