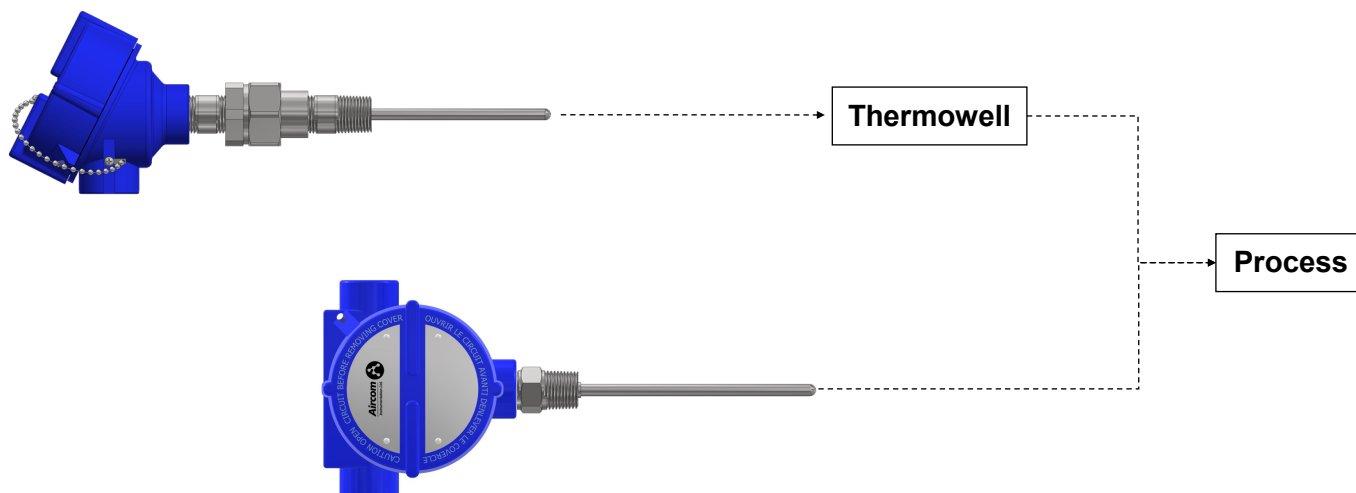


TC10 Thermocouple Assembly

Class I, Division 1, Groups B, C, D; Class II, Division 1, Groups E, F, G; Class III; T6...T1

Class I, Zone 1, Groups IIB plus hydrogen, IIB; Zone 20; T6...T1



Overview

Description:

The TC10 thermocouple assembly is a thermocouple designed for use in hazardous locations. The TC10 is a customizable product that is model number configured and made to order.

The TC10 consists of a thermocouple sensor probe, complete with a connection head (enclosure) that may be provided with a terminal block, DIN rail, wire splice connectors, or internal transmitter. Connection extension fittings will spring load the sensor into a thermowell or a fixed fitting can be used without a thermowell.

Features:

- Simple design that is used and accepted across multiple process industries.
- TC10 configuration options allow for many different arrangements to be configured for almost any temperature measurement application.

Application:

- Hazardous location temperature measurement
- Industrial temperature measurement
- Process control
- Outdoor / indoor use

Specifications

Accuracy TC	Tolerance per ASTM E230
T-Code	T6...T1
Electrical rating	30 Vdc, 1.0 A max
Ambient temperature	-50°C to +50°C (-58°F to +122°F)
Process temperature	-50°C to +450°C (-58°F to +842°F)
CSA Certificate of Compliance	1526478

Note: Specifications will depend on model code variants, and the values shown are the full rated model ranges.



TC10 Thermocouple Assembly Model Code

TC10 - T1 T1A - T2 - T3 - T4 - T5 - T6 - T7 - T8 - T9

TC10 Thermocouple assembly with connection head and connection extension fittings

T1	Connection Head	Color	Material	Conduit Connection	Terminal Block	Type Rating
2ALT	Standard style	Blue	Aluminum epoxy coated	1x 3/4" NPT	Bakelite	Type 4X
1ALT	Standard style	Blue	Aluminum epoxy coated	1x 1/2" NPT	Bakelite	Type 4X
3ALT	Standard style	Blue	Aluminum epoxy coated	1x 3/4" NPT	Ceramic	Type 4X
2ALW	Mounting holes	Grey	Aluminum epoxy coated	1x 3/4" NPT	Bakelite	Type 4X
2ALM	Multi connection	Blue	Aluminum epoxy coated	2x 3/4" NPT	Bakelite	Type 4X
2AL	Standard style	Grey	Aluminum	1x 3/4" NPT	Bakelite	Type 4
2SS	Standard style	Steel	Stainless steel	1x 3/4" NPT	Bakelite	Type 4X
Note	Refer to page 6 for additional options, details and other styles					

T1A	Terminal Block / Transmitter	T1A	Continued
'Blank'	Bakelite terminal block	31D	5331D PR puck transmitter
C	Ceramic terminal block	35D	5335D PR puck transmitter (with HART)
D	DIN mount technology	Other	See page 7 or consult factory for additional options
S	Splicing connectors		

T2	Connection Extension	Material	CSA Note
N	Nipple 1/2" NPT ¹	Galvanized	Thermowell required ² for hazardous rating
SN	Nipple 1/2" NPT ¹	Stainless Steel	
NUN	Nipple-union-nipple 1/2" NPT ¹	Galvanized	
TX	Spring loaded fitting 1/2"x1/2" NPT	Stainless Steel	
TXUN	Spring loaded fitting-union-nipple	Galvanized	Canada only, Thermowell required ² for hazardous rating
SNUN	Nipple-union-nipple 1/2" NPT ¹	Stainless Steel	
STXUN	Spring loaded fitting-union-nipple	Stainless Steel	
FS	Fixed bushing 1/2"x1/2" NPT	Stainless Steel	CSA process pressure rating ≤ 34.4 MPa @ +20°C (5000 psi @ +68°F)
FX	Fixed hex instrument fitting 1/2" NPT	Stainless Steel	CRN process pressure rating ≤ 25.5 MPa @ +20°C (3700 psi @ +68°F)

T3	Connection Extension Length (CEL)	Connection Extension (T2) Options	CSA Rating
X	Fixed - FS/TX = 1" (A), FX = 0.5" (A)	FS, FX, TX	-50°C to +50°C (-50°F to +122°F), T6
0.5	Clearance fit	N, SN	-50°C to +50°C (-50°F to +122°F), T6
1.5	1.5" (CEL), 1" installed length (A)	N, SN	-50°C to +200°C (-50°F to +392°F), T4A
3.5	3.5" (CEL), 3" installed length (A)	N, NUN, TXUN, SN, SNUN, STXUN	-50°C to +230°C (-58°F to +446°F), T3C
4.5	4.5" (CEL), 4" installed length (A)	N, NUN, TXUN, SN, SNUN, STXUN	-50°C to +230°C (-58°F to +446°F), T3C
8.5	8.5" (CEL), 8" installed length (A)	SN, SNUN, STXUN	-50°C to +450°C (-58°F to +842°F), T2
"inches"	Specify other Connection Extension Length (CEL). Note ³ : CEL = A + t _p ; A = CEL - t _p		Reference above

Continued on page 3

NOTES:

1. N, SN, NUN, SNUN require connection heads and terminal block to enable spring-loaded functionality.
2. Must be installed into certified thermowell at Aircom or in the field.
3. CEL=Connection Extension Length, A=Installed Length, OAL=Fitting Overall Length, t_h=Head thread, t_p=Process thread.
4. Bold text indicates most common part selections.



TC10 Thermocouple Assembly Model Code

TC10 - T1 T1A - T2 - T3 - T4 - T5 - T6 - T7 - T8 - T9

Continued from page 2

T4	Thermocouple Type			
K	Type K	N	Type N	
J	Type J	R	Type R	
T	Type T	S	Type S	
E	Type E	B	Type B	

T5	Sensor Sheath Diameter			
18	1/8" OD			
36	3/16" OD			
14	1/4" OD			
38	3/8" OD			

T6	Thermocouple Junction			
G	Grounded			
U	Ungrounded			
E	Exposed			

T7	Thermocouple Junction Quantity			
S	Single			
D	Dual			
T	Triple			
Q	Quad			

T8	Sensor Sheath Material			
304	304/304L stainless steel			
316	316/316L stainless steel			
310	310 stainless steel			
600	Inconel 600			
HAC	Hastelloy C-276			
Other	Consult factory			

T9	Sensor "L" Length (inches)			
"inches"	Specify length in inches			

NOTES:

1. Part number example: TC10-2ALT32D-NUN-3.5-K-14-U-S-316-14.
2. Reference page 4-5 for outline and dimensions.
3. Bold text indicates most common part selections.



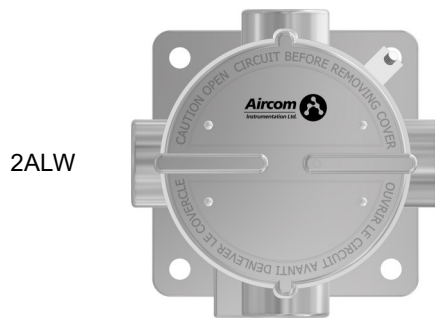
Section: Thermocouple Sensor Probes & Assemblies
File: Thermocouple-Assembly-TC10-8



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TC10 Thermocouple Assembly Outline

Connection Head



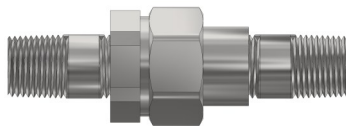
Refer to page 6 for additional
connection head styles, options,
and details

Connection Extension

N & SN



NUN & SNUN



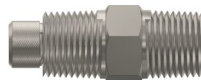
FS



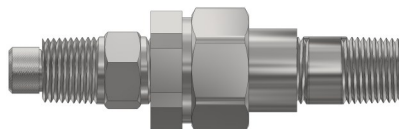
FX



TX



TXUN & STXUN



Sensor Probe (OD)

18
(0.125")



36
(0.188")



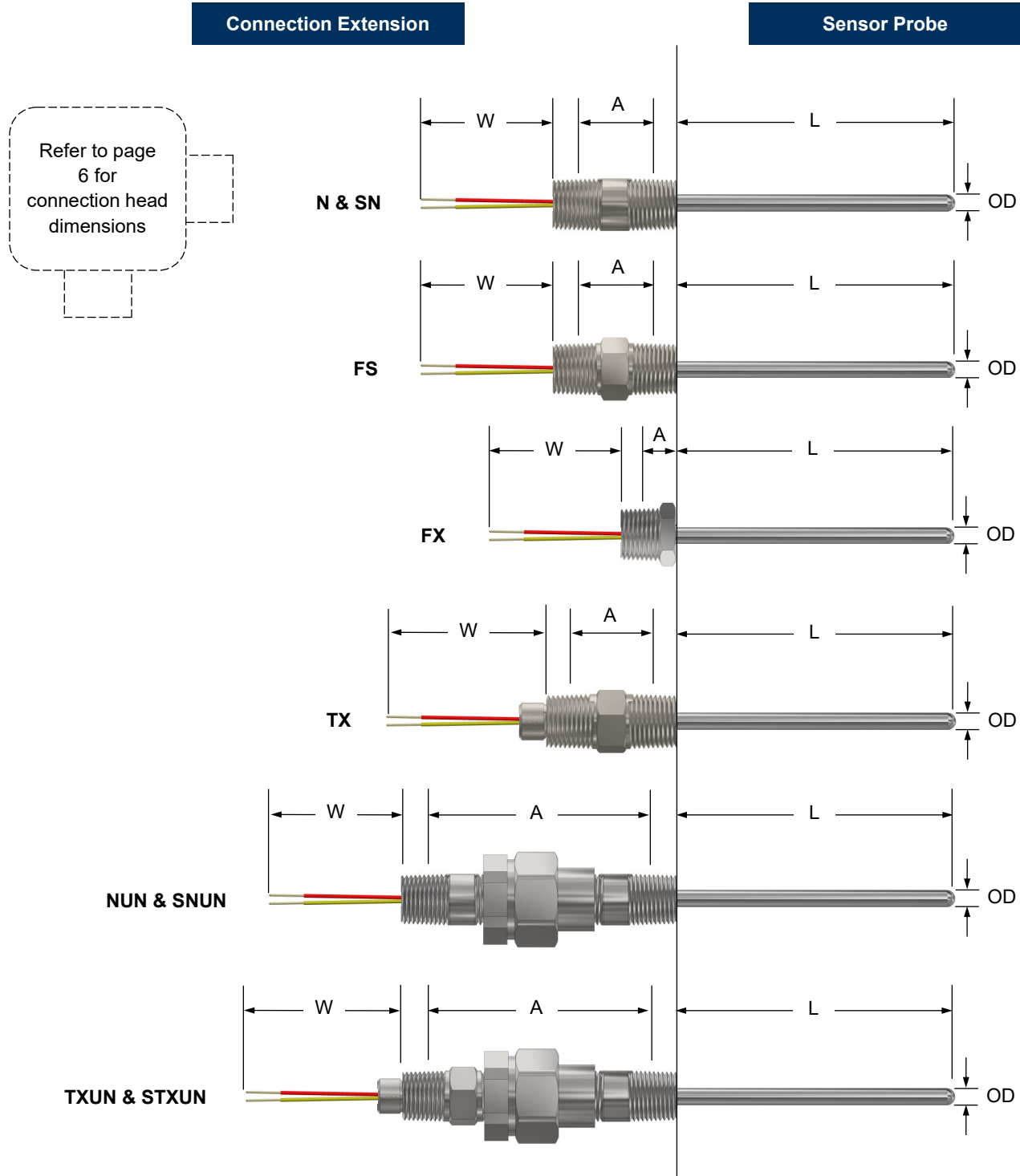
14
(0.250")



38
(0.375")



TC10 Thermocouple Assembly Dimensions



NOTE:

1. Assemblies are supplied with 6" to 8" of lead wire (W).
2. Thread engagements are approximately 0.5".



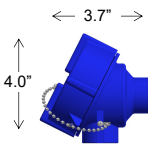
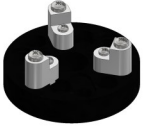
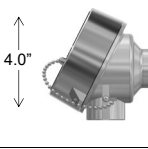
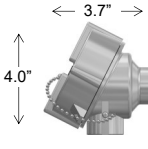
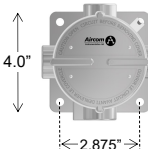
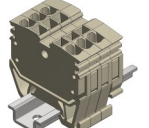
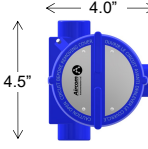
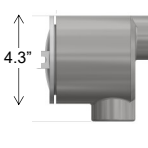
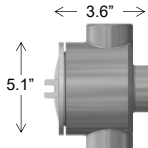
Section: Thermocouple Sensor Probes & Assemblies
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TC10 Connection Heads

Model, Outline, and Dimensions

Outline & Dimensions	Model	Connection (NPT)		Material & Type	Ambient Temperature	Terminal Block Options (T1A)
		Instrument	Conduit			
 3.7" (width) 4.0" (height)	1ALT	1/2"	1x 1/2" ²	Cast aluminum epoxy coated Buna O-ring Type 4X		 Bakelite - <u>standard</u> Screw terminals to suit sensor configuration
	2ALT	1/2"	1x 3/4"			
	3ALT	3/4"	1x 3/4"			
 3.7" (width) 4.0" (height)	1SS	1/2"	1x 1/2" ²	316 stainless steel Buna O-ring Type 4X	-50°C to +85°C (-58°F to +185°F) (+125°C (+257°F) Canada only)	 Ceramic - optional Screw terminals to suit sensor configuration Add suffix "C" to connection head model number.
	2SS	1/2"	1x 3/4"			
	3SS	3/4"	1x 3/4"			
 3.7" (width) 4.0" (height)	1AL	1/2"	1x 1/2" ²	Cast aluminum Buna O-ring Type 4		Ceramic - optional Screw terminals to suit sensor configuration Add suffix "C" to connection head model number.
	2AL	1/2"	1x 3/4"			
	3AL	3/4"	1x 3/4"			
 4.0" (width) 4.0" (height) 2.875" (width)	1ALW	1/2" ²	1x 1/2" ²	Cast aluminum epoxy coated Buna O-ring Type 4X		 Clamp technology - optional DIN mounted clamp technology terminals to suit sensor configuration Add suffix "D" to connection head model number.
	2ALW	1/2" ²	1x 3/4"			
	3ALW	3/4"	1x 3/4"			
	4ALW	3/4"	2x 3/4"			
 4.0" (width) 4.5" (height)	1ALM	1/2"	2x 1/2"			Clamp technology - optional DIN mounted clamp technology terminals to suit sensor configuration Add suffix "D" to connection head model number.
	2ALM	1/2"	2x 3/4"			
	3ALM	3/4"	2x 3/4"			
 3.6" (width) 4.3" (height)	1CAL ³	1/2" ²	1x 1/2" ²			 Splice technology - optional Wire splicing connectors contained loosely within connection head. Add suffix "S" to connection head model number.
	2CAL ³	3/4"	1x 3/4"			
 3.6" (width) 5.1" (height)	4CAL ³	1/2"	2x 1/2"	Cast aluminum Buna O-ring Type 4	-20°C to +40°C (-4°F to +104°F)	Splice technology - optional Wire splicing connectors contained loosely within connection head. Add suffix "S" to connection head model number.
	3CAL ³	3/4"	2x 3/4"			

NOTES:

1. Ambient ratings are of the connection head only, temperature assembly ambient rating is typically -50°C to +50°C (-58°F to +122°F).
2. May be supplied with an approved 3/4" x 1/2" NPT reducer bushing.
3. Type ratings are for enclosure component of assembly ONLY and not full assembly.

TC10 Thermocouple Assembly Transmitters

Transmitter Options for T1/T1A

Image	Code	Model	Specifications
	31D	5331D PR Order PN RTD, TC, Ohm, or mV input Extremely high accuracy 1.5 kVAC galvanic isolation Programmable sensor error value For DIN form B sensor head mounting	Operating Temperature: -40°C to +85°C Protection Degree: IP68 (enclosure) / IP00 (terminal) Dimensions: Ø 44 x 20.2 mm Weight: Approx. 50 g Supply Voltage: 7.2...30 VDC Isolation Voltage: 1.5 kVAC (test) / 50 VAC (working) Accuracy: Better than 0.05% of selected range Response Time (Programmable): 1...60 s Signal Range (Output): 4...20 mA Approvals: ATEX, IECEx, FM, CSA, INMETRO Refer to PR Electronics for full details
	35D	5335D PR Order PN RTD, TC, Ohm, or mV input Extremely high accuracy HART 5 protocol Galvanic isolation For DIN form B sensor head mounting	Zone 0,1,2,21,22, M1 / DIV.1, DIV.2 Operating Temperature: -40°C to +85°C Protection Degree: IP68 (enclosure) / IP00 (terminal) Dimensions: Ø 44 x 20.2 mm Weight: Approx. 50 g Supply Voltage: 8.0...30 VDC Isolation Voltage: 1.5 kVAC (test) / 50 VAC (working) Accuracy: Better than 0.05% of selected range Response Time (Programmable): 1...60 s Signal Range (Output): 4...20 mA Approvals: ATEX, IECEx, FM, CSA, INMETRO, SIL Refer to PR Electronics for full details
Image Not Applicable	37D	5337D PR Order PN	Refer to PR Electronics for full details
Image Not Applicable	47D1	5437D1 PR Order PN	Refer to PR Electronics for full details
Image Not Applicable	47D2	5437D2 PR Order PN	Refer to PR Electronics for full details
Image Not Applicable	Other	Consult Aircom for other available options	