

# Sheathed thermocouple

## Model : R120 series

Spec. sheet no. RD01-02

### Service intended

Sheath type thermocouple generally shares the similar principle of protection tube type thermocouple. However, it has a different construction.

It is filled with inorganic insulating material between the thin wire and the metal sheath, and it shares the same body as one.

Inside the thin stainless steel pipe, thermocouple element is located, and then stainless pipe is filled with a MgO.

Normally, thermocouple is used with a thermowell.

The advantages over protection tube types are ; it has a faster response time, it has a broader temperature range (-200 ~ 1,600°C), longer life, it can be bended to install according to its required installation site condition, a better mechanical strength, and a better internal pressure control.



### Standard features

#### Element

K, E, J, T, N

#### Tolerances on temperature reading

Class 1, Class 2 (DIN/IEC584-2, BS/EN60584-2, JIS C1602)  
Special, Standard (ASTM E230 E988 ISA-MC96.1)

#### Head type

Compact Type	General Type Weatherproof
Explosion Proof Type	Explosion Proof Type Double Conduit
Ex d IIC T6 IP67	Ex d IIC T6 IP67

#### Head material

ALDC (Standard)  
304SS (Not available compact type)  
316SS (Not available compact type)

#### Hot junction shape

Grounded  
Ungrounded

#### Sheath outer diameters

1.0, 1.6, 2.3, 3.2, 4.8, 6.4, 8.0, 9.5 and 12.7 mm  
Double element is not available for 1.0 and 1.6 mm sheath outer diameter

**1. Base model**

- R121** Single element  
**R122** Double (Duplex) element

**2. Head & tip shape type**

- A** General (Weatherproof) and ungrounded  
**B** General (Weatherproof), ungrounded and spring - loaded  
**C** General (Weatherproof) and grounded  
**D** General (Weatherproof), grounded and spring - loaded  
**E** General (Weatherproof) and exposed  
**F** Explosion proof and ungrounded  
**H** Explosion proof and grounded  
**K** Explosion proof and exposed  
**L** Compact (Small) and ungrounded  
**M** Compact (Small) and grounded  
**N** Compact (Small) and exposed  
**P** Explosion proof (Double conduit) and ungrounded  
**Q** Explosion proof (Double conduit) and grounded  
**R** Explosion proof (Double conduit) and exposed

**3. Element**

- K** K (0.75)  
**J** J (0.75)  
**T** T (0.75)  
**N** N (0.75)  
**E** E (0.5)  
**B** B (0.5)  
**1** K (0.4)  
**2** J (0.4)  
**3** T (0.4)  
**4** E (0.4)  
**5** N (0.4)  
**R** R (0.25)  
**S** S (0.25)  
**Z** Other

**4. Sheath material**

- 1** 316SS  
**2** Inconel 600  
**3** 310SS  
**4** 446SS  
**5** 347SS  
**6** 321SS  
**7** 316L SS  
**8** Other

**5. Sheath outer diameter (mm)**

- A9** 1.0  
**B9** 1.6  
**C9** 2.3  
**D9** 3.2  
**E9** 4.8  
**F9** 6.4  
**G9** 8.0  
**H9** 9.5  
**L9** 12.7

**6. Conduit connection**

- 1** ½" PF  
**2** ½" PT  
**3** ½" NPT  
**4** ¾" PF  
**5** ¾" PT  
**6** ¾" NPT  
**9** Other

**7. Mounting type**

- X** Refer to mounting table (11<sup>th</sup> character)

**8. Connection type**

- XX** Refer to mounting table (12<sup>th</sup> and 13<sup>th</sup> character)

**9. Insert length**

- X** Refer to insert length table (14<sup>th</sup> character)

**10. Option**

- 0** None  
**1** Accessories  
**4** Epoxy coated ALDC head  
**5** Head material : 304SS (Only for weatherproof head)  
**6** Head material : 316SS (Only for weatherproof head)  
**7** Accessories and epoxy coated ALDC head  
**8** Accessories and head material : 304SS  
 (Only for weatherproof head)  
**9** Accessories and head material : 316SS

1	2	3	4	5	6	7	8	9	10
R121	A	K	1	F9	1	X	XX	X	0

Sample  
ordering code

## Mounting, connection type and insert length table - 11<sup>th</sup> thru 14<sup>th</sup> characters

11 <sup>th</sup> character		12 <sup>th</sup> character		13 <sup>th</sup> character		14 <sup>th</sup> character	
Code	Mounting	Code	Connection size and connector material	Code	Connection type	Code	Insert length (mm)
A	None	A	None	A	None	A	100 mm
	Fixed thread lag length						
B	80 mm	B	1/8" and 304SS	B	PT	B	200 mm
C	100 mm	C	1/4" and 304SS	C	NPT	C	300 mm
D	150 mm	D	3/8" and 304SS	D	PF	D	400 mm
E	200 mm	E	1/2" and 304SS	E	NPS	E	500 mm
F	Other	F	3/4" and 304SS	F	UNF	F	600 mm
	Fixed flange lag length						
G	80 mm	G	1" and 304SS	G	BSPT	G	700 mm
H	100 mm	H	1 1/4" and 304SS	H	BSPF	H	800 mm
J	150 mm	J	1 1/2" and 304SS	J	MM	J	900 mm
	Fixed flange lag length						
K	200 mm	K	2" and 304SS	K	ANSI 150 Lb RF	K	1,000 mm
L	Other	L	3" and 304SS	L	ANSI 150 Lb FF	L	1,500 mm
M	Movable thread	M	7/16" and 304SS	M	ANSI 300 Lb RF	M	2,000 mm
N	Movable flange	N	1/8" and 316SS	N	ANSI 300 Lb FF	N	2,500 mm
P	Compression fitting	P	1/4" and 316SS	O	Sanitary	P	3,000 mm
	Union and nipple length			P	ANSI 600 Lb RF		
Q	100 mm length	Q	3/8" and 316SS	Q	ANSI 600 Lb FF	Q	3,500 mm
R	150 mm length	R	1/2" and 316SS	R	JIS 5K RF	R	4,000 mm
*Y	150 mm length						
S	Other	S	3/4" and 316SS	S	JIS 5K FF	S	4,500 mm
	Nipple length						
T	50 mm	T	1" and 316SS	T	JIS 10K RF	T	5,000 mm
U	100 mm	U	1 1/4" and 316SS	U	JIS 10K FF	U	6,000 mm
V	150 mm	V	1 1/2" and 316SS	V	JIS 20K RF	V	7,000 mm
W	Other	W	2" and 316SS	W	JIS 20K FF	W	8,000 mm
X	Fixed thread	X	3" and 316SS	X	ANSI 1,500 Lb RTJ	X	9,000 mm
		Y	7/8" and 316SS	Y	ANSI 2,500 Lb RTJ	Y	10,000 mm
Z	Other	Z	Other	Z	Other	Z	Other

- Note for 14<sup>th</sup> character, please choose a code of next higher length if applicable length is not. Actual length shall be specified.
- Note for \*Y code (Oil sealing type), only available with spring-loaded head type.

A large empty rectangular box with a thin black border, intended for writing a memo.