

# SHEATH TYPE THERMOCOUPLE

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

## Technical Data

**Head Housing:** Weather proof; Explosion proof available  
**N, K, E, J, T type available**

**Sensor Dimensions:**  $\phi 1.0 \sim \phi 21.7$ mm on request

**Sheath Material:** SS316, SS310, Inconel 600 on request

**Working Temperature Limited:**  $-200 \sim 1050^{\circ}\text{C}$ , according to applicable standards table.

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

## Element Material

Symbol	Positive Polarity (+)	Negative Polarity (-)
N	Alloy: nickel, chromium and silicone	Alloy: nickel and silicone
K	Alloy: nickel and chromium	Alloy: nickel
E	Alloy: nickel and chromium	Alloy: copper and nickel
J	Iron	Alloy: copper and nickel
T	Copper	Alloy: copper and nickel



### Approvals:



TD0400TJ

工電(2014)第00267號

工電(2014)第00268號

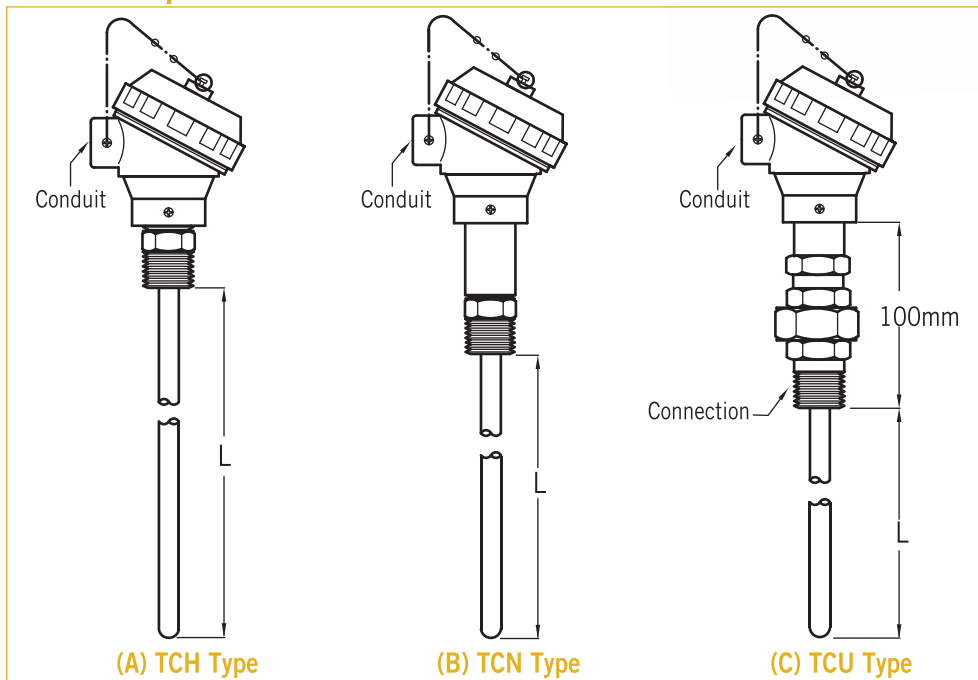
工電(2015)第00108號

工電(2015)第00103號

Explosion Proof

Weather Proof

## Thermocouple Model



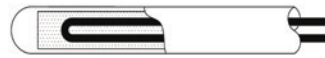
## Sensor Type

(A) Spring Loading Hexagonal Head Thread Type (TCU Type)	(C) Welded Hexagonal Head Thread Type (TCH Type)
(B) Spring Loading Nipple Thread Type (TCN Type)	(D) Welded Nipple Thread Type (TCN Type)

## 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.

## Thermocouple Sensor Size

SINGLE ELEMENT	Sheath (mm)		Wire dia. (mm)	Maximum Temperature Range (in air) Limited (unit:°C)					Maximum Length Available (unit:M)		
	O.D	t		N	K	E	J	T			
	Ø1.0	0.17	Ø0.17	900 <sup>(3)</sup>	650 <sup>(1)</sup>	650 <sup>(1)</sup>	450 <sup>(1)</sup>	300 <sup>(1)</sup>	400		
	Ø1.6	0.27	Ø0.27	1200 <sup>(3)</sup>	650 <sup>(1)</sup>	650 <sup>(1)</sup>	450 <sup>(1)</sup>	300 <sup>(1)</sup>	180		
	Ø3.2	0.47	Ø0.51	1260 <sup>(3)</sup>	750 <sup>(1)</sup>	750 <sup>(1)</sup>	650 <sup>(1)</sup>	350 <sup>(1)</sup>	130		
	Ø4.8	0.72	Ø0.76	1260 <sup>(3)</sup>	800 <sup>(1)</sup>	800 <sup>(1)</sup>	750 <sup>(1)</sup>	350 <sup>(1)</sup>	140		
	Ø6.4	0.93	Ø1.0	1260 <sup>(3)</sup>	1000 <sup>(3)</sup>	900 <sup>(2)</sup>	800 <sup>(1)</sup>	750 <sup>(1)</sup>	350 <sup>(1)</sup>	80	
	Ø8.0	1.16	Ø1.3	—	1050 <sup>(3)</sup>	1000 <sup>(2)</sup>	900 <sup>(1)</sup>	800 <sup>(1)</sup>	750 <sup>(1)</sup>	350 <sup>(1)</sup>	50
DOUBLE ELEMENT	Ø3.2	0.47	Ø0.51	—	750 <sup>(1)</sup>			750 <sup>(1)</sup>	650 <sup>(1)</sup>	350 <sup>(1)</sup>	130
	Ø4.8	0.72	Ø0.76	—	800 <sup>(1)</sup>			800 <sup>(1)</sup>	750 <sup>(1)</sup>	350 <sup>(1)</sup>	140
	Ø6.4	0.93	Ø1.0	—	1000 <sup>(3)</sup>	900 <sup>(2)</sup>	800 <sup>(1)</sup>	800 <sup>(1)</sup>	750 <sup>(1)</sup>	350 <sup>(1)</sup>	80
	Ø8.0	1.16	Ø1.3	—	1050 <sup>(3)</sup>	1000 <sup>(2)</sup>	900 <sup>(1)</sup>	800 <sup>(1)</sup>	750 <sup>(1)</sup>	350 <sup>(1)</sup>	50

\* Material:  
 (1) SS316  
 (2) SS310  
 (3) Inconel 600

## Applicable Standards Table

Standard	IEC 584-2-1982 / JIS C1605-1995			ASTM E230-1996			
	Class	Temp. Range(°C)	Tolerance(°C)	Class	Temp. Range(°C)	Tolerance(°C)	
N & K	1	-40~+375	±1.5	STD.	0~+1260	±2.2 or ±0.75 %	
		+375~+1000	±0.004 t			±1.1 or ±0.4 %	
	2	-40~+333	±2.5	SP.		±1.7 or ±0.5 %	
		+333~+1200	±0.0075 t			±1 or ±0.4 %	
	3	-167~+40	±2.5	STD.		-200~0	±1.7 or ±1 %
		-200~-167	±0.015 t				
E	1	-40~+375	±1.5	STD.	0~+870	±1.7 or ±0.5 %	
		+375~+800	±0.004 t			±1 or ±0.4 %	
	2	-40~+333	±2.5	SP.		±1.7 or ±1 %	
		+333~+900	±0.0075 t				
	3	-167~+40	±2.5	STD.		-200~0	±1.7 or ±1 %
		-200~-167	±0.015 t				
J	1	-40~+375	±1.5	STD.	0~+760	±2.2 or ±0.75 %	
		+375~+750	±0.004 t			±1.1 or ±0.4 %	
	2	-40~+333	±2.5	SP.		±1.7 or ±1 %	
		+333~+750	±0.0075 t				
T	1	-40~+125	±0.5	STD.	0~+370	±1 or ±0.75 %	
		+125~+350	±0.004 t			±0.5 or ±0.4 %	
	2	-40~+133	±1.0	SP.		±1 or ±1.5 %	
		+133~+350	±0.0075 t				
	3	-67~+40	±1.0	STD.		-200~0	±1 or ±1.5 %
		-200~-67	±0.0075 t				

**Ordering Information**

<b>Model</b>	TCH	TCN	TCU											
<b>Code</b>	<b>Head Housing Model</b>													
	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													
<b>Code</b>	<b>Sensor Type</b>													
<b>A</b>	Spring Loading Hexagonal Head Thread Type						<b>C</b>	Welded Hexagonal Head Thread Type						
<b>B</b>	Spring Loading Nipple Thread Type						<b>D</b>	Welded Nipple Thread Type						
<b>Code</b>	<b>Sensor Connection Type</b>													
	Thread Type (1) ½"NPT (2) ¾"NPT (3) Option													
<b>Code</b>	<b>Conduit Connection</b>													
	(A) ½"NPT Female (B) ¾"NPT Female (O) option													
<b>Code</b>	<b>Sensor Dimensions "O.D" mm</b>													
	(1) 1.0 (2) 1.6 (3) 3.2 (4) 4.8 (5) 6.0 (6) 8.0 (7) 1.2 (8) 2.3 (9) 2.7 (10) 3.0													
	(11) 3.175 (12) 3.8 (13) 4.0 (14) 4.5 (15) 4.72 (16) 5.0 (17) 6.35 (18) 6.4													
	(19) 9.0 (20) 10.0 (21) 12.0 (22) 12.7 (23) 12.75 (24) 13.8 (25) 15.0 (26) 16.0													
	(27) 18.0 (28) 19.0 (29) 20.0 (30) 21.34 (31) 21.7													
<b>Code</b>	<b>Sheath Material</b>													
<b>A</b>	SS316/SS316L			<b>B</b>	SS310			<b>C</b>	Inconel 600			<b>O</b>	Option	
<b>Code</b>	<b>Element Type</b>													
	N K E J T													
<b>Code</b>	<b>Element No.</b>													
<b>S</b>	Single						<b>D</b>	Double						
<b>Code</b>	<b>Measuring Junction</b>													
<b>G</b>	Grounded type													
<b>U</b>	Ungrounded type													
<b>US</b>	Ungrounded separated type													
<b>Code</b>	<b>Sensor Class</b>													
	(1) Class 1 (2) Class 2 (3) Class 3													
<b>Code</b>	<b>Sensor Insertion Length "L"</b>													
	Please directly fill in the requesting length (mm).													
<b>Code</b>	<b>Transmitter</b>													
	(1) NT-IB (2) 5335A (SIL)													
	(3) 5335D (SIL) (4) Other													
	(5) Without													
<b>Code</b>	<b>Explosion Proof Type / Head Housing Model</b>													
<b>N</b>	For Weather Proof Type													
<b>A</b>	<i>Certificate on Housing Only / S1 &amp; S2:</i> EEx d IIC-T6, II 2 GD													
<b>B</b>	<i>Taiwan Explosion Proof Certification / ES &amp; EA:</i> Ex d IIB + H2 T6 Gb													
<b>S</b>	<i>Certificate on Housing Only / XDS &amp; XDA:</i> II 2G D Ex db IIC T6 Gb II 2G D Ex tb IIIC T100°C Db													
														<b>Complete Ordering Code</b>

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**TEMPERATURE**