

INSTRUCTION MANUAL

THERMOCOUPLE & RESISTANCE TEMPERATURE DETECTOR

March 28, 2017 (Rev.5)



Sheath type



**Non-metallic
protection tube type**



**Metallic protection
tube type**

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WARNING

***Incorrect use of temperature sensor can cause damage and injuries therefore
The user must ensure that temperature sensor has to be installed and used as the following***

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A. General

ETR Series is made of aluminium alloy or stainless steel enclosure consist of threaded cover and case.

These temperature thermocouples or R.T.D are sensitive devices which contain ceramic parts for temperature measurement. Thermocouple and R.T.D are one sheathed that is composed of fine gauged metal sheath in which high purity MgO powder is tightly compacted around thermoelement wires.

These temperature sensors are sensitive to vibration and mechanical shock, therefore if installations are subjected to mechanical shocks and vibrations, the sensor must be mounted at a distance

Packages should not be removed untill installation start because these temperature sensor sould be kept in a clean, dry place during storage.

B. Thermocouples

Thermocouple is one sheathed thermocouple that is composed of fine gauged metal sheath in which high purity MgO powder is tightly compacted around thermoelement wires.

Thermocouple has high insulation and pressure resistance. It has also high reliability because of its EMF tolerance falling within the limits stipulated by JIS, ANSI, DIN standard

C. Resistance temperature detectors

Resistance temperature detectors operate under the principle the electrical resistance of certain metals increases or decreases in a repeatable and predictable manner with a temperature change.

RTD's may have a lower temperature range than some thermocouples and a slower response time however they are more stable and repeatable over long periods of time.

Sheathed RTD is a registered trade name of one metal sheathed RTD that has a monolithic structure comprising of sheathed element and MI cable(MgO compacted, metal sheathed lead wires).

This is newly developed RTD with quick response, longer service and life and high accuracy under critical conditions.

D. ETR Series Specification

Union nipple material	: Stainless steel 304SS
Union nipple length	: 150 mm
Enclosure material	: Die cast aluminum(ALDC12.1) or Stainless steel (316SS)
Enclosure classification	: Ex d IIC T6(IEC 60079-0, 60079-1), IP 65
Electrical rating	: 10 mA 4 VDC resistance load
Electrical connection	: 1/2" PF, 3/4" PF (With Connector) : 1/2" NPT, 3/4" NPT, M20 x 1.5P (Without Connector)
Process connection	: 1/2" PT or NPT
Ambient temperature	: -40 °C ~ +65 °C
Cable entry type	: 1 entry type or 2 entry type
Option	: Spring load type, Ceramic type, Transmitter type

E. Mounting and Operation

1. Installation

- 1.1 Use a correctly sized spanner to tighten connections

NEVER TWIST THE CASE BY HAND !

- 1.2 Users are advised to mount with protection tubes(thermowell) for maintenance

- 1.3 To avoid thermal conduction errors, the immersion depth should be :

in fluids 6~8 times greater or in gases 10~15 times greater than the protective tube diameter

- 1.4 Conduit connection wire of ETR series must be use a explosion proof type cable gland

(The cable gland must use only the certified product for the cable entry)

- 1.5 Cable entry of not use shall be stop up entry with stopping plug



F. Maintenance

1. The general safety of facility often depends on the reliability of indications on the temperature gauge installed in the facility, thus any temperature gauge that seems to be abnormal must be removed immediately, then tested if necessary confirmation of temperature gauge accuracy should be maintained by periodic testing
2. Verification and recalibration must be carried out by appropriate test equipment and qualified personnel

G. Special condition for safe use

1. Sensitive element are fragile, they should not be submitted to mechanical impact during mounting and installation.
2. The user must take all precautions to ensure that thermal transfer from sensing element to connection head does not affect the temperature class T6 in connection head.
3. The sensitive element of ETR-4 must be installed outside the explosion hazard zone.
4. Only certified cable gland must be used.
5. Repairs of flameproof joints should not be undertaken by the end user. In the event that flameproof joint must be repaired, contact the manufacturer.