THE QUEEN'S AWARDS
FOR ENTERPRISE:
INNOVATION
ISOTECH
Calibration Solutions
for Industrial Sensors
-100°C to 1200°C

Fast Temperature Calibrators 4

Choose for fast portable temperature calibration from -35°C to 650°C

Multi-function Temperature Calibrators ISOCAL-6 6

Choose for portable and bench calibration. Use as Dry Block, Liquid Bath and more... -45°C to 250°C

milliK Precision Thermometer 14

High accuracy for SPRTs, PRTs, Thermocouples, Thermistors and Current Transmitters with flexible expansion

TTI-22 True Temperature Indicator 16

Highest accuracy precision thermometer for SPRTs and PRTs

Large Volume Calibrators 18

Large Block with up to 300mm immersion depth -25°C to 700°C.
Options for ITS-90 Fixed Points

Cryogenic Calibrator 19

Model 525 -100°C to 40°C
Choose for low temperature calibration and validation

High Temperature Calibrators 10

Choose for portable and bench calibration. Calibrate all sensor types from -35°C to 1200°C

TTI-10 Hand Held Thermometer 17

High accuracy hand held thermometer for PRTs

Temperature Cycling and Automation 20

Options for fully automated temperature calibration

ISOTECH

The world's leading National Metrology Institutes choose Isotech...

Shouldn't you?

The company is always willing to give technical advice and assistance where appropriate.

Equally because of the program of continual development and improvement, we reserve the right to amend or alter characteristics and design without prior notice.

This publication is for information only.

Fast Temperature Calibrators

Quick-Cal - The hand-held temperature test unit

Two models available, 30°C to 350°C and -12°C to 140°C

- Better accuracy: 0.4°C to 0.2°C, using comparison techniques
- Wide temperature ranges: cover most sensor types with just two units
- Fast: Nine minutes to reach temperature
- Light, compact, and portable

Isotech's Quick-Cal range of portable dry block calibrators is ideally suited to the less-exacting applications where our larger, better specified blocks are unnecessary.

Choose Quick-Cal for...

- Small enough to carry where ever you go
- A handheld block with interchangeable inserts
- (25mm x 120mm or two 13mm pockets with interchangeable sleeves)
- Value with ease of use

Fast-Cal - The fast portable temperature calibrator for on-site use

3 Temperature Ranges: Low -35°C to 140°C, Medium 30°C to 350°C and High 35°C to 650°C

- Rugged & Lightweight
- Accuracies: ±0.15°C to ±2°C, model & range dependent
- Fast response, high stability
- Shoulder Carry Case Included
- PC Interface and Software

The key secret of Isotech's success is knowledge. By applying our insight from the manufacture of National, Primary and Secondary laboratory apparatus to the Industrial Fast-Cal, you get the full benefit of our experience with industrial calibration equipment.

Choose Fast-Cal for...

- Fast Portable Calibration
- Standard Insert or machined to your specification (25mm x 148mm)
- Ease of use on site for all sensor types

For more information: ISOTECH.CO.UK

UKAS Calibration Options ISO 17025

FAST-CAL
FAST-CAL
ISOTECH

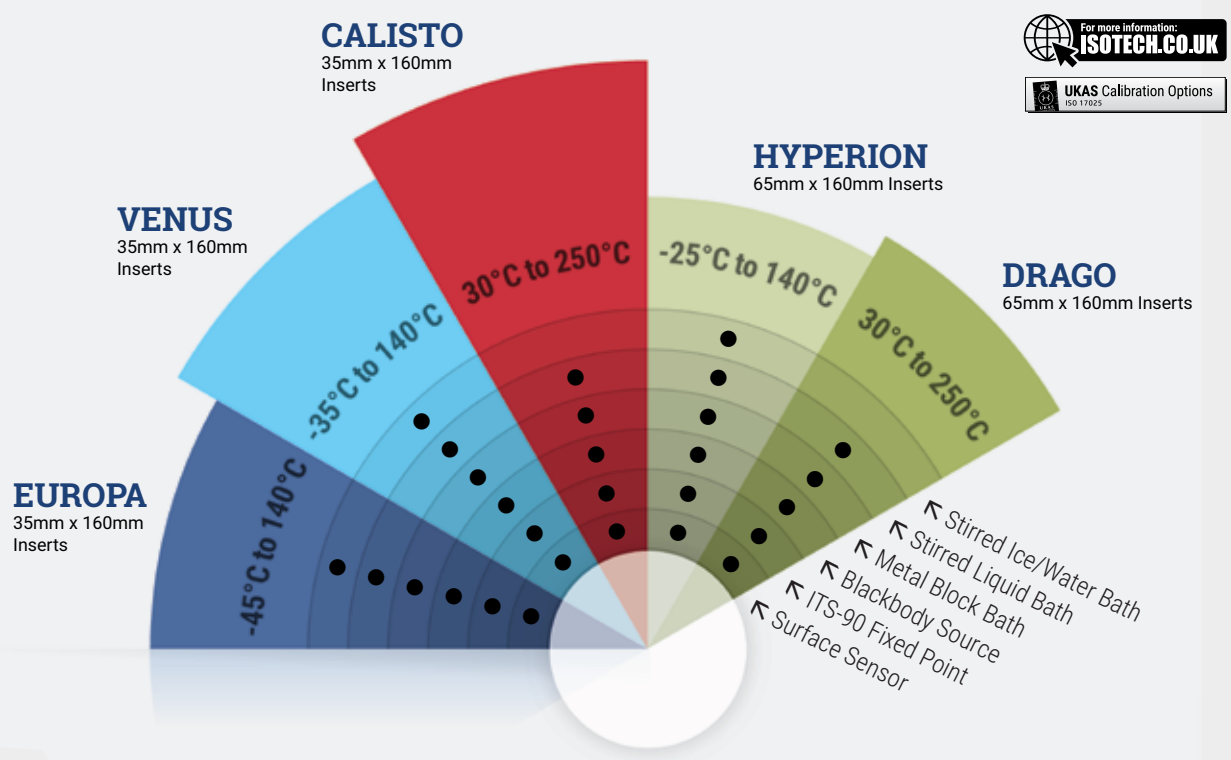
Multi-function Temperature Calibrators - ISOCAL-6

Europa / Venus / Calisto / Hyperion / Drago

Calibrate all sensor types from -45°C to 250°C

Choose Isocal-6 for...

- Portable and bench calibration
- Dry block, liquid bath and more
- Accuracy to ±0.15°C (display to block)
- Choose 35mm or 65mm diameter calibration volumes
- Range of Standard Inserts or machined to your specification
- Inserts interchangable across models of same size volume



ISOCAL-6 - Expandable Modular Design

Add options as required

1. Dry Block: Calibrate thermocouples, RTDs and other sensor types in removable inserts
2. Liquid Bath: Switch to a liquid bath to calibrate awkward shaped sensors
3. Ice Bath: Check standards at 0°C
4. Infrared Calibrator: Add blackbody accessory to calibrate IR sensors
5. Surface Sensor Calibration: Simply add the surface sensor kit
6. ITS-90 Fixed Point Calibration: Mercury, Water and Gallium fixed points available

Award Winning Temperature Calibrators available in three versions

BASIC	Heat Source Only
SITE	Heat Source with built in Reference Probe
ADVANCED	Heat Source with Reference Channel and inputs for Thermocouple, RTDs, Thermostats and Transmitter. Built in automatic temperature stepping and data logging.

BASIC Model

The thermometer under test is compared to the dry block controller value.

Useful for moderate temperature ranges and quick testing.

A control system with digital display shows the set and measured value from the calibration volume.

Use with a separate external temperature indicator for higher accuracy.

SITE Model

A thermometer under test is compared to a calibrated standard.

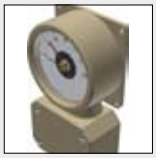
In addition to the temperature control system with its display the Isotech SITE model includes a separate temperature read out for the Standard (Reference) probe.

ADVANCED Model

Isotech ADVANCED models have inputs for both the test thermometer and a calibrated standard.

The Isotech ADVANCED models have three input channels so that both the Standard and the Test Probes can be connected to the temperature read out. Additionally the ADVANCED models feature data logging, Ethernet, greater accuracy and further additional features.

Inputs for: Thermocouples, RTDs, Thermostats and Current Transmitters



BASIC Calibrator Features...

- Simple to use and outstanding value
- Rugged case
- Calibrate all sensor types
- Ramp to set temperature
- Supply voltage power correction and digital filtering
- PC interface and software

Block Temperature -
Set Temperature -

SITE Calibrator Features...

- In-built reference channel
- Accepts both platinum resistance thermometers and thermocouples including Types K, N, R, S, L, PL2, T, J and E.
- Simple to use and outstanding value
- Rugged case
- Calibrate all sensor types
- Ramp to set temperature
- Supply voltage power correction and digital filtering
- Pc interface and software
- Thermostat testing, stand alone or with PC
- Configurable units °C, °F or K

Reference Channel

ADVANCED Calibrator Features...

BEST PERFORMANCE

- Benefit from advanced temperature controller that provides best performance
- Resolution to 0.001°C - Superior Stability
- Control parameters automatically optimised with temperature

LARGE BRIGHT COLOUR DISPLAY

THERMOSTAT TESTING

- Test two thermostats simultaneously

VIEW FROM ANYWHERE

- Ethernet interface and inbuilt webserver
- View remotely on your tablet or smartphone

AUTOMATIC TEMPERATURE CYCLING

- Program the ADVANCED with the temperature points you need, store commonly used ranges. The calibrator can then automatically follow these points and log your data

DATA LOGGING

- Massive internal memory can safely store all your data
- Store a lifetime of data on a USB Drive
- Choose open CSV files or tamper proof data with secure file format for data security

CONNECT MORE PROBES

- Up to 3 input channels
- Inbuilt reference system with two universal inputs for PRT, thermocouple or process
- Input and a third thermocouple input
- Input types: Process inputs including 4-20mA, PRT, and thermocouple types K, N, T, J, R, S, B, E, C, D, G, U, NiMo/NiCo, Platinel, Pt20%Rh/Pt40%RH

NOW WITH REFERENCE PROBE CONTROL

- Control the block temperature from the reference probe
- Eliminate Offsets
- Use in combination with automatic cycling and logging

THE SOFTWARE YOU NEED

- PC tools for reviewing data with support for secure file format, managing temperature programs, easy configuration and data logging

Connect Current Transmitters

Left to Right:
Home Screen - Three Input Channels,
Thermostat Testing Screen,
Automatic Temperature Cycling with Logging,
User Screen - Reference Control & Auto Tune

High Temperature Calibrators

Gemini / Jupiter / Pegasus

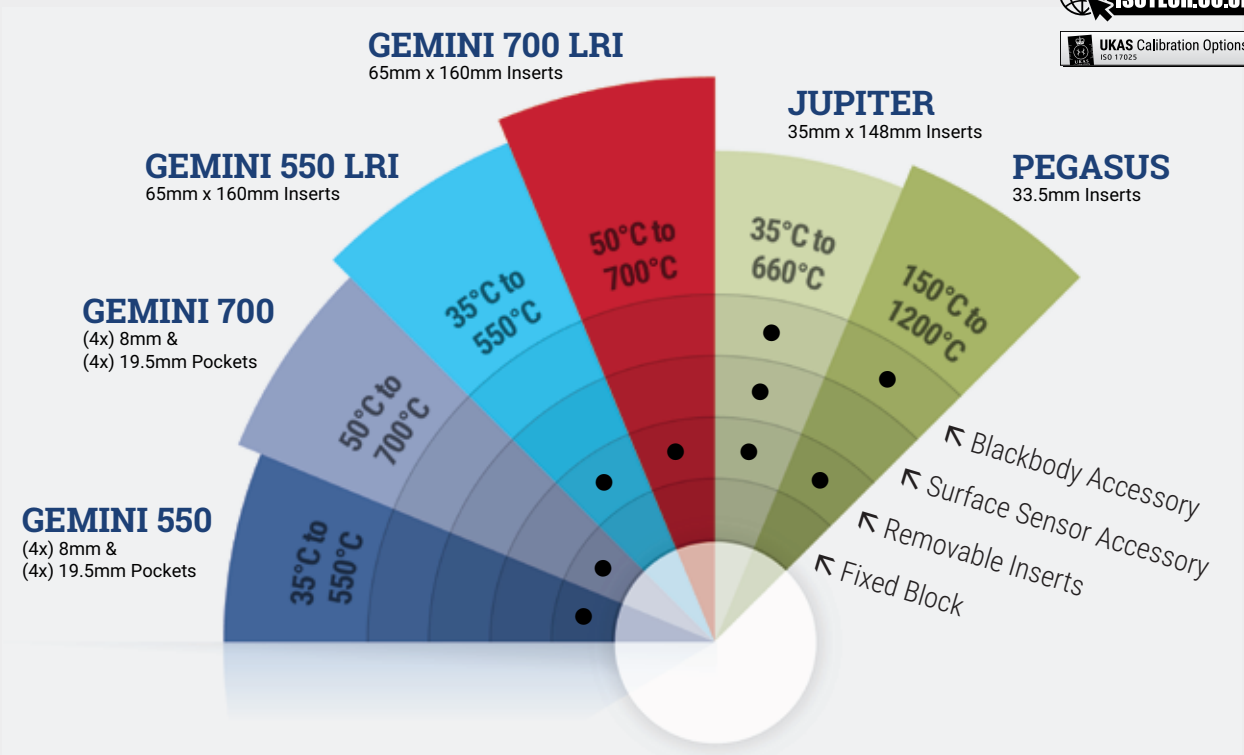
Calibrate all sensor types from 35°C to 1200°C

Choose for...

- Portable and Bench Calibration
- Range of Standard Inserts or machined to your specification
- Accessories for Blackbody and Surface Sensor Calibration

For more information: ISOTECH.CO.UK

UKAS Calibration Options ISO 17025



The world's leading National Metrology Institutes choose Isotech - shouldn't you?

Isothermal Technology manufacture a full range of temperature calibration equipment from Primary Standards used in National and Primary Laboratories, for Secondary Laboratory Equipment used in accredited calibration laboratories through to the Dry Blocks featured here. We have been pioneering the latest developments in Temperature Metrology more than 35 years, benefit from our know how, experience and global network.

Jupiter

- For fast calibration to 660°C - 35mm diameter removable inserts for all sensor types
- High conductivity copper block for superior uniformity
- Accuracy: ±0.3°C (display to block)

The Jupiter Dry Block range offers industry-leading performance in an easy-to-use portable package. It is ideal for the calibration of thermocouples and platinum resistance thermometers. It has been designed for fast heating and cooling for both bench and convenient field use. For flexibility, surface sensor and infrared thermometer accessories can be added.

Gemini

- For large sensors to 700°C - 65mm block - fixed and removable versions
- Suits sensors too large for other block
- Display to Block Accuracy: Better than ±0.5°C

The Gemini family of Dry Blocks have high capacity, allowing a large number of probes to be calibrated together. This dry block calibrator is also suitable for large-diameter probes with the block volume of a nominal 65mm diameter x 160mm deep.

Pegasus

- For high temperature thermocouple calibration to 1200°C - 33.5mm diameter removable inserts
- High temperatures in a compact size
- Accuracy: ±3.0°C (display to block)

The Isotech Pegasus 1200 high temperature calibrator is perfect for the calibration of high temperature thermocouples used in industries such as steel and glass making, electrical power, automotive and material processing. This portable furnace utilises a specially profiled heater that gives a central zone of constant temperature and it is compact and portable enough for easy use on site. For flexibility, fast cool down and infrared thermometer accessories can be added.

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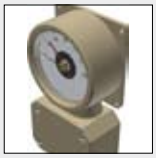

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milliK Precision Thermometer / -270°C to 1820°C

High accuracy for SPRTs, PRTs, Thermocouples, Thermistors and Current Transmitters with flexible expansion.

The milliK Precision Thermometer from Isotech sets a new standard for the high accuracy measurement and calibration of Platinum Resistance Thermometers, Thermistors, Thermocouple and Process Instrumentation (4-20mA) over the range -270°C to 1820°C.

The milliK has two input channels for sensors and a third channel for current. It can be expanded to become a measuring system with up to 33 channels reading SPRTs, PRTs, Thermistors, or Thermocouples with the option to control calibration baths and log readings accurately.

Wide Range of Sensors:
SPRTs, PRTs, Thermistors, Thermocouple and 4 - 20mA
The milliK sets a new standard for value, versatility and accuracy - < ±5ppm over range for PRTs, ±2µV for Thermocouples and ±1µA for current transmitters, see Data Sheet.

Supporting a wide range of sensors and functions it replaces individual devices making a cost effective calibration solution.

SPRT/PRT, Thermocouple, & Thermistor Precision Thermometer

- Range: -270°C to 1820°C (3308°F)
- Accuracy: ±0.005°C (±5mK) full range for PRTs
- Resolution: 0.0001°C (0.1mK)
- SPRT/PRT, Thermocouple, Thermistor and 4-20mA Inputs
- Full colour graphical display
- Store up to 180 days of measurements
- Control Isotech calibration baths

Choose milliK for...

- Accuracy: Best in class ±0.003°C (±3mK) at 0°C
- Calibration and precision measurement
- Features: Cycles Isotech Blocks and Baths through a series of calibration temperatures whilst logging the data - all without a PC
- USB: Export logged data - connect a mouse and keyboard for ease of operation

For more information: ISOTECH.CO.UK

UKAS Calibration Options ISO 17025

milliK - Flexible Operation

1. Connect current transmitters
2. USB interface for mouse, keyboard and pen-drive
3. Control Isotech blocks with automated temperature stepping
4. Optional carry case
5. Optional terminal adapter for bare wires, forks or 4mm plugs
6. Add up to four millisKanners for maximum of 32 expansion channels
7. Serial and Ethernet ports for remote control
8. Connect thermocouples, PRTs, SPRTs and thermistors

TTI-22 True Temperature Indicator / -250°C to 962°C

Highest accuracy precision thermometer for SPRTs and PRTs

TTI-22 is a dedicated high accuracy thermometer for resistance thermometers, supporting both Industrial Platinum Resistance thermometers (IEC 60751) and Standard Platinum Resistance Thermometers (ITS-90).

The TTI-22 offers a higher accuracy than other precision bench thermometers as it measures the resistance ratio of the thermometer to a reference resistor. This is the same method that is used by microK and other thermometry bridges that are used in primary temperature metrology.

For more information: ISOTECH.CO.UK

UKAS Calibration Options ISO 17025

Choose TTI-22 for...

- Accuracy to ±0.001°C (±1mK) utilises resistance ratio method
- A reference thermometer for your PRT or SPRT Standards
- For use in the lab or to achieve the highest accuracy in the field
- Resolution: 0.0001°C (0.00004Ω)

TTI-10 Hand Held Thermometer / -200°C to 850°C

High accuracy hand held thermometer for PRTs

The TTI-10 brings laboratory level performance of up to 0.01°C (10mK) and resolution up to 0.001°C (1mK) in a portable handheld instrument. Battery life is typically 20 hours from a 9V PP3 alkaline battery and a protective rubber boot, that is included as standard, offers protection in field use.

The instrument can capture the minimum, maximum and average values for up to 4000 measurements with a logging rate selectable in the range of 1 second to 30 minutes.

The TTI-10 has an easy to use "learning calibration mode" that allows the TTI-10 to be system calibrated with a Platinum Resistance Thermometer simply by comparing it to a calibrated standard thermometer. There is no need to calculate calibration coefficients or data, simply enter the reference probe temperature or temperatures and the TTI-10 does the work for you.

A USB interface allows connection to Isotech Cal Notepad software with its charting and logging features.

TTI-10 supports Isotech Semi Standard Platinum Resistance probes with system uncertainties (probe and instrument) as low as 0.02°C (20mK)

Choose TTI-10 for...

- Handheld Accuracy to ±0.01°C (±10mK)
- High Accuracy field validation of ovens, chambers, tank temperatures
- Portable High Accuracy Temperature Measurement
- An ideal companion reference thermometer to a basic dry block heat source

For more information: ISOTECH.CO.UK

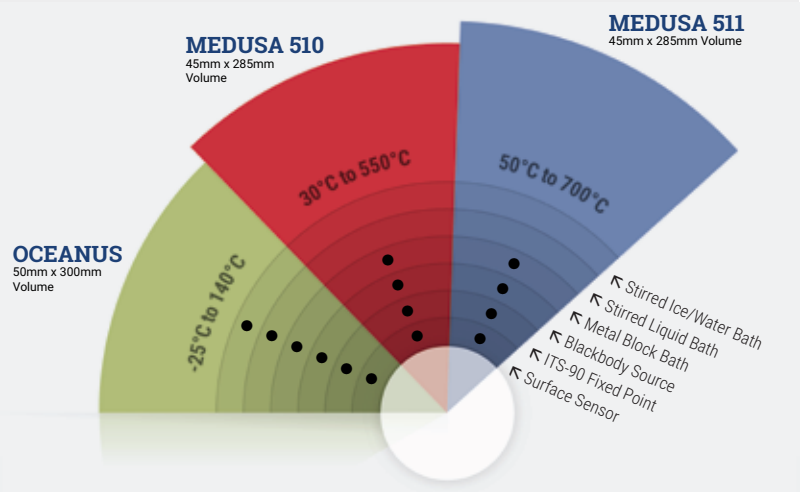
UKAS Calibration Options ISO 17025

Large Volume Calibrators

Oceanus / Medusa / Medusa 511

Choose for...

- Deep Immersion - up to 300mm
- Range of Standard Inserts or machined to your specification
- Realising Isotech ITS-90 Slim Fixed Point Cells including Water Triple Point, Gallium, Indium, Tin, Zinc and Aluminium



For sensors requiring deep immersion or for ITS-90 Fixed Point Calibration

These blocks cover the range -25°C to 700°C and offer large calibration volumes of up to 50mm diameter x 300mm deep. This suits both thermometers requiring larger immersion and the Isotech Slim Fixed Point Cells for ITS-90 Calibration providing uncertainties of less than 0.001°C

Cryogenic Calibrator

-100°C Dry Block: Model 525

Now it is possible to calibrate temperature sensors such as PRTs, Thermocouples and Thermistors at ultra low temperatures without the need for a liquid bath.

Portability and Safety

Unlike a liquid bath the Isis requires no costly or hazardous fluids and offers greater portability. This will be of particular value to calibration engineers working on site with low temperature freezers as encountered in pharmaceutical, aeronautical and food environments. The minimum operating temperature is less than most stirred liquid laboratory calibration baths can achieve. Users in laboratories will also benefit by avoiding the ongoing need for expensive fluids.

For more information: ISOTECH.CO.UK

Choose for...

- Model 525 - the world's first -100°C Portable Calibrator
- Stability: 0.02°C at -90°C.
- No hazardous or expensive liquids

Temperature Cycling and Automation

Our BASIC and SITE Models (not Quick-Cal) include Cal Notepad software which can log data from the block. Cal Notepad can be left running to switch between different temperatures after a preselected time.

The Isotech milliK can connect to our Basic and Site models to switch them between temperatures whilst logging the data to the milliK's internal memory. (A PC is not required)

Our ADVANCED blocks include built in automatic temperature cycling with the ability to program with up to 25 set temperatures. Temperature ramp and hold cycles can also be created. Up to 100 separate programs can be stored and all data is automatically logged.

milliK can control Isotech blocks with automatic temperature stepping whilst logging all the data

Fully Automated Systems

Our powerful and sophisticated I-Cal EASY software can fully automate temperature calibration and save you time. As well as temperature switching, the I-Cal EASY software can print certificates, calculate coefficients and print tables of corrected values.

Try I-Cal EASY for **FREE** for 30 days - after the trial period if a licence is not purchased for the full version, the software can be used indefinitely with no license fee to log from Basic, Site and ADVANCED calibrators, milliK, millisKanner and almost all of our laboratory products.

Choose I-Cal Easy for...

- Fully Automatic Calibration
- Calculate ITS-90 and CvD Coefficients
- Calculate Thermocouple Error Curves
- Print Resistance / Temperature and Voltage / Temperature Tables
- Design and Print Certificates
- Compatible with almost all Isotech Industrial and Secondary Laboratory equipment.

Industrial Reference Probes

Isotech have a range of industrial platinum resistance thermometers and thermocouples are suited for both field and laboratory use. They are ideal for use as working standards in Dry Blocks and Liquid Baths or as high accuracy probes for our milliK and TTI Indicators. There is also a range of angled probes for use in our Portable Temperature Calibrators for applications where the units under test have a terminal head fitted that would otherwise obstruct a longer reference thermometer.

For more information: ISOTECH.CO.UK

UKAS Calibration Options ISO 17025

Calibration Services & Training

Isotech can calibrate your standards in our world leading laboratory, we focus on low uncertainty calibration and take pride in the quality of our service from experienced temperature specialists.

Our laboratory was first established in 1980 and has grown to be a full scale UKAS laboratory providing calibration with uncertainties comparable, if not better, than most of the world's NMI's

Training - Isotech is widely recognized as a leading provider of training for temperature calibration both at the customers site and in Southport, for more details visit our website www.isotech.co.uk/training

How Isotech Can Help?

- ISO 17025 schedule includes Dry Block Calibrators, Thermometers, ITS-90 Fixed Point Cells, Standard Resistors and Temperature Simulation
- Our experienced calibration team can provide advice and support whatever your calibration needs from industrial applications through to Primary Standards
- Clear and simple certification - the uncertainty stated on the certificate is for the piece of equipment that has been calibrated

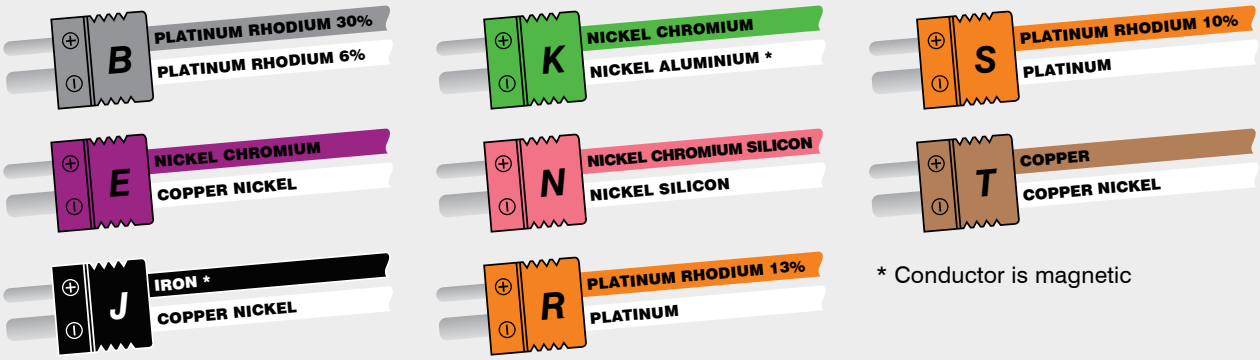
Reference Chart

Thermocouple Tolerances - IEC 60584 2013

B	Class 1	-	-	-	
	Class 2	600	+1700°C:	±0.0025 . t	or ±1.5°C
	Class 3	600	+1700°C:	±0.005 . t	or ±4.0°C
E	Class 1	- 40	+800°C:	±0.004 . t	or ±1.5°C
	Class 2	- 40	+900°C:	±0.0075 . t	or ±2.5°C
	Class 3	- 200	+40°C:	±0.015 . t	or ±2.5°C
J	Class 1	- 40	+750°C:	±0.004 . t	or ±1.5°C
	Class 2	- 40	+750°C:	±0.0075 . t	or ±2.5°C
	Class 3	-	-	-	
K	Class 1	- 40	+1000°C:	±0.004 . t	or ±1.5°C
	Class 2	- 40	+1200°C:	±0.0075 . t	or ±2.5°C
	Class 3	- 200	+40°C:	±0.015 . t	or ±2.5°C
N	Class 1	- 40	+1000°C:	±0.004 . t	or ±1.5°C
	Class 2	- 40	+1200°C:	±0.0075 . t	or ±2.5°C
	Class 3	- 200	+40°C:	±0.015 . t	or ±2.5°C
R	Class 1	0	+1600°C:	±1 for t<1100°C ±[1+ 0.003 x (t-1100)] for t>1100°C	
	Class 2	0	+1600°C:	±0.0025 . t	or ±1.5°C
S	Class 1	0	+1600°C:	±1 for t<1100°C ±[1+ 0.003 x (t-1100)] for t>1100°C	
	Class 2	0	+1600°C:	±0.0025 . t	or ±1.5°C
T	Class 1	- 40	+350°C:	±0.004 . t	or ±0.5°C
	Class 2	- 40	+350°C:	±0.0075 . t	or ±1.0°C
	Class 3	- 200	+40°C:	±0.015 . t	or ±1.0°C

t = temperature, degree Celsius, larger value applies

Thermocouple Colour Coding - IEC 60584-3



* Conductor is magnetic

ISOTECH

About Us

The world leader in temperature metrology, with over 35 years' experience.

Our clients include the world's leading laboratories including National Laboratories, leading ISO 17025 Accredited Laboratories and users in all industries.

For more information: ISOTECH.CO.UK

UKAS Calibration Options ISO 17025

Why Choose Isotech?

- Innovation - winner of the Queen`s Award for Enterprise in the Innovation Category, 2017.
- Isotech has solutions for all calibration needs, from Primary Laboratories maintaining National Standards to the needs of field engineers calibrating industrial sensors on site. Isotech is truly "The Source for Calibration Professionals".
- Global Network - local support. Isotech has over 90 authorized sales agents worldwide! No matter where you are, we can offer local support.
- The world's leading National Metrology Institutes choose Isotech - shouldn't you?

Temperature Metrology Solutions for:

- ITS-90 Primary Standards
- Industrial Sensor Calibration
- Secondary Temperature Calibration
- Infrared Thermometers
- High Accuracy Temperature Measurement
- Thermocouple Referencing Equipment

ISO 17025 Calibration Services to the smallest of uncertainties and with international recognition

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