Explosion proof
Metallic protection tube thermocouple and RTD
Model : R960 series

Spec. sheet no. RD09-07

Service intended

Protection tube type is constructed with the insulator which insulates the element wire, and with the protection tube which protects the insulator.
To install this model on the process pipe or on the container, it normally attaches to a connector,a flange, or a compression fitting on the protection tube.
It can be manufactured as it is required for its use.
As its special features, it does not have any resistance issues with a lead wire, and its immediate response to a temperature change leads to a less error rate of temperature change in a broade range.

Standard features

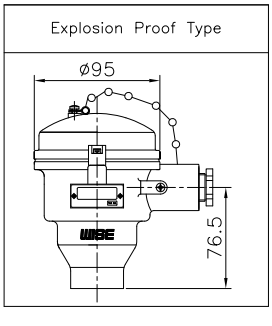
Element

Thermocouple : K, E, J, T, N
RTD : Pt 100Ω at 0℃

Head material

ALDC (Standard)
316SS

Head type



Certificates

KCS Ex d e IIC T6 IP67

Tolerance on temperature reading

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

■ RTD
Class A : ±(0.15 + 0.002 l t l)
Class B : ±(0.3 + 0.005 l t l)

Tube and element wire size (Thermocouple only)

Outer diameter (mm)	
Tube	Element wire
6.4	0.65
8.0	0.65 (1.0)
10.0	1.0 (1.6)
12.0	1.0 (1.6)
15.0	1.0, 1.6 (2.3)
17.3	1.6 (2.3) (3.2)
21.7	2.3 (3.2)

* ( ) Standard

Protecting tube outer diameter (RTD only)

6.4, 8.0 and 10 mm

1. Base model

R961	Thermocouple single element
R962	Thermocouple double (Duplex) element
R963	RTD single element
R964	RTD double element

2. Head and tip shape type

A	ALDC head and ungrounded
B	ALDC head and grounded
C	316SS head and ungrounded
D	316SS head and grounded

3. Element

K	K (0.75)	**1**	K (0.4)
J	J (0.75)	**2**	J (0.4)
T	T (0.75)	**3**	T (0.4)
E	E (0.5)	**4**	E (0.4)
N	N (0.75)	**5**	N (0.4)
Q	Pt 100Ω (B), 3 wire	**9**	Pt 100Ω (A), 3 wire
U	JPt 100Ω (B), 3 wire	**0**	JPt 100Ω (A), 3 wire
A	Pt 100Ω (B), 4 wire	**C**	Pt 100Ω (A), 4 wire
B	JPt 100Ω (B), 4 wire	**D**	JPt 100Ω (A), 4 wire
Z	Other		

4. Tube material

0	304SS
1	316SS
2	Inconel 600
3	310SS
4	446SS
5	347SS
6	321SS
7	316L SS
9	Other

5. Tube and element outer diameter (mm)

F0	6.4 and 0.65	**M1**	15.0 and 1.0
F9	6.4 for RTD	**M2**	15.0 and 1.6
G0	8.0 and 0.65	**M3**	15.0 and 2.3
G1	8.0 and 1.0	**P2**	17.3 and 1.6
G9	8.0 for RTD	**P3**	17.3 and 2.3
J1	10.0 and 1.0	**P4**	17.3 and 3.2
J2	10.0 and 1.6	**Q3**	21.7 and 2.3
J9	10 for RTD	**Q4**	21.7 and 3.2
K1	12.0 and 1.0		
K2	12.0 and 1.6		

6. Conduit connection

1	½" PF
2	½" PT
3	½" NPT
4	¾" PF
5	¾" PT
6	¾" NPT
7	None
8	M20 x 1.5P
9	Other

7. Mounting type

X	Refer to mounting table (11th character)

8. Connection type

XX	Refer to connection type table (12th and 13th character)

9. Insert length

X	Refer to insert length table (14th character)

10. Option

0	None
1	Accessories
4	Epoxy coated ALDC head
7	Accessories and epoxy coated ALDC head

1	2	3	4	5	6	7	8	9	10
R961	**A**	**K**	**1**	**F1**	**2**	**X**	**XX**	**X**	**1**

Sample ordering code

Mounting, connection type and insert length table - 11th thru 14th characters

11th character		12th character		13th character		14th character	
Code	Mounting	Code	Connection size and connector material	Code	Connection type	Code	Insert length (mm)
A	None	A	None	A	None	A	100
	Fixed thread lag length	B	⅛" and 304SS	B	PT	B	200
B	80 mm	C	¼" and 304SS	C	NPT	C	300
C	100 mm	D	⅜" and 304SS	D	PF	D	400
D	150 mm	E	½" and 304SS	E	NPS	E	500
E	200 mm	F	¾" and 304SS	F	UNF	F	600
F	Other	G	1" and 304SS	G	BSPT	G	700
	Fixed flange lag length	H	1¼" and 304SS	H	BSPF	H	800
G	80 mm	J	1½" and 304SS	J	MM	J	900
H	100 mm	K	2" and 304SS	K	ANSI 150 Lb RF	K	1,000
J	150 mm	L	3" and 304SS	L	ANSI 150 Lb FF	L	1,500
K	200 mm	M	7/16" and 304SS	M	ANSI 300 Lb RF	M	2,000
L	Other	N	⅛" and 316SS	N	ANSI 300 Lb FF	N	2,500
M	Movable thread	P	¼" and 316SS	O	Sanitary	P	3,000
N	Movable flange	Q	⅜" and 316SS	P	ANSI 600 Lb RF	Q	3,500
P	Compression fitting	R	½" and 316SS	Q	ANSI 600 Lb FF	R	4,000
	Union and nipple length	S	¾" and 316SS	R	JIS 5K RF	S	4,500
Q	100 mm length	T	1" and 316SS	S	JIS 5K FF	T	5,000
R	150 mm length	U	1¼" and 316SS	T	JIS 10K RF	U	6,000
S	Other	V	1½" and 316SS	U	JIS 10K FF	V	7,000
	Nipple length	W	2" and 316SS	V	JIS 20K RF	W	8,000
T	50 mm	X	3" and 316SS	W	JIS 20K FF	X	9,000
U	100 mm	Y	7/16" and 316SS	X	ANSI 1,500 Lb RTJ	Y	10,000
V	150 mm	Z	Other	Y	ANSI 2,500 Lb RTJ	Z	Other
W	Other			Z	Other		
X	Fixed thread						
Z	Other						

■ Note for 14th character, please choose a code of next higher length if applicable length is not. Actual length shall be specified.

Memo