



TEMPERATURE

IMMERSION THERMISTOR AND RTD SENSORS

ST-W* SERIES

DESCRIPTION

The Precon **ST-W* Series Immersion 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 sensing element is sealed with a temperature conductive compound in a 4-7/8" (12.4 cm) stainless steel tube and brass fitting. A brass thermowell is the standard well provided with each sensor. A Greenfield connector is factory installed for flexible connection. The sensor probe assembly is removable from the thermowell for replacement without draining the system.

FEATURES

- **Lifetime warranty**
- **$\pm 0.36^{\circ}\text{F}$ ($\pm 0.2^{\circ}\text{C}$) thermistor accuracy**
- **$\pm 0.135^{\circ}\text{F}$ ($\pm 0.075^{\circ}\text{C}$) optional high accuracy thermistor**
- **$\pm 0.54^{\circ}\text{F}$ ($\pm 0.30^{\circ}\text{C}$) RTD accuracy (375 curve)**
- **$\pm 0.054^{\circ}\text{F}$ ($\pm 0.03^{\circ}\text{C}$) ultra high accuracy optional**
- **$\pm 0.27^{\circ}\text{F}$ ($\pm 0.15^{\circ}\text{C}$) RTD accuracy (385 curve)**
- **Wide selection of thermistor and RTD curves**
- **Brass thermowell for quick temperature response**
- **Adaptable with many options**
- **Easy to mount and remove from thermowell**
- **Waterproof stainless steel probe**

APPLICATION

The **ST-W* Series** sensors are waterproof and feature a 304 stainless steel probe and brass fitting. The fitting has 1/2" NPSM female threads to accept the standard Greenfield fitting. It also has 1/8" NPSM male threads for installing into a furnished Model WEL-B thermowell.

Precon™



The thermowells are designed with close tolerances, eliminating the need for thermal grease under normal conditions. Each well is designed so that the sensor assembly can be easily removed after installation. The well screws into a 1/2" FNPT saddle (or Thredolet® fitting) furnished by the installing contractor.

OPTIONS

- **304 stainless steel well, maximum temperature 900°F (482°C), maximum pressure 3000 psig (20,685 kPa)**
- **Handy-box enclosure**
- **Custom lengths (wells available)**
- **1/2" LB conduit fitting**
- **Liquid-tight fitting**
- **Weather resistant box**
- **Matched pairs used for BTU measurement**
- **NIST Traceable**

Thredolet® registered trademark of Bonney Forge

SPECIFICATIONS

Accuracy

Thermistor	$\pm 0.36^{\circ}\text{F}$ (0.2°C)
XPA Option	$\pm 0.135^{\circ}\text{F}$ ($\pm 0.075^{\circ}\text{C}$)

RTD

Type 63	$\pm 0.72^{\circ}\text{F}$ (0.40°C)
Type 71	$\pm 0.054^{\circ}\text{F}$ (0.03°C)
Type 81, 85	$\pm 0.27^{\circ}\text{F}$ (0.15°C)
Type 91	$\pm 0.54^{\circ}\text{F}$ (0.30°C)

Sensor types available

Thermistor	2.252 k Ω , 3 k Ω , 10 k Ω , 20 k Ω , 100 k Ω
RTD	
Type 63	1000 Ω Nickel
Type 71, 81	100 Ω Pt 385 Curve
Type 85	1000 Ω Pt 385 Curve
Type 91	1000 Ω 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

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)
Supplied well (WEL-B)	Brass well-max temp 450°F (232°C) max pressure 1000 psig, (6895 kPa) 1/2" MNPT

Connections

	8' (2.4m) of 24 AWG pigtails prestripped
Mounting	Directly to pipe in supplied brass well, no adapters needed for standard boxes, customer-supplied 1/2" Thredolet® required in pipe

Weight	0.6 lb (0.36 kg)
Warranty	Lifetime

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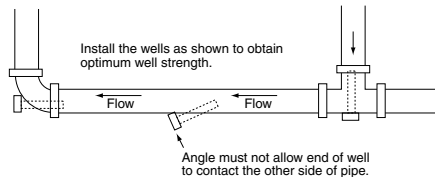
MOUNTING/WIRING

Mounting

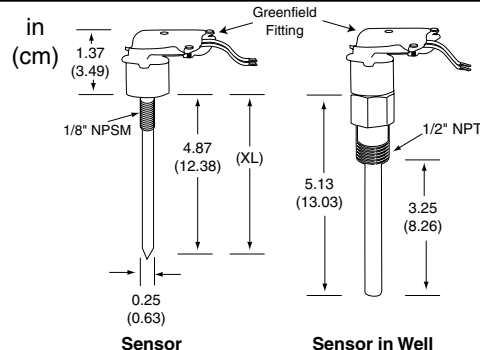
Install well into customer-supplied 1/2" FNPT saddle (or Thredolet®). Screw sensor into the well via the 1/8" NPSM brass fitting.

Wiring

Terminate with butt splice or soldering. Wire nuts are not recommended.



DIMENSIONS



ORDERING INFORMATION

MODEL	DESCRIPTION
ST-W3	10,000Ω immersion thermistor @ 77°F (25°C), Type III (gray leads)
ST-W21	2252Ω immersion thermistor @ 77°F (25°C), Type II (green leads)
ST-W22	3000Ω immersion thermistor @ 77°F (25°C), Type II (blue leads)
ST-W24	10,000Ω immersion thermistor @ 77°F (25°C), Type II (yellow leads)
ST-W27	100,000Ω immersion thermistor @ 77°F (25°C), Type II (gray leads)
ST-W42	20,000Ω immersion thermistor @ 77°F (25°C), Type IV (green leads)
ST-W63	1000Ω nickel immersion RTD @ 70°F (21°C), (yellow leads)
ST-W71	100Ω ultra high accurate immersion RTD @ 32°F (0°C), 385 platinum curve (blue leads)
ST-W81	100Ω immersion RTD @ 32°F (0°C), 385 platinum curve (yellow leads)
ST-W85	1000Ω immersion RTD @ 32°F (0°C), 385 platinum curve (blue leads)
ST-W91	1000Ω immersion RTD @ 32°F (0°C), 375 platinum curve (green leads)
WELL DESIGNATION	
-	Sensor with standard brass well
E	Sensor without well
S	Sensor with stainless steel well 900°F (482°C) max temp, 3000 psig (20.7 kPa) max pressure
OPTIONS (List options in alphabetical order with dashes)	
NG	No Greenfield fitting(1/2" NPSM threads)
QD1/4	Nylon insulated quick disconnect 1/4"
X25	25' (7.6m) lead length 24 AWG
XC25	25' (7.6m) lead length jacketed cable
XCO	1/2" LB conduit fitting
XCP25	25' non-shielded plenum cable
XD	Dual sensors in one probe
XH	Handy box housing (factory installed)
XHP	Non-metallic handy box housing (factory installed)
XL	Custom length insertion probes 1" to 108"(Specify E without well)
XL2 in	Custom length insertion probe, 2"(5.08 cm)(Specify E without well)
XL9	Custom length insertion probe, 9"(22.86 cm)(Specify E without well)
XLT	Liquid-tight fitting (factory installed)
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)
XNB	1/2" MNPT brass close nipple
XNP	1/2" MNPT plastic close nipple
XP	Matched sensor pair, matched to ±0.1°F, 0.05°C (must order two sensors)
XPA	Ultra high accuracy, all thermistors, ±0.135°F (0.075°C)
XW	Weather resistant housing
XZ	Three wire RTD connections (Optional only on Type 81, standard on Type 71, not available for use with XC25 & XCP25 options)

ST-W3 - S - XP

Example: ST-W3-S-XP 10,000Ω Type III immersion sensor with a matched 10,000Ω Type III immersion sensor and stainless steel well

RELATED PRODUCTS

UR Moisture-resistant three-wire butt splice
TCC-12 Single application thermal compound
TCC-111 Thermal conductive compound 111 ml tub