

User Manual

Product Name: Skin Type Thermocouple

MODEL : R600



INSTRUCTION MANUAL FOR SAFE USE

Please read carefully this instruction manual for safety before using the product.

Incorrect handling can lead into the fault of the product and cause damage and accidents.



WARNING

1. For safety, only technicians specializing in instrumentation work and electric work should perform attachment.
2. Please use the product in the range of rated input/output specs. in the manual.
Otherwise, the product can have a problem.
3. Please attach this product into the use environment described in the manual.
Otherwise, the product can have a problem.
4. For wiring, please comply with indoor wiring rules and electrical installations standard.
5. Make sure to power off before wiring work.
Otherwise, the product can have a problem.
6. Please the solderless terminal covered with insulation for the ends of electric wires.
7. DO NOT disassemble this product under any circumstances.
Otherwise, the product can have a problem.
8. Please be careful about excessive welding in attaching the product.
The temperature sensor pair can be damaged.
9. Please choose a proper guard pipe that meets process conditions.
Please bear in mind that a person placing an order is fully responsible for a wrong choice of a guard pipe.

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1. Introduction

TUBE-SKIN TYPE Thermocouple and Thermoresistor made by WISE CONTROL INC. are precisely customized products.

These products should be tested and kept at a proper place.

To maintain the best use state during their available period, it is necessary to meet the required conditions in various documents, test reports and instruction manual

2. Purpose

TUBE-SKIN TYPE Temperature Sensor is used to measure the surface temperature of pipes and others. The measured values are used for instruction, record and control made by the control part or process system.

The temperature sensor can directly be attached to a pipe without a guard pipe.

Depending on process conditions, for use it is possible to install Shield-Cover which is made in the process of inserting insulators like Zrcar Tape into the whole Sheath or insulator into temperature sensor pair.

3. Warranty

This manufacturer is not responsible for any damage caused by incompliance with this instruction manual and for any discretionary remodeling, change, and repair, and in such cases, the product warranty is subject to lapse.

4. Name Plate

4. 1 IEC Explosion-Proof Class

< Flameproof Enclosure >	
1	TYPE : ETR Series
2	Ex d IIC T6 Gb(Tamb = -20℃ to +60℃)
3	IECEX KGS 05.0001/02 Cable entry : See Installation Instruction Document
4	Tag No.
5	Do not open when an explosive atmosphere may be present

< Intrinsically Safe Circuit >	
1	TYPE : ETR10 Series
2	Ex ia IIC T6 ...T1 Ga/Gb (Tamb = -20℃ to +60℃)
3	IECEX KTL 12.0001X Ui = 30V , Ii = 100mA Pi = see the instruction manual Ci = 0.1nF, Li = 0.01mH
4	Tag No.

1. Name of Each Type	4. TAG Number
2. Explosion-Proof Class & Available T	5. Warning
3. Explosion-proof Certified Number	

4. 2 ATEX Explosion-Proof Grade

< Flameproof Enclosure >

1 TYPE : ETR Series

2 II 2G Ex d IIC T6 Gb

3 (Tamb = -20°C to +60°C)

4 LCIE 06 ATEX 6072X/02

5 Cable entry : See Installation Instruction Document

6 Tag No.

Do not open when an explosive atmosphere may be present

7 0081

8

9

< Intrinsically Safe Circuit >

1 TYPE : ETR10 Series

2 KEMA 09ATEX0006X

3 II 1/2 G Ex ia IIC T6 ...T1 Ga/Gb

4 (Tamb = -20°C to +60°C)

5 Ui = 30V , li = 100mA

6 PI = see the instruction manual

CI = 0.1nF, LI = 0.01mH

Tag No.

199, Sanggal-dong, Gihung-gu, Youngin-si, Gyeonggi-do, Korea

WISE CONTROL INC.

7 0344

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1. Name of Each Type 2. CE Certified Mark 3. Explosion-Proof Class 4. Available Temp.	5. Explosion-Proof Certificate 6. TAG Number 7. CE Mark 8. Certified Number 9. Warning
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4. 3 Explosion-Proof Class

1

2

3

4

Ex d II C T6 IP65

(Tamb = -20°C to +60°C)

Tag No.

Do not open when energized !

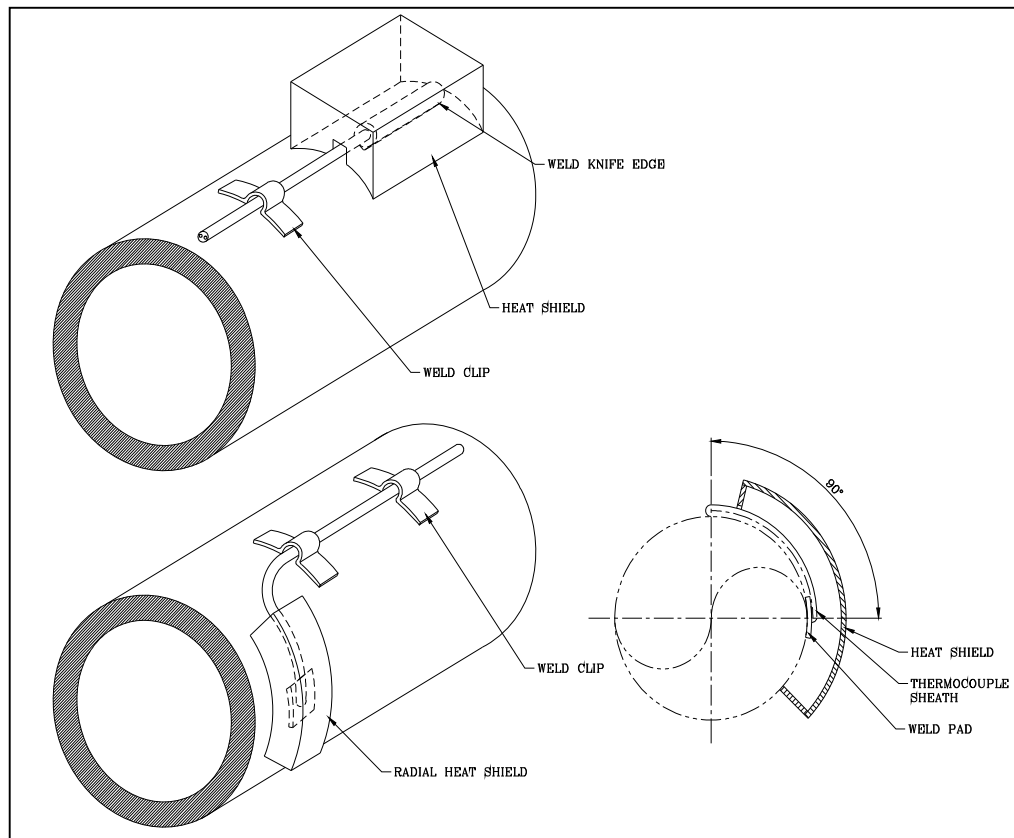
1. Explosion-Proof Class 2. Available Temp.	3. TAG Number 4. Warning
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6. Return and Package of the Product

6. 1 To return the product for re-correction or repair, it is required to use its original package or a safe packing method and return any relevant documents.
6. 2 It is required to prevent the product from being exposed to humidity, dust and other pollution sources in transit.
6. 3 It is required to pack the product to prevent it from being exposed to vibration and impacts in transit.
6. 4 The product damaged in transit is recorded in a document, and it is possible to demand all of the compensation for installation delay to a relevant transport company.

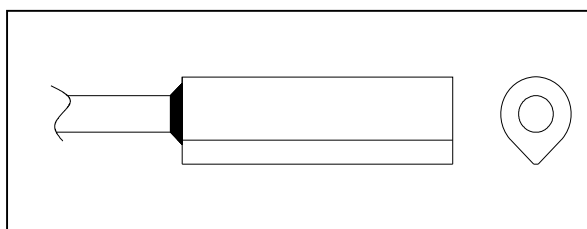
7. External Appearance & Functions

7.1 External appearance of temperature sensor

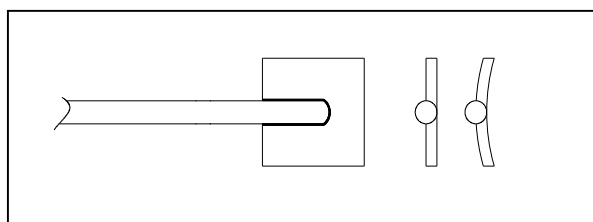


7.2 Attachment type of the measurement part

Knife-Edge Type



Pad Type



7.3 Functions

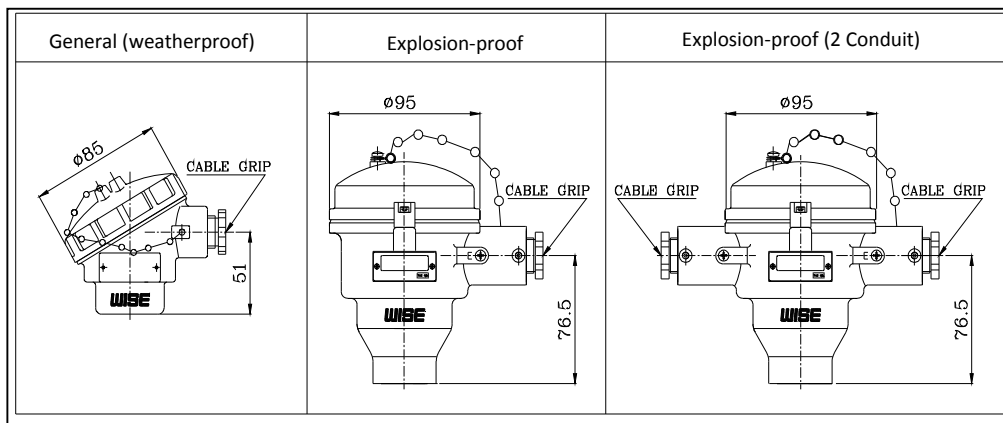
Process temperature is measured by the temperature measurement sensor of R600 Series Model. A proper one is used depending on temperature conditions (low temp., mid temp., and high temp.)

Temperature measurement element is the temperature sensor suitable to EN60584(Thermocouple) and EN60751(Thermoresistor) specifications.

Temperature sensor can be made with or without transmitter.

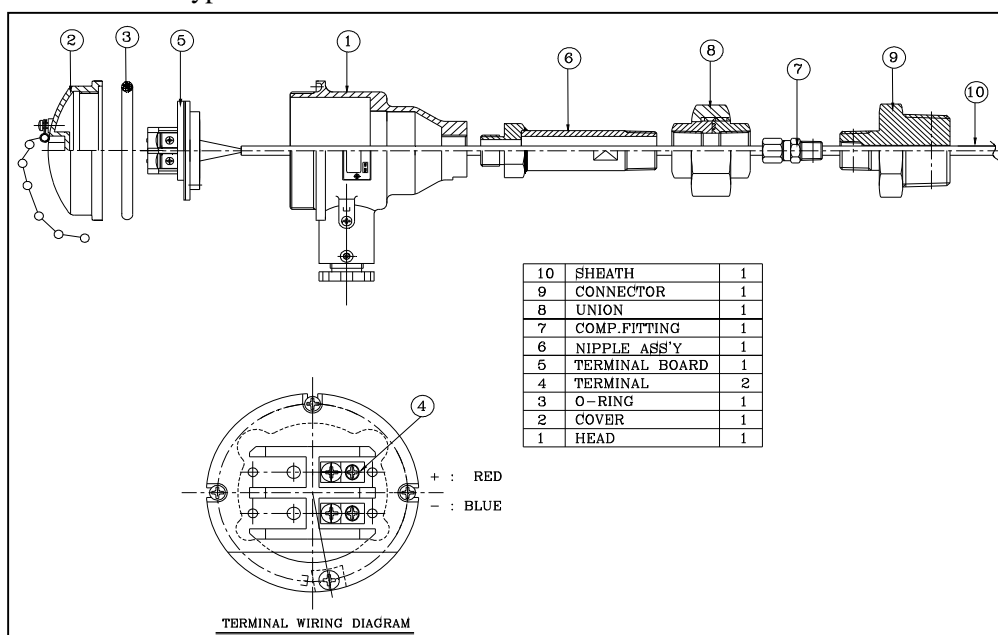
8. Head & Connection of Connectors

8.1 Head (Terminal Box)

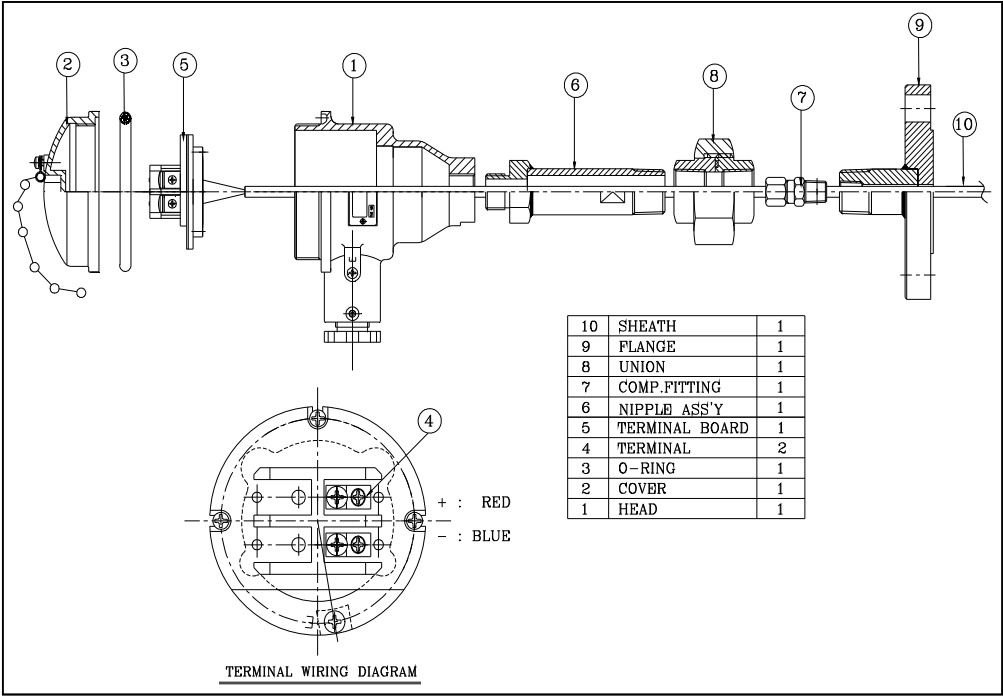


8.2 Connector Type & Connection

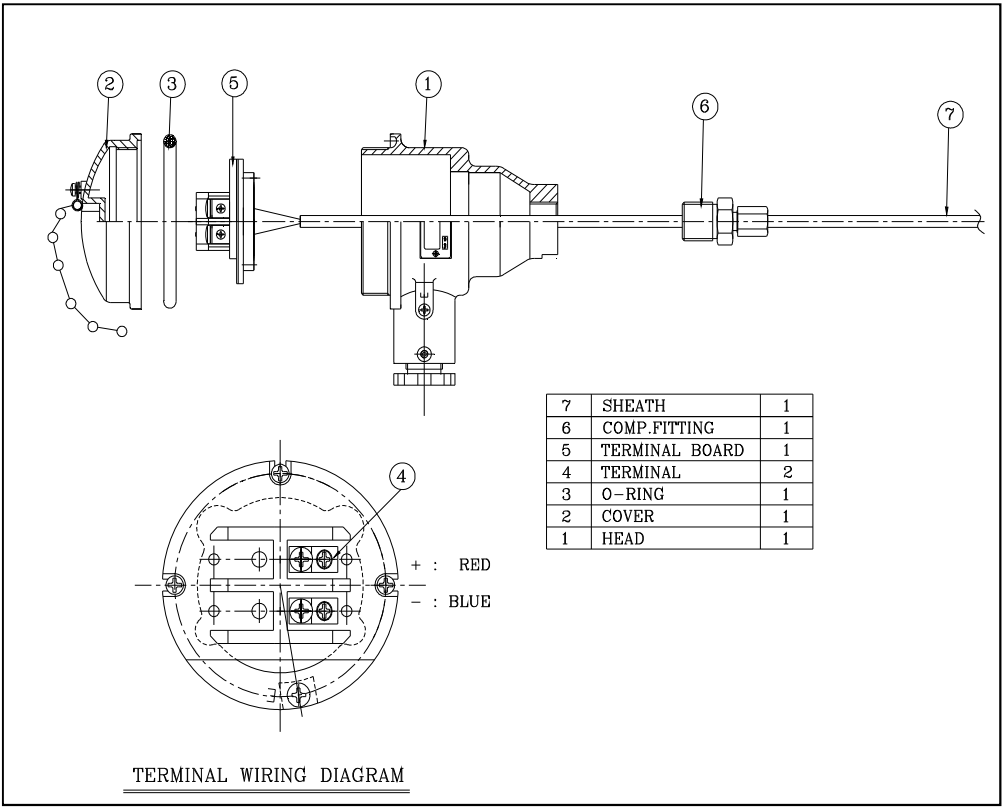
8.2.1 Connector Type



8.2.2 Flange Connector Type

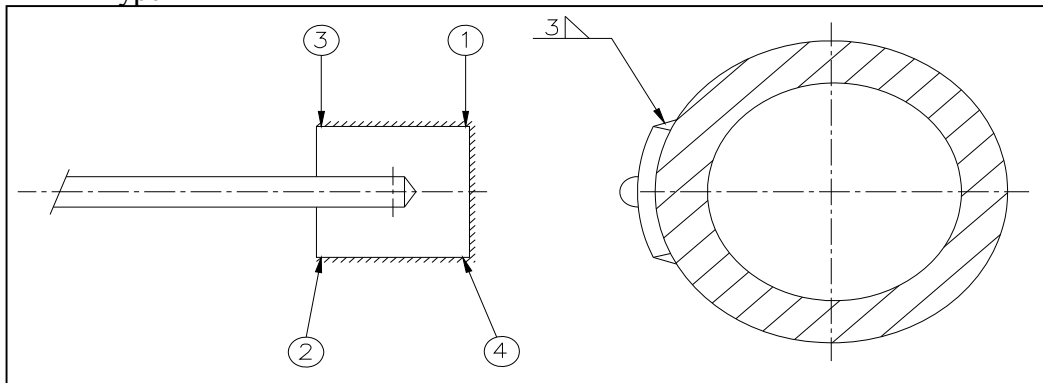


8.2.3 Head Connector Type



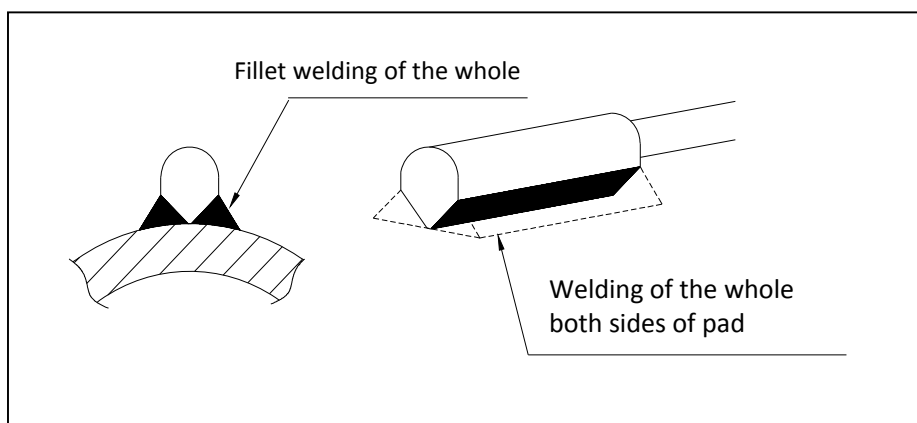
9. How to Attach PAD

9.1 PAD Type



- 1) Remove the impurities on the tube welding part surface with a grinder, etc.
- 2) DO NOT put a welding rod in the numerical order of the figure, but tack-weld in diagonal direction. While tack-welding, be careful about any deformation like twisting. If any deformation occurs, then do not beat, but disassemble and weld it again (a crack can occur when a impact is given to the welding part)
- 3) Either melt PAD without a welding rod as possible as you can for welding, or use a welding rod with less than 1.6mm to weld in a low current.
Weld evenly in three directions not to put welding heat only on one side.
(If welding heat is focused on one side, deformation occurs and causes a crack in the sheath and pad welding part).
- 4) DO NOT pull sheath or beat PAD with any hitting tools and prohibit any impacts (the welding part can be damaged by such impacts).

9.2 Knife Edge Type



- 1) Remove the impurities on the tube welding part surface with a grinder, etc.
- 2) Weld both sides by 1PASS in turn.

10. Wire Connection

10.1 Extension Leadwire & Cable

- 1) The specifications of extension leadwire should be the same as thermocouple sensor's.
- 2) It is required to choose an extension leadwire with a proper thickness on account of voltage dip.
- 3) Extension leadwire should not be damaged or cut off by surrounding environments.
- 4) Thermoresistor cable should be properly chosen according to two-wire, three-wire, and four-wire cables. One end of shielding wire should be grounded.

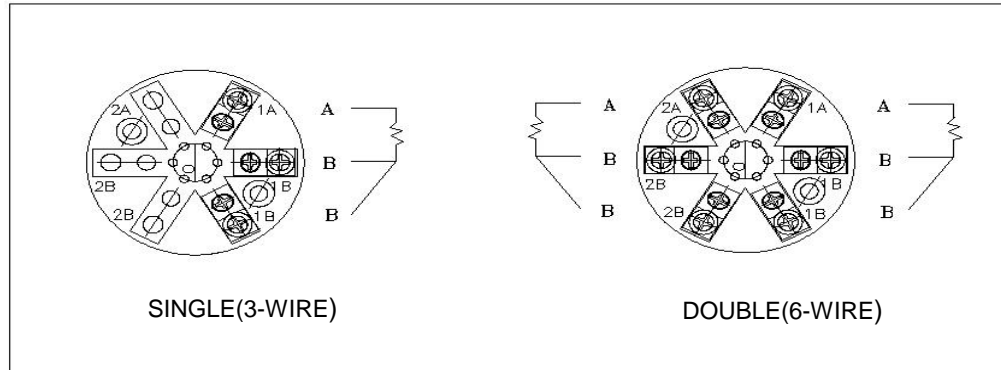
10.2 Wire Connection

- 1) Explosion-proof product should be powered off before wire connection.
- 2) It is required to check polarity of thermocouple before wire connection. And thermoresistor should be wire-connected after A/B/B(3-wire case) terminals are distinguished.
- 3) If necessary, a ground wire is connected to head.
- 4) The ends of extension leadwire and cable should be attached to terminal block with the use of solderless terminal, and screws should be tightened up.
- 5) In the case of explosion-proof, cover should not be opened in operation, and Locking device should be tightened up.

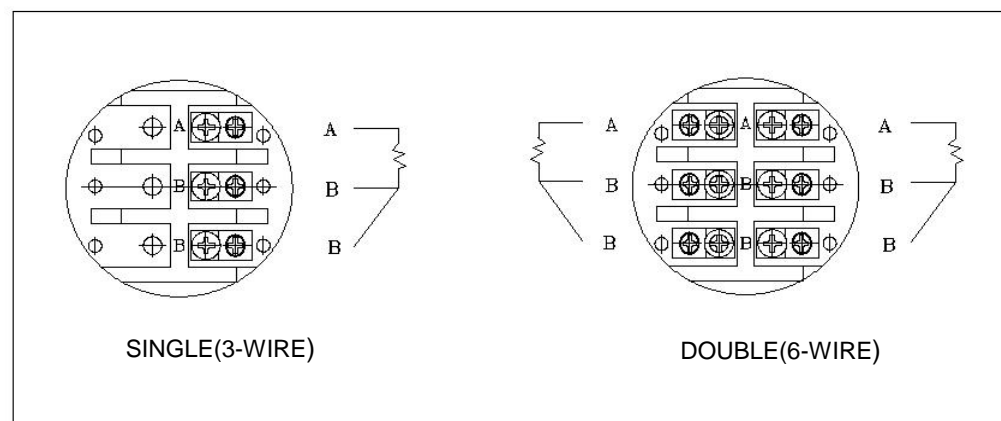
10.3 Wire connection of terminal block of temperature sensor

10.3.1 Thermoresistor

For General Head

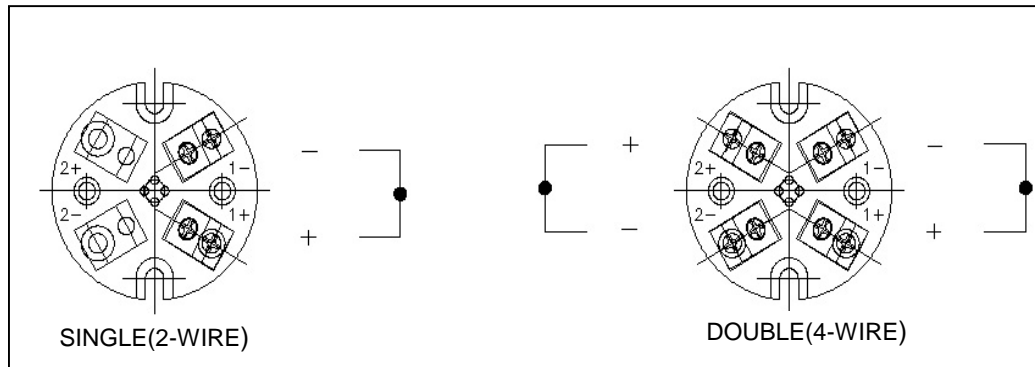


For Explosion-Proof Head

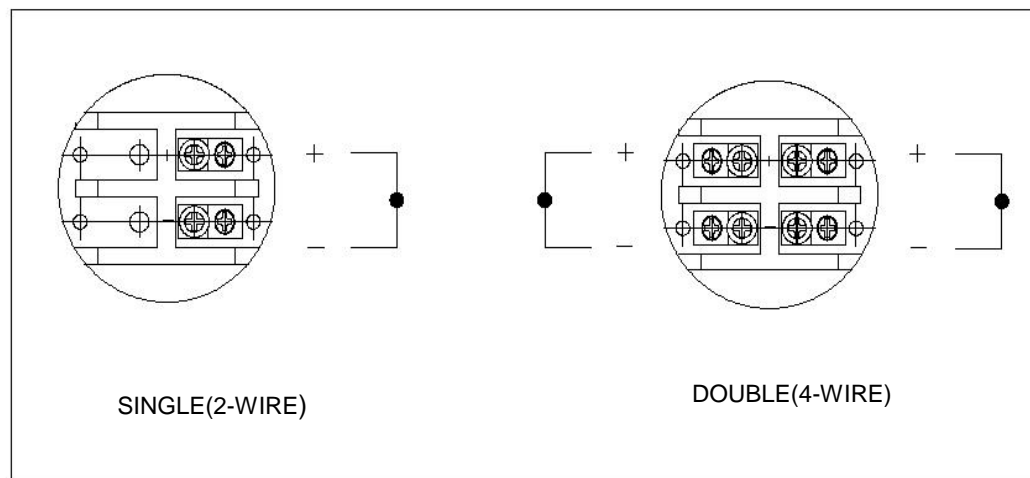


10.3.2 Thermocouple

For General Head



For Explosion-Proof Head



11.4 Terminal Block & Screw Specs.

Type	General Type	Explosion-Proof Type
External diameter	50 mm	67.5 mm
Connected screws gap	40 mm	60.5 mm
Screw size	M4×0.7P	M3×0.5P