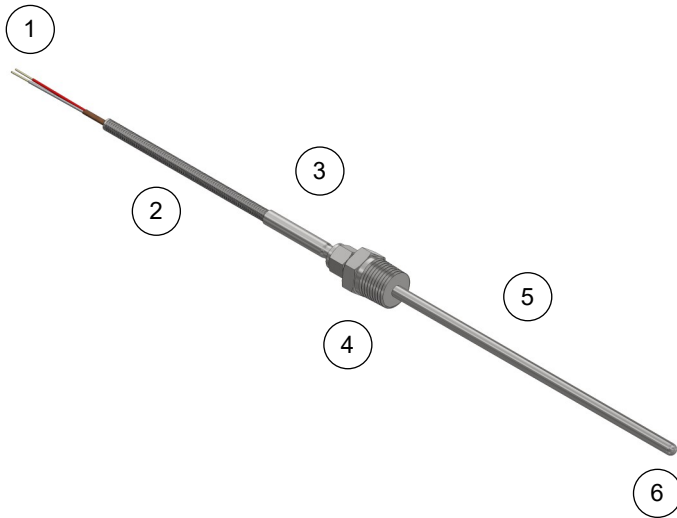


## TC Series Sensor Probes

## Overview



The TC series Thermocouple sensor probes come in various styles unique to different applications. Each style consists of a thermocouple sensing junction protected by a sheath with a termination option.

### Features:

- Styles are customizable to almost any application.
- Manufactured from high quality raw materials that meet industry recognized standards.
- Fast lead time on styles that utilize standard Aircom materials.

### Application:

Thermocouple sensor probes are used widely across almost any and every commercial and industrial temperature process control application.

**1. Lead Wire Termination** is how the sensor will connect and terminate to the instrument or electrical interface.

**2. Lead Wire Insulation Type** and length are selected to suit each application. The temperature rating varies depending on the material of lead wire used.

**3. Transition** is where the sensing probe is transitioned to lead wires. This piece is crimped or brazed onto the probe and potted with an epoxy rated to 150°C. For high temperature, and low moisture applications, a ceramic cement potting material is available on special request.

**4. Fitting** options are available to fasten the sensor into the process or optional thermowell.

**5. Sensor** length, outer diameter, and material are very important variables when designing a thermocouple sensor probe. The sheath is commonly constructed from mineral insulated cable (MI cable). Various alloys are available to suit applications. Material compatibility is always the end users responsibility.

**6. Thermocouple Junction** is located in the tip of the sensor. This is where the temperature sensing takes place.

**Temperature Limiting Factors** of thermocouple sensor probes 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 sheath will have a higher temperature rating than the transition and lead wires.

## Configuration Considerations

When configuring the TC series thermocouple sensor probe models to suit your application it is important to consider the following:

- Hazardous location approval rating
- Thermocouple type
- Number of junctions
- Sheath OD
- Sheath material
- Sensor probe length
- Lead wire length
- Lead wire type
- Lead wire termination
- Process fitting options
- Process fitting size
- Minimum and maximum temperature of the process
- Process conditions and effect on the sensor probe
- Maximum pressure (if any)

# TC4 Thermocouple Sensor Probe Model Code

TC4 - T1 - T2 - T3 - T4 - T5 - T6 - T7 - T8 - T9 - T10

## TC4 Thermocouple Sensor Probe

### T1 Thermocouple Type

<b>K</b>	<b>Type K</b>
J	Type J
T	Type T
E	Type E
N	Type N
Other	Consult factory

### T2 Thermocouple Junction

G	Grounded
<b>U</b>	<b>Ungrounded</b>
2G	Dual grounded
2U	Dual ungrounded
()G	(Qty up to 4) grounded <sup>2</sup>
()U	(Qty up to 4) ungrounded <sup>2</sup>
E	Exposed

### T3 Sensor Probe Diameter

04	0.040" (1/25")
16	0.063" (1/16")
18	0.125" (1/8")
36	0.188" (3/16")
<b>14</b>	<b>0.250" (1/4")</b>
38	0.375" (3/8")

### T4 Sensor Sheath Material

304	304/304L stainless steel
<b>316</b>	<b>316/316L stainless steel</b>
310	310 stainless steel
446	446 stainless steel
600	Inconel 600
Other	Consult factory

### T5 Sensor Probe "L" Length (inches)<sup>3</sup>

"inches"	Specify length in inches for straight probe length
N "inches"	Specify "N" and length in inches for 90° bend

### T6 Lead wire "A" Length (inches)<sup>3</sup>

"inches"	Specify length in inches
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## T7 Lead Wire Type<sup>4</sup>

FB	Fiberglass (482°C)
SF	Fiberglass with SS over braid (482°C)
<b>AF</b>	<b>Flex armor over fiberglass (482°C)</b>
TE	Teflon (260°C)
ST	Teflon with SS over braid (260°C)
<b>AT</b>	<b>Flex armor over Teflon (260°C)</b>
PT	Poly jacketed flex armor over Teflon (102°C)
PV	Polyvinylchloride (PVC) (102°C)
BC	2" Stripped bare conductor
Other	Consult factory

## T8 Lead Wire Termination<sup>4</sup>

<b>BE</b>	<b>Bare ended lead wire</b>
<b>SC</b>	<b>Standard male connector (205°C)</b>
MC	Miniature male connector (205°C)
HC	High temp standard male connector (425°C)
MH	High temp miniature male connector (425°C)
SL	Spade lugs (thermocouple alloy if available)
CG	1/2" NPT cord grip electrical fitting <sup>5</sup>
Other	Consult factory

## T9 Fitting Options

<b>X</b>	<b>No fitting required</b>
CF	Compression fitting - SS ferrule
CT	Compression fitting - Teflon ferrule
FX	Fixed hex instrument plug <sup>6</sup> 1/2" NPT
FS	Fixed bushing 1/2"x1/2" NPT
TX	Spring loaded bushing 1/2"x1/2" NPT
OS	Oil seal spring loaded 1/2"x1/2" NPT
SG	Self gripping spring
Other	Consult factory

## T10 Fitting Size





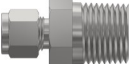



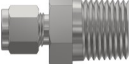

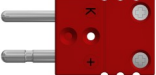













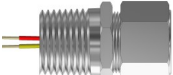





<b>X</b>	<b>No fitting</b>
18	1/8" NPT
14	1/4" NPT
38	3/8" NPT
12	1/2" NPT
Other	Consult factory

#### NOTES:

1. Part number example: TC4-K-U-14-316-12-36-TE-BE-X-X or TC4-J-2U-14-316-N6-24-AT-SC-CF-12
2. Consult factory for more than 2 thermocouple junctions with probe OD (T3) values less than option 36 (0.188")
3. Reference page B-6 for part outline and B-7 for part dimensions
4. Temperature values given are for maximum continuous rating for the specific component of the configuration
5. CG fitting option (T8) only for lead wire options AT, AF & PT
6. Consult factory for FX fixed hex plug option (T9) for probe OD options smaller than option 36 (0.188")
7. Bold text indicates most common part selections



# TC4 Thermocouple Sensor Probe Outline

Termination	Lead Wire Type	Transition	Fittings	Sensor Sheath (OD)
BE 	FB 		X (None)	
SC 	SF 		CF 	04 (0.040") 
MC 	AF 		CT 	16 (0.0625") 
HC 	TE 	Standard Transition 	FX 	18 (0.125") 
MH 	ST 	Small Transition 	FS 	36 (0.188") 
SL 	AT 		TX 	14 (0.250") 
CG 	PT 		OS 	38 (0.375") 
	PV 			
	BC 			

# TC4 Thermocouple Sensor Probe Dimensions

