Precision Industrial PRTs

FLUKE®
Hart Scientific®

- Vibration and shock resistant
- 19 mm (3/4-inch) bend radius for increased durability
- NVLAP-accredited calibration included

When buying a PRT, performance isn't the only criterion you need to look at. The real issues are price-to-accuracy and price-to-durability ratios.

The Model 5627A probes have a temperature range up to 420 °C and an accuracy as good as ± 0.05 °C. They come in three different lengths. (Both six- and nine-inch models cover –200 °C to 300 °C.) Each instrument is shipped with its ITS-90 coefficients and a calibration table in 1 °C increments.

One of the best features of this sensor is that it conforms to the standard 385 curve, letting you use your DIN/IEC RTD meters fully. Why use a probe that's less accurate than your meter?

The 5627A is manufactured using a coil suspension element design for increased shock and vibration resistance. It has a mineral-insulated sheath with a minimum bend radius of 19 mm (3/4-inch) for flexibility and durability. (Bend, if any, should be specified at time of order.)

Six- and nine-inch 5627s are calibrated at –196 °C, –38 °C, 0 °C, 200 °C, and 300 °C. For 12-inch versions the point at 300 °C is replaced by a calibration point at 420 °C.

Each probe is individually calibrated and includes a NVLAP-accredited report of calibration from the manufacturer..

This probe is an excellent value. It has the price-to-accuracy and price-to-durability ratios you should demand in every PRT you buy!

Ordering Information

5627A-6-X	Secondary PRT, 152 mm x 4.7 mm (6 x 3/16 in), –200 °C to 300 °C
5627A-9-X	Secondary PRT, 229 mm x 4.7 mm (9 x 3/16 in), –200 °C to 300 °C
5627A-12-X	Secondary PRT, 305 mm x 6.35 mm (12 x 1/4 in), –200 °C to 420 °C
2601	Probe Carrying Case

X = termination. Specify "B" (bare wire), "D" (5-pin DIN for Tweener Thermometers), "G" (gold pins), "I" (INFO-CON for 1521 or 1522 Handheld Thermometers), "J" (banana plugs), "L" (mini spade lugs), "M" (mini banana plugs), or "S" (spade lugs).

Specifications

Resistance	Nominal 100 Ω
Temperature Coefficient	0.00385 Ω/Ω/ °C nominal
Temperature Range	–200 °C to 420 °C (5627-6 and 5627-9 to 300 °C; transition and cable temperature: 0 °C to 150 °C)
Drift Rate	± 0.13 °C at 0 °C after 1000 hours at 400 °C
Sheath Material	316 Stainless Steel
Leads	Teflon™-insulated, nickel-plated stranded copper, 22 AWG
Termination	Specify. See Ordering Information.
Time Constant	Four seconds maximum for 63.2 % Response to step change in water moving at 3 fps.
Bending Radius	Sheath may be ordered with a bend on a minimum radius of 19 mm (3/4 in) except for 50 mm (2 in) area of sheath near tip. (Hart lab requires 20 cm [8 in] of unbent sheath to re-calibrate.)
Calibration	Includes manufacturer's NVLAP-accredited calibration and table with R vs. T values in 1 °C increments from –196 °C to 500 °C (to 300 °C for 5627A-6 and 5627A-9). ITS-90 coefficients included.
Immersion	At least 100 mm (4 in) recommended
Accuracy (includes calibration uncertainty and short-term stability)	± 0.050 °C at –196 °C ± 0.050 °C at 0 °C ± 0.051 °C at 200 °C ± 0.055 °C at 420 °C
Size	**5627A-12:** 12 in L x 1/4 in Dia. **5627A-9:** 9 in L x 3/16 in Dia. **5627A-6:** 6 in L x 3/16 in Dia.

Small Diameter Industrial PRT

- Small diameter sheath, 3.2mm (0.125 in)
- Excellent stability
- Includes ITS-90 coefficients
- NVLAP-accredited calibration from –200 °C to 500 °C

For secondary level performance with full ITS-90 calibration, Hart's 5618B series PRTs are an excellent choice for critical temperature measurements. Featuring a 3.2 mm diameter (1/8 in) sheath, these industrial standards probes have reduced response time without compromising precision. This small diameter 5618B probe works well in many applications where immersion depth is limited. Larger diameter probes give more measurement error in short immersion depth applications because they conduct more heat between ambient and the sensor.

With each probe you will receive a full NVLAP-accredited calibration report. On the report you'll get the test data and the ITS-90 calibration coefficients that you can easily input into your Hart thermometer. If you are using a 1521 Handheld Thermometer readout, we'll program the coefficients directly into your INFO-CON connector.

The 5618B is also a great probe to use for calibrating your Hart 9132 or 9133 infrared calibrators. In fact, these IR black body heat sources were designed to be calibrated with this type of probe. Now you can calibrate these targets in your own lab!

For use from –200 °C to 500 °C (the six-inch model goes to 300 °C), you won't find a better industrial standard in this configuration than our 5618B. We recommend using the 5618B PRTs with the 1521, 1522, 1502A, 1529, or 1560 thermometer readouts.

Specifications

Resistance	Nominal 100 Ω at 0 °C
Temperature Coefficient	0.003923Ω/Ω/ °C nominal
Temperature Range	–200 °C to 500 °C (–200 °C to 300 °C for 5618B-6-X)
Drift Rate	± 0.1 °C when used periodically to 500 °C
Sheath Material	316 SST
Leads	22 AWG Teflon, 6'
Termination	Specify
Hysteresis	Less than 0.01 °C at 0 °C when using –196 °C and 420 °C as the end points.
Time Constant	9 seconds max for 63.2 %
Thermal EMF	Less than 25 mV at 420 °C
Calibration	Includes manufacturer's NVLAP-accredited calibration w/ITS-90 coefficients, R vs. T values in 1 °C increments
Size	**5618B-12:** 305 mm L x 3.2 mm dia. (12 x 1/8 in) **5618B-9:** 229 mm L x 3.2 mm dia. (9 x 1/8 in) **5618B-6:** 152 mm L x 3.2 mm dia. (6 x 1/8 in)
Probe Accuracy (includes calibration uncertainty and short-term stability)	± 0.05 °C over entire range

Ordering Information

5618B-12-X	305 mm (12 in) Small Diameter Probe
5618B-9-X	229 mm (9 in) Small Diameter Probe
5618B-6-X	152 mm (6 in) Small Diameter Probe
2601	Probe Carrying Case

X = termination. Specify "B" (bare wire), "D" (5-pin DIN for Tweener Thermometers), "G" (gold pins), "I" (INFO-CON for 1521 or 1522 Handheld Thermometers), "J" (banana plugs), "L" (mini spade lugs), "M" (mini banana plugs), or "S" (spade lugs).

Interim checks save trouble later

You spend good money getting your reference standards calibrated. How can you be sure that they continue to measure accurately prior to their next calibration? One way is to periodically compare them to other reference standards with higher accuracy. Such a test is called an interim check.

An interim check that most of us are familiar with is the use of a water triple point cell to check the stability of a PRT. The ISO 17025 suggests the use of interim checks as a quality safeguard. Do this regularly, keep good records, and you may improve your accuracy by more than a factor of 10. And if you find a problem, you'll be glad you found it sooner rather than later!

Precision RTD Freezer Probe

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- Fully immersible probe assembly to –200 °C
- NVLAP-accredited calibration and ITS-90 coefficients included
- Accuracy to ± 0.05 °C over the full range

If you need a precision measurement at low temperatures, do not look any further than Hart Scientific.

The 5623B, precision "freezer probe," is specially sealed from the sensing element to the end of the probe cable, preventing ingress of moisture when exposed to temperatures as low as –200 °C. The entire assembly withstands temperatures over its full range (–200 °C to 156 °C), which is ideal for verification of freezers or autoclaves where a thermowell isn't available. The 5623B assembly can be fully immersed in fluids when the application may require use in a liquid bath. The 5623B is available in a 6.35 mm (0.25 in) dia. × 125 mm (6 in) long Inconel™ sheath. With accuracy (that includes calibration uncertainty and short-term drift) of ± 0.05 °C over its full range, the 5623B is just right as a secondary standard for calibration of other process sensors.

Most Hart Scientific readouts make an excellent companion for the 5623B. We recommend the use of the 1521, 1522, 1502A, 1529, or 1560 thermometer readouts.

With each 5623B, you receive a full NVLAP-accredited calibration report. This report includes test data and ITS-90 calibration coefficients to enter into your Hart Scientific thermometer readout.

Specifications

Resistance	Nominal 100 Ω (± 0.1 Ω)
Temperature Coefficient	0.003925 ohms/ohm/ °C nominal
Temperature Range	–200 °C to 156 °C
Transition Temperature	–200 °C to 156 °C
Drift Rate	± 0.01 °C per year maximum at 0 °C, when used periodically at max temperature
Sheath Material	Inconel™ 600
Leads	Teflon™-insulated, silver-plated stranded copper, 22 AWG.
Termination	Specify. See ordering information.
Calibration	Includes manufacturer's NVLAP-accredited calibration and table with R vs. T values in 1 °C increments from –200 °C to 156 °C. ITS-90 coefficients included.
Probe Accuracy (includes calibration uncertainty and short-term stability)	± 0.05 °C over the full range
Cable Length	6.7 meters (20 ft)
Size	6.35 mm (0.25 in) dia. x 152 mm (6 in)

Ordering Information

5623B-6-X	Freezer Probe, RTD 6.35 mm dia. x 152 mm (1/4 in x 6 in), –200 to 156 °C
2601	Probe Carrying Case

X = termination. Specify "B" (bare wire), "D" (5-pin DIN for Tweener Thermometers),"G" (gold pins), "I" (INFO-CON for 1521 or 1522 Handheld Thermometers), "J" (banana plugs), "L" (mini spade lugs), "M" (mini banana plugs), or "S" (spade lugs).