



Temperature Sensor Temperature Transmitter

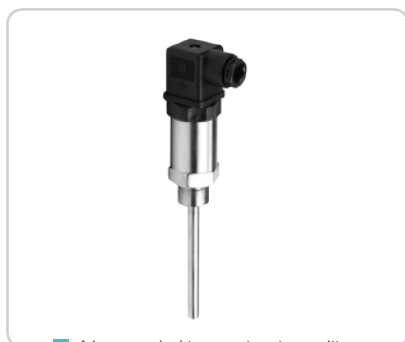
TI



TI integrated temperature transmitter with thermal couple (or thermal resistance) consists of thermocouple, thermal resistance and temperature transmitter module, adopting two-wire system, with nonlinear calibration circuit. It can directly measure the temperature of liquid, gas medium and any special matter within $-200\sim 1600^{\circ}\text{C}$, and convert the temperature signal into current output signal of $4\sim 20\text{mA DC}$, and then send to display or for distributed control by adjusting recorder or computer.

This product is widely applied to petroleum, chemical, metallurgy, power, light industry and textile, food industries etc. It can be matched with the moving coil instrument, digital instrument, recording instrument, regulators, and computer and so on to constitute various temperature measuring control systems.

Product series



■ A1 economical temperature transmitter



■ A2 economical temperature transmitter with display



■ A3 high temperature abrasion resistance temperature transmitter



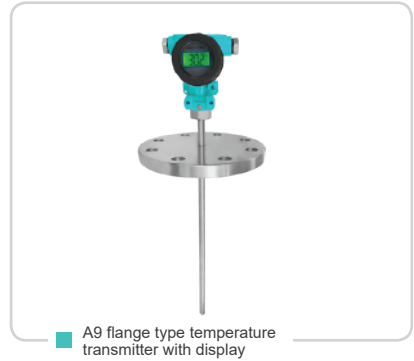
■ A4 industry standard temperature transmitter



■ A5 integrated economical temperature transmitter



■ A7 integrated temperature transmitter with display

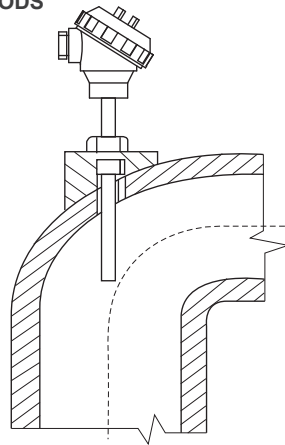


Product features

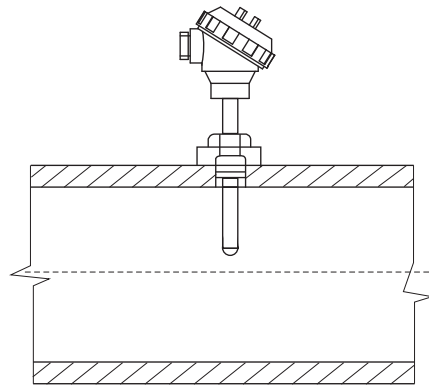
1. With high precision of cold terminal compensation circuit, compensation accuracy within full temperature range is $\pm 0.5\text{ }^{\circ}\text{C}$;
2. Unique nonlinear calibration circuit, output signal is in linear relationship with the measured temperature;
3. With drift correction system, can ensure the precision within the whole range of working temperature.

TI integrated temperature transmitter installation instructions

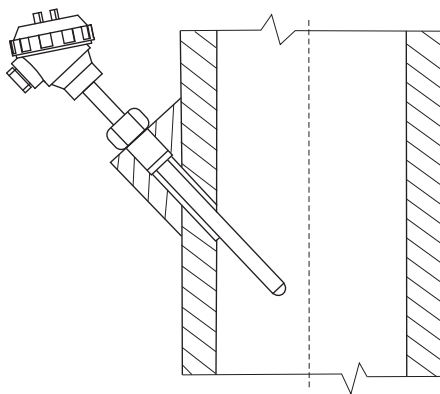
INSTALLATION METHODS



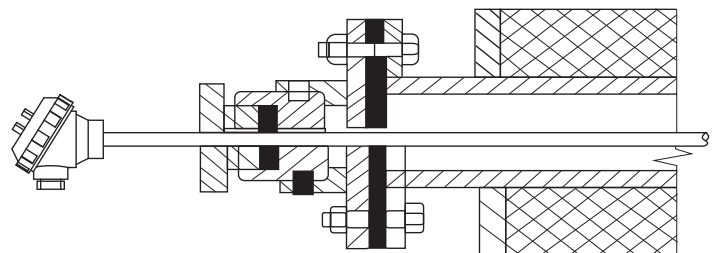
installation method on the bend pipe



installation method in a horizontal pipe

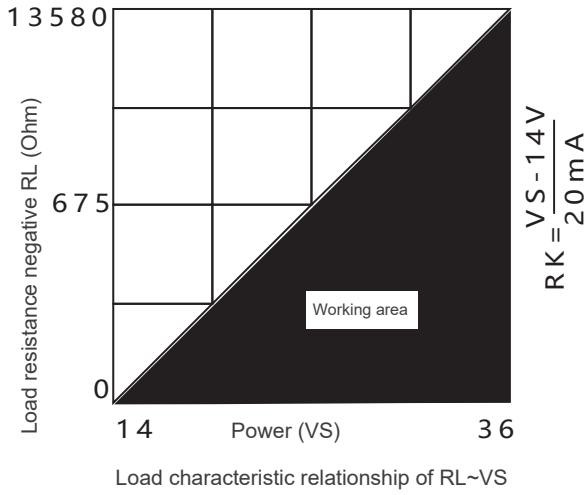


installation method in the vertical pipe



sealing installation method for boiler apertures

Technical parameters



Basic error	±0.2% ±0.5% ±1%
Influence of ambient temperature changing	For 0.2 level : 0.02%F.S/ C
	For 0.5 level : 0.05%F.S/ C
	For 1.0 level : 0.05%F.S/ C
Output signal	4-20mADC,two-wire system
Voltage supplied	Rated voltage 24VDC
Load capacity	Please refer to the left PL~VS relationship chart
	When the voltage is 24VDC, the load capacity is 0~500 C
Thermocouple cold terminal compensation error	Within working temperature range, <1 C
Working temperature range	-25~85 C
Relative humidity	5~95%, no condensation
On-site display precision	Analog pointer indicator : ±2.5%
	Digital display indicator : ±1.0%
Power consumption	< 0.5W

Selection table

Temperature sensor/Temperature transmitter

A1: Economical type; **A2:** Economical type with display; **A3:** High temperature abrasion-resistance type;
A4: Industrial standard type; **A5:** Integrated economical type; **A7:** Integrated display type; **A8D:** Explosion-proof type;
A8D-2: Explosion-proof type; **A9:** Flange type with display

Please refer to the sensor type code table on next page

M1: M20×1.5; **M2:** M27×2; **N1:** NPT 1/4; **N2:** NPT 1/2; **R1:** R 1/4; **R2:** R1/2;
F1: DN15 PN1.6 RF; **F2:** DN20 PN1.6 RF; **F3:** DN25 PN1.6 RF; **SS:** Other special requirements

A: Bushing; **B:** Armored;

Unit: mm; e.g.: 350/200

Note: if transmitter output is required, please add the flowing sections.

F: 4~20mA two-wire system; **H:** 4~20mA/Hart; **V:** 1~5VDC; **Y1:** Customized;

1: 1%; **2:** 2%; **5:** 5%; **Y2:** Customized;

Number + unit, for example: (0~100 C)

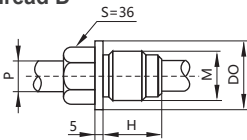
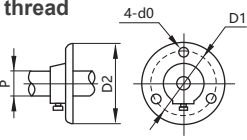
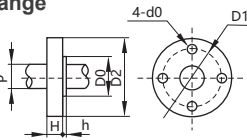
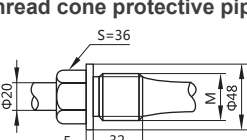
Product series	Structure	Sensor type	Connection specification	Encapsulated form	Total length/insertion depth		Output signal	Accuracy grade	Temperature range
TI	-□	□	□□	□	□/□	+	□	□	()

Please specify your special requirements when ordering.

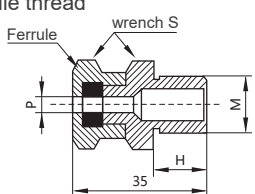
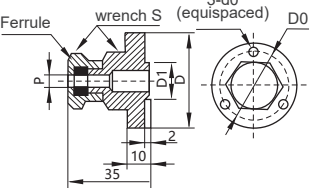
Sensor type code table:

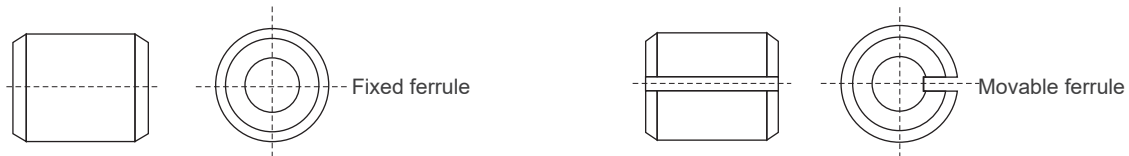
Category	Code	Material	Graduation	Measuring range
Thermal resistance	0	Copper thermal resistance	Cu50	-50~150 C
	1	Copper thermal resistance	Cu100	-50~150 C
	2	Platinum thermal resistance	Pt100	-200~600 C
	3	Platinum thermal resistance	Pt1000	-200~600 C
Thermocouple	4	Ni-Cr,BR	E	0~1000 C
	5	Ni-Cr,Nisi	K	0~1300 C
	6	Ni-Cr-Si,Nisi	N	0~1300 C
	7	Pt-Rh10,Pt-Rh	S	0~1600 C
	8	Pt-Rh30,Pt-Rh6	B	0~1800 C

Assembly type installation specifications

Fixed thread D 	d	M	H	S	D0	nominal pressure		
	Φ12 Φ16	M27×2	32	32	Φ40	10		
Movable thread 	d	D2	D1		D0	nominal pressure		
	Φ12 Φ16 Φ20	Φ70	Φ54		Φ6	nomal pressure		
Fixed flange 	dD2	D2	D1	D0	d0	H	h	nominal pressure
	Φ12 Φ16 Φ20	Φ95	Φ65	Φ45	Φ14	19	3	6.4
Fixed thread cone protective pipe 	d	M	H	S	D0	nominal pressure		
	Cone-shape	M33×2	32	36	Φ48	30		

Armored type installation specifications

Type	Basic parameters	Φ8	Φ6	Φ5	Φ4	Φ3	Φ2
Ferrule thread 	M	M16 x 15			M12 x 15		
	S	22			19		
	H	15					
	Fixed ferrule nominal pressure	26MPa					
	Movable ferrule nominal pressure	normal pressure					
	Ferrule flange 	D	Φ60			Φ50	
D0		Φ42			Φ36		
D1		Φ24			Φ20		
d0		Φ9			Φ7		
S		Φ22			Φ19		
Fixed ferrule nominal pressure		25MPa					
Movable ferrule nominal pressure		normal pressure					



Assembly type working temperature & response time

Diameter of protective tube	Material of protective tube	Working temperature(°C)		Response time
		Long time	Short time	
Φ16	Alundum tube	1600	1800	< 150
	High aluminum tube	1300	1600	
	1Cr18Ni8Ti	-200~+800	900	< 90
	Cr25Ti	1000	1100	
	Carbon steel 20#	-200~+600	800	
Φ20	Alundum tube	1600	1800	< 240
	High aluminum tube	1300	1600	
	1Cr18Ni8Ti	-200~+800	900	< 90
	Cr25Ti	1000	1100	
	Carbon steel 20#	-200~+600	800	
Φ25	Alundum tube	1600	1800	< 360
	High aluminum tube	1300	1600	
	1Cr18Ni8Ti	-200~+800	900	< 90
	Cr25Ti	1000	1100	
	Carbon steel 20#	-200~+600	800	

Armored type working temperature & response time

Ferrule diameter	Φ2	Φ3	Φ4	Φ5	Φ6	Φ8
Thermocouple response time	<0.5	<1.2	<2.5	<4	<6	<8
Thermo resistance response time	●	<3	<5	<8	<12	<15

Notes

Please indicate the following information when ordering:

- Product name
- Type
- Graduation
- Temperature measuring range
- Overall accuracy, protective tube material, outer diameter, length, and insert depth
- Installation and connection mode
- Ambient temperature
- Signs of explosion-proof products
- Quantity
- Delivery time

If the precision is not indicated, please supply: 1 grade for TI integrated temperature transmitter with thermocouple; 0.5 grade for TI temperature transmitter with thermoresistance. The protective tube total length of integrated temperature transmitter with industrial assembled thermocouple (thermalresistance) = insert depth + 150mm.

Special requirements can be negotiated.