

Semi-Standard PRTs

Platinum Resistace Thermometers

In many secondary & industrial laboratories the costly and mechanically fragile SPRT is unnecessary. For these applications the uncertainty requirements may not be a stringent, and hence the T100 range of secondary standard PRTs may be a more practical choice.

The T100 series can provide short term accuracies of 0.01°C to 0.02°C depending on the range of temperature use. They are designed with 4 wire high purity platinum wire wound detectors, housed in stainless steel or inconel sheaths, with an Ro value of 100Ω.

A number of configurations are available since particular characteristics might be required such as short sensing length, fast response, or applicability to a particular temperature range.

WHAT IS THE ACCURACY OF MY THERMOMETER?

The million dollar question will a million different answers, many of which are all correct.....The overall accuracy of a thermometer system during use is a function of several parameters. Repeatability, drift, hysteresis, self heating effects, & calibration uncertainty of the PRT are main components of the sensor accuracy. What you connect it to, and how you use it, such as in a dry block, liquid bath, or dynamic process will all lead to additional uncertainty components which must be determined by the user.

In this data sheet, we consider repeatability, drift, and self heating of the sensor along with our calibration uncertainties, and combine them using standard RSS methods to achieve our published probe uncertainties.

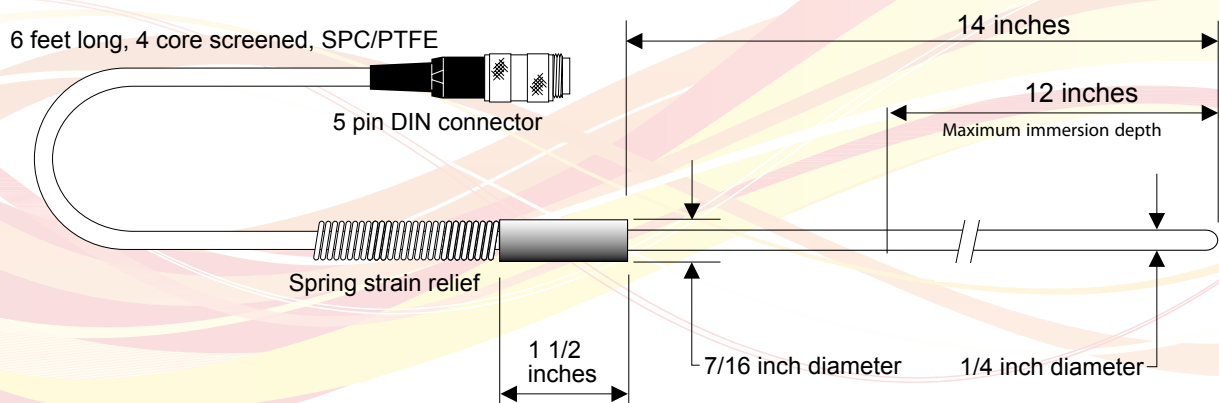
Your T100 Secondary Standard PRT should remain within its uncertainties between successive annual calibrations, unless you drop it or otherwise mechanically shock it.

QUICK SPECS

- Temperature Ranges from -200 to 670°C
- Ideally suited as a Secondary Standard Reference PRT
- Exceptional stability and low drift
- Calibrated Uncertainties from 9 to 21mK (0.009°C to 0.021°C)
- Custom diameters and lengths available, contact Isotech with your requirements
- SMART connectors, DIN, Lemo, or Gold plated Spade terminations available

STANDARD ORDERING CODES

- T100-250-1X
- T100-450-1X
- T100-650-1X
- REPLACE the X with the termination you require
 - D = 5 PIN DIN connector (ASL F100, F200, F250 thermometers)
 - L – 4 PIN Lemo connector (Isotech TTI-22, TTI-7, TTI-5 thermometers)
 - S = "SMART" 5 Pin DIN connector (ASL F100 &F200, thermometers)
 - G = Gold Plated Spade Lugs



PRT/RTDs

SPECIFICATIONS	T100-250	T100-450	T100-650
Temperature Range	-200 to 250°C	-200 to 450°C	-50 to 660°C
Nominal Resistance at 0.01°C	100 ohms	100 ohms	100 ohms
Accuracy	See Calibration Table	See Calibration Table	See Calibration Table
Probe Diameter	6.35 mm (1/4") Standard	6.35 mm (1/4") Standard	6.35 mm (1/4") Standard
Probe Length	355 mm (14") Standard	355 mm (14") Standard	380 mm (15") Standard
Sensing Length	25 mm (1")	25 mm (1")	25 mm (1")
Rtpw Repeatability;	0.004°C after ten thermal shocks from ambient to max temperature	0.004°C after ten thermal shocks from ambient to max temperature	0.007°C after ten thermal shocks from ambient to max temperature
Rtpw Drift:	0.003°C after 300 Hours at 250°C	0.006°C after 300 Hours at 450°C	0.010°C after 500 Hours at 670°C
Sheath Material	316 SS	316 SS	Inconel
Minimum Immersion	100mm (4")	100mm (4")	125mm (5")
Maximum Immersion	300 mm (12")	300 mm (12")	300 mm (12")
Self Heating Error in Water Bath at 0°C	Typically less than 5mK at 1mA	Typically less than 5mK at 1mA	Typically less than 5mK at 1mA
Response Time in Water	Typically 8 Seconds to 63% of final value	Typically 8 Seconds to 63% of final value	Typically 12 Seconds to 63% of final value
Lead Wires	6 Feet of 26 AWG, stranded silver plated copper, braided shield over all four wires with FEP teflon jacket	6 Feet of 26 AWG, stranded silver plated copper, braided shield over all four wires with FEP teflon jacket	6 Feet of 22 AWG, stranded silver plated copper, braided shield over all four wires with FEP teflon jacket
Terminations	Bare Wire, Gold Plated Spade, DIN, Lemo and SMART connectors available	Bare Wire, Gold Plated Spade, DIN, Lemo and SMART connectors available	Bare Wire, Gold Plated Spade, DIN, Lemo and SMART connectors available

Calibrated Probe Accuracy

Includes, short term repeatability, stability, drift, hysteresis and calibration uncertainty

	-196°C	-38°C	0.01°C	30°C	157°C	232°C	420°C	660°C
T100-250	0.011	0.009	0.009	0.009	0.01	0.012	N/A	N/A
T100-450	0.013	0.01	0.01	0.01	0.011	0.012	0.014	N/A
T100-650	N/A	0.014	0.014	0.014	0.015	0.016	0.018	0.021

Recommended Meters



F100 Precision Thermometer

- $\pm 0.02^\circ\text{C}$ ($\pm 20\text{mK}$) Accuracy
- Accuracy of $\pm 0.02^\circ\text{C}$ over full range
- Resolution of 0.001°C
- Range of -200°C to $+850^\circ\text{C}$
- Stability of $<0.005^\circ\text{C}$ per year
- Common inputs for both "SMART" and passive
- Single or differential measurement
- 2 channel models



F200 Precision Thermometer

- $\pm 0.01^\circ\text{C}$ ($\pm 10\text{mK}$) Accuracy
- Accuracy of $\pm 0.01^\circ\text{C}$ over full range
- Resolution of 0.001°C
- Range of -200°C to $+962^\circ\text{C}$
- Stability of $<0.005^\circ\text{C}$ per year
- Common inputs for both "SMART" and passive
- Single or differential measurement
- 2 or 8 channel models



TTI-22 True Temperature Indicator

- $\pm 0.001^\circ\text{C}$ (1mK) accuracy
- Resolution of 0.1 mK
- 2 channel inputs
- Range of -250°C to 960°C
- Measure in ohms, $^\circ\text{C}$, $^\circ\text{F}$ or K
- No mechanical relays, long life
- Weighs only 4 pounds
- Store calibration for up to 30 probes