TEMPERATURE

UNIVERSAL-MOUNT THERMISTOR AND RTD SENSORS
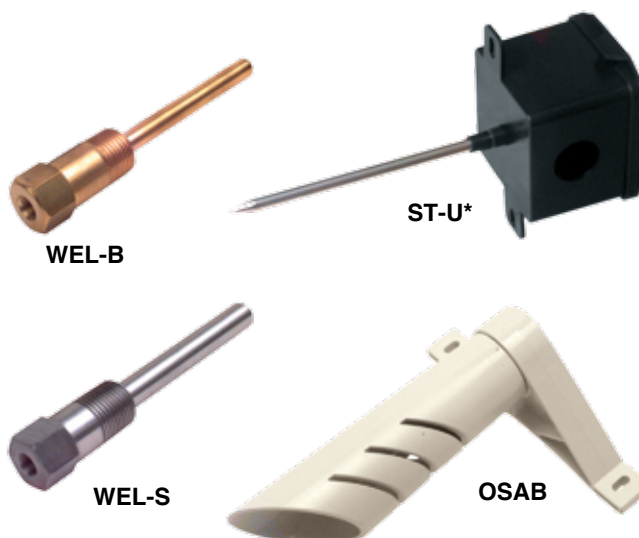### ST-U* SERIES

Precon™

DESCRIPTION

The Precon **ST-U* Series Universal-Mount Sensors** provide precision remote temperature sensing in multiple applications such as duct, OSA, and immersion installations for building automation systems. The active sensing element is a highly stable precision thermistor material or platinum RTD.

The sensing element is sealed with a thermally conductive compound in a 4-7/8" (12.38 cm) long stainless steel probe and is attached to a 2.5" (6.35 cm) square enclosure. The tabs on the enclosure provide mounting ears for direct duct mounting and are easily removable if they are not needed. This multi-purpose enclosure minimizes the number of stock parts required to handle multiple applications.

FEATURES

- *Lifetime warranty*
- *Flame retardant, plenum rated*
- *Wide selection of thermistor and RTD curves*
- *Adaptable with many mounting options*
- *304 stainless steel probes*
- *Easy to mount to duct, well, or wall*
- *Waterproof probe*
- *Paintable plastic*
- *NEMA 3R, IP22*
- *Brass or stainless well*
- *Outside air kit*
- *Custom lengths*
- *Matched sensor pairs*
- *Ultra high accuracy optional*

WEL-B **ST-U***

WEL-S **OSAB**

PROBE APPLICATIONS

- The **Duct Temperature** application is designed for direct mounting on sheet metal duct systems. The sensor is point sensitive and comes standard with a 4-7/8" (12.38 cm) insertion depth. The **XL** option is available for custom lengths up to 36" (91.44 cm).

- The **Immersion Temperature** application is designed to be threaded directly into a 1/8" NPT well. The wells are available in brass or 304 stainless steel and are designed for pipe insertion using a 1/2" threaded saddle (Thredolet®).

- The **Outside Air Temperature** application uses a wall bracket with a vented weather shield to minimize the effect of rain, snow, or other weather-related influences. This rugged enclosure and bracket will ensure long life even in severe weather conditions.

SPECIFICATIONS

Accuracy	
Thermistor	±0.36°F (0.2°C)
RTD	
Type 63	±0.72°F (0.40°C)
Type 71	±0.054°F (0.03°C)
Type 81, 85	±0.27°F (0.15°C)
Type 91	±0.54°F (0.30°C)
Sensor types available	
Thermistor	2.252 kΩ, 3 kΩ, 10 kΩ, 20 kΩ, 100 kΩ
RTD	
Type 63	1000Ω Nickel
Type 71, 81	100Ω Pt 385 Curve
Type 85	1000Ω Pt 385 Curve
Type 91	1000Ω Pt 375 Curve
Temperature range	
Thermistor	10° to 230°F (-12° to 110°C)
RTD	
Type 63	-76° to 392°F (-60°C to 200°C)
Type 71	-58° to 572°F (-50°C to 300°C)
Type 81, 85, 91	-67° to 240°F (-55°C to 115°C)

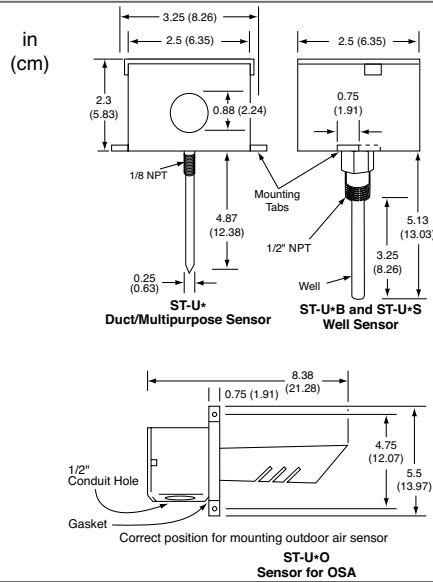|	
Temperature response	
Thermistor	Negative temperature coefficient
RTD	Positive temperature coefficient
Probe sheath	304 stainless steel section
Stability	
Thermistor	0.24°F (0.13°C) over five years
RTD	<0.09°F (0.05°C) over five years
Heat dissipation	2.7 mW/°C (power needed to raise the temperature by 1°C)
Connections	8' (2.44m) of 24 AWG pigtails prestripped, type 71 & 81 sensors have 18" leads
Mounting	Directly to duct, immersion well, or OSA wall mount with appropriate bracket
Enclosure	UL 94V-0, plenum-rated plastic NEMA 3R, IP22 UV protected with snap-off cover
Warranty	Lifetime

DIMENSIONS

in
(cm)

3.25 (8.26)
2.5 (6.35)
2.3 (5.83)
0.88 (2.24)
1/8 NPT
4.87 (12.38)
Mounting Tabs
0.25 (0.63)

ST-U*
Duct/Multipurpose Sensor

2.5 (6.35)
0.75 (1.91)
1/2" NPT
Well
5.13 (13.03)
3.25 (8.26)

ST-U*B and ST-U*S
Well Sensor

8.38 (21.28)
0.75 (1.91)
1/2" Conduit Hole
Gasket
4.75 (12.07)
5.5 (13.97)

Correct position for mounting outdoor air sensor
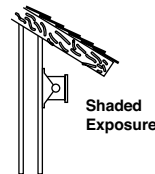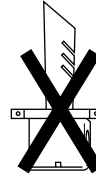**ST-U*O**
Sensor for OSA

MOUNTING

Duct: Drill a 9/16" (1.43 cm) hole for insertion into the duct. Attach probe snug to the duct with self tapping screws.

Well Insertion: Install the well into the customer-supplied 1/2" saddle (Thredolet®), then thread the sensor into the well. For better heat transfer you may apply thermal compound to the tip of the sensor before insertion. Mounting tabs may be removed.

OSA: Insert the shield into the bracket and thread the **ST-U*** through the gasket to the shield. Secure the assembly to the wall using the appropriate hardware for the wall surface. The ideal orientation of the sensor is horizontal with the knockout facing down and located on an outside wall with a shaded exposure. Mounting tabs may be removed. The sensor and shield may be painted to the architect's specifications.

Shaded Exposure

When choosing location for any outdoor air temperature sensors:
1. Do not mount above building openings (windows, doors)
2. Keep sensor out of direct sunlight

Do not mount sensor in vertical position with the weather shield pointing up.

ORDERING INFORMATION

MODEL	DESCRIPTION
ST-U3	10,000Ω universal-mount thermistor @ 77°F (25°C), Type III (gray leads)
ST-U21	2252Ω universal-mount thermistor @ 77°F (25°C), Type II (green leads)
ST-U22	3000Ω universal-mount thermistor @ 77°F (25°C), Type II (blue leads)
ST-U24	10,000Ω universal-mount thermistor @ 77°F (25°C), Type II (yellow leads)
ST-U27	100,000Ω universal-mount thermistor @ 77°F (25°C), Type II (gray leads)
ST-U42	20,000Ω universal-mount thermistor @ 77°F (25°C), Type IV (green leads)
ST-U63	1000Ω nickel universal-mount RTD @70°F (21°C), (yellow leads)
ST-U71	100Ω ultra high accurate universal RTD @32°F (0°C), 385 platinum curve (blue leads)
ST-U81	100Ω universal-mount RTD @32°F (0°C), 385 platinum curve (yellow leads)
ST-U85	1000Ω universal-mount RTD @32°F (0°C), 385 platinum curve (blue leads)
ST-U91	1000Ω universal-mount RTD @32°F (0°C), 375 platinum curve (green leads)

	OPTIONS (List options in alphabetical order with dashes)
B	WEL-B brass well included
O	OSAB Outside weathershield, gasket, and bracket for wall mount included
QD¼	Nylon insulated Quick Disconnect 1/4"
R	Rugged moistureproof coating 3.5"
R#	Rugged moistureproof coating. # equals number of feet of the coating
S	WEL-S 304 stainless steel well included
X25	25' (7.6m) lead length 24 AWG
XC25	25' (7.6m) lead length jacketed cable
XCP25	25' Non-shielded plenum cable
XD	Dual sensors in one probe
XG	Greenfield fitting (factory installed)
XL	Custom length insertion probes 1" to 108"
XL2 in	Custom length insertion probe, 2"(5.08 cm)
XL9	Custom length insertion probe, 9"(22.86 cm)
XN	NIST Certificate of conformance
XN1	NIST certificate, one reference point 32°F(0°C)
XN2	NIST certificate, two reference points 32°F/158°F(0°C/70°C)
XN3	NIST certificate, three reference points 32°F/77°F/158°F(0°C/25°C/70°C)
XP	Matched sensor pair, matched to ±0.1°F, 0.05°C (must order two sensors)
XPA	Ultra high accuracy, thermistors only, ±0.135˚F (0.075˚C)
XZ	Three wire RTD connections(optional only on Type 81, standard on Type 71, not available with XC25 & XCP25 options)

ST-U3	–	B	*Example:* **ST-U3B** 10,000Ω Type III immersion sensor with brass well

UNIVERSAL-MOUNT SENSOR ACCESSORIES

WEL-B	**Brass well**	**OSAB**	**OSA weather shield, gasket, and bracket**
WEL-S	**304 stainless steel well**	**TCC-111**	**Thermal conductive compound 111 ml tub**
F-1000-331	**Nylon bushing for open wiring**		

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