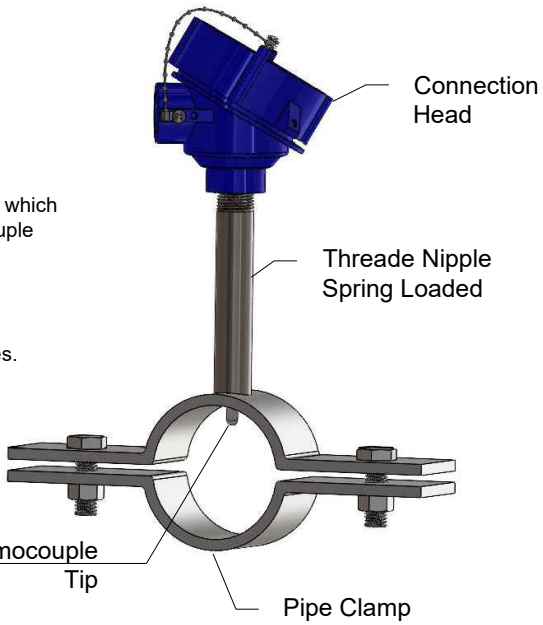
TC-62 MGO-PAC Non Invasive Pipe Mount Thermocouple Assembly

TEMPERATURE SENSOR

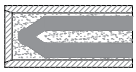
TC62 Thermocouple is a type of surface thermocouple designed specifically for measuring temperatures on metal surfaces. It ensures precise thermal contact and accurate temperature readings by featuring a spring loaded flat tip thermocouple. This type of thermocouple is widely used in applications requiring permanent or semi-permanent temperature monitoring of pipes, vessels, and equipment in harsh industrial environments. Many time these sensors are used to measure the temperature in heat trace application to avoid pipe freed in extreme cold conditions.

Key Feature:

- Uses connection head to protect the electrical connections from environmental factors such as moisture, dust, and mechanical damage.
- Connection head usually made of aluminum, stainless steel or plastic and available in weatherproof, explosion-proof, or corrosion-resistant designs.
- Connection head contains terminals or 4-20mA output temperature transmitter for signal conditioning.
- Available in different thermocouple types K, J, T, E, N.
- A wide selection of sheath material to suit application requirement 304ss, 316ss, 321ss, Inconel® 600.
- Available in IEC 60584 & ANSI MC 96.1 standard tolerances



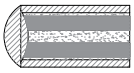
Thermocouple Junction options for TC62



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	°C (F)	°C (F)	°C (F)	°C (F)	°C (F)	°C (F)
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
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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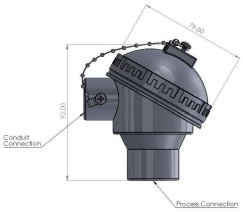
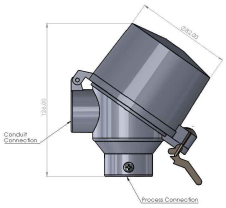
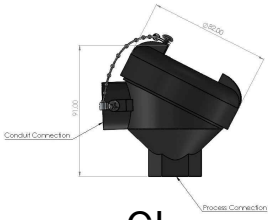
Connection Heads



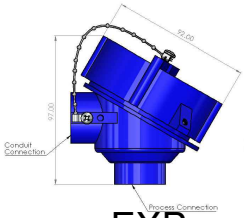
KNE



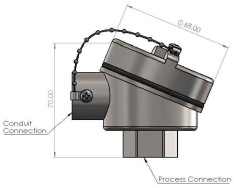
DANA



CI



EXP



SS


FL

Transmitters and Displays

Model	TT-167	TT-267	TT-367	TT-467	TT-567
Transmitter					
Output					
4-20 mA	X	X	X	X	X
HART®Protocol		X	X	X	X
Input					
Thermocouple	K,J,R,S,T N,E,B, Pt100, Pt1000	K,J,R,S,T N,E,B, Pt100, Pt1000	K,J,R,S,T N,E,B, Pt100, Pt1000	K,J,R,S,T N,E,B, Pt100, Pt1000	K,J,R,S,T N,E,B, Pt100, Pt1000
Approval					
Electrical		CE, CSA	CE, CSA	CE, CSA	CE, CSA
HazLoc		OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Integaral Display			X	X	X
Field Programable		X	X	X	X

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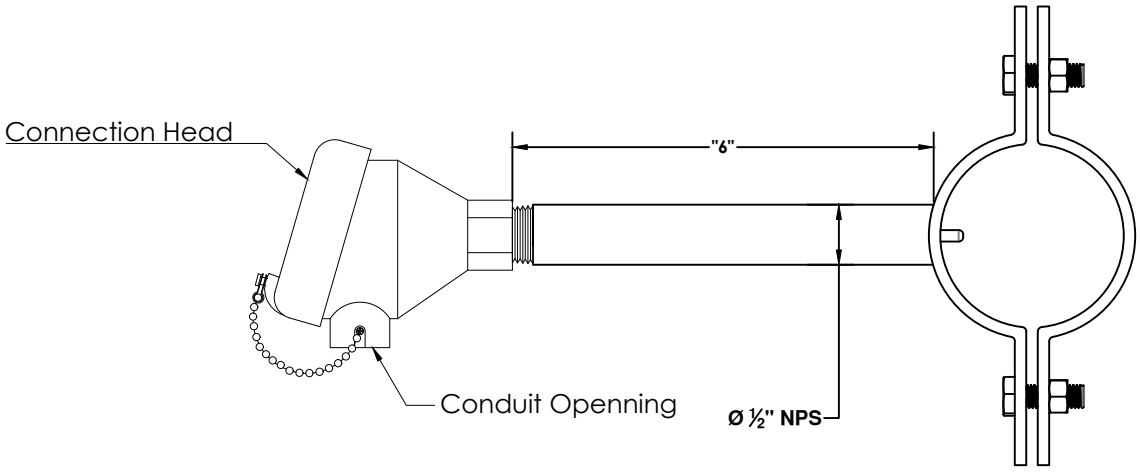

	1	2	3	4	5	6	7	8	9
TC62	J	G	8	4	5	8	AX	05	TB

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 JN	
CODE	
G	Simplex/Grounded
UG	Simplex/Ungrounded
E	Simplex/Exposed
DG	Duplex/Grounded
DUG	Duplex/Ungrounded
DE	Duplex/Exposed

3. SHEATH MAT.	
CODE	
8	SS 316/316L

4. SHEATH OD		
CODE	IMPERIAL SIZE	METRIC SIZE
4	¼"	6.35 mm

5. PIPE SIZE
Specify the Pipe size in inches (For eg. use 2 for 2" pipe, 2.5 for 2½" pipe)

6. PIPE MATERIAL	
CODE	
8	SS 316
9	SS 304
10	Carbon steel

7. CONNECTION HEAD	
CODE	
A	Gen purpose Aluminium head IP68
EA	Economical Aluminium gen purpose head(non-rated)
S	SS general purpose
CG	Cast iron
PG	Polypropylene
SX	SS Explosion proof
AX	Aluminium explosion proof (CSA,FM,ATEX,IECE'x approved)
06	"Fieldmount Temp Transmitter w/ Display Aluminum"
07	"Fieldmount Temp Transmitter w/ Display SS"
06X	"Exd Fieldmount Temp Transmitter w/ Display Aluminum"
07X	"Exd Fieldmount Temp Transmitter w/ Display SS"
09	General Purpose Transmitter w/ Loop Powered Indicator
10	Aluminium connection head (CCOE approved)
DA	Dual entry gen purpose Aluminium head
D-XD	Dual entry Aluminium explosion proof (CSA,FM,ATEX,IECE'x approved)

8. Conduit Conn.	
CODE	
05	½" NPT
07	¾" NPT
2M	M20 x 1.5

9. HEAD TERMINATION	
CODE	
00	Blank Head Ready to Install Transmitter
TB	Ceramic Terminal Block
TRM	Standard 4-20 mA Transmitter
TRM-H	Standard 4-20 mA Transmitter w/ Hart