



# Thermocouple Standards Platinum / Platinum Rhodium

- Type R and Type S
- Gas Tight Assembly
- Premium Grade Wire

The Isothermal range of Thermocouple Standards are the result of many years development. The type R and S standards will cover the range from 0°C to 1600°C.

The measuring assembly comprises a 7mm x 300mm or 600mm gas tight 99.7% recrystallized alumina sheath inside which is a 2.5mm diameter twin bore tube holding the thermocouple.

The inner 2.5mm assembly is removable since some calibration laboratories will only accept fine bore tubed thermocouples and some applications require fine bore tubing.

The covered noble metal thermocouple wire connects the measuring sheath to the reference sheath which is a 4.5mm x 250mm stainless steel sheath suitable for referencing in a 0°C reference system. Two thermo electrically free multistrand copper wires (teflon coated) connect the thermocouple to the voltage measuring device.

The thermocouple material is continuous from the hot or measuring junction to the cold, or referencing junction.

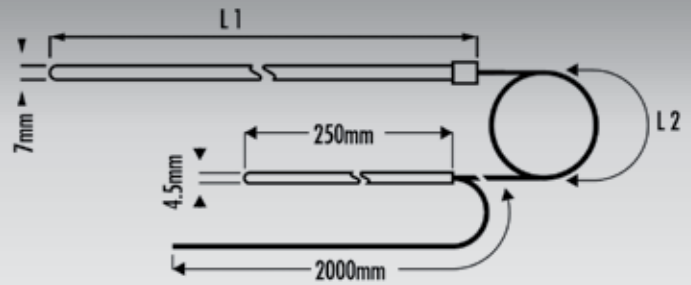
### Calibration

The 1600 is supplied with a certificate giving the error between the ideal value and the actual emf of the thermocouple at the gold point. For types R and S thermocouples, manufacturing tolerances are small and, therefore, the use of a standard reference table is particularly apt. A few calibration points, only, are required to determine the small differences between the characteristics of an individual thermocouple and the standard reference table. As an example of consistency, 48 Isotech thermocouples calibrated at NPL, had a standard deviation of the differences from the reference table value at the gold point (11, 364µV) of only 7µV, equivalent to about 0.5°C.

Thermocouple characteristics are sufficiently smooth to allow interpolation of deviations from the reference table to be carried out over fairly wide temperature spans without introducing unacceptable errors. Isotech can offer a 4-point UKAS calibration for temperatures up to 1100°C (supplied as standard), a 6 point UKAS calibration up to 1300°C with the option of a table of millivolts to degrees Celsius in 10°C steps or, alternatively, arrange for an NPL calibration at fixed points, see page 36.

Please contact Isotech to obtain current prices for calibration.

*Type R & S Standard Thermocouple, Model 1600, Premium grade wire, gas tight assembly, No intermediate junctions.*



| TYPE R & S STANDARD THERMOCOUPLE | CODE | L1  | L2     |
|----------------------------------|------|-----|--------|
|                                  | /600 | 600 | 1150mm |
|                                  | /300 | 300 | 1450mm |

*Also available without the physical cold junction - Specify No Cold Junction (NCJ).*

|                              |  |
|------------------------------|--|
| Model                        | 1600   |
| Hot Sheath Temperature Range | 0°C to 1600°C (R or S)   |
| Emf Vs Temperature           | According to relevant document                                 |
| Response Time                | 5 minutes  |
| Hot Junction Dimensions      | see diagram  |
| Connecting Cable             | see diagram  |
| Cold Junction                | 250mm long x 4.5 diameter                                      |
| Copper Extension Wires       | 2000mm   |
| Immersion                    | 100mm min.   |
| Case Dimensions              | Height 65mm<br>Width 710mm<br>Depth 165mm<br>Gross Weight 900g |
| Feature                      | Removeable inner assembly                                      |

The standard thermocouple described can be supplied in the following noble metal combinations

- TYPE R: Platinum vs Platinum 13% Rhodium
- TYPE S: Platinum vs Platinum 10% Rhodium

### How to order

- Model 1600 Type R/300
- Model 1600 Type R/600
- Model 1600 Type S/300
- Model 1600 Type S/600

If cold junction not required, specify NCJ.

UKAS calibration is included