ENCAPSULATED THERMISTOR AND RTD SENSORS

ST-R*, ST-R*R SERIES

DESCRIPTION

Precon **Encapsulated Sensors** provide precision remote temperature sensing for building automation systems and mechanical equipment room instrumentation. The active sensing element is a highly stable precision thermistor material or platinum RTD.

The sensor is encapsulated with a low mass, high-conductivity compound for good heat transfer characteristics. It is enclosed in a tough, miniature cylinder, 0.17" (0.43 cm) in diameter, which is small enough to be installed in most HVAC thermostat enclosures.

ST-R*

ST-R*R

FEATURES

- ***Lifetime warranty***
- ***±0.36°F (±0.2°C) thermistor accuracy***
- ***±1°F (±0.53°C) RTD accuracy***
- ***Wide selection of thermistor and RTD curves***
- ***Adaptable miniature sensor***
- ***High heat dissipation constant***
- ***Easy to mount with clips***
- ***Pre-aged, highly stable thermistor material***

OPTIONS

- ***25' (7.6m) of 24 AWG zipcord***
- ***Matched sensor pairs***
- ***Dual sensor probe***
- ***Rugged sensor coating***
- ***Wide temperature range -30° to 230°F (-34° to 110°C)***
- ***NIST traceable***

APPLICATION

ST-R*

The **ST-R* Series Encapsulated Sensor** (white) is intended for indoor use only, in areas not subject to moisture or condensation. The sensor may be installed under the cover of an existing pneumatic thermostat. Caution should be exercised when applying the sensor to existing electric thermostats. Heat is often generated by anticipators or other electronics that will affect the sensor reading. The sensor operating range is 35° to 140°F (2° to 60°C). Do not use in conditions below 35°F (2°C) or where condensation could occur.

ST-R*R

The **ST-R*R Series Rugged Encapsulated Sensor** (red) is suitable for temperature extremes and is immune to the effects of moisture and condensation. Precon uses a three-stage, rugged coating process to moistureproof any sensor which is to be used below ambient dewpoint. The sensor operating range is -30° to 230°F (-34° to 110°C). Vibration or wire stress below 32°F (0°C) can cause the rugged coating to crack.

SPECIFICATIONS

Sensors	Thermistor (thermal resistor) RTD (resistance temperature device)
Accuracy	
Thermistor	±0.36°F (0.2°C)
RTD	±0.1°F (0.53°C)
Sensor types available	
Thermistor	2.252 kΩ, 3 kΩ, 10 kΩ, 20 kΩ, 100 kΩ
RTD	Platinum 100Ω, 385 curve Platinum 1000Ω, 385 curve Platinum 1000Ω, 375 curve
Temp range	35° to 140°F (2° to 60°C)
R option (Thermistor)	-30° to 230°F (-34° to 110°C)
R option (RTD)	-68° to 240°F (-55° to 116°C)
Temp response	
Thermistor	Negative temperature coefficient
RTD	Positive temperature coefficient
Sensitivity	See Sensor Resistance Charts in the Technical Reference section
Stability	
Thermistor	0.24°F (0.13°C) over five years
RTD	<0.09°F (0.05°C) over five years
Heat dissipation	2.7 mW/°C (power needed to raise the temperature by 1°C)
Wire	24 AWG, UL low voltage to 105°C
Connection	8' (2.4m) of 24 AWG prestripped pigtails
Mounting	Directly to wall or customer-supplied enclosure using customer-supplied clips

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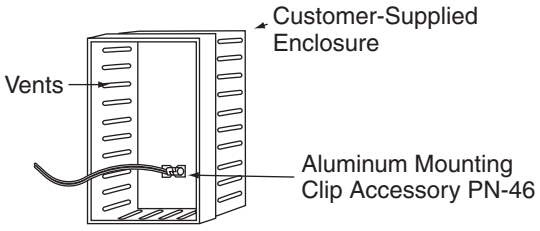
ST-R*, ST-R*R SERIES

MOUNTING

Mounting
Secure to enclosure or wall using cable ties, clips, or brackets. To obtain optimum performance, the sensor enclosure/assembly must be highly conductive. Any sensor element surrounded by insulating media will not perform properly at all temperatures or with the proper temperature response times. An accurate room sensor must have good ventilation and a high thermal-conducting metal which is in direct contact with the sensor. The enclosure must be insulated from the building mounting surface to limit wall temperature influence on the sensor.

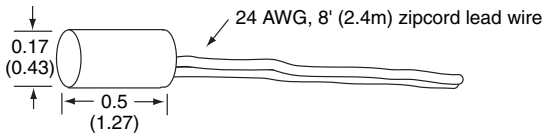
Wiring
Terminate using butt splices or solder connections. Wire nuts are not recommended. Use the full-length wire lead to avoid condensation or moisture migration from the field connection.



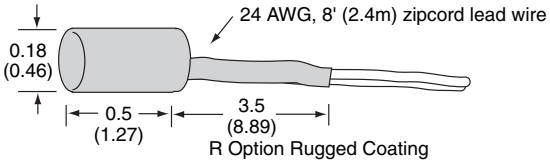
Rear View

DIMENSIONS

in
(cm)



ST-R*



ST-R*R

ORDERING INFORMATION

MODEL	DESCRIPTION
ST-R3	10,000Ω encapsulated thermistor @ 77°F (25°C), Type III (gray leads)
ST-R21	2252Ω encapsulated thermistor @ 77°F (25°C), Type II (green leads)
ST-R22	3000Ω encapsulated thermistor @ 77°F (25°C), Type II (blue leads)
ST-R24	10,000Ω encapsulated thermistor @ 77°F (25°C), Type II (yellow leads)
ST-R27	100,000Ω encapsulated thermistor @ 77°F (25°C), Type II (gray leads)
ST-R42	20,000Ω encapsulated thermistor @ 77°F (25°C), Type IV (green leads)
ST-R81	100Ω encapsulated RTD @ 32°F (0°C), 385 platinum curve (yellow leads)
ST-R85	1000Ω encapsulated RTD @ 32°F (0°C), 385 platinum curve (blue leads)
ST-R91	1000Ω encapsulated RTD @ 32°F (0°C), 375 platinum curve (green leads)
	OPTIONS
R	Rugged (3.5" moistureproof coating; adding a **#** following the **R** extends the coating in feet)
X25	25' (7.6m) lead length
XP	Matched sensor pair, matched to ±0.1°F, 0.55°C (must order two sensors)
XN1	NIST certificate, one reference point 32°F (0°C)
XN2	NIST certificate, two reference points 32°F/158°F (0°/70°C)

ST-R3 – **R** – **X25**

Example: **ST-R3R-X25** 10,000Ω Type III thermistor with 3.5" rugged coating and 25' (7.6m) cable length

RELATED PRODUCTS

UR	**Moisture-resistant three-wire butt splice**
WMB-1	**Vented wall enclosure**
WMB-2	**Vented executive wall enclosure**
PN-46	**Aluminum mounting clip**