

Semi-Standard PRTs

Platinum Resistance Thermometers

In most industrial laboratories the costly and mechanically fragile SPRT is unnecessary. For these applications the uncertainties may be larger, and hence the Isotech range of semi-standards may be a more practical choice. Usually made in stainless steel sheaths 6mm in diameter, with an R_0 value of 100Ω and an $(R_{100}-R_0)/R_0$ of 0.385. 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.

In this collection of semi-standards Isotech has examined not only the uses that customers put them through but also the equipment that is used to calibrate them. Most units are now a little longer and have a slightly wider temperature range than our previous products. The stability of the semi-standard will depend upon its range of usage; your semi-standard should remain within its uncertainties between successive annual calibrations, unless you drop it or otherwise mechanically shock it. Our semi-standards are now fitted with a handle and strain relief, except where otherwise stated. All are made with our own high quality 100Ω detectors and completely assembled and calibrated in-house in our UKAS accredited and supervised Laboratory. Calibration is available with fixed points for the best uncertainties and to give the highest confidence possible.

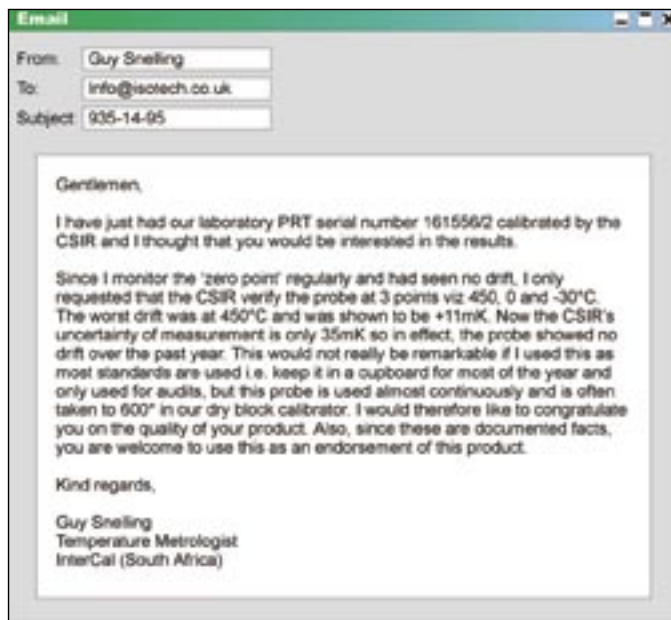
Please note that stem conduction accounts for the biggest sources of errors during calibration. Remember that for a given immersion depth stem conduction is dependent on the temperature difference between the sensing element and ambient temperature, and on the total conductance of the thermometer assembly. It is sometimes thought (mistakenly) that a shorter thermometer will be subject to less stem conduction.

Performance

Isotech has generated a long history for many of our semi-standards. Here are some documented facts:

The 935-14-95 model has the widest temperature range and consequently is likely to suffer the largest changes in characteristics.

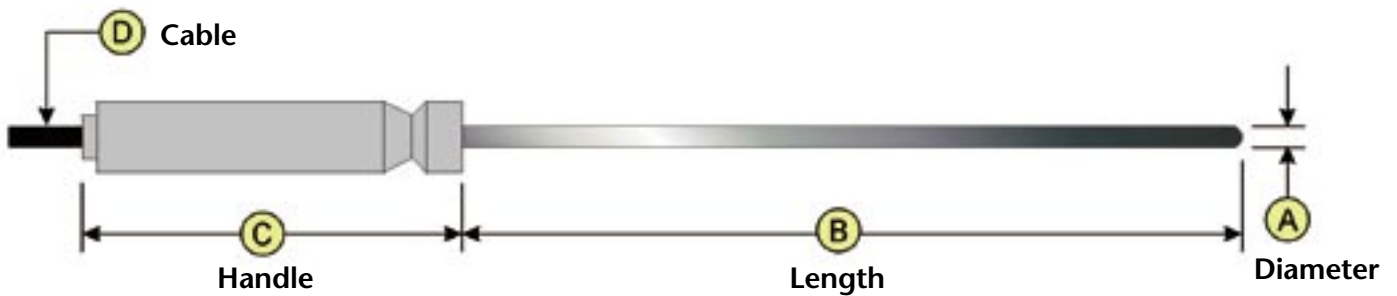
Guy Snelling sent this email (right) about the 935-14-95.



Advantages

- Ideal for All Industrial Applications
- High Stability
- Low Drift
- Selection of Temperature Ranges
- Choice of Lengths and Diameters





SPECIFICATIONS

Model Number	935-14-61	935-14-13	935-14-16	935-14-72	935-14-82	935-14-85	935-14-95
Diameter (A)	4mm	6mm	6mm	6mm	4mm	6mm	6mm
Length (B)	300mm	350mm	450mm	375mm	210mm	420mm	450mm
Sensing Length	6mm	25mm	25mm	25mm	6mm	25mm	25mm
Handle (C)	Yes	Yes	Yes	No	No (Angled)	No (Angled)	Yes
Cable (D)	2m PTFE 4 wire	2m PTFE 4 wire	2m PTFE 4 wire	2m PTFE 4 wire	1.5m PTFE 4 wire	540mm PTFE 4 wire	2mPTFE 4 wire
Temperature Range	-50 to +250°C	-196 to +250°C	-100 to +450°C	-50 to +670°C	-50 to +250°C	-50 to +250°C	-100 to +670°C
Application	Fast Response	Low-Temp. Use	General Use	Gemini Jupiter	Europa Venus Calisto	Oceanus-6	General Use Medusa
Features	Small Stem Conduction	Copper Earth Screen	316 stainless steel sheath	Fits lid of Carry-case	General Purpose	General Purpose	Metal Alloy Sheath

Annealing Drifts

The most severe test of a thermometer is to cycle it from its minimum temperature of use to its maximum temperature.

Below is tabulated the annealing drifts of a typical 935-14-95.

Annealing Range — 0°C to +670°C
with 4 hour dwell at 670°C

Cycle Number	Shift (mK)
1	-0.8
2	-2.2
3	+0.5
4	-0.5
5	-2.3
6	-1.2
7	-0.2
8	+0.6

Total Shift over 8 Cycles: -6.1 mK
Mean Shift per Cycle: -0.76 mK

SPECIFICATIONS — GENERAL

Ro	100Ω ±0.05Ω
Alpha	0.003850 ±0.000005
Stability	0.010 ohm/year
Calibration	A NIST Calibration Certificate can be provided at extra cost
Recommended Current	1mA
Self-Heating Error at 1mA	0.004°C

ACCESSORIES

Termination Accessories	BW: Bare Wire TTI: Lemo Connector: suits TTI-5, TTI-6, and TTI-7 DB: Connector for Dry Block Calibrator SITE Indicator, or TTI-8
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HOW TO ORDER

Please Specify Model Type and Termination Option (for example 935-14-13/BW)