

-196 to 670°C

# Reference Probes - Semi Standards Platinum Resistance Thermometers

- High Stability Reference Probes
- Wide Temperature Ranges
- High Stability Platinum Coil Elements

These industrial platinum resistance thermometers are ideal for field and lab use. Suitable for use as working standards in Dry Blocks and Liquid Baths or as high accuracy probes for our range of True Temperature Indicators.

All the thermometers are metal sheathed and both less fragile and more affordable than the Isotech range of true Standard Platinum Resistance Thermometers that are used in laboratories and are found in our publication "Solutions for Primary and Secondary Laboratories".

All the thermometers use handmade coil wound platinum sensing elements to give high accuracy and low drift. Isotech's UKAS accredited lab can calibrate to the smallest of uncertainties.

Calibration should be specified to suit the particular operating range and application. Isotech can advise on which service is appropriate to match the temperature range and application.

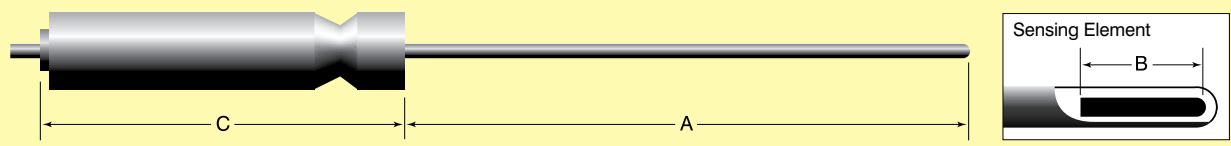
<http://www.isotech.co.uk>



## Universal Specifications

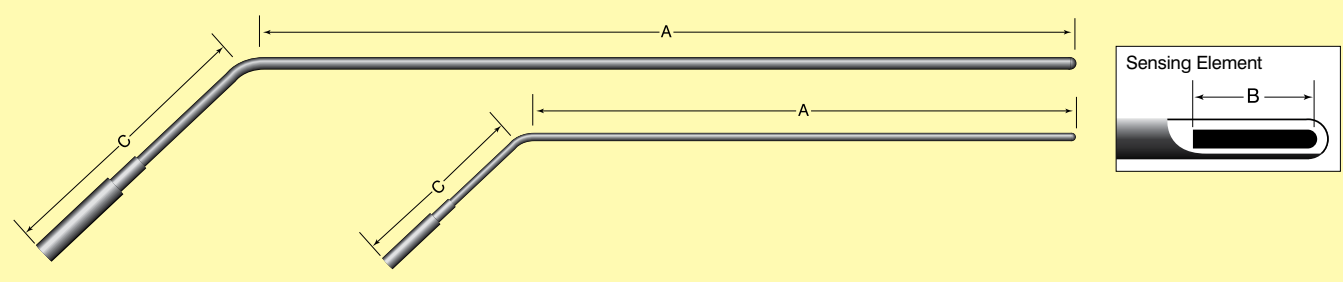
Ro	100Ω ± 0.05 Ω
Alpha	0.003850 ± 0.000005
Standard	IEC 60751
Stability	0.010 Ω/year
Recommended Current	1mA
Self Heating at 1mA	0.004°C
Calibration	Optional UKAS Calibration at extra cost. See table for typical uncertainties
Connection	Four Wire
Max. Handle Temperature	80°C

*After manufacture all Isotech Semi Standard PRTs are thermally pre-conditioned to provide optimal stability.*



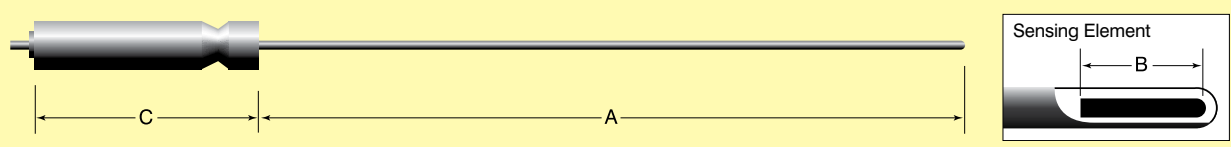
■ **General Purpose Probes**

Model	Range	Diameter	Length (A)	Sensing Length (B)	Handle (C)	Cable	Application
935-14-112	-50°C to 250°C	3mm	225mm	6mm	No Handle	2m PTFE	General Purpose/TTI-10
935-14-61	-50°C to 250°C	4mm	300mm	6mm	19 x 120mm	2m PTFE	Fast Response, Low Stem Conduction
935-14-13	-196°C to 250°C	6mm	350mm	25mm	25 x 115mm	2m PTFE	Low Temperature
935-14-113	-100°C to 250°C	6mm	350mm	25mm	19 x 120mm	2m PTFE	General Purpose
935-14-16	-100°C to 450°C	6mm	450mm	25mm	19 x 120mm	2m PTFE	General Purpose
935-14-116	-100°C to 450°C	6mm	350mm	25mm	19 x 120mm	2m PTFE	General Purpose/Fits milliK Case
935-14-72	-50°C to 670°C	6mm	375mm	25mm	No Handle	2m PTFE	Fits Jupiter / Gemini Carry Case
935-14-98	-50°C to 350°C	4mm	300mm	8mm	No Handle	2m PTFE	Low Stem Conduction



■ **Angled Probes** - angled head provides maximum clearance at top of calibration bath

Model	Range	Diameter	Length (A)	Sensing Length (B)	(C)	Cable	Application
935-14-82	-50°C to 250°C	4mm	165mm	6mm	50mm	1.5m PTFE	Europa - Venus - Calisto
935-14-85	-50°C to 250°C	6mm	385mm	25mm	35mm	0.54 m PTFE	Oceanus-6



■ **Working Industrial Standards**

These thermometers use premium grade wire wound elements to IEC-751 and the same internal construction as our working Standard SPRTs. The 95L is optimised for low temperature with minimum stem conduction. The 95H is optimised for high temperature operation. Both models employ strain free construction.

Model	Range	Diameter	Length (A)	Sensing Length (B)	Handle (C)	Cable
935-14-95L	-200°C to 165°C	6mm	480mm	25mm	25 x 115mm	2m PTFE
935-14-95H	-80°C to 670°C	6mm	480mm	25mm	19 x 120mm	2m PTFE

**Termination Options**

- Bare Wire (BW)
- TTI suits milliK and TTI-1 to TTI-7, TTI-b – suits TTI-22
- DB Connector for Dry Block Calibrator Site Indicator

**How to Order**

Please Specify Model Type and Termination Option (for example 935-14-13/BW)  
Please state whether UKAS Certification is required

## Typical Uncertainties of PRT Semi Standards with Range

Temperature	Uncertainty mK					
	Model	935-14-95L*	935-14-61* 935-14-13	935-14-13*	935-14-95H* 935-14-72 935-14-16	935-14-95H* 935-14-72
-196		25	N/A	25	N/A	N/A
-80		20	N/A	20	25	25
-50		15	15	15	20	20
0		10	10	10	15	15
50		10	10	10	15	15
156		10	10	10	15	20
232		N/A	15	15	20	25
420		N/A	N/A	N/A	40	40
550		N/A	N/A	N/A	N/A	50
660		N/A	N/A	N/A	N/A	50

\*Preferred Models

The above uncertainties do not include long term drift  
 Typical Stability of correctly used semi standard is 0.01°C/year at 0°C  
 Actual uncertainty of a probe determined at time of calibration

### Isotech have generated a long history of many of our semi-standards.

Here are a few documented facts:

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

Guy Snelling sent the following email about the 935-14-95.

#### ISOTECH

I thought that you might like to see the calibration history of one of our probes from the past 12 years.

You may recall that we purchased this probe to use as a laboratory standard when our company was still young. This particular probe is still in daily use and is regularly taken to 600°C in our dry block calibrator. While we handle it with care, being in daily use for 12 year it has take the occasional mild knock and accidental abuse - I believe that it was even taken to close to 700°C once, although I wasn't involved so I can't testify to the temperature reached.

You'll see from the attached history of the calibration by our NMI that the probe has remained stable and accurate, and bearing in mind the daily variations in temperature that it has undergone, these results are testimony to the high quality of this product.

John, you are to be congratulated on developing and producing such a fine measuring instrument, and feel free to use us as a product reference any time.

Kind regards,

**Guy Snelling**

Temperature Metrologist  
 InterCal (South Africa)



**UKAS Calibration**  
 available for these systems  
*International Traceability - Best Practice*

Resistance at 0°C

