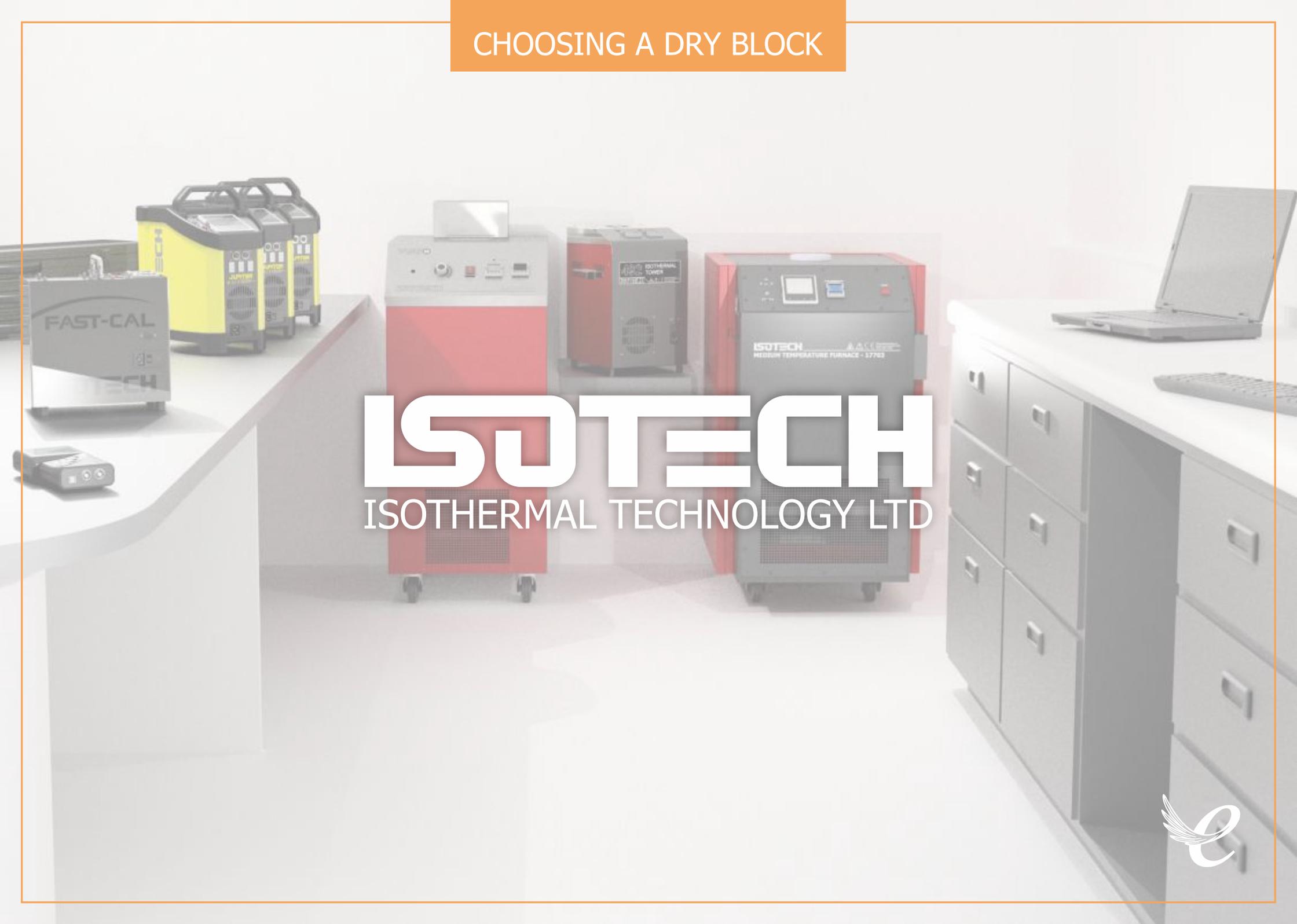


## CHOOSING A DRY BLOCK



**ISOTECH**  
ISOTHERMAL TECHNOLOGY LTD



## CHOOSING A DRY BLOCK

[Click Me](#)

Part One: Sensor Sizes

[Click Me](#)

Part Two: Temperature Ranges & Features

[Click Me](#)

Part Three: Basic, Site or Advanced

[Click Me](#)

Part Four: Calibration Options



## Part One: Sensor Sizes

What size are the thermometers to be calibrated?



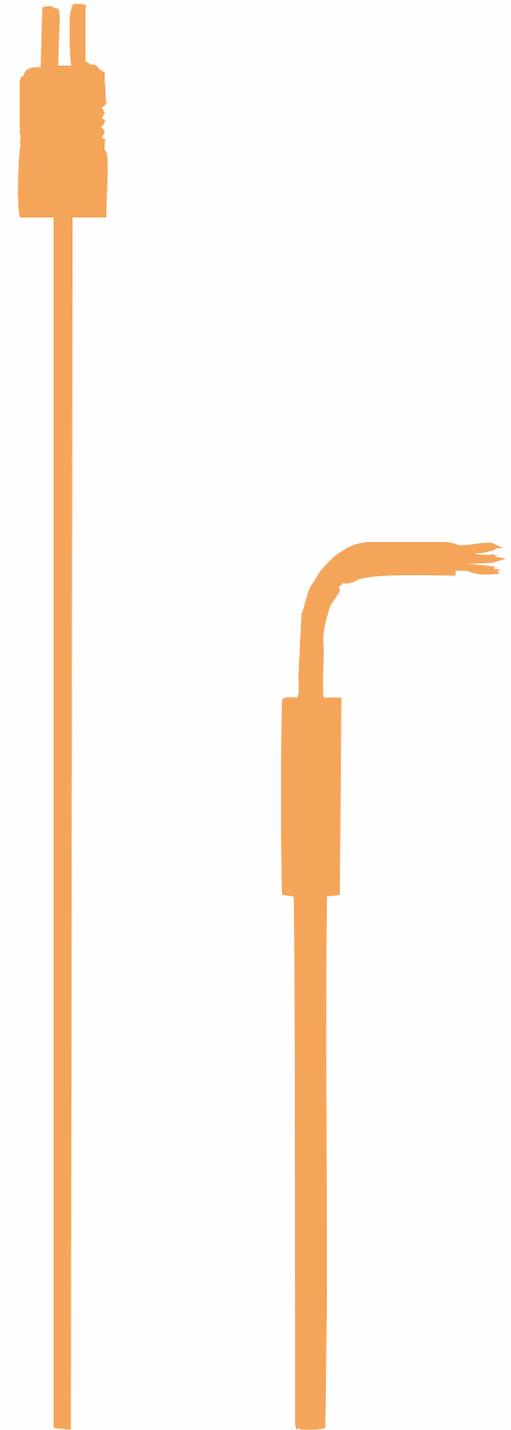
What size are the thermometers to be calibrated?

The Dry Block must have a block large enough and deep enough to suit the test thermometers.



What size are the thermometers to be calibrated?

PRT or RTDs & Thermocouples are commonly calibrated in blocks 140mm to 160mm deep.



## CHOOSING A DRY BLOCK

What size are the thermometers to be calibrated?

But other sensor types may demand greater depth.



What size are the thermometers to be calibrated?

Isotech have depths from 115mm to 300mm and diameters from 25mm to 65mm.



## CHOOSING A DRY BLOCK

### Insert Size

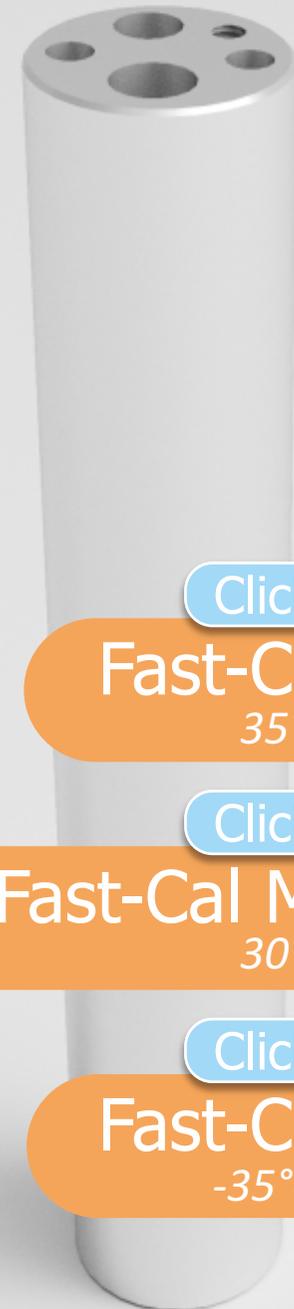
Insert Size - Fast-cal - 25mm x 148mm:

Standard Thermometer Pockets:

2x4.5mm, 1x6.5mm, 1x8mm.  
(others to special order)



Fast response highly portable operation



[Click Me](#)

**Fast-Cal High**  
*35°C to 65°C*

[Click Me](#)

**Fast-Cal Medium**  
*30°C to 35°C*

[Click Me](#)

**Fast-Cal Low**  
*-35°C to 140°C*

## CHOOSING A DRY BLOCK

### Insert Size

Insert Size - 4000 Range - 35mm x 160mm:

---

Standard Thermometer Pockets:

---

2x4.5mm, 2x6.5mm, 1x8mm & 1x9.5mm.  
(others to special order)



35mm Diameter for More Pockets  
and more features Dry Blocks



[Click Me](#)

**Europa**

*-45°C to 140°C*

[Click Me](#)

**Venus**

*-35°C to 140°C*

[Click Me](#)

**Calisto**

*30°C to 250°C*

[Click Me](#)

**Jupiter**

*30°C to 660°C*

## CHOOSING A DRY BLOCK

### Insert Size

## Insert Size - Isotech 65mm Diameter Blocks:

### Standard Thermometer Pockets:

Room for many more thermometers  
or bigger thermometers - Depth to 160mm.



65mm Diameter for More Pockets  
and more features Dry Blocks



[Click Me](#)

**Drago**  
*30°C to 250°C*

[Click Me](#)

**Hyperion**  
*-25°C to 140°C*

[Click Me](#)

**Gemini**  
*50°C to 700°C*

# CHOOSING A DRY BLOCK

Insert Size

Insert Size - Isotech "Deep" Blocks:

Standard Thermometer Pockets:

Depth to 300mm x 50mm Diameter.



[Click Me](#)

**Medusa 511**  
*50°C to 700°C*

[Click Me](#)

**Medusa 510**  
*30°C to 550°C*

[Click Me](#)

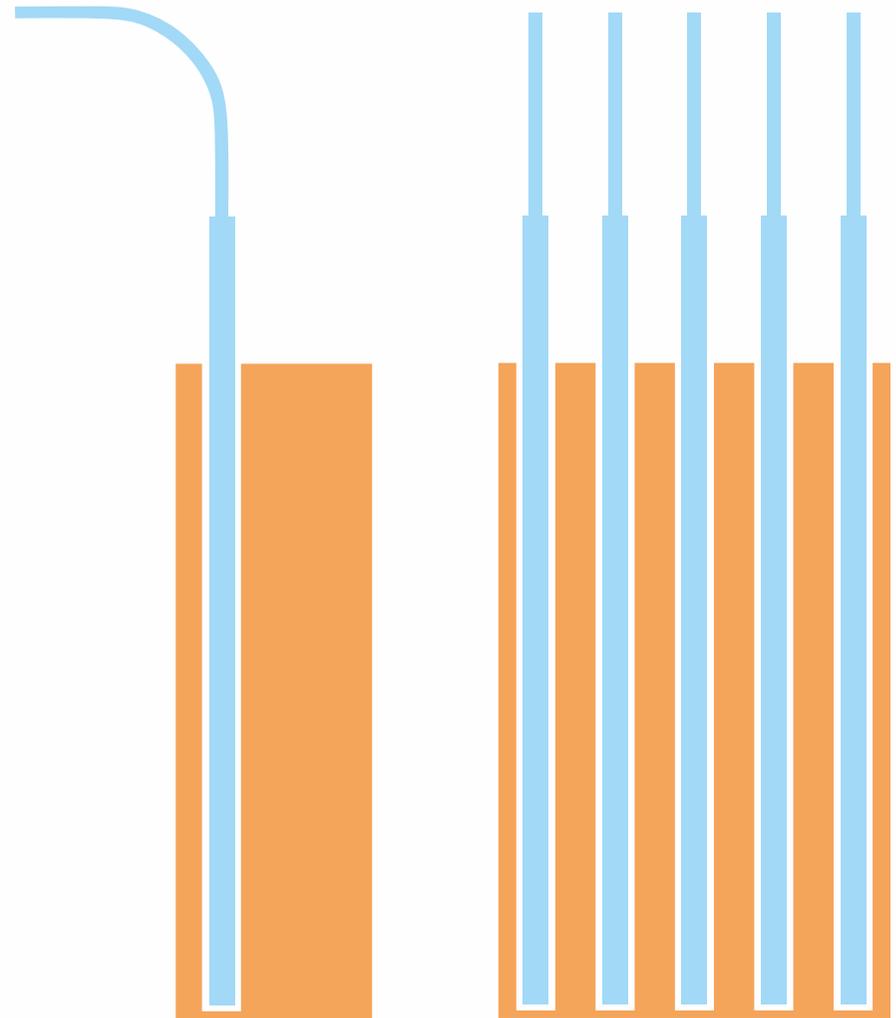
**Oceanus-6**  
*-25°C to 140°C*

Greater Depth

## RESPONSE TIMES

Smaller Blocks like Fast-Cal heat and cool much more quickly than larger blocks.

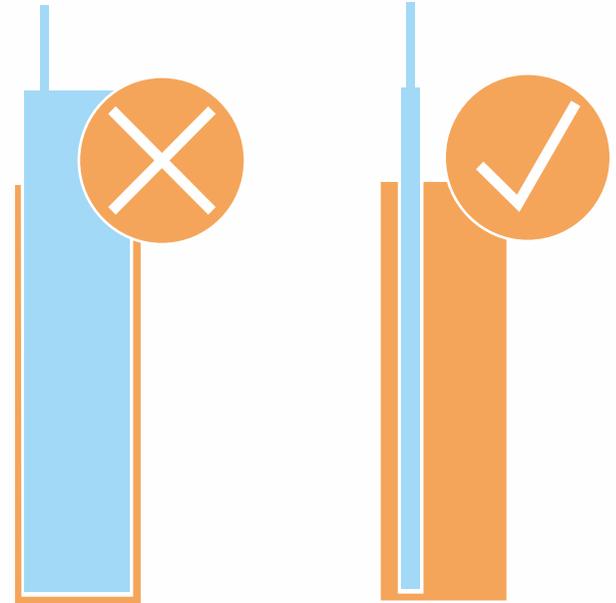
What is more important? Speed of response or ability to calibrate several sensors in one go?



## TOP TIPS

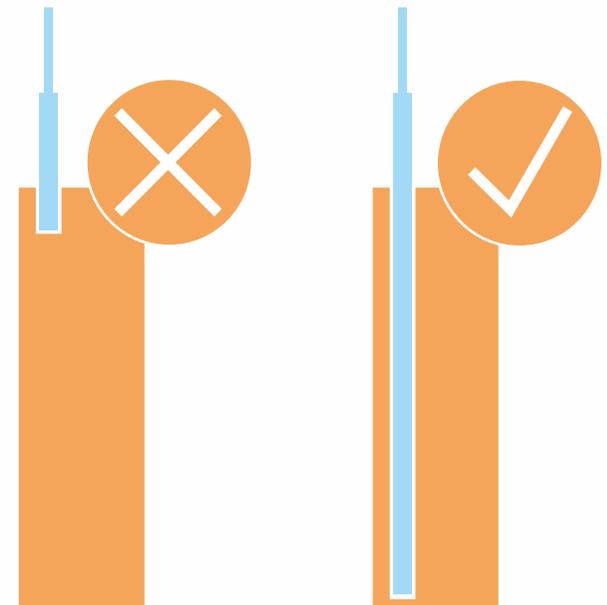
### Adequate Thermal Volume

Keep probe or probes small compared to mass of block.



### Ensure Good Immersion Depth

Ensure sensors are sufficiently immersed.

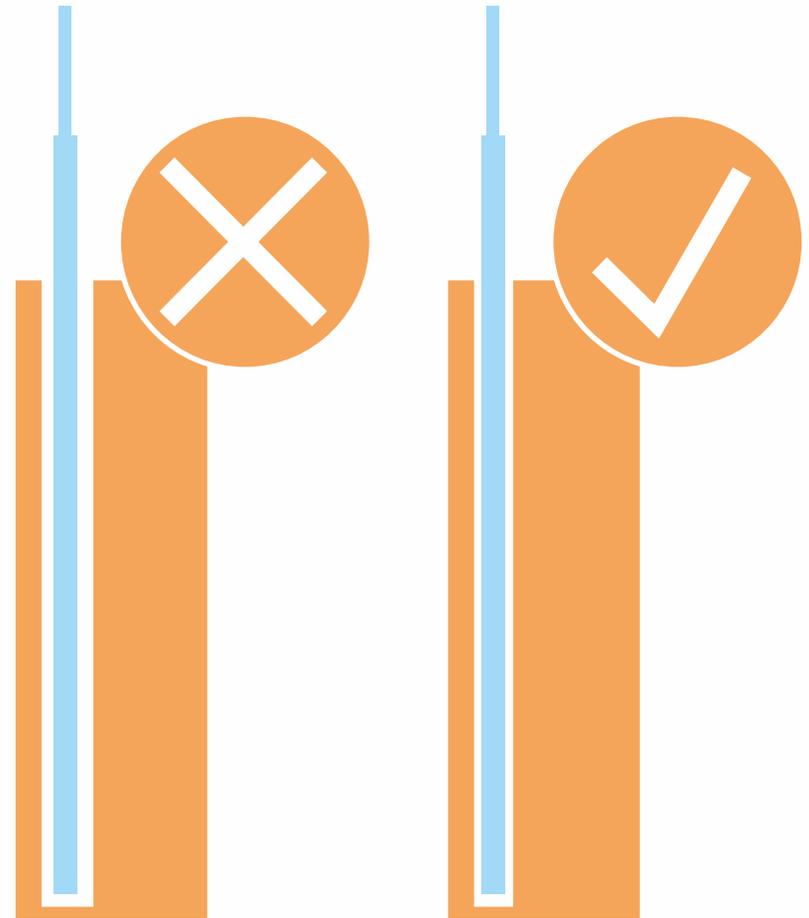


## TOP TIPS

### Hole Sizes

Generally make pockets 0.5mm larger than the probe size.

In Dry Blocks - Avoid liquids or other transfer mediums.



Learn More:

More Information About Depth

[Click Me](#)

## Search Results for: Documents

[Temperature Calibration; Depths of Immersion](#)

[Industrial Measurements with Very Short Immersion](#)

[Immersion Depth Chart – Dry Block Bath](#)

## Part Two: Temperature Ranges & Features

Temperature Range;  
and multi functional calibrators.



## CHOOSING A DRY BLOCK

What Temperature range needs to be covered?

Portable Dry Blocks can go to negative temperatures and as high as 1200°C.

There are three general categories.



# CHOOSING A DRY BLOCK

## Peltier Blocks

Models covering  $-45^{\circ}\text{C}$  to  $140^{\circ}\text{C}$



[Click Me](#)

Fast-Cal



[Click Me](#)

4000 Series



[Click Me](#)

Oceanus-6

### Peltier Blocks

---

#### PROS

- Fast
  - Portable
  - Good Value
  - Multi Purpose
- 

#### CONS

- Limited in maximum temperature



# CHOOSING A DRY BLOCK

## Isotech Isocal-6 Models

[Click Me](#)



Surface  
Sensor  
Calibration



ITS-90  
Fixed Point



Liquid  
Bath



Ice  
Bath



Infrared  
Calibrator

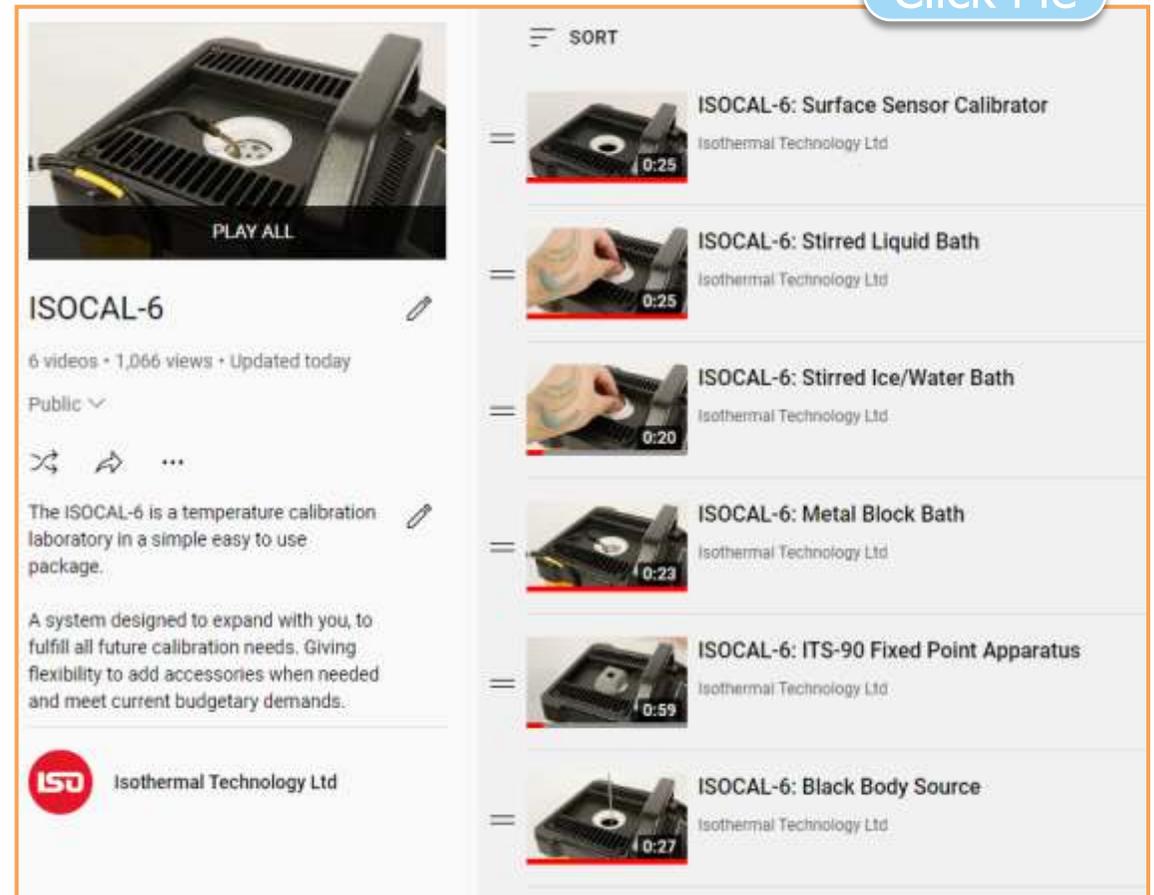


Dry  
Block

## Isocal-6 Multi Mode operation

- Metal Block Bath
- Liquid Baths
- A Stirred Ice Bath
- Blackbody Sources
- Surface Sensor Calibrators
- ITS-90 Fixed Points

Click Me



The screenshot shows a YouTube playlist for the ISOCAL-6 system. The main video player shows a close-up of the device with a 'PLAY ALL' button overlaid. Below the player, the title 'ISOCAL-6' is displayed, along with '6 videos • 1,066 views • Updated today' and 'Public' visibility. A description states: 'The ISOCAL-6 is a temperature calibration laboratory in a simple easy to use package. A system designed to expand with you, to fulfill all future calibration needs, Giving flexibility to add accessories when needed and meet current budgetary demands.' The channel name 'Isothermal Technology Ltd' is visible at the bottom left. On the right, a 'SORT' menu is open, and a list of six videos is shown, each with a thumbnail, title, channel name, and duration:

- ISOCAL-6: Surface Sensor Calibrator (0:25)
- ISOCAL-6: Stirred Liquid Bath (0:25)
- ISOCAL-6: Stirred Ice/Water Bath (0:20)
- ISOCAL-6: Metal Block Bath (0:23)
- ISOCAL-6: ITS-90 Fixed Point Apparatus (0:59)
- ISOCAL-6: Black Body Source (0:27)

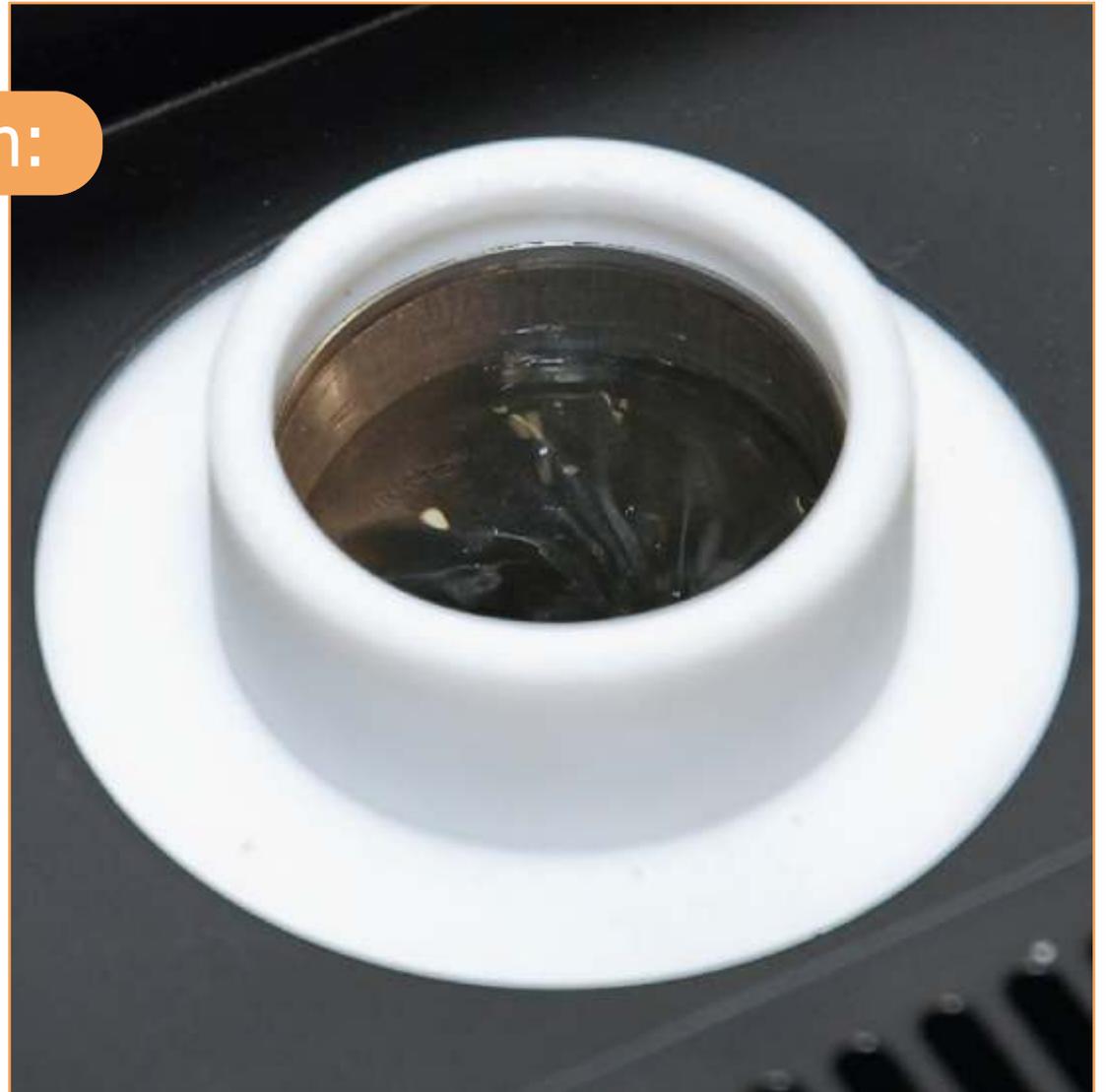
## 1. Metal Block Bath:

- Fast, Convenient, Mess free operation



### 2. Stirred liquid bath operation:

- Awkward shaped sensors
- Improved accuracies
- Use with reference probes



## 3. Stirred ice bath:

- Simple but effective 0°C ice bath
- Check for drift in thermometers



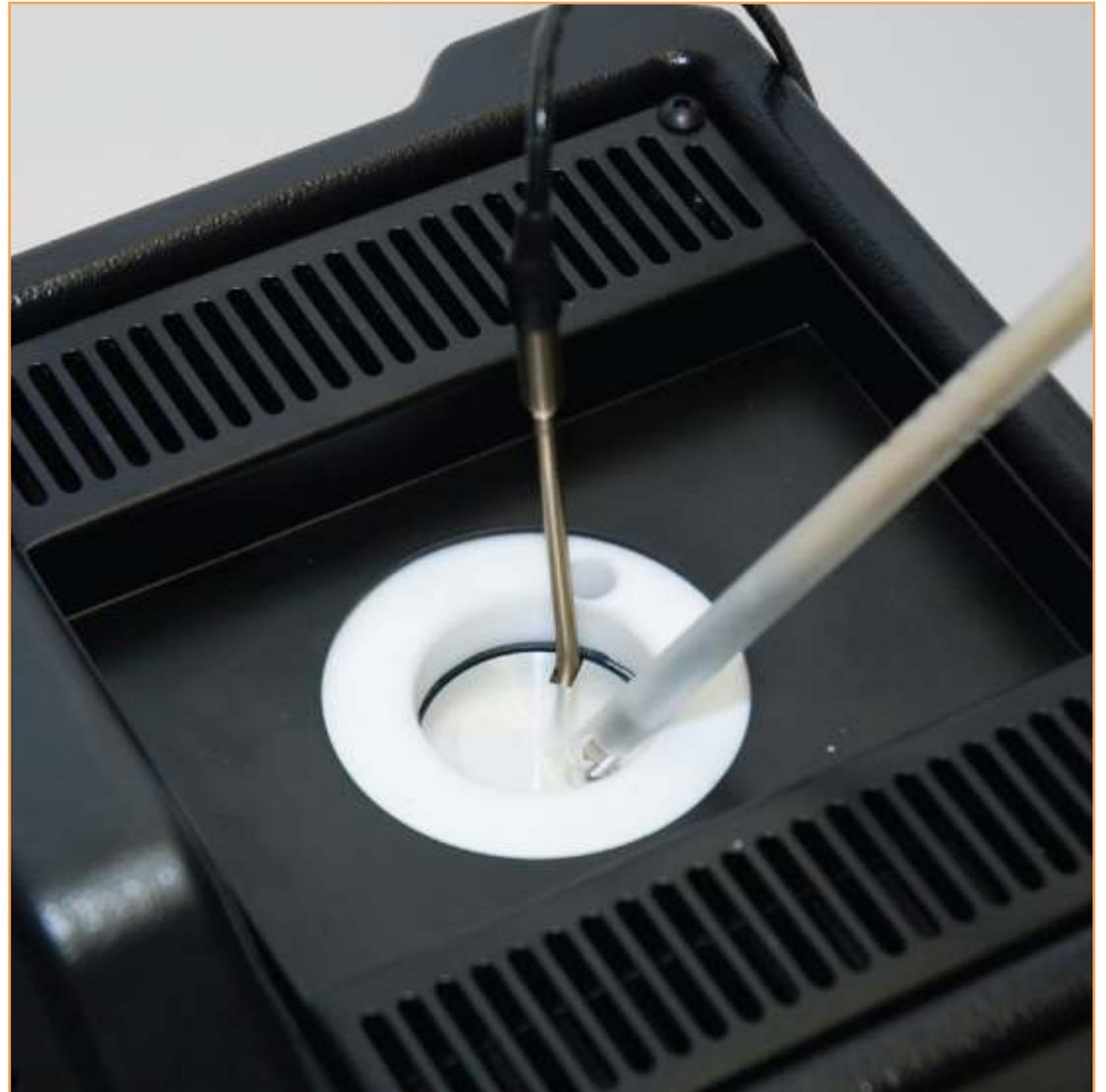
### 4. Blackbody source:

- Test & Check low cost IR Thermometers



### 5. Surface sensor kit:

- Save on the cost of additional equipment for surface sensor calibration



### 6. ITS-90 Fixed Points:

- 17724 Mercury Slim Cell (Europa)
- B8 Water Triple Point Cell (Venus/Europa/Hyperion)
- 17401 Gallium Slim Cell (Venus/Europa/Hyperion)



## Higher Temperatures

Models covering 30°C to 700°C



[Click Me](#)

Fast-cal



[Click Me](#)

4000 Series



[Click Me](#)

511 Medusa

### Higher Temperature Blocks

---

#### PROS

- Fast
  - Portable
  - Best Value
  - Multi Purpose
- 

#### CONS

- Minimum Temperature 30°C
- Slow Around Ambient Temperatures



## CHOOSING A DRY BLOCK

Higher Temperature:  
150°C to 1200°C

Thermocouple Calibration Furnace



[Click Me](#)

4000 Series

## Portable Thermocouple Calibration Furnace

---

### PROS

- High Temperature Thermocouple Calibration
  - Portable
- 

### CONS

- Minimum Temperature 150°C



## CHOOSING A DRY BLOCK

To span wider ranges...  
you may need more than one  
heat source?

E.g. 0°C to 650°C -  
Need two dry blocks.

But is 0°C really needed?

if it is... how about an ice flask  
for 0°C and then a 650°C Dry Block.



# CHOOSING A DRY BLOCK

## Part Three: Advanced, Site or Basic

**ADVANCED**



**SITE**



**BASIC**



# CHOOSING A DRY BLOCK

Basic, Site or Advanced

## BASIC Models



[Click Me](#)

Fast-cal



[Click Me](#)

4000 Series



[Click Me](#)

Oceanus-6

## CHOOSING A DRY BLOCK

Basic, Site or Advanced

### BASIC Version

Heat Source with digital display of set and nominal block temperature.

- Field changeable units (°C - °F - K)
- Autotune feature
- Setpoint ramp feature
- PC Serial interface

### BASIC



## CHOOSING A DRY BLOCK

Basic, Site or Advanced

### Using a Basic Calibrator

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

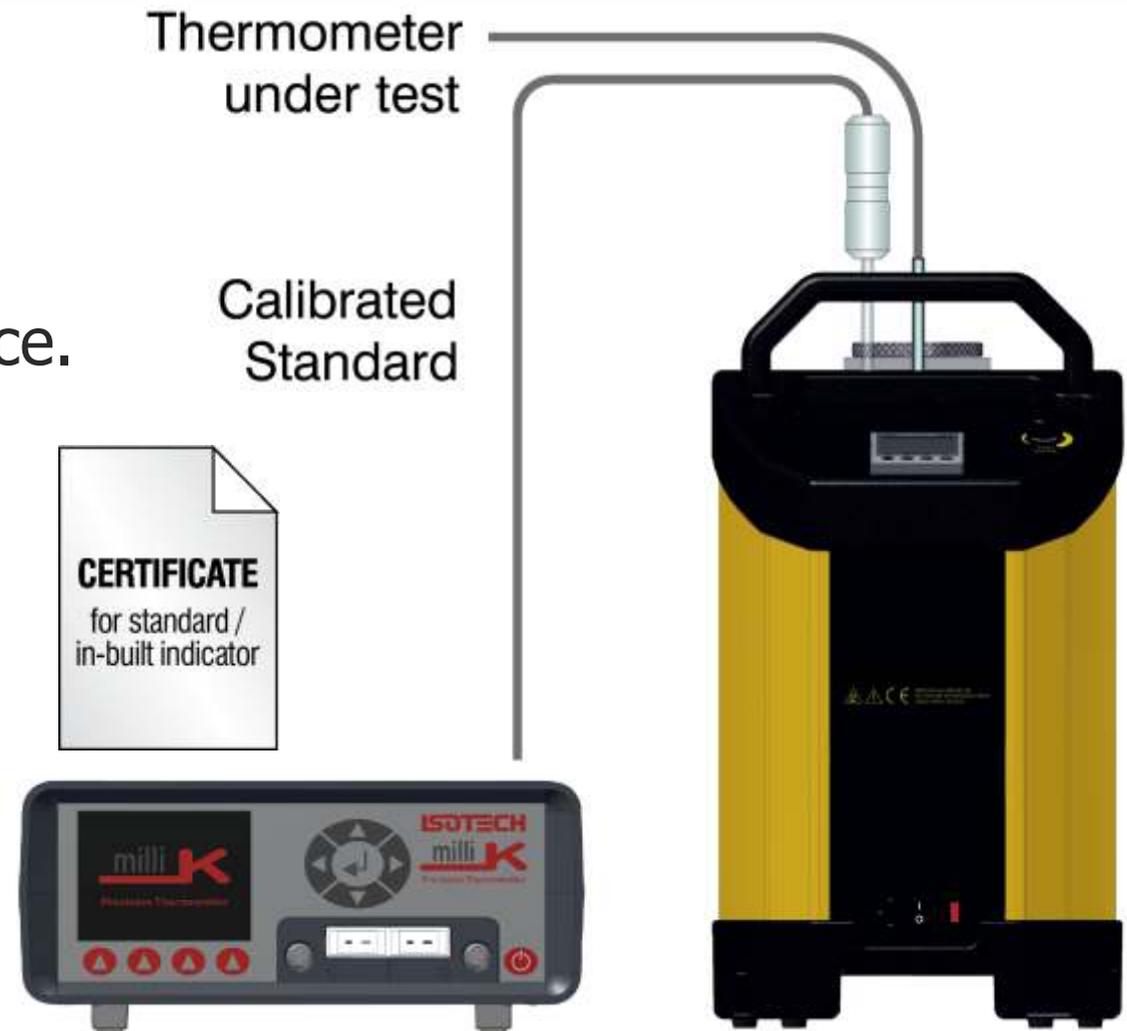
Useful for moderate temperature ranges and quick testing.

Thermometer  
under test



## Using a Basic Calibrator

Can be used with an external indicator for better performance.



# CHOOSING A DRY BLOCK

Basic, Site or Advanced

## SITE Models



[Click Me](#)

Fast-cal



[Click Me](#)

4000 Series



[Click Me](#)

Oceanus-6

## CHOOSING A DRY BLOCK

Basic, Site or Advanced

### SITE Version

All the features of the basic version with the addition of an independent indicator to use as the reference channel.

Supports single "Switch" testing with reversible polarity.



# CHOOSING A DRY BLOCK

Basic, Site or Advanced

## Using the Site (S) Model

Thermometer  
under test

Calibrated  
Standard

**CERTIFICATE**  
for standard /  
in-built indicator



# CHOOSING A DRY BLOCK

Basic, Site or Advanced

## ADVANCED Models



[Click Me](#)

4000 Series

# CHOOSING A DRY BLOCK

Basic, Site or Advanced

## ADVANCED Version

Now up to three input channels.

- Datalogging
- Ethernet
- Automatic Temperature Stepping
- Offset Elimination

& Many more features.



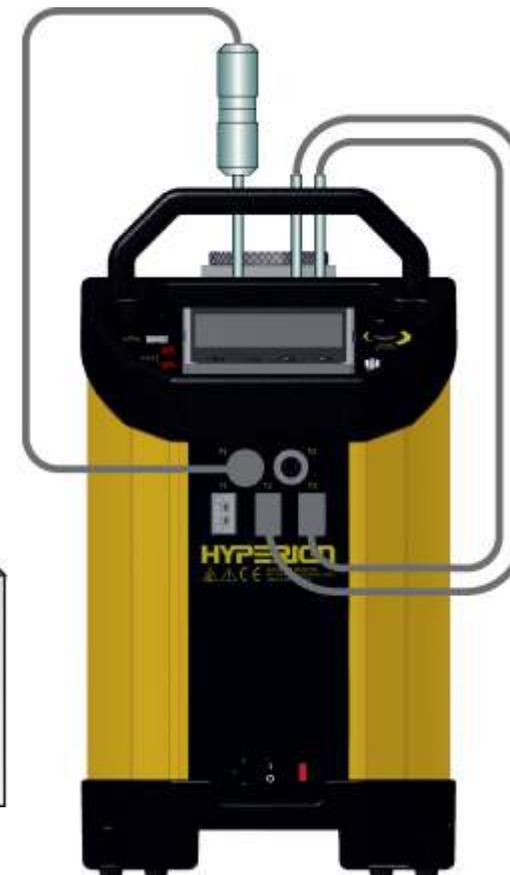
# CHOOSING A DRY BLOCK

Basic, Site or Advanced

## ADVANCED Version

Has inputs for test thermometers in addition to the reference probe.

Calibrated  
Standard



Thermometers  
under test

## Learn More: Further Information.

Click Me

**ISOTECH**

### A Guide to Industrial Temperature Calibration: Traceable Calibration

For best practice, the thermometer (or thermometers) under test are placed into the calibration volume alongside a calibrated standard. This is so that the test thermometers "can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons". This "traceability" meets the requirements of quality systems including that of ISO 9000.

Using the Calibrator itself as the Reference (or standard) raises a number of issues, such as how is temperature difference between the test thermometer and the calibrator display determined - how can this 'uncertainty value' be known?

International Guidelines have been published from EURAMET, "Guidelines on the Calibration of Temperature Block Calibrators" Calibration Guide 13. Isotech Calibrators meet the calibration capacity requirements of this guide.

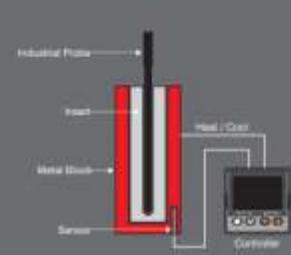
We recommend that a reference probe is used, the same method as used in secondary temperature laboratories. For less demanding calibration, and the quick testing of sensors, the Calibrator can be used without a reference probe, refer to the units Evaluation Report for typical performance data.

**Pre-purchase check list**

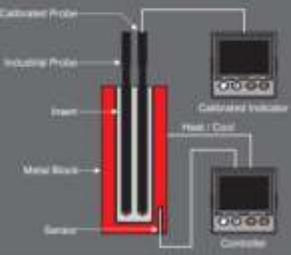
- Does the supplier have an accredited laboratory?**  
UKAS accreditation, for example, is the public interest. It means by strict, in the public interest, the integrity and competence of independent evaluators is confirmed and decided. Isotech can issue a UKAS certificate with the performance expressed in the manner that you will need, not to some confusingly expressed specification that is made with no consideration of integrity and competence.
- Experience**  
Does the producer have experience? Do they understand the difference between accuracy and uncertainty? Can they tell you how to calibrate the uncertainty of a probe being calibrated in the DRY BLOCK method?
- Expandable**  
Can the Dry Block be used with other sensors? Are there accessories available for future expansion? Will Isotech products do this well?
- PC Support**  
Can it be connected to a computer? Is there software available, can it be upgraded? Is there Dry Block Calibrators from a range of software options.
- Documented**  
Is the block fully documented? Can you download a full evaluation report from the Web Site? Does it come with a comprehensive feedback and history? Is history available? Isotech provides all of these free of charge.
- Practical**  
Isotech Dry Blocks are precisely designed with a strong metal case, and are a compact portable size. If you are going to carry it around don't forget to check the size and weight. It is surprising how large some other blocks are, even though they take the same number of probes. Always if the specification does not include the weight.
- Value**  
Check the prices, all the above come at an amazingly competitive price when you choose Isotech.



**Dry Block Calibrator of Poor Design**



**Dry Block Calibrator Meeting ISO9000 Requirements**



**Calibration Solutions**

**ISOTECH**

**MODEL ADVANCED**

- Best performance**
  - Benefit from advanced temperature controller that provides best performance
  - Resolution to 0.001°C - Superior Stability
  - Control parameters automatically optimized with temperature
- View easily in all conditions**
  - Large Bright Colour Display
  - Similar to Smartphone
  - Crystal clear display with full colour graphics
- View from anywhere**
  - 21st Century Connectivity with Ethernet and in-built webserver
  - Connect to the network and view the calibrator from anywhere, on your Notebook, Tablet or Smartphone
- Save time and money**

**AUTOMATIC TEMPERATURE CYCLING**

  - Program the ADVANCED with the temperature points you need, store commonly used recipes. The calibrator can then automatically follow these points and log your data
- Safely store and secure all the data you need**
  - 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
- Supports five languages**
  - English, French, German, Italian and Spanish
  - Simple to use with clear user interface
- Connect more probes**

**UP TO 3 INPUT CHANNELS**

  - In-built 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 B, C, D, E, J, K, L, N, R, S, T, U
- Offset elimination**
  - Connect a reference probe to one of the external probe inputs and the calibrator can trim the block temperature to remove offsets
  - Block adjusted to reference probe value
  - Remove offsets
  - Use in combination with automatic cycling
- Thermostat testing**
  - Test Two Thermocouples Simultaneously
- The software you need**
  - PC tools for reviewing data with support for secure file format, managing temperature programs, easy configuration and data logging.



**Calibration Solutions**

# CHOOSING A DRY BLOCK

Learn More: Further Information.

[Click Me](#)

|  |  Ø 65mm |  Ø 65mm |  Ø 35mm |  Ø 35mm |  Ø 35mm |  Ø 65mm |  Ø 35mm |  Ø 33.5mm |
|--|--|--|--|--|--|--|--|--|
|  | Isocal-6   |  |  |  |  | Dry Block Calibrators  |  |  |
|  | HYPERION   | DRAGO  | EUROPA   | VENUS  | CALISTO  | GEMINI   | JUPITER  | PEGASUS  |
| Specifications   |  |  |  |  |  |  |  |  |
| Metal Block Bath        | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| Stirred Liquid Bath     | ✓  | ✓  | ✓  | ✓  | ✓  |  |  |  |
| Stirred Ice/Water Bath  | ✓  |  | ✓  | ✓  |  |  |  |  |
| Blackbody Source        | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| Surface Sensor          | ✓  | ✓  | ✓  | ✓  | ✓  |  | ✓  |  |
| ITS-90 Fixed Point    | ✓  | ✓  | ✓  | ✓  | ✓  |  |  |  |
| Temperature Range (°C)   |  |  |  |  |  |  |  |  |
| 1200°  |  |  |  |  |  |  |  | 150°C → 1200°C   |
| 1100°  |  |  |  |  |  |  |  |  |
| 1000°  |  |  |  |  |  |  |  |  |
| 900°   |  |  |  |  |  |  |  |  |
| 800°   |  |  |  |  |  |  |  |  |
| 700°   |  |  |  |  |  |  |  |  |
| 600°   |  |  |  |  |  |  |  |  |
| 500°   |  |  |  |  |  |  |  |  |
| 400°   |  |  |  |  |  |  |  |  |
| 300°   |  |  |  |  |  |  |  |  |
| 200°   |  |  |  |  |  |  |  |  |
| 100°   |  |  |  |  |  |  |  |  |
| 0°   |  |  |  |  |  |  |  |  |
| -100°  |  |  |  |  |  |  |  |  |
|  | -25°C → 140°C  | 30°C → 250°C   | -45°C → 140°C  | -35°C → 140°C  | 30°C → 250°C   | 35°C → 700°C   | 35°C → 660°C   |  |

## Special Applications: **Please Contact Us**

Have probes that  
don't fit?

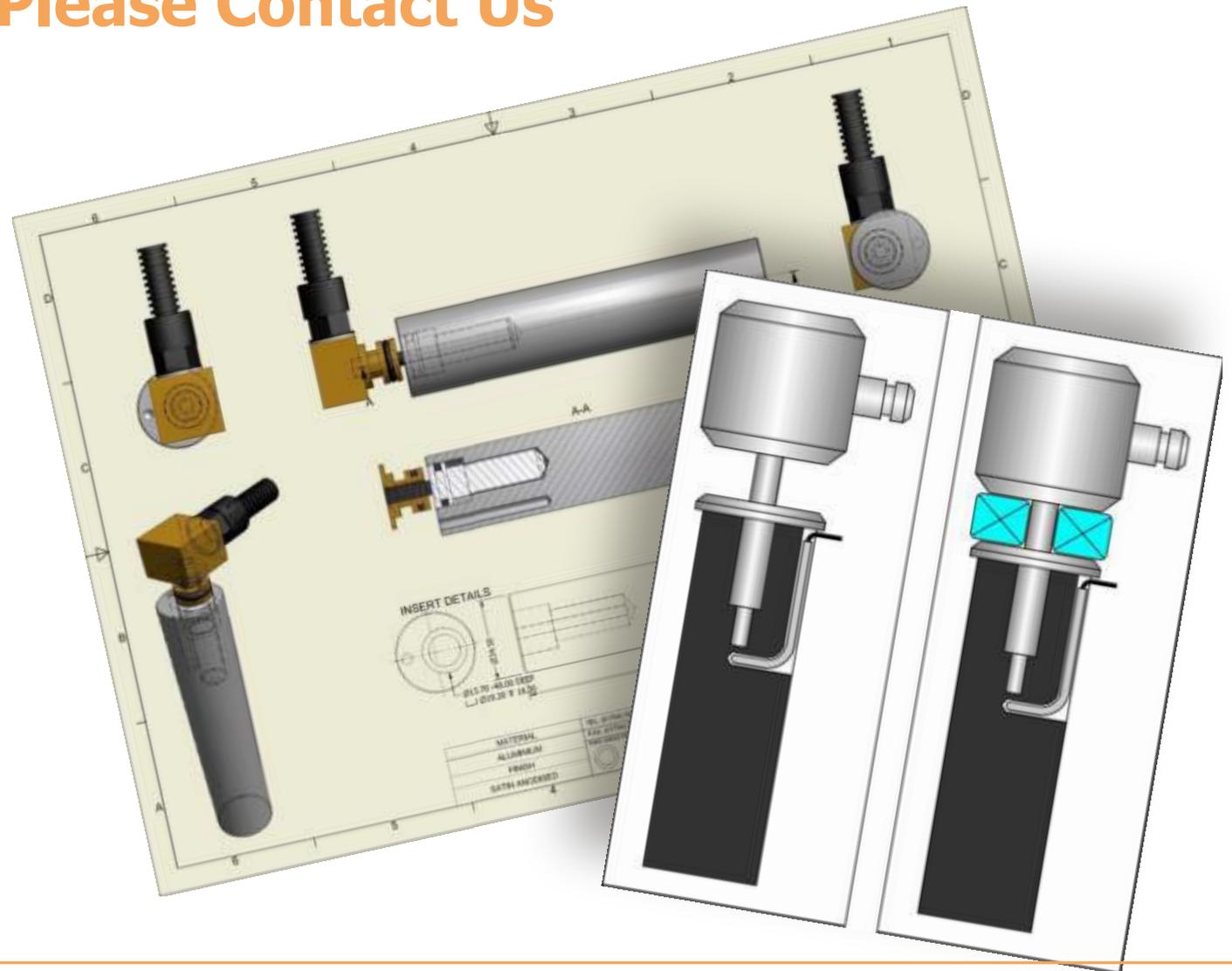
Need Advice?

**CONTACT US:**

+44(0)1704 543830

[Click Me](#)

**Consultancy Page**



### Part Four: Calibration Options

All Isotech Dry Blocks include a traceable calibration certificate.

Basic models cover block temperature.

When the Site or Advanced models are ordered with a reference probe this is included on the certificate.

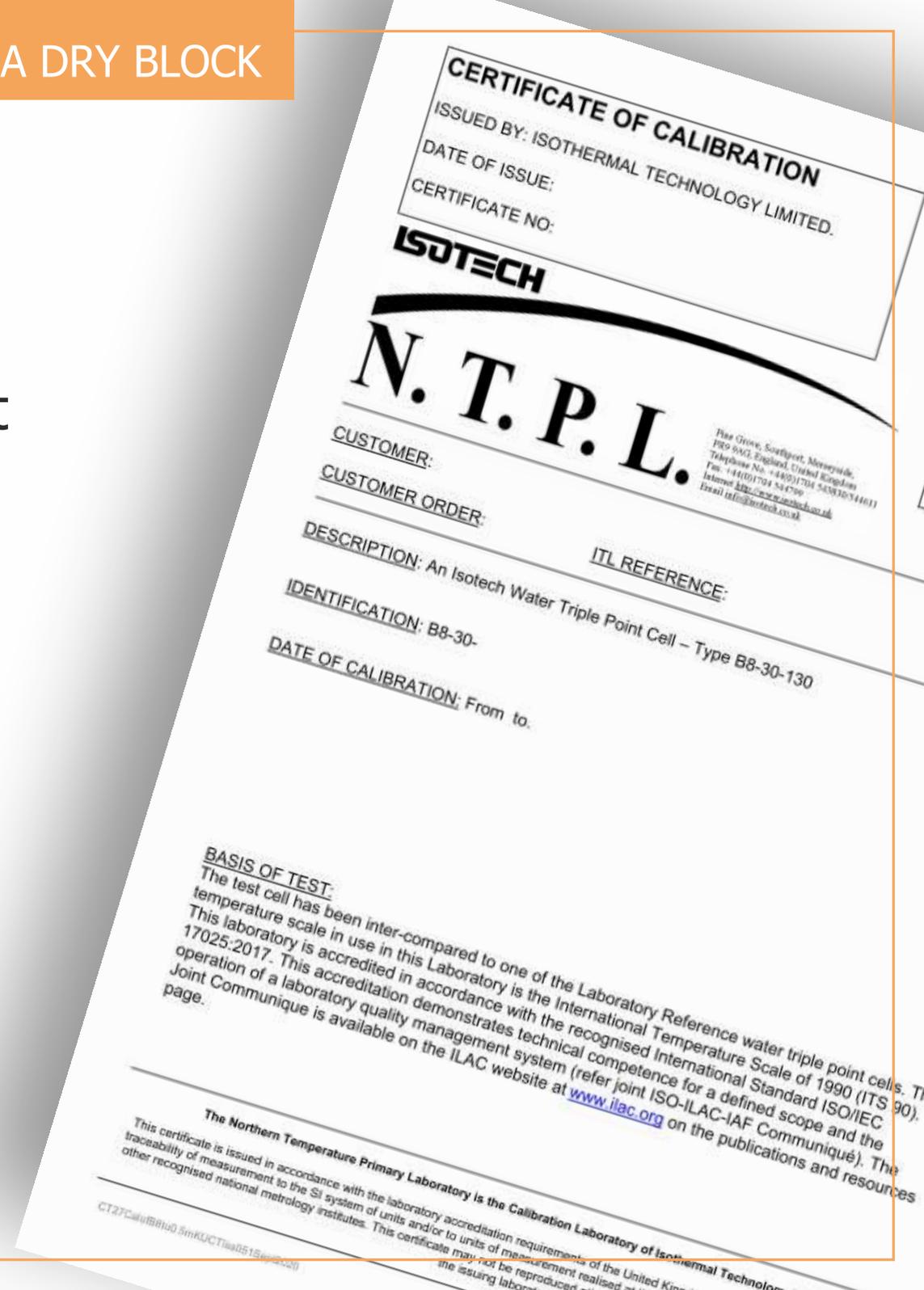


## CHOOSING A DRY BLOCK

UKAS (ISO 17025) is available at extra cost.

Our UKAS Certificate carry the ILAC-MRA Logo and recognised in many countries.

Best Practise - Find out more [www.ukas.com](http://www.ukas.com)



## CHOOSING A DRY BLOCK

We offer three services (Additional Cost)

| The following calibration options are available |   | Code      |
|---|---|-----------|
| Basic, Site and Advanced                        | 5 point calibration for block temperature; includes reference probe values when ordered with Site or Advanced       | UKAS-TEMP |
| Advanced  | 5 point calibration for block temperature and reference probe (when ordered) and electrical simulation of indicator | UKAS-SYST |
| Advanced  | Calibration of input channels, electrical simulation only   | UKAS-SIM  |



**ISOTECH**  
ISOTHERMAL TECHNOLOGY LTD