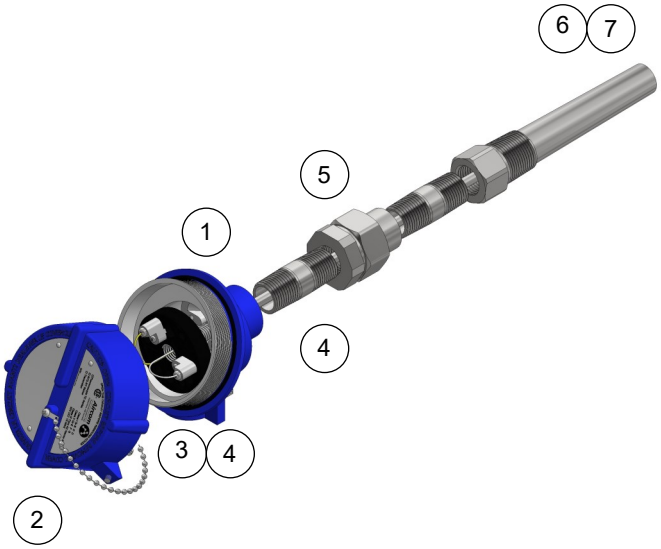
TC8 Thermocouple Assembly

TC8



1. Connection Head or Junction box is the electrical enclosure that holds the terminal block for connecting the appropriate signal wires.

2. Tags on the connection head will identify the hazardous location approval rating of the enclosure as well the assembly if applicable.

3. Terminal Block is where the lead wires are terminated. Standard material is Bakelite. Other terminal block options such as ceramics available.

4. Spring Loading can be achieved by a spring attached to the terminal block or a spring loaded fitting in the extension (5) between the connection head and the thermowell.

5. Connection Extension is what attaches the connection head to the thermowell. It can be made up of an array of fittings, most common being an electrical conduit nipple-union-nipple.

6. Thermowells are optional parts that will protect and allow the sensor to be removed from process. Hazardous location explosion proof certified assemblies must come complete with a thermowell.

7. Thermocouple Sensor Probe is housed inside the assembly

Temperature Limiting Factors of thermocouple assemblies will depend on the material temperature rating of each component used in the sensors construction, in addition to the thermocouple type. Continuous temperature ratings of the components are listed in the model number selection. Generally, the sensor probe and thermowell will have a higher temperature rating than the extension and junction box.

Overview

The TC8 Thermocouple assembly is a temperature sensor assembly consisting of a thermocouple sensor probe, tapered thermowell, conduit nipples, union, spring loading terminal block, and connection head.

Features:

- Thermocouple sensor probe is removable for verification, maintenance and replacement.
- Simple design that is used and accepted across multiple process industries.
- Tapered thermowell profile provides a good strength to response time balance.

Application:

Thermocouple assemblies are used widely across almost any and every industrial process control environment.

Configuration Considerations

When configuring the TC8 model to suit your application it is important to consider the following:

- Hazardous location approval rating
- Connection head type
- Extension length
- Thermocouple type (tolerance)
- Junction style and quantity
- Thermowell lengths
- Thermowell material and compatibility with process
- Thermowell NPT connection to process
- Minimum and maximum temperature of the process
- Maximum pressure
- Process conditions and effect on the assembly

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TC8 Thermocouple Assembly Model Code

TC8 - T1 - T2 - T3 - T4 - T5 - T6 - T7 - T8 - T9

TC8	TC Assembly with Tapered Threaded Thermowell

T1	Connection Head
2AL	Aluminum, 3/4” conduit, Bakelite terminal block
2ALT	Aluminum epoxy, 3/4” conduit, Bakelite terminal block
2SS	Stainless steel, 3/4” conduit, Bakelite terminal block
X	Not required
Other	Refer to page B-19 for details, styles and options

T2	Connection Extension Length “A” (inches)[5]
3	**3” installed length**
4	4” installed length
Other	Specify (inches)

T3	Thermocouple Type
K	**Type K**
J	**Type J**
T	Type T
E	Type E
N	Type N

T4	Thermocouple Junction
G	Grounded
U	**Ungrounded**

T5	Thermocouple Junction Quantity
S	**Single**
D	**Dual**
T	Triple
Q	Quad

T6	Thermowell “H” Length (inches)[5]
“inches”	Specify length in inches

T7	Thermowell “U” Length (inches)[5]
“inches”	Specify length in inches

T8	Threaded Thermowell Material
304	304/304L stainless steel
316	**316/316L stainless steel**
310	310 stainless steel
600	Inconel 600
HAC	Hastelloy C276
Other	Consult factory

T9	Thermowell Process Connection
12	1/2” NPT
34	3/4” NPT
1	1” NPT

Assembly Hazardous Location Approval	Connection Head Series
Class I Groups A,B,C,D Class II Groups E,F,G Class III	CCI
Class I Groups B,C,D Class II Groups E,F,G Class III; Enclosure Type 4	AL, CAL
Class I Groups B,C,D Class II Groups E,F,G Class III; Enclosure Type 4X	ALT, SS
General Purpose	0AL, 4AL, 1CI, 2CI, 3CI, 0PY

1. NOTES:
2. Part number example: TC8-2ALT-3-K-U-S-1.75-10-316-34
3. TC8 configuration includes tapered threaded thermowell
4. Thermocouple probe sheath material is 316/316L stainless steel unless otherwise specified
5. Reference page B-17 for part overview and B-18 for dimensions
6. Bold text indicates most common part selections

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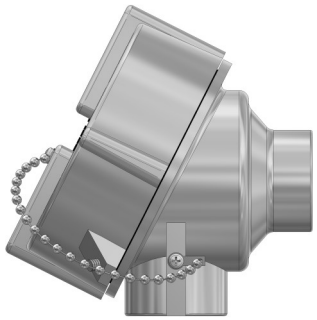
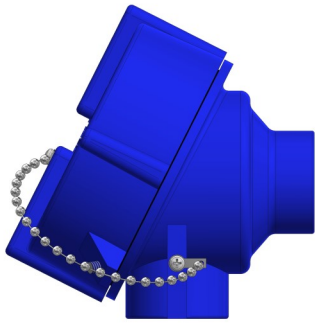
TC8 Thermocouple Assembly Outline

Connection Head

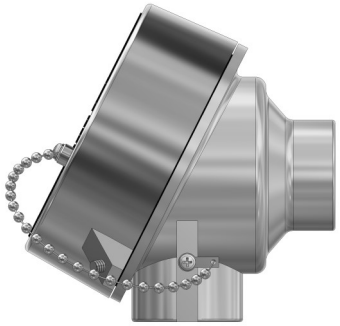
2AL



2ALT

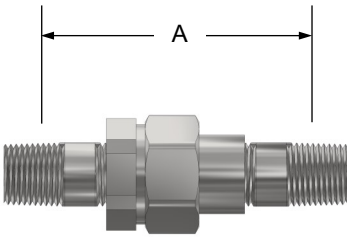


2SS

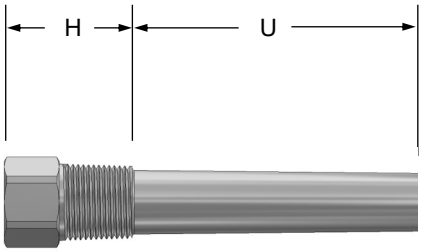


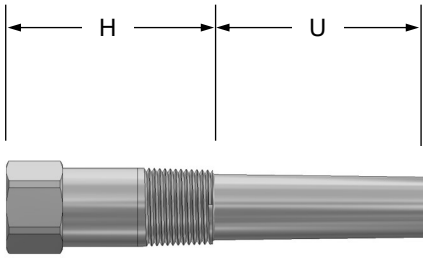
Refer to page B-19 for further connection head styles, options, and details

Connection Extension



Threaded Thermowell





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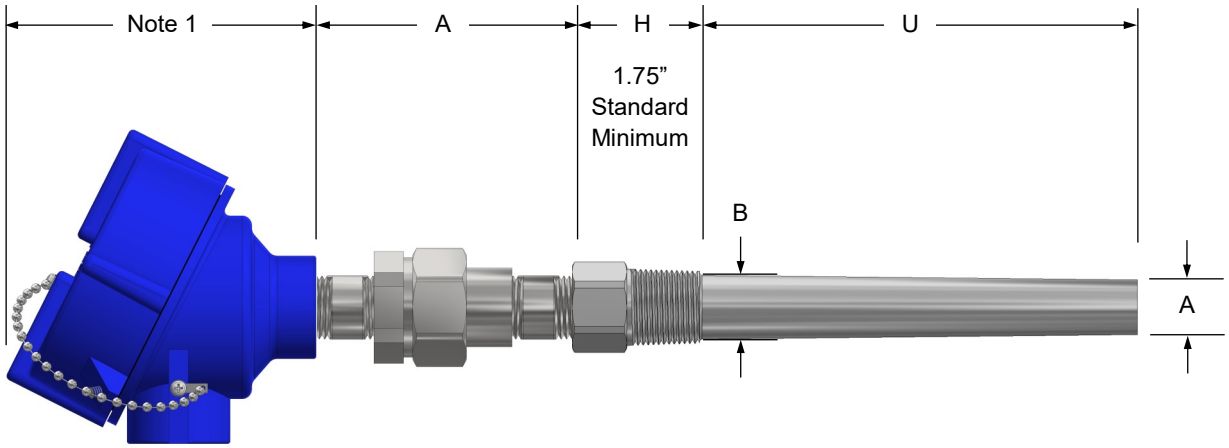
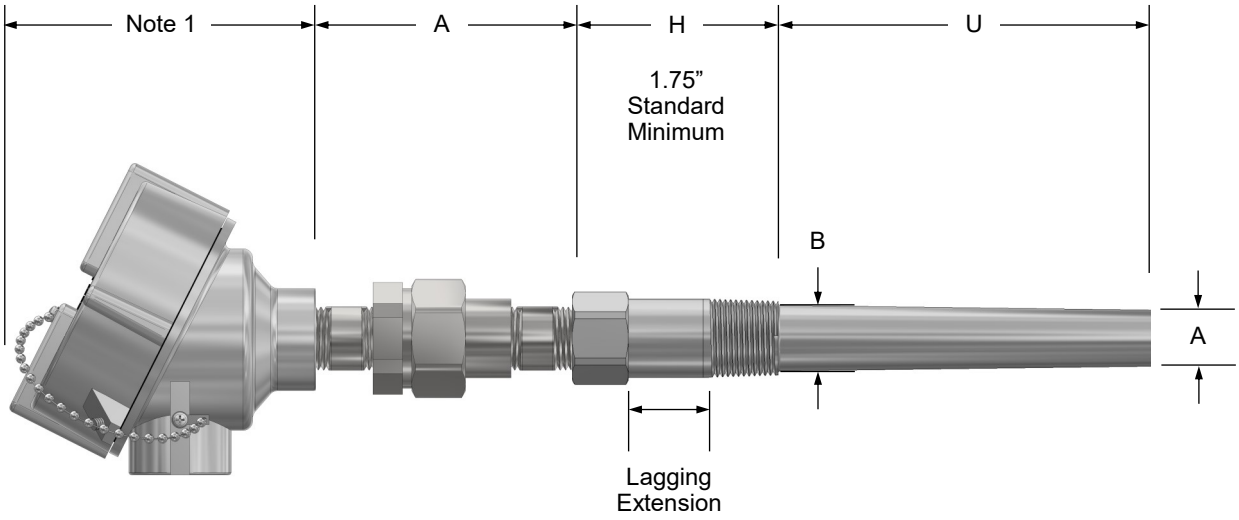
TC8 Thermocouple Assembly Dimensions





NPT	“A” (Root OD)	“B” (Tip OD)
1/2”	0.625”	0.500”
3/4”	0.875”	0.750”
1”	1.063”	0.750”

NOTES:
1. Connection head dimensions on page B-19

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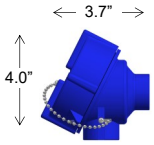
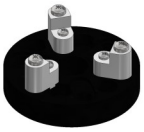
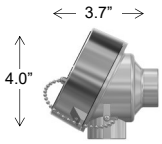
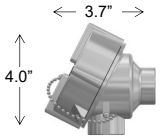
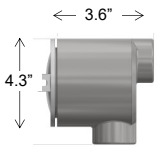
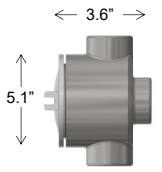
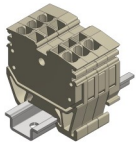
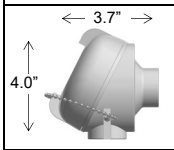
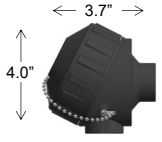
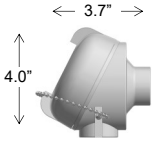
Model, Outline, and Dimensions

Outline & Dimensions	Model	Connection (NPT)		Terminal Block Options	Material	Assembly Electrical Approval[1]
		Instrument	Conduit			
	1ALT	1/2"	1/2"[2]	 Bakelite - standard Screw terminals to suit sensor configuration	Cast aluminum epoxy coated Buna O-ring	Class I Groups B,C,D Class II Groups E,F,G Class III Enclosure Type 4X
	2ALT	1/2"	3/4"			
	3ALT	3/4"	3/4"			
	1SS	1/2"	1/2"[2]		316 stainless steel Buna O-ring	
	2SS	1/2"	3/4"			
	3SS	3/4"	3/4"			
	1AL	1/2"	1/2"[2]	 Ceramic - optional Screw terminals to suit sensor configuration Add: "C" to connection head model number Example: 2ALTC	Cast aluminum Buna O-ring	Class I Groups B,C,D Class II Groups E,F,G Class III Enclosure Type 4
	2AL	1/2"	3/4"			
	3AL	3/4"	3/4"			
	1CAL[3]	1/2"[2]	1/2"[2]			
	2CAL[3]	3/4"	3/4"			
	1CCI[3]	1/2"[2]	1/2"[2]		Iron alloy Buna O-ring	Class I Groups A,B,C,D Class II Groups E,F,G Class III
	2CCI[3]	3/4"	3/4"			
	4CAL[3]	1/2"	2x 1/2"	 Clamp technology - optional DIN mounted clamp technology terminals to suit sensor configuration Add: "D" to connection head model number. Example: 2ALTD	Cast aluminum Buna O-ring	Class I Groups B,C,D Class II Groups E,F,G Class III; Enclosure
	3CAL[3]	3/4"	2x 3/4"			
	4CCI[3]	1/2"[2]	2x 1/2"[2]		Iron alloy Buna O-ring	Class I Groups A,B,C,D Class II Groups E,F,G Class III
	3CCI[3]	3/4"	2x 3/4"			
	4AL	1/2"	1/2"[2]		Cast aluminum Buna O-ring	General purpose
	0AL	1/2"	3/4"			
	1CI	1/2"	1/2"[2]	Ceramic - oval terminal block Screw terminals to suit sensor configuration	Iron alloy Buna O-ring	
	2CI	1/2"	3/4"			
	3CI	3/4"	3/4"			
	0PY	1/2"	3/4"	Terminal block integral to connection head Screw terminals to suit sensor configuration	Polypropylene	

NOTES:
1. Electrical approval noted is for the temperature sensor assembly not the connection head itself
2. May be supplied with an approved reducer bushing
3. Model connection extension will include a spring loaded fitting in place of one nipple

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