SensorsX

SX-THJD Series

Temperature and Humidity Transmitter



IP67	Dual isolated outputs	−40 to +85 °C
Ingress protection	Humidity and temperature	Ambient operation

■ OVERVIEW

The SX-THJD Series measures relative humidity and temperature for industrial monitoring and control. Depending on the selected configuration, it also calculates dew point, absolute humidity and mixing ratio. The transmitter features an IP67-rated enclosure and is available in wall-mount, duct-mount and remote-probe versions. Versions with two 4–20 mA outputs provide galvanic isolation between the output channels. An optional LCD displays two measured parameters simultaneously. DIP switches provide preset temperature-range selection and output-channel assignment, while a PC configuration tool supports parameter settings and one- or two-point temperature and humidity calibration.



■ FEATURES

- IP67 compact enclosure with Ø15 mm probe
- Wall, duct, and remote-probe installation options
- Surge protection and electrical fast transient/burst immunity
- Two mutually isolated 4–20 mA output channels
- Optional LCD and intrinsically safe Ex ia configuration
- DIP-switch range selection; PC configuration and one- or two-point temperature and humidity calibration

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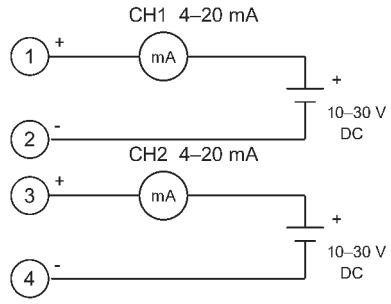
■ TYPICAL APPLICATIONS

Application Fields

- Industrial process monitoring and control
- Industrial drying and humidification
- Electronics production environments
- Food and pharmaceutical facilities
- Cleanrooms, cultivation rooms, and incubators
- Storage and cold rooms
- HVAC and building control
- Municipal utility tunnels
- Agriculture, greenhouses, and indoor pool facilities

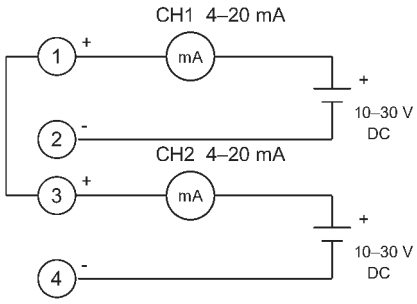
ELECTRICAL CONNECTIONS

Isolated current outputs



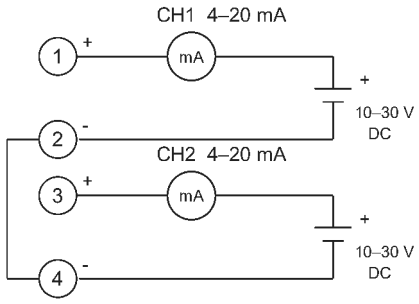
Separate output circuits

Common-positive outputs



Link terminals 1 and 3

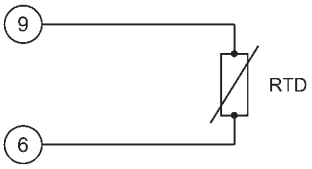
Common-negative outputs



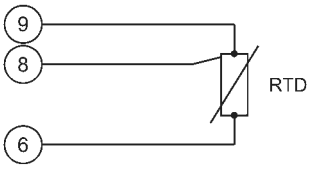
Link terminals 2 and 4

Passive RTD outputs (Pt100 / Pt1000)

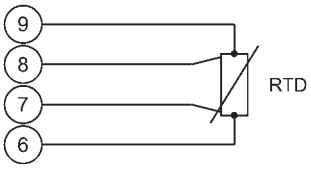
2-wire RTD



3-wire RTD



4-wire RTD

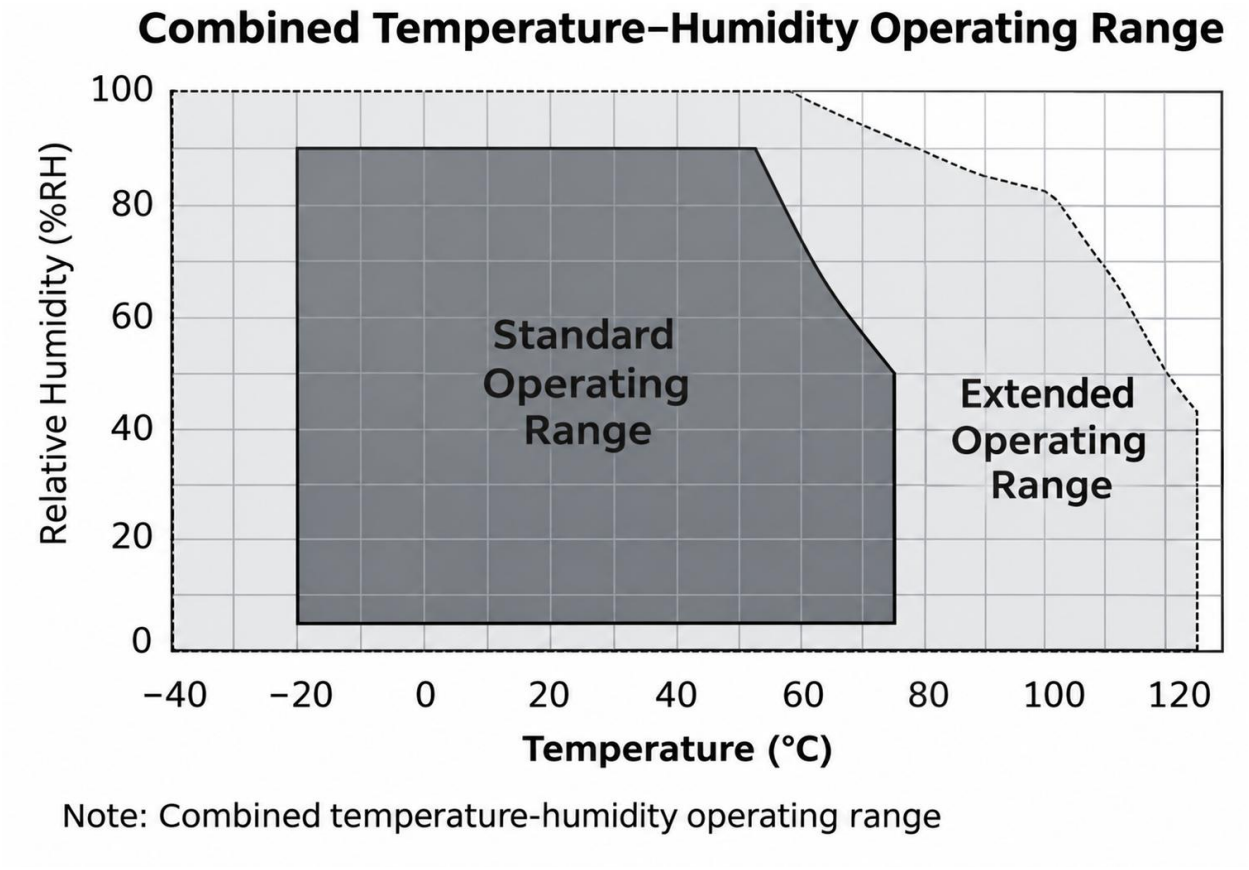


Connection	Terminal assignment
Isolated current outputs	Channel 1: 1 (+), 2 (−); Channel 2: 3 (+), 4 (−).
Common-positive current outputs	Link 1 and 3 (+). Channel 1 return: 2 (−); Channel 2 return: 4 (−).
Common-negative current outputs	Link 2 and 4 (−). Channel 1 supply: 1 (+); Channel 2 supply: 3 (+).
2-wire RTD	Connect 9 and 6 to opposite ends of the RTD. Leave 8 and 7 unused.
3-wire RTD	Connect 9 and 8 to the same end of the RTD, and 6 to the other end. Leave 7 unused.
4-wire RTD	Connect 9 and 8 to one end of the RTD, and 7 and 6 to the other end.

Note: Select the wiring configuration for the ordered output type. The current-output diagrams show two-wire 4–20 mA loops with a 10–30 V DC supply. Common-positive or common-negative wiring electrically connects the two output circuits. The RTD diagrams apply to passive Pt100/Pt1000 output versions. Maximum RTD lead resistance: 0.5 Ω.

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■ OPERATING ENVELOPE

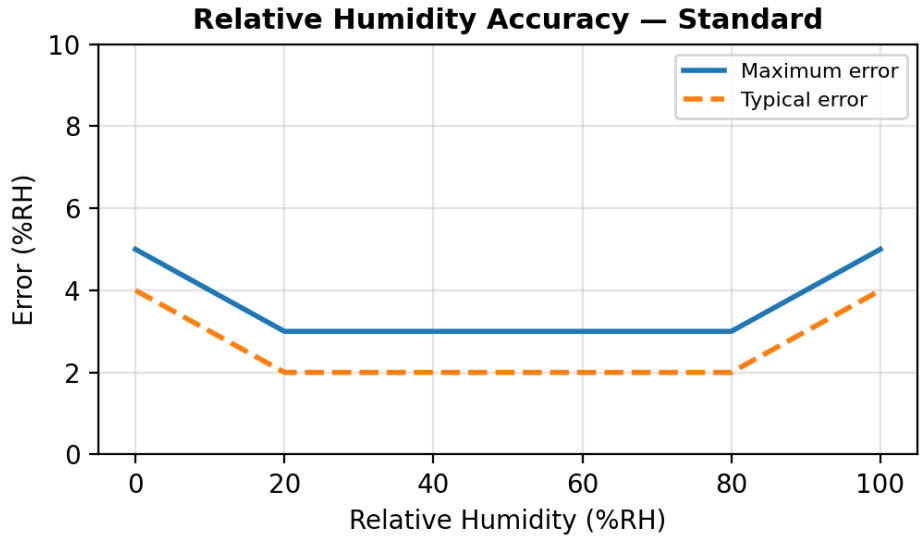


Outside the standard operating range, relative-humidity measurement error may temporarily increase, especially above 80% RH. Accuracy recovers after the sensor returns to the standard range. Recovery may be slower after exposure to high temperature and high humidity.

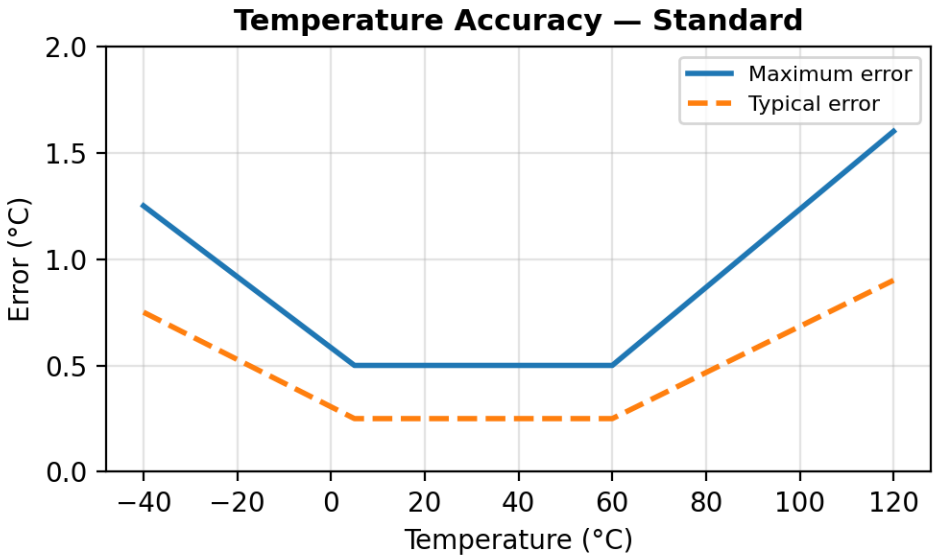
■ MEASUREMENT PERFORMANCE

Measurement	Specification	Reference condition
Relative humidity range	0–100% RH	
Humidity accuracy	±2% RH	20–80% RH at 25 °C
Temperature range	−40 to +125 °C	Integrated T/RH sensing element
Temperature accuracy	±0.3 °C	5–60 °C
Pt100	Class A	DIN EN 60751
Pt1000	Class B	DIN EN 60751

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The curves illustrate the typical and maximum relative humidity measurement errors.



The curves illustrate the typical and maximum temperature measurement errors of the integrated sensing element.

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■ TECHNICAL DATA

EMC & Immunity	
Applicable EMC standards	EN 61326-1; EN 61326-2-3 — industrial environment
Surge immunity	±4,000 V (up to 5 test applications)
Electrical fast transient/burst	Level 4
Optional isolation voltage	500 V AC / 1,500 V AC
RF immunity	>10 V/m, 80 MHz–1,000 MHz
Output & Wiring	
Analog outputs	Two mutually isolated 4–20 mA channels
Current output	4–20 mA, two-wire
Load resistance	R_l ≤ 750 Ω at 24 V
Fault indication	Output ≤ 3.6 mA or ≥ 21.5 mA
Default fault indication	Low alarm (≤3.6 mA). Specify any alternative alarm setting when ordering.
Maximum load	(V_s − 10 V) / 0.025 A
Current limit	≤ 25 mA
Terminal capacity	Maximum 1.5 mm²
Cable gland	M16 × 1.5
Power & Response	
Supply voltage	10–30 V DC
Response time	1 s
Display & Configuration	
Display	Multi-line backlit LCD
Configuration	DIP switches and PC configuration
Stability & Drift	
Temperature drift	0.008% FS/°C
Long-term stability	0.05%/year or ≤ 0.1 °C/year
Mechanical & Environmental	
Enclosure material	PC
Ingress protection	IP67
Operating environment	−40 to +85 °C; 0–95% RH, non-condensing
Storage environment	−40 to +85 °C; 20–80% RH

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■ DIP SWITCH SETTINGS

Use the four DIP switches to select the temperature range and assign the humidity and temperature outputs. Switch positions below are listed in the order 1 / 2 / 3 / 4.

Temperature Range	Channel 1: Humidity / Channel 2: Temperature	Channel 1: Temperature / Channel 2: Humidity
0 to +50 °C	OFF / OFF / OFF / OFF	ON / OFF / OFF / OFF
0 to +100 °C	OFF / OFF / OFF / ON	ON / OFF / OFF / ON
−40 to +60 °C	OFF / OFF / ON / OFF	ON / OFF / ON / OFF
−10 to +50 °C	OFF / OFF / ON / ON	ON / OFF / ON / ON
−20 to +80 °C	OFF / ON / OFF / OFF	ON / ON / OFF / OFF
−40 to +80 °C	OFF / ON / OFF / ON	ON / ON / OFF / ON
−40 to +125 °C	OFF / ON / ON / OFF	ON / ON / ON / OFF

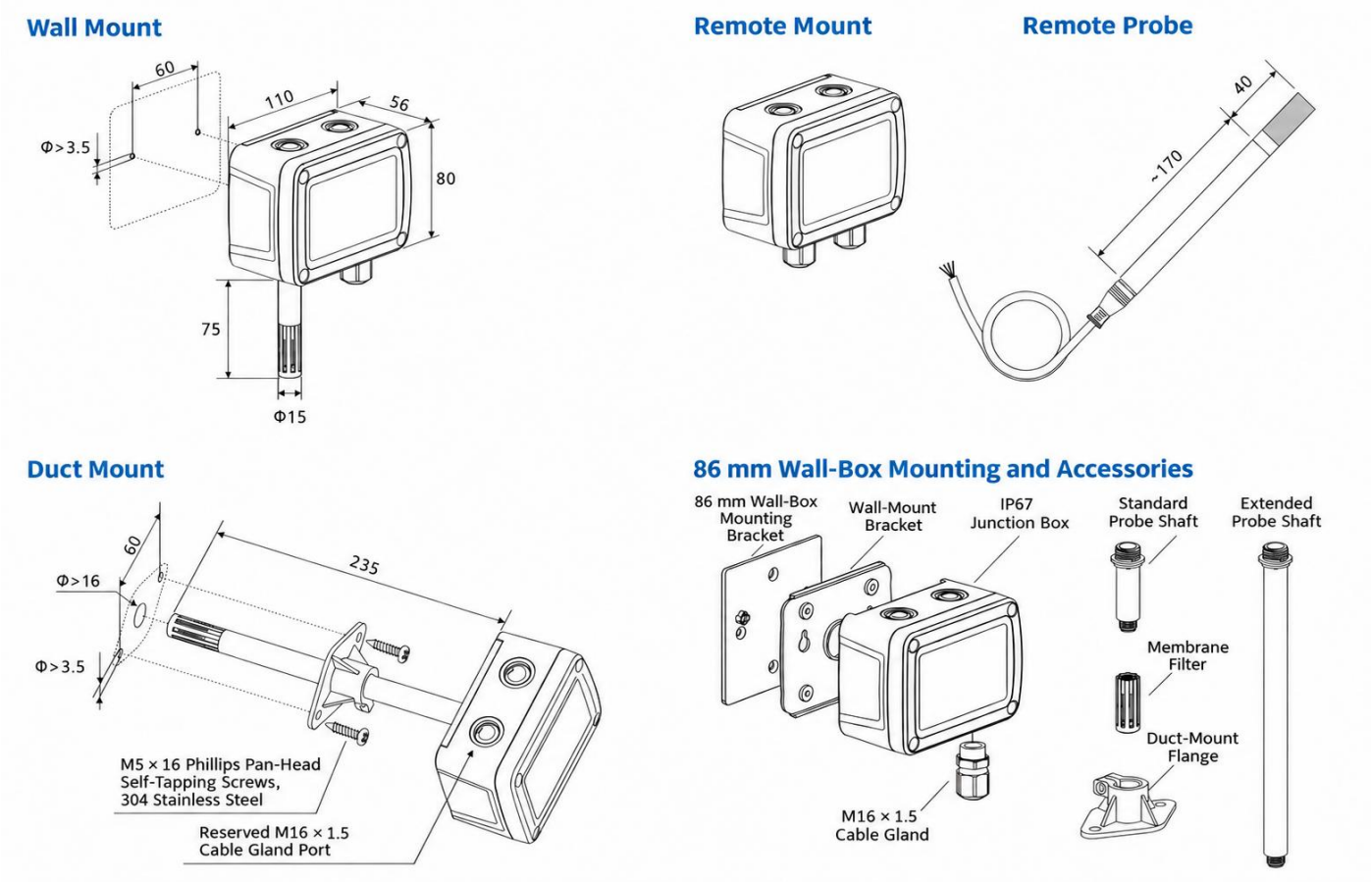
Channel assignment: By default, Channel 1 outputs relative humidity and Channel 2 outputs temperature. Setting DIP switch 1 to ON swaps the two channel assignments, as shown in the table.

Software configuration: If the preset temperature ranges do not meet the application requirements, set all four DIP switches to ON. This activates the programming interface and enables custom settings through the PC configuration tool.

Configuration without external operating power: The temperature range can be changed while the transmitter is unpowered. Communication and programming through the dedicated configuration tool can also be carried out without connecting the transmitter’s external operating power supply.

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■ PRODUCT DIMENSIONS AND INSTALLATION



All dimensions are in millimeters

Available accessories include a configuration adapter, configuration software, a nylon cable gland (M16 × 1.5), a duct mounting flange, an extended probe rod, a membrane filter, a wall-mount bracket, an 86-type mounting bracket, and remote probes in plastic or metal versions.

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■ ORDERING INFORMATION- Temperature and Humidity Transmitter

Ordering code example: SX-THJD-A01410100

Example interpretation: SX-THJD series; wall mount (A); 0 to +50 °C range (01); integrated temperature/RH sensing element (4); 0–100% RH (1); standard humidity accuracy (0); 4–20 mA output (1); without display (0); without explosion protection (0).

Model Number	
SX-THJD	
Installation	
A	Wall mount
B	Duct mount
C	Remote mount
Temperature Range	
01	0 to +50 °C
02	0 to +100 °C
03	−40 to +60 °C
04	−10 to +50 °C
05	−20 to +80 °C
06	−40 to +80 °C
07	−40 to +125 °C
Type	
4	Integrated temperature/RH sensing element
5	Pt100
6	Pt1000
7	Dew point
Humidity Range	
1	0–100% RH
Humidity Accuracy	
0	Standard
Output	
1	4–20 mA
2	Pt100
3	Pt1000
Display	
0	Without display (−40 to +85 °C ambient)
1	LCD (−20 to +70 °C ambient)
Explosion Protection	
0	Without
1	Intrinsically safe, Ex ia
Customized Information	
D	Optional configuration - specify requirements when ordering.

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■ ORDERING INFORMATION- REMOTE PROBE

Model Number	
SX-THRD	
Probe Shaft	
2	Engineering Plastic Shaft
6	Metal Shaft
Filter	
PC	PE Membrane Filter
PS	Sintered Stainless Steel Filter
Connection Cable	
C2	Standard: 2 m PUR cable, −20 to +80 °C
H2	Shielded: 2 m PUR cable, −40 to +125 °C
Customized Information	
D	Optional configuration - specify requirements when ordering.

Notes:

For remote-mount configurations, order the remote probe separately (SX-THRD).

The default humidity measurement range is 0–100% RH.

Select the temperature sensing element and output type as a compatible pair.

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