

**CONTAINING:**

- How to electrically calibrate a temperature indicator that had cold junction compensation?
- Isotech 880 Cold Junction Thermocouple Probes: Uncertainties to  $\pm 0.1\text{ }^{\circ}\text{C}$
- Thermocouple Referencing Systems

## Cold Junction Thermocouple Probes

### How to Electrically Calibrate a Temperature Indicator that has Cold Junction Compensation?

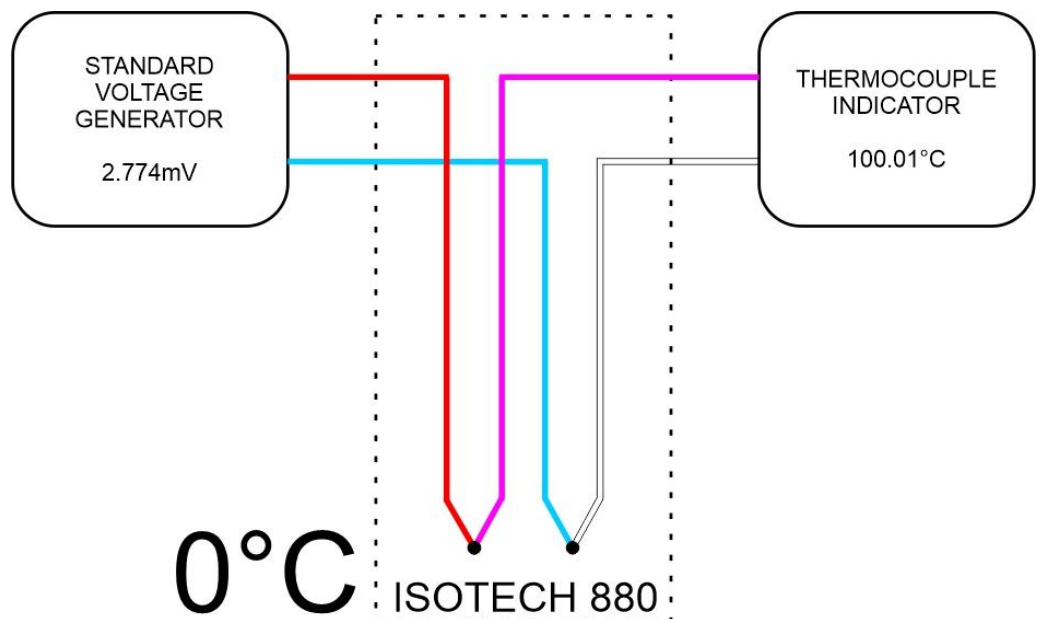
When calibrating a thermocouple indicator that has cold junction compensation, a standard voltage generator cannot be directly connected to the thermocouple input. One method is to connect the voltage generator to a "double junction" of thermocouple to copper wires and to place this junction in an ice flask or  $0\text{ }^{\circ}\text{C}$  reference unit.

For more details see: 'Euramet Guide No. 11 | Guidelines on the Calibration of Temperature Indicators and Simulators by Electrical Simulation and Measurement | TC-T | Version 2.0, 03/2011

<https://www.euramet.org/publications-media-centre/calibration-guidelines/>

### Isotech 880 Cold Junction Thermocouple Probes: Uncertainties to $\pm 0.1\text{ }^{\circ}\text{C}$

<https://www.isotech.co.uk/thermocouple-referencing/laboratory-models-for-standard-tcs/multi-junction-laboratory-probes>



We can provide 880 Double Junction Thermocouple Probes with UKAS calibration to an uncertainty of  $\pm 0.1\text{ }^{\circ}\text{C}$   $k = 2$

*Laboratory Thermocouple Reference Unit:*



Shown is an Isotech Model 880 DJ Assembly with six complete junctions; Type E, J, K, N, T and U that are enclosed within a 200 mm stainless steel sheath. The assembly can be provided with ISO 17025 Calibration from our UKAS laboratory, uncertainty 0.1 °C



*Multi-Channel Thermocouple Reference Unit:*



Such a probe can be placed into a simple ice flask or for greater convenience, a 0 °C thermocouple reference unit.

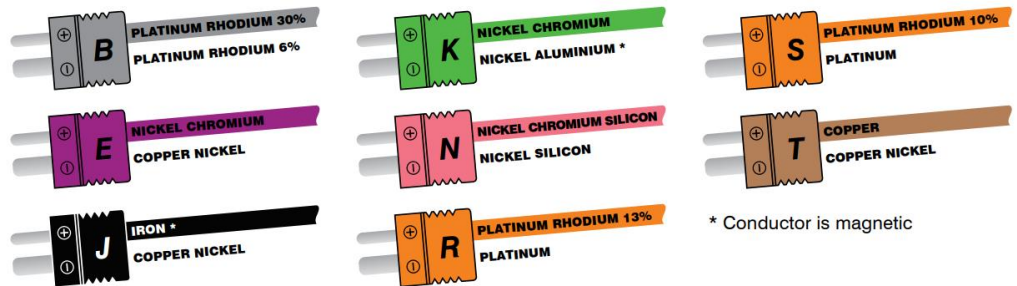
## Isotech Thermocouple Reference Units

The Isotech TRU Model 938 provides a stable 0 °C reference to accept cold junction probes such as the Model 880 and the cold junctions of standard thermocouples used in the laboratory. The Isotech Model 937 can be provided with pre-wired thermocouples.

For larger systems outside of the laboratory Isotech have multi-channel 0 °C reference units, ovens and isothermal systems.

<https://www.isotech.co.uk/thermocouple-referencing>

## Thermocouple Colour Coding – IEC 60584



## Help and Advice

If you need low uncertainty measuring systems we can help, contact us for free advice and consultation. We have proven solutions at all levels in temperature metrology, from high accuracy cost effective industrial measurements systems to the lowest uncertainty systems for primary metrology used by the world's leading National Metrology Institutes.

If you have any questions, if you need any advice, if you would like a free consultation then please get in touch