

Intrinsic safety and increased safety type thermocouple and resistance temperature detector

Model : R950 (ETR10 series)

Spec. sheet no. RD09-05

Service intended

Measuring the temperature in the area where combustible gas, particles and flammable liquid exist can be a very dangerous task. The electrical energy of measuring instrument is lower than electric motor, however, the malfunction of the instrument or the accident can cause to start the explosion. Therefore, ETR10 series is explosion proof type product which is designed to be used in a critical danger zone (Ex e=Zone 1, Ex ia=Zone 0) by acquiring IECEx and ATEX certification.



Examination certificate

- ATEX II 1/2G Ex ia IIC T6...T1 Ga/Gb
- IECEx Ex ia IIC T6...T1 Ga/Gb
 Ui = 30 V, Li = 100 mA, Pi = see the instruction manual
 Ci = 0.1 nF, Li = 0.01 mH
- ATEX 2G Ex e IIC T6...T1 Gb
- IECEx Ex e IIC T6...T1 Gb



Remote type



Lead wire type

Standard features

Element

Thermocouple : K, E
 RTD : Pt 100Ω at 0°C

Standard nipple material

304SS (Head type only)

Standard nipple length

100 or 150 mm (Head type only)

Enclosure material

Die cast aluminium (ALDC) or 316SS (Head type only)

Standard measuring material

316SS

Electrical rating

10 mA 4 VDC resistance load

Standard process connection

½" NPT

Ambient temperature

-20 ~ +60°C (Ex ia)

-40 ~ +65°C (Ex e)

Head type

Explosion Proof Type	Explosion Proof Type Double Conduit
ATEX II 1/2 G Ex ia IIC T6 IECEx Ex ia IIC T6	ATEX II 1/2 G Ex ia IIC T6 IECEx Ex ia IIC T6

1. Base model

R951	ETR10 series single element (ATEX II 1/2G Ex ia IIC T6...T1 Ga/Gb)
R952	ETR10 series double element (ATEX II 1/2G Ex ia IIC T6...T1 Ga/Gb)
R953	ETR10 series single element (IECEX Ex ia IIC T6...T1 Ga/Gb)
R954	ETR10 series double element (IECEX Ex ia IIC T6...T1 Ga/Gb)
R955	ETR10 series single element (ATEX II 2G Ex e IIC T6...T1 Gb)
R956	ETR10 series double element (ATEX II 2G Ex e IIC T6...T1 Gb)
R957	ETR10 series single element (IECEX Ex e IIC T6...T1 Gb)
R958	ETR10 series double element (IECEX Ex e IIC T6...T1 Gb)

2. Head type

A	Single entry head type (With ungrounded)
B	Dual entry head type (With ungrounded)
C	Single entry head type and spring load type (With ungrounded)
D	Dual entry head type and spring load type (With ungrounded)
E	Single entry head type and remote mounting with terminal head type (With ungrounded)
F	Dual entry head type and remote mounting with terminal head type (With ungrounded)
G	Extended lead wire type (With ungrounded)
H	Extended lead wire with steel armored tube type (With ungrounded)
J	Single entry head type (With grounded)
K	Dual entry head type (With grounded)
L	Single entry head type and spring load type (With grounded)
M	Dual entry head type and spring load type (With grounded)
N	Single entry head type and remote mounting with terminal head type (With grounded)
P	Dual entry head type and remote mounting with terminal head type (With grounded)
Q	Extended lead wire type (With grounded)
R	Extended lead wire with steel armored tube type (With grounded)

3. Element

K	K type thermocouple
E	E type thermocouple
Q	Pt 100Ω resistance thermometer - 3 wire type
V	Pt 100Ω resistance thermometer - 4 wire type

4. Sheath material

1	316SS
2	Inconel 600 (Thermocouple only)
3	310SS (Thermocouple only)
6	321SS (Thermocouple only)

5. Sheath outer diameter (mm)

D9	3.2
E9	4.8
F9	6.4
G9	8.0

6. Conduit connection

1	½" PF	5	¾" PT
2	½" PT	6	¾" NPT
3	½" NPT	7	M20 * 1.5
4	¾" PF	8	None

7. Extension length and type

A	None - Remote mounting with terminal head type and extended lead wire type only * Minimum lead wire length = 100 mm (Actual length will be specified on remark column)
P	Com. fitting type - Remote mounting with terminal head and extended lead wire type only * Minimum lead wire length = 100 mm (Actual length will be specified on remark column)
Q	100 mm (Nipple union nipple) - Extended direct mounting with terminal head type
R	150 mm (Nipple union nipple) - Extended direct mounting with terminal head type
U	100 mm (Nipple) - Extended direct mounting with terminal head type
V	150 mm (Nipple) - Extended direct mounting with terminal head type

8. Connection type

A	None
E	½" NPT and 304SS
F	¾" NPT and 304SS
R	½" NPT and 316SS
S	¾" NPT and 316SS

9. Insert length (mm)

A	100	F	600
B	200	G	700
C	300	H	800
D	400	J	900
E	500	K	1,000

10. Outer material of lead wire

A	PVC
B	Teflon
C	Non-asbestos
X	None

11. Option

0	None
1	Accessories
4	Accessories and ATEX certificate
5	Accessories and IECEx certificate

1	2	3	4	5	6	7	8	9	10	11
R951	A	K	1	D9	2	U	E	A	X	0

Sample ordering code

Tolerance classes

Thermocouple

Standard	Type	Class	Temperature range	Maximum deviation
EN 60584 IEC 584	K	1	-40 ~ 375°C	±1.5°C
			375 ~ 1,000°C	±0.0040 X t
		2	-40 ~ 333°C	±2.5°C
			333 ~ 1,200°C	±0.0075 X t
	E	1	-40 ~ 375°C	±1.5°C
			375 ~ 800°C	±0.0040 X t
2		-40 ~ 333°C	±2.5°C	
		333 ~ 900°C	±0.0075 X t	

Thermocouple

Standard	Type	Class	Temperature range	Maximum deviation
ASME/ANSI MC96.1	K	Special	-0 ~ 275°C	±1.1°C
			275 ~ 1,250°C	±0.0040 X t
		Standard	-0 ~ 293°C	±2.2°C
			293 ~ 1,250°C	±0.0075 X t
	E	Special	-0 ~ 293°C	±1.0°C
			293 ~ 870°C	±0.0040 X t
		Standard	-0 ~ 293°C	±1.7°C
			293 ~ 870°C	±0.0050 X t

Resistance thermometer

Type	Nominal resistance (Ω at 0°C)	Class	Temperature range	Maximum deviation
Pt100	100	A	-30 ~ 350°C	±(0.15 + 0.0020 t)
			-50 ~ -30 / 350 ~ 400°C	±(0.30 + 0.0050 t)
		B	-50 ~ 400°C	±(0.30 + 0.0050 t)

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