TE.25 High Accuracy Sensor Assembly c/w Opened-end Thread Thermowell

Resistance thermometer for temperature measurement in chilled pipe

Introduction

The platinum sensing resistor, Pt100 to IEC 60571 advantages include chemical stability, relative ease of manufacture, the availability of wire in a highly pure form and excellent reproducibility of its electrical characteristic. The result is a truly interchangeable sensing resistor which is widely commercially available at a reasonable cost.

They can use in many applications for a variety of reasons:

1) Installation is simplified since special cabling and cold junction considerations are not relevant. Similarly, instrumentation considerations are less complex in terms of input configuration and enhanced stability.
2) Instrumentation developments have resulted in high accuracy, high resolution and high stability performance from lower cost indicators and controller; such accuracy can be better exploited by the use of superior temperature sensors.
3) The availability of a growing range of sensing resistor configurations has greatly expanded the scope of applications; such configurations include miniature, flat-film fast response versions in addition to the established wirewound types with alternative tolerance bands.

The coefficients and their relationship to constraints) are A = 3.9083 x 10^{-3}, B = -5.775 x 10^{-7}, C = -4.183 x 10^{-12}, (C = 0 when is > 0°C).

The combination of resistance tolerance and temperature coefficient define the resistance vs temperature characteristics for the RTD sensor.

Tolerance of PT 100, 1/10 DIN, as per IEC 60751

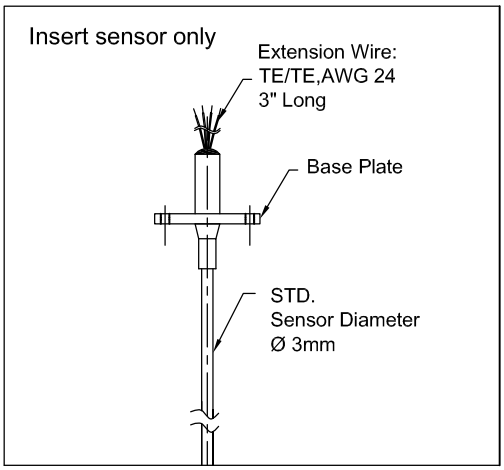
Temp (°C)	Resistance (Ω)	Tolerance (±°C)
0	100.00	0.03
10	103.90	0.04
20	107.79	0.04
30	111.67	0.05
40	115.54	0.06
50	119.4	0.07

Thermistors are temperature sensors that are made from a variety of metal-oxide semiconductor materials. The semiconductor material used determines the temperature range, sensitivity and resistance ranges involved in its application.
Resistance@+25°C=10,000 Ohm (10 K Ω) Nominal
Maximun temperature rating is +80°C
Temperature coefficient @+25°C = -4.4%/°C

Temp (°C)	Resistance (Ω)
0	32,650.00
25	10,000.00
50	3602.00
75	1480.00

Tolerance (±°C)
0.05
0.10

Note: Sensor tolerance will vary upon selection



Standard Lead Wire

All standard RTD sensor is stranded as Teflon insulation.
Teflon insulated leads are rated at 200°C maximum.

Connection Head Type

Recommended to use polypropylene material rather than die cast aluminum in order to prevent the heat loss which will cause when it is passing through the housing.Standard colour for polypropylene is white and die cast aluminum head is available as either blue or silver upon requested

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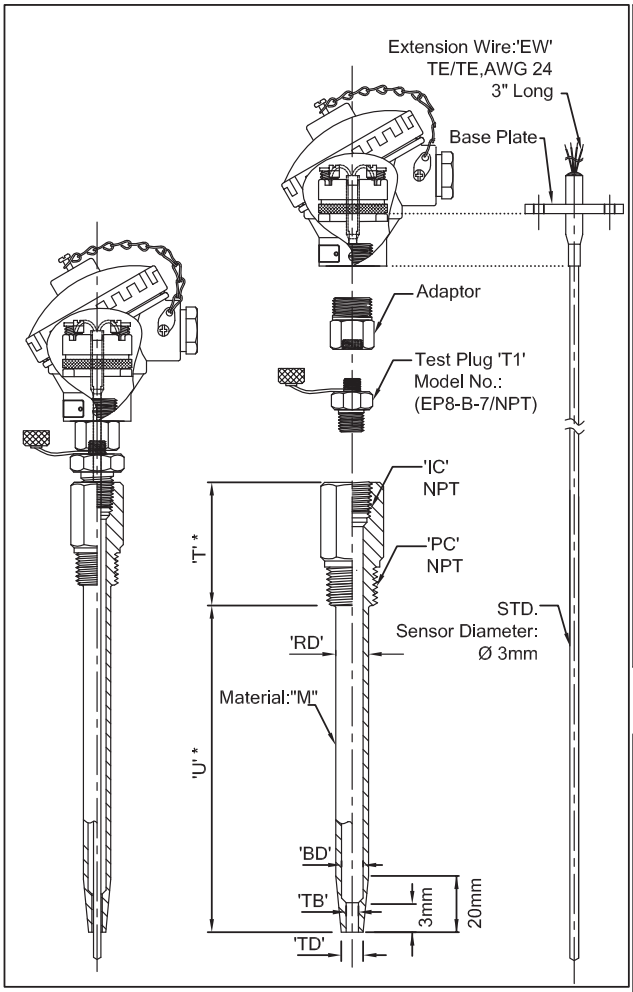
Sensor & opened-end thread thermowell with housing (TE-25)

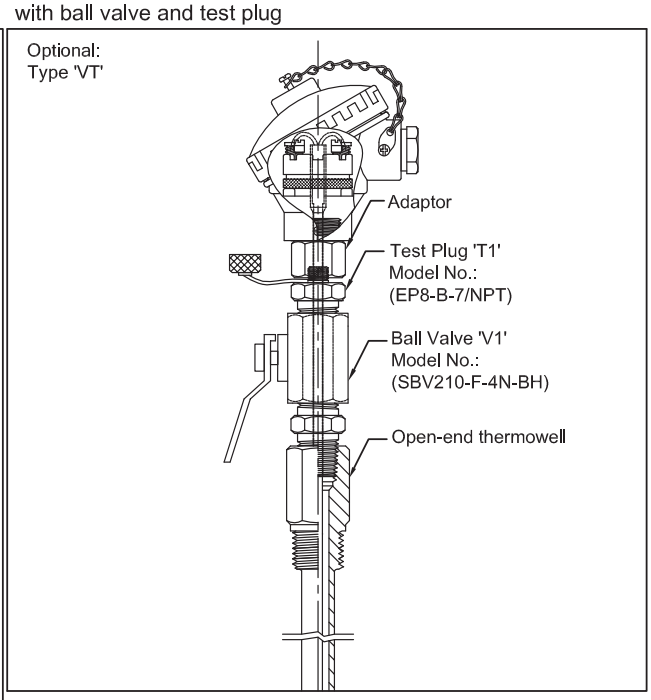
This sensor is designated for HVAC application. Exposed sensor tip will allow to get faster response from the process temperature and temperature readings are even more accurate based on sensor type.

Optional:
(1) Test Plug (max. pressure: 35 bar from -8°C to +50°C)
(2) Ball Valve(max. pressure: 69 bar at 38°C)

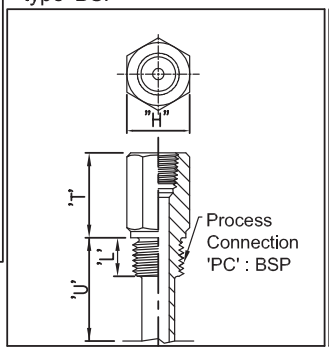
Assembly drawing for sensor & opened-end thread thermowell



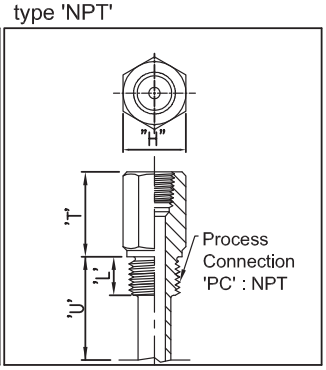
Sensor & opened-end thread thermowell assembly with ball valve and test plug



*For process connection type 'BSP'



*For process connection type 'NPT'



U = Insertion length
T = Lagging length
BD = Bore diameter
TB = Tip bore diameter
RD = Root diameter
TD = Tip diameter
M = Material
PC = Process connection
IC = Instrument connection
V1 = Ball valve
T1 = Test plug
L = Thread length
EW = Extension wire

BSP :
(British Standard Pipe Thread)

NPT :
(National Pipe Thread)

Process Connection	Hex F/F Size:'H'	Thread Length:'L'	Process Connection	Hex F/F Size:'H'	Thread Length:'L'
½" BSP	28.5 mm	14 mm	½" NPT	28.5 mm	19 mm
¾" BSP	31.75 mm	16 mm	¾" NPT	28.5 mm	19 mm

Process Connection,
NPT or BSP, measurement system of insertion length 'U' and lagging length 'T' will reflect upon the selected connection type.

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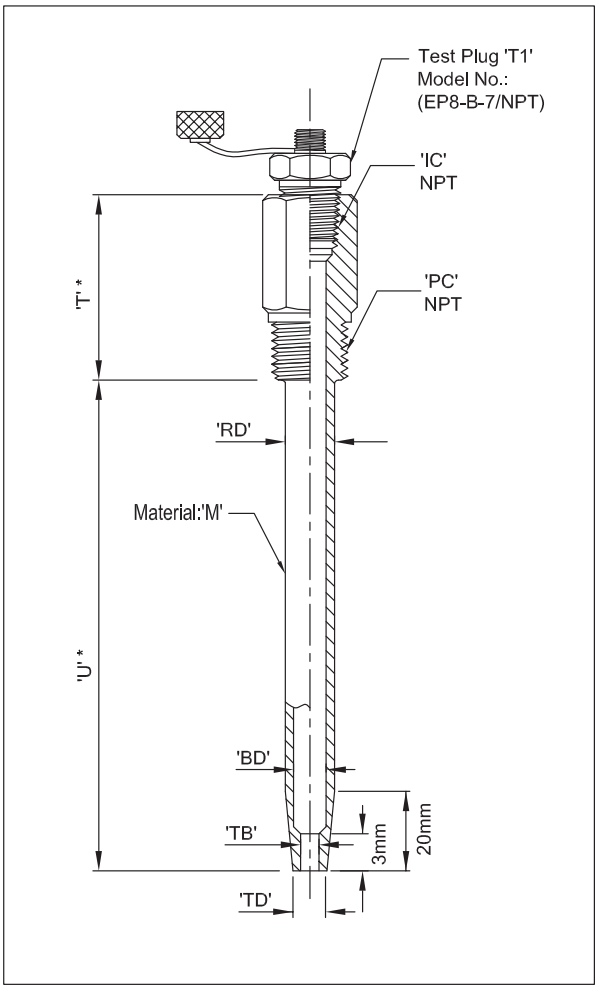
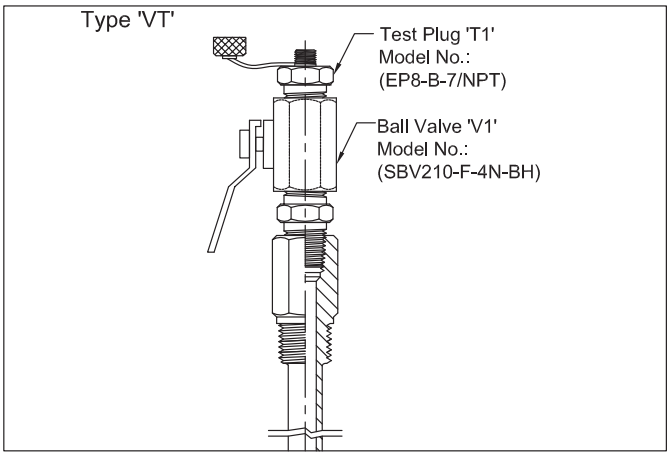
Assembly drawing for opened-end thread thermowell

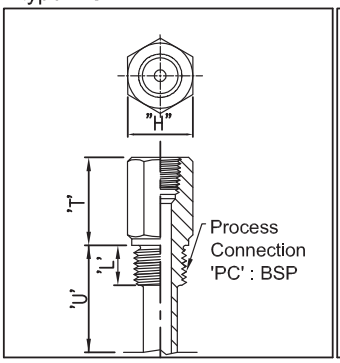
Thermowell will protect the exposed sensor tip to get better accuracy at stable position rather than the vibration which can be occured due to certain noise level of environmental. It will also support the running process at certain period of changing sensor and test plug will play the esssential role for thermowell to prevent the particles coming from outside of process into the thermowell during the absent of sensor.

Optional:
(1) Test Plug (max. pressure: 35 bar from -8°C to +50°C)
(2) Ball Valve(max. pressure: 69 bar at 38°C)

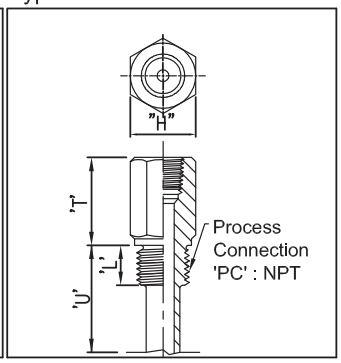




*For process connection type 'BSP'



*For process connection type 'NPT'



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(British Standard Pipe Thread)

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	1	2	3	4	5	6	7	8	9	10	11	12	13
TE25													

Sensor Type

R	RTD , PT 100 , 1/10 DIN , ±0.03℃ at 0℃
T1	Thermistor 10 K , ±0.05℃ at (0 to 50℃)
T2	Thermistor 10 K , ±0.10℃ at (0 to 70℃)

Tolerance Type

1	± 0.03℃ at 0 ℃ (For 1/10 DIN) , IEC 751
2	± 0.05℃ at (0 to 50 ℃) For Thermistor 10 K
3	± 0.10℃ at (0 to 70 ℃) For Thermistor 10 K

Sensor Sheath

TU1	Tubing-RTD-Ø 3.0 mm -Single-4 Wires-SS 316

(Note : the data for reference only , it may varies based on sensor type)

Wire Junction

U	Ungrounded (Std for this design)

Complete design

W	With Open-end Thread thermowell
WO	Thermowell is not required
B	Base plate and terminal block
L1	Epoxy holder and lead wire (TE/TE, AWG 24) , 70 mm (STD)

(Note : 100 mm , 150 mm , 200 mm , 250 mm and 300 mm are avaliable as option)

Process connection (PC)

PC1	1/2" NPT M
PC2	1/2" BSP M
-	Not Applicable
Y2	Special version to be specified

Thermowell Stem Dimensions

TW1	Root Dia : Ø16 mm , Tip Dia : Ø12 mm , Bore Dia : Ø6.6 mm
-	Not Applicable
Y3	Special version, to be specified

Thermowell Insertion Length/Sensor Length if thermowell is not require

XXXX	To be specified (e.g 0125 mm for 125 mm long)

Lagging length "T"

T	45 mm (STD)
Y4	Special version to be specified

Accessories

T1	Test Plug Size : 1/4 " NPT M , Material : Brass
V1	Ball valve Size : 1/4" NPT F , Material : SS 316
VT	Ball valve (V) and Test plug (T) , size : 1/4" NPT
-	Not Applicable
Y5	Special version, to be specified

Housing / Enclosure

W1	Weather Proof , IP65, Polypropylene , White colour
W2	Weather Proof , IP65, Die Cast Aluminum , Blue colour
W2	Weather Proof ,IP 65, Die Cast Aluminum , Silver colour
-	Connection head is not required
Y6	Special version to be specified

Accessories (from customer to assembly with)

TX	Head mounted transmitter (suplied by customer)
-	Not Applicable

Documents (Optional)

In-house Calibration Certificate {RTD,PT100 ,1/10 DIN}

1	One Point (0 to 50℃)
2	Two Points (0 to 50℃)
3	Three Points (0 to 50℃)
-	_

(Note : Non-Singlas / Singlas Calibration report is avaliable upon request)

Order Code

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CERTIFICATION INTERNATIONAL ISO 9001:2008 Cert No: CI/10952 UKAS MANAGEMENT SYSTEMS 063