

CONVENTIONAL TYPE THERMOCOUPLE ASSEMBLIES

NEW-FLOW conventional type thermocouple is high precision and reliability measuring temperature sensor.

Technical Data

Head Housing: Weather Proof; Explosion proof available

R type available

Insulator Ceramic Dimensions: $\phi 4.0\sim\phi 6.0$ mm on request

Insulated Material: Ceramic

Protection Tube Material: Metal, Non-metal. Please refer to the table of protection tube.

Working Temperature Limited: $-200\sim 1700^{\circ}\text{C}$, according to applicable standards table.

Measuring Junction Type: Grounded type, Ungrounded type, Ungrounded separated type

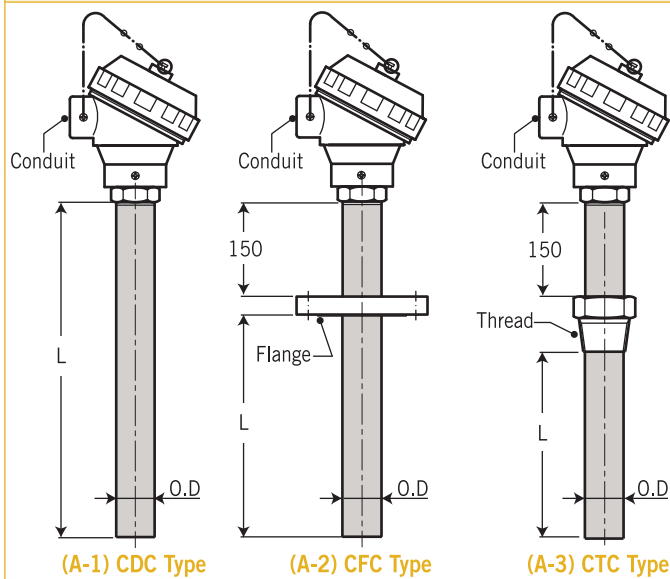


Approvals:



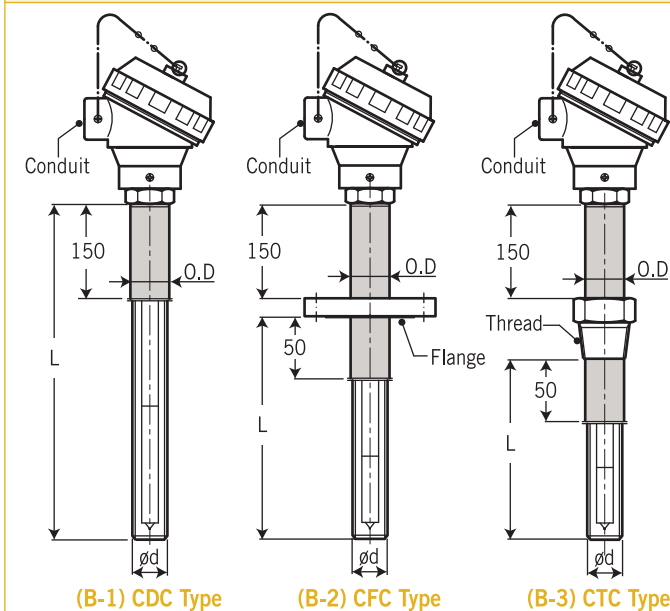
Thermocouple Model (unit=mm)

A Series (Protection Well Material: Metal)



B Series (Protection Well Material: Metal & Non-Metal)

Ceramic tube style type



Applicable Standard Table

Standard	IEC 584-2-1982/ JIS C1605-1995			ASTM E230-1996				
	Symbol	Class	Temp. Range ($^{\circ}\text{C}$)	Tolerance	Class	Temp. Range ($^{\circ}\text{C}$)	Tolerance	
B	B	2	600~1700	$\pm 0.0025 t $	STD.	870~1700	$\pm 0.5\%$	
		3	600~800	± 4				
			800~1700	$\pm 0.005 t $				
R & S	R & S	1	0~1100	± 1	STD.	0~1450	± 1.5 or $\pm 0.25\%$	
		2	0~600	± 1.5	SP.		± 0.6 or $\pm 0.1\%$	
N	N	1	-40~+375	± 1.5	STD.	0~1260	± 2.2 or $\pm 0.75\%$	
			+375~+1000	$\pm 0.004 t $				
		2	-40~+133	± 2.5	SP.		± 1.1 or $\pm 0.4\%$	
			+333~+1200	$\pm 0.0075 t $				
		3	-167~40	± 2.5	STD.		-200~0	± 2.2 or $\pm 2\%$
			-200~(-167)	$\pm 0.015 t $				

*|t|: Display temperature ($^{\circ}\text{C}$) on request range.

Wire Element with Ceramic Insulator



Measuring Junction Type



(A) Grounded Type



(B) Ungrounded Type



(C) Ungrounded Separated Type

(A) It is not suitable for using in location such as electromagnetic induction interfered by radio frequency.

(B) It has response slower than grounded. But ensured a long life, it is available for measuring in various location.

(C) It could be used in two control loop separately.

Thermowell Tube Table

A. Metal

Material	Max. Temp. Limit (°C)		Symbol	Dimension (ømm)		Max.Length (mm)
	Nor.	Max.		O.D	I.D	
SS316	850	950	C	10	7	2000
				12	9	
				15	11	3950
				21.7	15.7	
SS316L	850	950	CL	10	7	2000
				12	9	
				15	11	3950
				21.7	16.1	
SS304	850	950	A	10	7	2000
				12	9	
				15	11	3950
				21.7	15.7	
SS310S	1050	1100	D	15	7	3950
				21.7	16.1	
				27.2	21.4	
Titanium	250	500	T	15	11	3950
				17.3	12.7	
				21.7	16.1	
				27.2	21.6	
				27.2	21.6	
Kanthal AF	1100	1300	K	22	16	3950
NCF600 (Inconel 600)	1000	1250	B	22	16	3950
Sandvik P4	1050	1100	P	21.7	16.1	3950
				21.3	16	
				26.9	21.6	
UMCo 50	1150	1200	U	22	16	3950
				27	21	

B. Non-Metal

Material	Max. Temp. Limit (°C)		Symbol	Dimension (ømm)		Max.Length (mm)
	Nor.	Max.		O.D	I.D	
Silicon Carbide	1650	-	GK	20	12	1000
				by25	17	
				30	20	
				35	25	
				40	25	
				45	30	
Alumina	1600	1700	P1	8	5	1000
				10	6	
				13	9	
				15	11	
				17	13	
				20	15	
High Alumina	1700	1900	PO	8	5	1000
				10	6	
				13	9	
				15	11	
				20	16	
				15	6	
				20	10	

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Working Temperature Limits in Wire of Element Dimension Size

SINGLE ELEMENT 	Thermocouple Type	Wire Dia.		Working Temperature Limit (°C)		Available Dimensions Protection Tube (ømm)	
		Symbol	O.D	Nor.	Max.	Metal Tube	Non-Metal Tube
DOUBLE ELEMENT 	B	L	0.5	1500	1700	--	15 x 11
	R	L	0.5	1400	1600	--	15 x 11
	S	L	0.5	1400	1600	--	15 x 11
N	A	1.0	950	1000	21.7 x 16.1	--	
	B	1.6	1050	1100	21.7 x 16.1	--	
	C	2.3	1100	1150	15 x 11	--	
	D	3.2	1200	1250	12 x 9	--	

Material of Thermocouple Element

SYMBOL	COMPOSITION	TYPE	FEATURE
B	Pt-30Rh/Pt-6Rh		(+) Positive Wire: Platinum-rhodium alloy: 30% rhodium and 70% platinum (-) Negative Wire: Platinum-rhodium alloy: 6% rhodium and 94% platinum
R	Pt-13Rh/Pt		(+) Positive Wire: Platinum-rhodium alloy: 13% rhodium and 87% platinum (-) Negative Wire: PurePlatinum
S	Pt-10Rh/Pt		(+) Positive Wire: Platinum-rhodium alloy: 10% rhodium and 90% platinum (-) Negative Wire: PurePlatinum
N	Ni-Cr-Si/Ni-Si		(+) Positive Wire: Nicrosil (-) Negative Wire: Nisil

Ordering Information

1. Select for Thermocouple Model:

Model	A-Series: (A-1) CDC Type (A-2) CFC Type (A-3) CTC Type									
	B-Series: (B-1) CDC Type (B-2) CFC Type (B-3) CTC Type									
Code	Head Housing Protection									
	Weather Proof (1) HN (2) HP (3) HD (4) HI (5) HB (6) LS (7) option									
Explosion Proof (8) XDS (9) XDA (10) S1 (11) S2 (12) ES (13) EA (14) option										
Code	Conduit Connection									
	A	½" NPT Female			B	¾" NPT Female			O	option
Code	Element Type									
		B	R	S	N					
Code	Element No.									
	S	Single			D	Double				
Code	Wire Element Dimensions "O.D"									
	(1) 0.5mm (2) 1.0mm (3) 1.6mm (4) 2.3mm (5) 3.2mm (0) option									
Code	Measuring Junction									
	G	Grounded type			U	Ungrounded type			US	Ungrounded Separatd type
Code	Element Class									
	(1) Class 1 (2) Class 2 (3) Class 3									
Code	Insulated Ceramic Dimensions									
	(1) ø4.0mm (2) ø6.0mm									
Code	Process Connection for Protection Well									
	(0) Non (for CDC type)									
Thread (1) ½" (2) ¾" (3) 1" (4) 1½" (5) 2" (6) option										
Flange (7) ½" (8) ¾" (9) 1" (10) 1½" (11) 2" (12) 2½" (13) 3" (14) 4" (15) option										
Code	Thread Type and Flange Rating									
	(Q) Non (for CDC type)									
Thread (A) NPTM (B) PTM (C) BSPM (D) option										
Flange (E) 150# (F) 300# (G) 600# (H) 900# (I) PN10 (J) PN16 (K) PN25 (L) PN40 (M) JIS 5K (N) JIS 10K (O) option										

+A. Select for Model A Series: (Protection Well Material: Metal)

Code	Metal Well Material
	(1) SS316 (2) SS316L (3) SS304 (4) SS310S (5) Titanium (6) Kanthal AF (7) NCF600 (8) SUH446 (9) Sandvik P4 (10) UMC050
Code	Metal Well Outer Diameter (øO.D)
	Please refer to the thermowell table directly fill in the requesting "øO.D"mm.
Code	Well Insertion Length (L)
	Please directly fill in the requesting length "L" mm.

Complete Ordering Code

+B. Select for Model B Series: (Protection Well Material: Non-Metal)

Code	Metal Well Material
	(1) SS316 (2) SS316L (3) SS304 (4) SS310S (5) Titanium (6) Kanthal AF (7) NCF600 (8) SUH446 (9) Sandvik P4 (10) UMC050
Code	Metal Well Outer Diameter (øO.D)
	Please refer to the thermowell table directly fill in the requesting "øO.D"mm.
Code	Non-Metal Well Material
	(1) Silicon Carbide (2) Alumina (3) High Alumina
Code	Non-Metal Well Outer Diameter (ød)
	Please refer to the thermowell table directly fill in the requesting "ød"mm.
Code	Well Insertion Length (L)
	Please directly fill in the requesting length "L" mm.

Complete Ordering Code

*Complete Ordering Code = 1 + A or B