

Introduction to Standard Thermocouples

■ Thermocouples

Isotech Model 1600 Platinum / Platinum Rhodium

Available as Type R or Type S these thermocouples are housed in a 99.7% recrystallized alumina sheath, 300 or 600 mm long and can be used to 1600°C.

Isotech Gold / Platinum Thermocouple

This model offers smaller uncertainties than Type R or S using only pure metals in the construction and can be considered as an alternative to HTSPRTs.

NPL Platinum / Palladium Thermocouple

This model manufactured by the National Physical Laboratory (NPL) was developed to operate reliably and accurately to 1500°C and offers superior stability to conventional platinum / platinum rhodium thermocouples. They now can be purchased from Isotech, with NPL calibration (UKAS) with an uncertainty of $\pm 0.2^\circ\text{C}$, from 0°C to 1100°C rising linearly to $\pm 0.55^\circ\text{C}$ at 1330°C or $\pm 0.7^\circ\text{C}$ at 1500°C.

■ Calibration Options

Comparison Calibration

The Model 1600 includes UKAS calibration to 1100°C, with options to extend this to 1200°C or 1300°C. The thermocouples are calibrated using comparison techniques in the Isotech 877 Furnace. Uncertainties for models with a cold junction (recommended) are $\pm 0.7^\circ\text{C}$ to 1100°C.



Fixed Point Calibration at the National Physical Laboratory (NPL)



For lower uncertainty calibration Isotech can supply the Model 1600 with ISO 17025 (UKAS) accredited fixed point calibration

up to 1330°C or even 1500°C benefiting from NPL's newly developed high temperature metal-carbon eutectic fixed points. The uncertainty is then $\pm 0.3^\circ\text{C}$ to 1100°C rising to $\pm 0.55^\circ\text{C}$ at 1330°C or $\pm 0.7^\circ\text{C}$ at 1492°C. The fixed points used are Zinc, Silver and the eutectic point of either Cobalt-Carbon or Palladium-Carbon alloys.

The Platinum/Gold Thermocouple can be supplied calibrated with uncertainties of $\pm 0.07^\circ\text{C}$ from 0°C to 400°C and $\pm 0.05^\circ\text{C}$ from 400°C to 1000°C using the fixed points of Zinc, Aluminium and Silver.

These calibrations are performed by NPL who established the world-first ISO 17025 (UKAS) accredited calibration services using metal-carbon eutectic fixed-point cells.

www.npl.co.uk/temperature-humidity

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

