SensorsX

SX-TRNA Series

RTD Temperature Sensor / Transmitter



Cu / Pt RTD	4–20 mA / HART	±0.2% FS
Sensor elements	Transmitter outputs	Best accuracy option

Industrial Process Measurement | Temperature | Pressure | Level | Flow | Density

■ PRODUCT OVERVIEW

The SX-TRNA Series includes industrial RTD temperature sensors and integrated temperature transmitters for process measurement and control. Available sensing elements are Cu50, Cu100, Pt100 and Pt1000. Depending on the configuration, options include threaded or flanged process connections, different probe constructions and local indication. Transmitter configurations offer 4–20 mA two-wire, 4–20 mA with HART, or 1–5 V DC output. The permissible measurement range depends on the selected RTD element and the complete probe assembly.



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■ KEY FEATURES

- ◆ Cu50, Cu100, Pt100, and Pt1000 RTD sensing elements
- ◆ 4–20 mA two-wire, 4–20 mA/HART, or 1–5 V DC output
- ◆ Assembled, sheathed, sheathed assembly, and Surface-mount probe constructions
- ◆ Linearization circuitry provides an output proportional to the measured temperature
- ◆ Basic accuracy options of ±1%, ±0.5%, and ±0.2% FS
- ◆ Threaded and EN 1092 PN16 RF flange connections
- ◆ Optional local analog or digital indication
- ◆ Built-in drift correction helps maintain measurement accuracy

■ TYPICAL APPLICATIONS

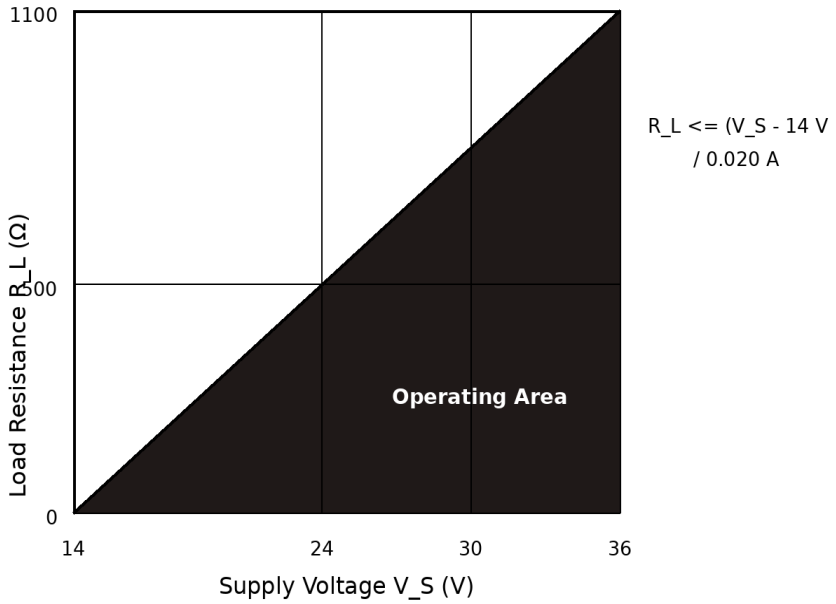
Industries Served

- Oil & Gas
- Power Generation
- Food & Beverage Processing
- Industrial Temperature Monitoring & Control
- Chemical Processing
- Light Industry
- Tanks & Vessels
- Metallurgy
- Textiles
- Pipelines

■ TECHNICAL SPECIFICATIONS

Parameter	Specification
Basic accuracy	±0.2%, ±0.5%, or ±1% FS
Ambient-temperature effect — ±0.2% grade	0.02% FS/°C
Ambient-temperature effect — ±0.5% grade	0.05% FS/°C
Ambient-temperature effect — ±1% grade	0.05% FS/°C
Output	4–20 mA DC, two-wire
Rated supply voltage	24 V DC
Load resistance	$R_l \leq (V_s - 14\ V) / 0.020\ A$
Load capacity	At 24 V DC supply, allowable load resistance is 0-500 Ω
Operating ambient temperature	−25 to +85 °C
Relative humidity	5–95% RH, non-condensing
Local analog indication accuracy	±2.5%
Local digital indication accuracy	±1.0%
Power consumption	<0.5 W

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Load resistance (R_L) vs. supply voltage (V_S) relationship

■ OUTPUT OPTIONS

Code	Output
F	4–20 mA, two-wire
H	4–20 mA with HART
V	1–5 V DC

※ For transmitter versions, confirm supply voltage and allowable load resistance for the selected output and operating temperature range.

■ PRODUCT CONFIGURATIONS

Code	Structure
A1	Economy
A2	Economy with display
A3	High-temperature wear-resistant
A4	Industrial standard
A5	Integrated economy
A7	Integrated display
A8	Explosion-proof
A9	Display with flange

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Product Configuration Photos



Economy



Economy with display



High-temperature wear-resistant



Industrial standard



Integrated economy



Integrated display



Explosion-proof



Display with flange

■ RTD SENSOR ELEMENTS

Code	Sensor element	Selectable measurement range
0	Cu50	−50 to +150 °C
1	Cu100	−50 to +150 °C
2	Pt100	−200 to +600 °C
3	Pt1000	−200 to +600 °C

■ PROBE ASSEMBLY

Code	Construction
A	Assembled
B	Sheathed
C	Sheathed assembly
D	Surface-mount

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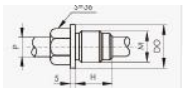
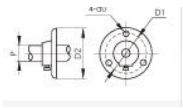
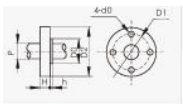
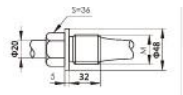
■ PROCESS CONNECTIONS AND INSTALLATION

Code	Process connection
M1	M20 × 1.5
M2	M27 × 2
M3	M20 × 1.5 adjustable
M4	M27 × 2 adjustable
N1	1/4 NPT
N2	1/2 NPT
R1	R 1/4
R2	R 1/2
F1	EN 1092 DN15 PN16 RF
F2	EN 1092 DN20 PN16 RF
F3	EN 1092 DN25 PN16 RF

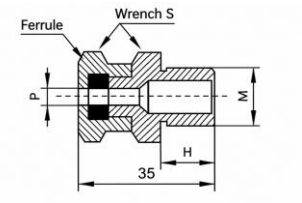
※ Specify total length and insertion depth in millimetres, for example 350/200. Verify the process connection, immersion depth, pressure, material compatibility, and mounting orientation before ordering.

■ MECHANICAL DIMENSIONS

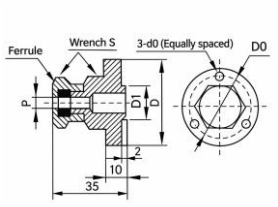
Assembly-Type Mounting Specifications

Diagram	Mounting Type	Key Dimensions	Rated Pressure
	**Fixed thread (d = Φ12 / Φ16)**	M27×2 thread; H = 32 mm; S = 32 mm; D0 = Φ40 mm	10 MPa
	**Adjustable threaded fitting (d = Φ12 / Φ16 / Φ20)**	D2 = Φ70 mm; D1 = Φ54 mm; d0 = Φ6 mm	Atmospheric
	**Fixed flange (d = Φ12 / Φ16 / Φ20)**	D2 = Φ95 mm; D1 = Φ65 mm; D0 = Φ45 mm; d0 = Φ14 mm; H = 19 mm; h = 3 mm	6.4 MPa
	**Fixed threaded connection with a tapered protective tube**	M33×2 thread; h = 32 mm; S = 36 mm; D0 = Φ48 mm	30 MPa

Ferrule Thread and Ferrule Flange Fittings



Ferrule thread fitting



Ferrule flange fitting

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Dimension	Φ8	Φ6	Φ5	Φ4	Φ3	Φ2
Thread (M)	M16×1.5	M16×1.5	M16×1.5	M12×1.5	M12×1.5	M12×1.5
Wrench size (S)	22	22	22	19	19	19
Height (H)	15	15	15	15	15	15
Fixed ferrule rated pressure	26 MPa	26 MPa	26 MPa	26 MPa	26 MPa	26 MPa
Adjustable ferrule fitting rated pressure	Atmospheric	Atmospheric	Atmospheric	Atmospheric	Atmospheric	Atmospheric

Ferrule Flange Fitting Dimensions

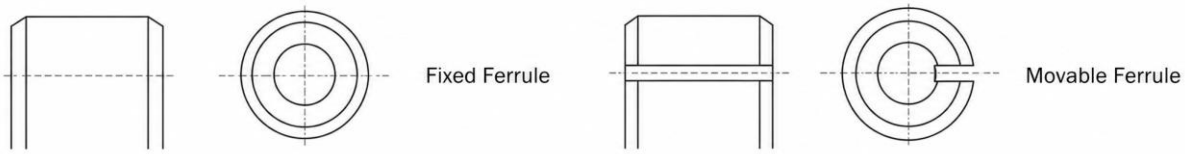
Dimension	Φ5/Φ6/Φ8	Φ2/Φ3/Φ4
D	Φ60	Φ50
D0	Φ42	Φ36
D1	Φ24	Φ20
d0	Φ9	Φ7
S	Φ22	Φ19
Fixed-ferrule rated pressure	25 MPa	25 MPa
Adjustable ferrule fitting rated pressure	Atmospheric	Atmospheric

Assembly-Type Protective-Tube Ratings and Response Time

Protective Tube Diameter	Protective Tube Material	Long-Term Use Temperature	Short-Term Use Temperature	Response Time
Φ16	1Cr18Ni8Ti	−200 to +800 °C	900 °C	< 90 s
Φ16	Carbon steel (Grade 20)	−200 to +600 °C	800 °C	< 90 s
Φ20	1Cr18Ni8Ti	−200 to +800 °C	900 °C	< 90 s
Φ20	Carbon steel (Grade 20)	−200 to +600 °C	800 °C	< 90 s
Φ25	1Cr18Ni8Ti	−200 to +800 °C	900 °C	< 90 s
Φ25	Carbon steel (Grade 20)	−200 to +600 °C	800 °C	< 90 s

The temperatures above are protective-tube material ratings. The measurement range is limited by the selected RTD element.

Sheathed-Type Mounting Specifications



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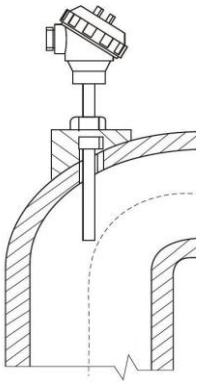
Sheathed-Type RTD Response Time

Protective Tube Diameter	Φ3	Φ4	Φ5	Φ6	Φ8
RTD response time (s)	< 3	< 5	< 8	< 12	< 15

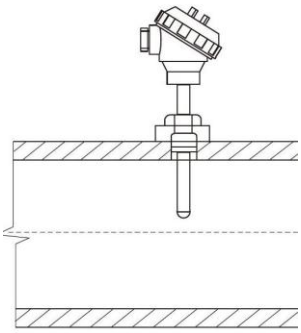
■ INSTALLATION DIAGRAMS

Integrated Temperature Transmitter — Mounting Methods

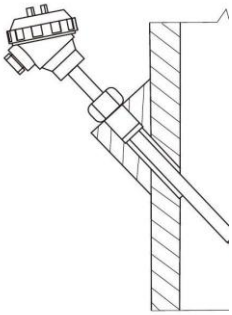
Typical mounting configurations for the SX-TRNA Series integrated temperature transmitters are shown below. When ordering, specify the process medium, measurement range, process connection specifications, and insertion depth.



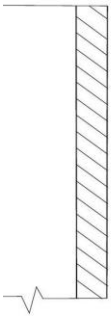
Mounting method on a bent pipe

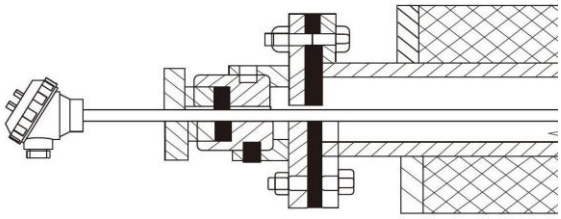


Mounting method on a horizontal pipe



Mounting method on a vertical pipe





Sealed mounting method at a boiler flue duct port

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■ ORDERING INFORMATION

Complete model number example: SX-TRNA-A42M1A350/200F2

Example interpretation: SX-TRNA series; industrial standard structure (A4); Pt100 RTD element (2); M20 × 1.5 connection (M1); assembled probe (A); 350 mm total length / 200 mm insertion depth; 4–20 mA two-wire output (F); ±2% accuracy (2).

Model Number	
SX-TRNA	
Structure	
A1	Economy
A2	Economy with display
A3	High-temperature wear-resistant
A4	Industrial standard
A5	Integrated economy
A7	Integrated display
A8	Explosion-proof
A9	Display with flange
Sensor element	
0	Cu50; −50 to +150 °C
1	Cu100; −50 to +150 °C
2	Pt100; −200 to +600 °C
3	Pt1000; −200 to +600 °C
Process connection	
M1	M20 × 1.5
M2	M27 × 2
M3	M20 × 1.5 adjustable
M4	M27 × 2 adjustable
N1	1/4 NPT
N2	1/2 NPT
R1	R 1/4
R2	R 1/2
F1	EN 1092 DN15 PN16 RF
F2	EN 1092 DN20 PN16 RF
F3	EN 1092 DN25 PN16 RF
Probe assembly	
A	Assembled
B	Sheathed
C	Sheathed assembly
D	Surface-mount
Total length / insertion depth	
350/200	Specify in millimetres

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Output	
F	4–20 mA, two-wire
H	4–20 mA / HART
V	1–5 V DC
Total accuracy (The accuracy values shown apply to the transmitter only)	
1	±1%
2	±2%
5	±5%
Customization Options	
D	Custom Configuration — Specify Requirements When Ordering

■ ORDERING NOTICE

When placing an order, please specify the following:

- 1. Product name
- 2. Model number
- 3. Sensor type (e.g., Pt100 or Pt1000)
- 4. Temperature measurement range
- 5. Overall accuracy, protective-tube material, outer diameter, total length, and insertion depth
- 6. Mounting / connection type
- 7. Ambient temperature
- 8. Explosion-proof marking (for explosion-proof models)
- 9. Quantity
- 10. Delivery time

Unless otherwise specified when ordering, SX-TRNA RTD integrated temperature transmitters are supplied with accuracy class 0.5. For assembly-type RTD integrated temperature transmitters, overall protective-tube length = insertion depth + 150 mm.

Custom specifications are available upon request.

■ ORDERING NOTES

- The available sensing elements are Cu50, Cu100, Pt100, and Pt1000 RTDs.
- Select a measurement range within the allowable range of the chosen sensing element.
- Response time depends on protective-tube diameter and probe construction.
- Confirm structure, probe material, process connection, total length, insertion depth, output, and accuracy before ordering.
- Optional and customized codes are appended only when required.

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