GUIDE

Venus-4951

Isotech

Distributed by AKRIBIS

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

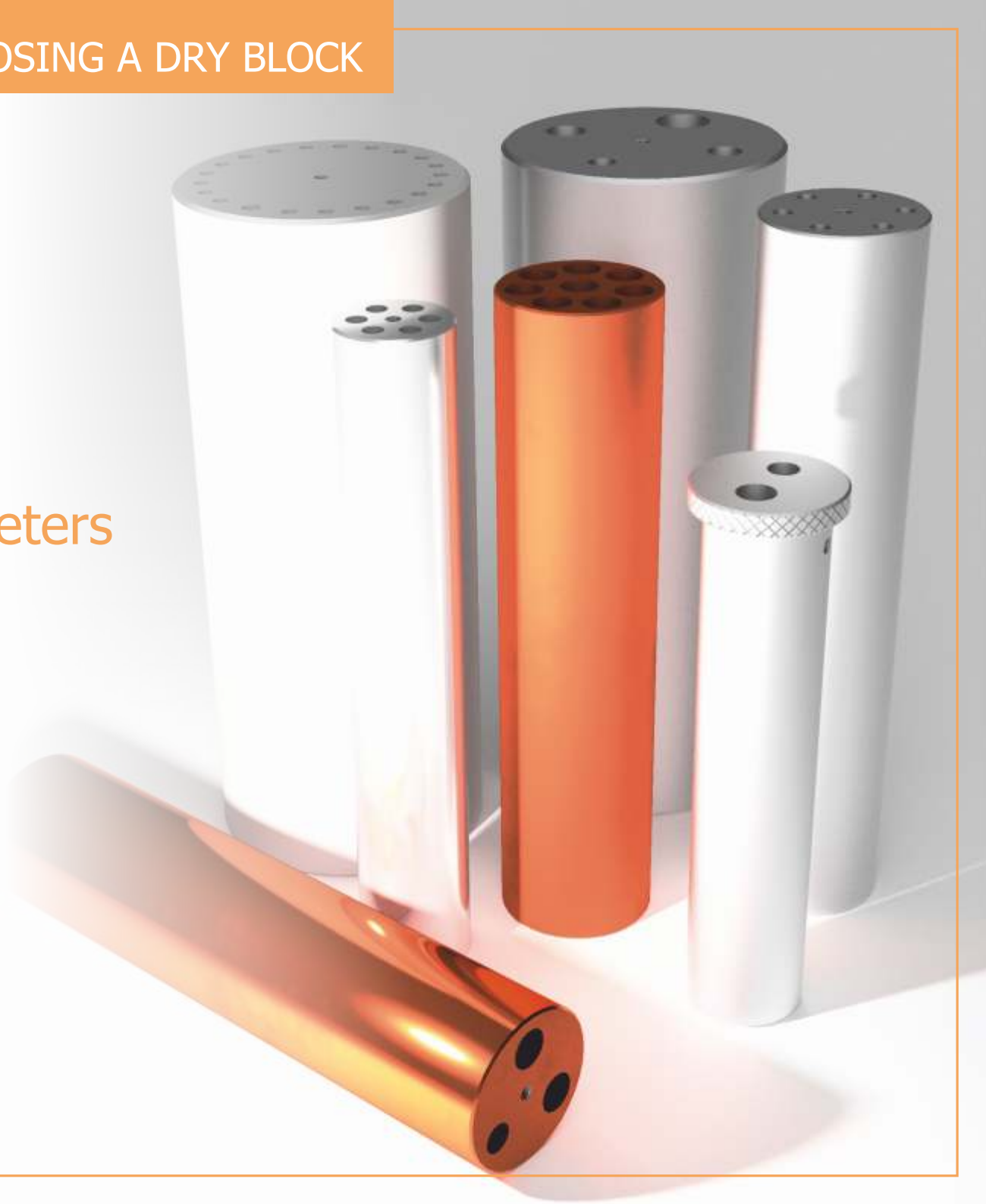
Part Three: Basic, Site or Advanced

Click Me

Part Four: Calibration Options

Part One: Sensor Sizes

What size are the thermometers to be calibrated?

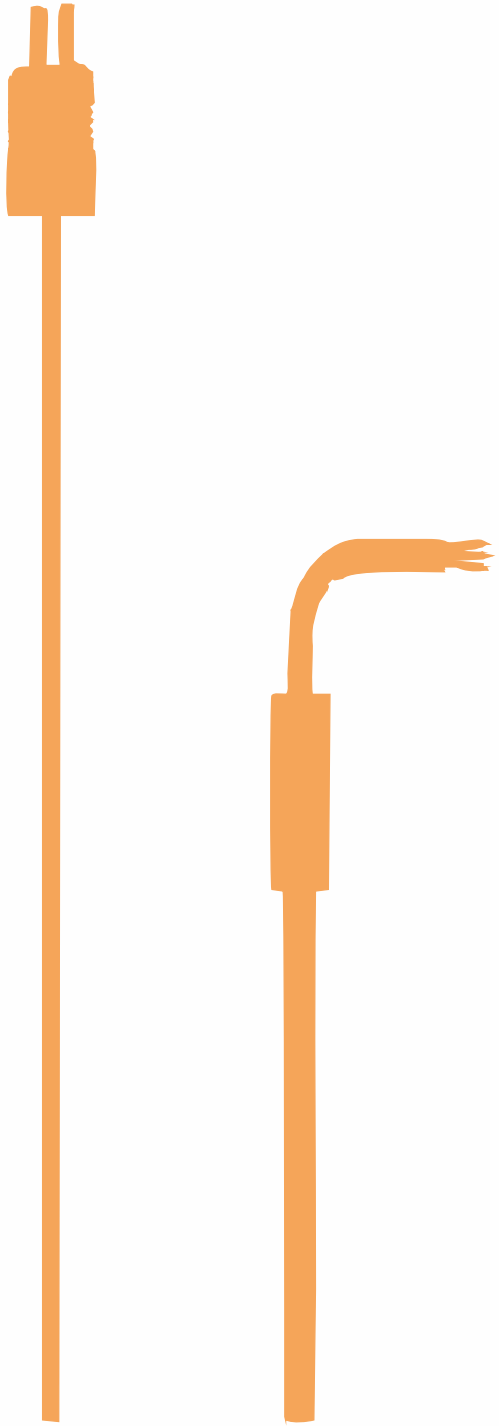


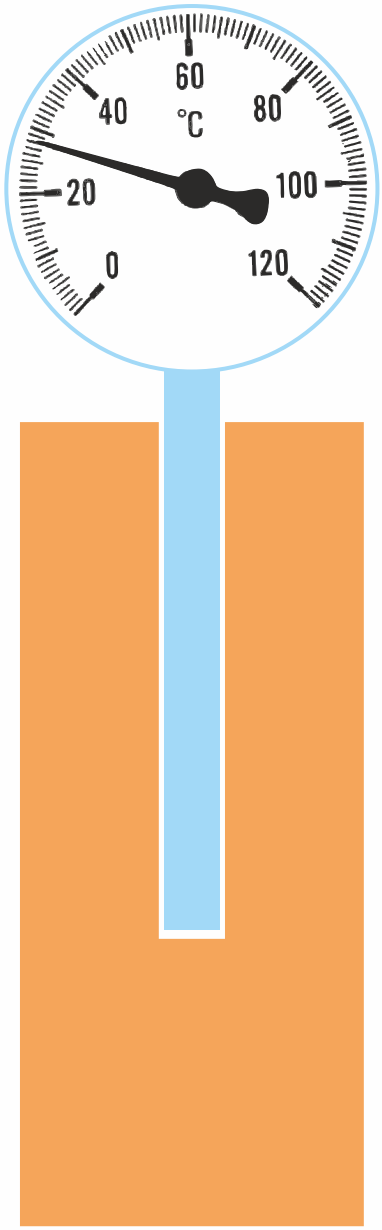
What size are the thermometers to be calibrated?

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.



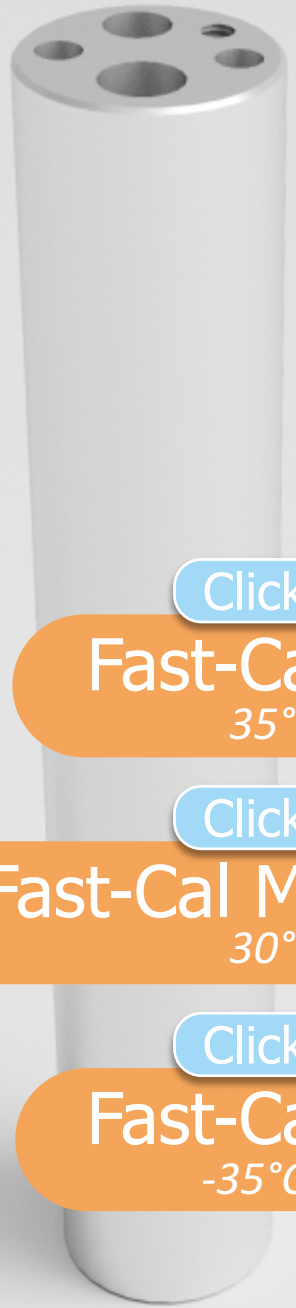


What size are the thermometers to be calibrated?

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.



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

Standard Thermometer Pockets:

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

Click Me
Fast-Cal High
35°C to 650°C

Click Me
Fast-Cal Medium
30°C to 350°C

Click Me
Fast-Cal Low
-35°C to 140°C

Fast response highly portable operation

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)

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

35mm Diameter for More Pockets
and more features Dry Blocks

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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

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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

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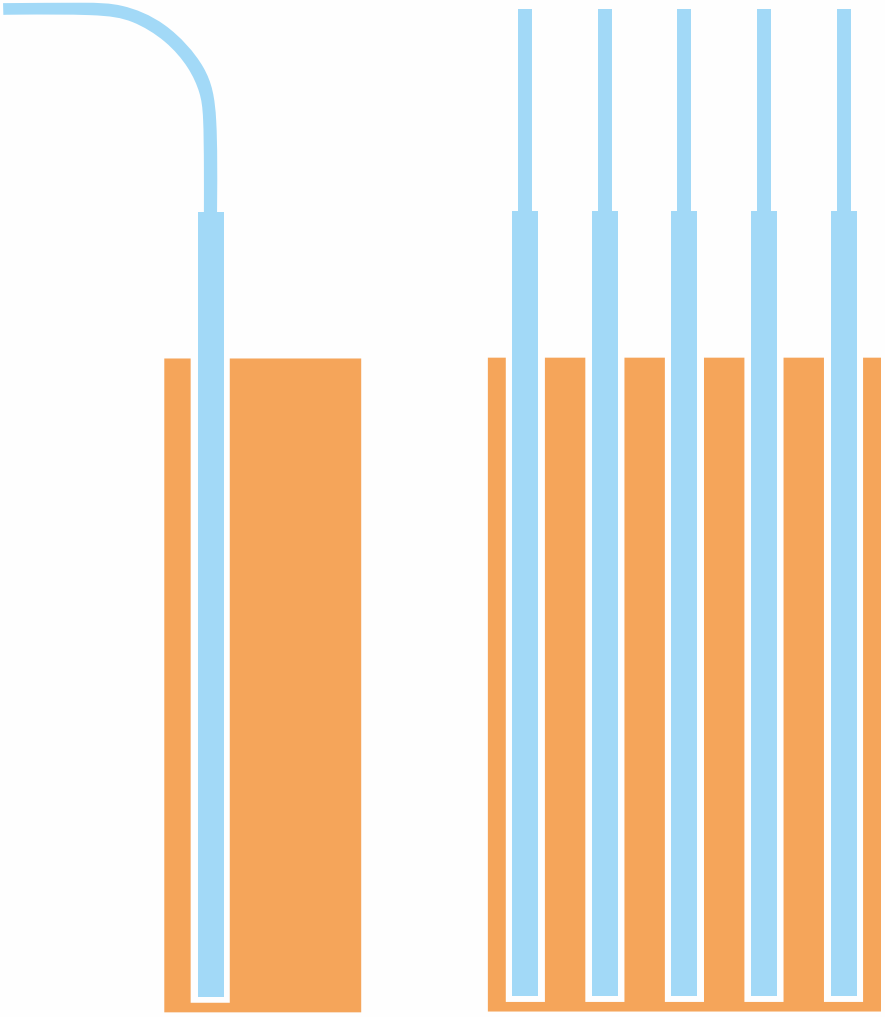
Smaller Blocks like Fast-Cal heat and cool much more quickly than larger blocks.

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

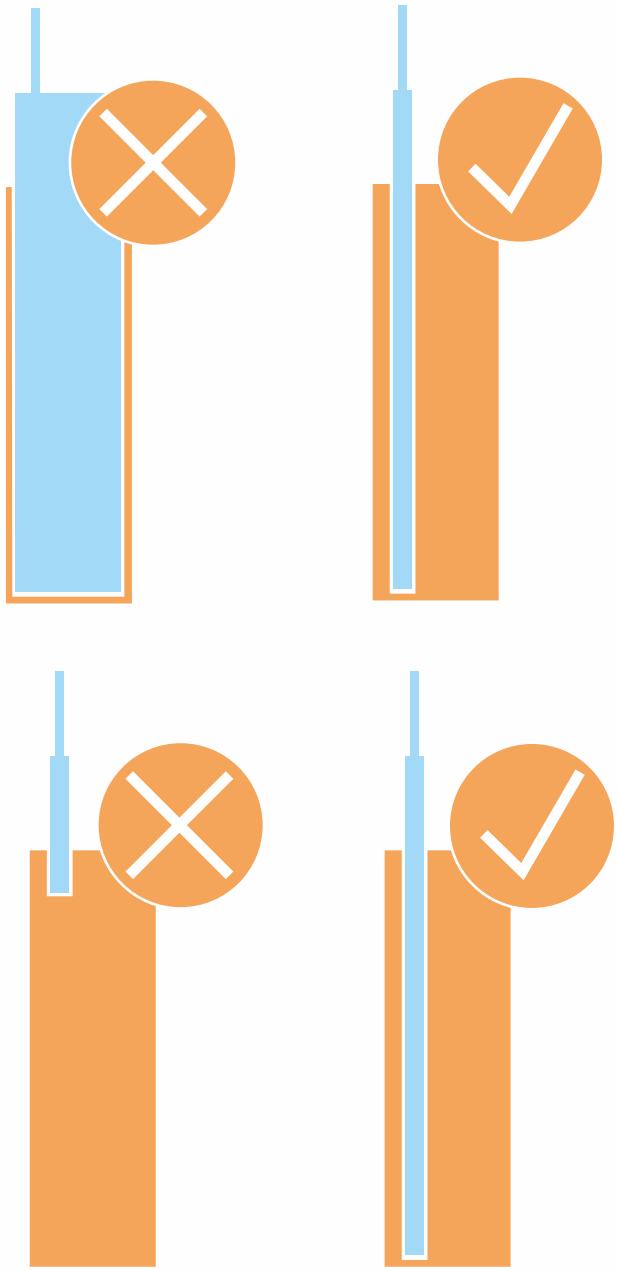


Adequate Thermal Volume

Keep probe or probes small compared to mass of block.

Ensure Good Immersion Depth

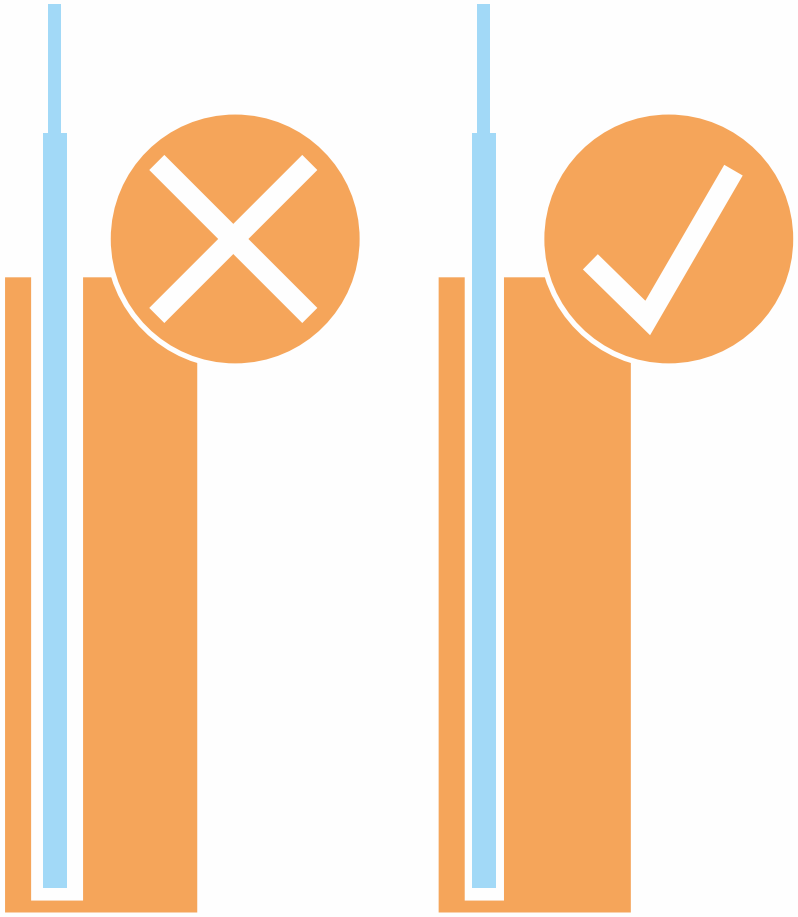
Ensure sensors are sufficiently immersed.



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.

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.

Peltier Blocks

Models covering -45°C to 140°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

Isotech Isocal-6 Models

Click Me

Surface Sensor Calibration

ITS-90 Fixed Point

Liquid Bath

Ice Bath

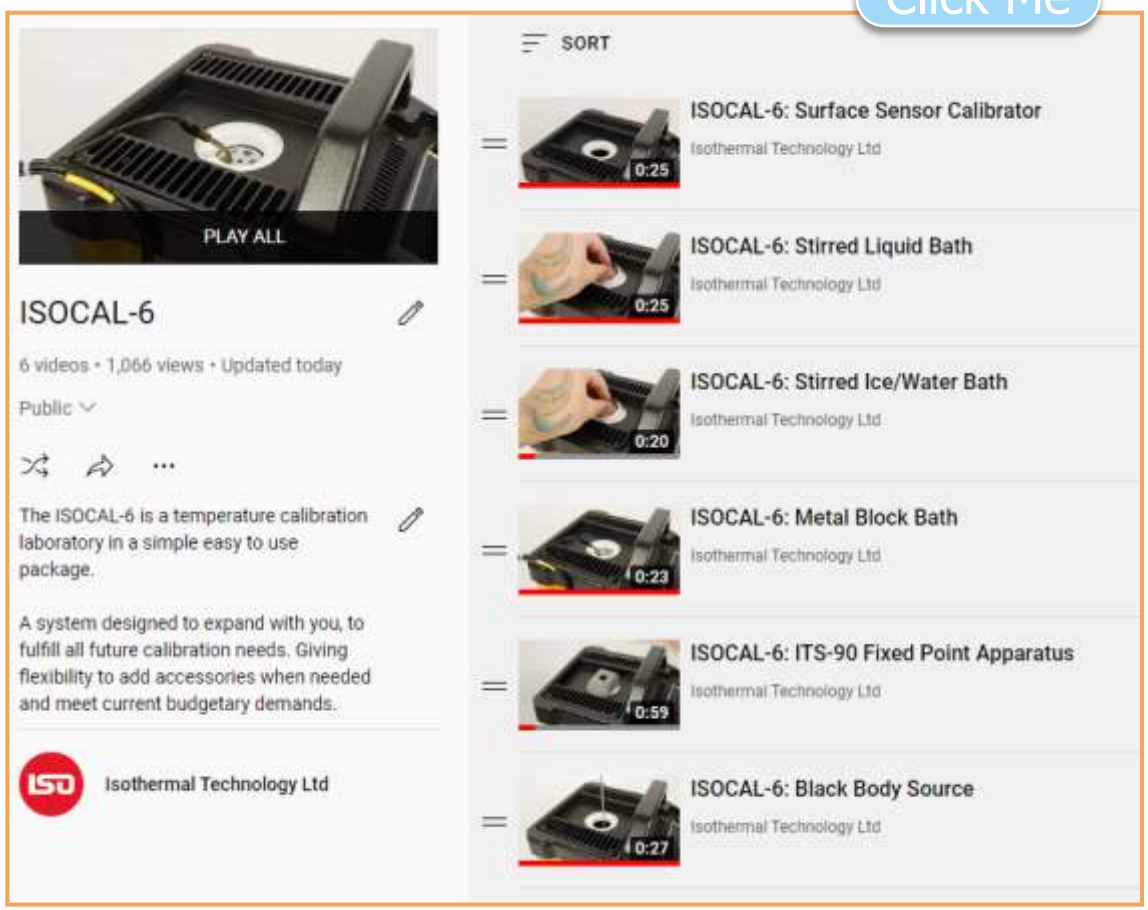
Infrared Calibrator

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

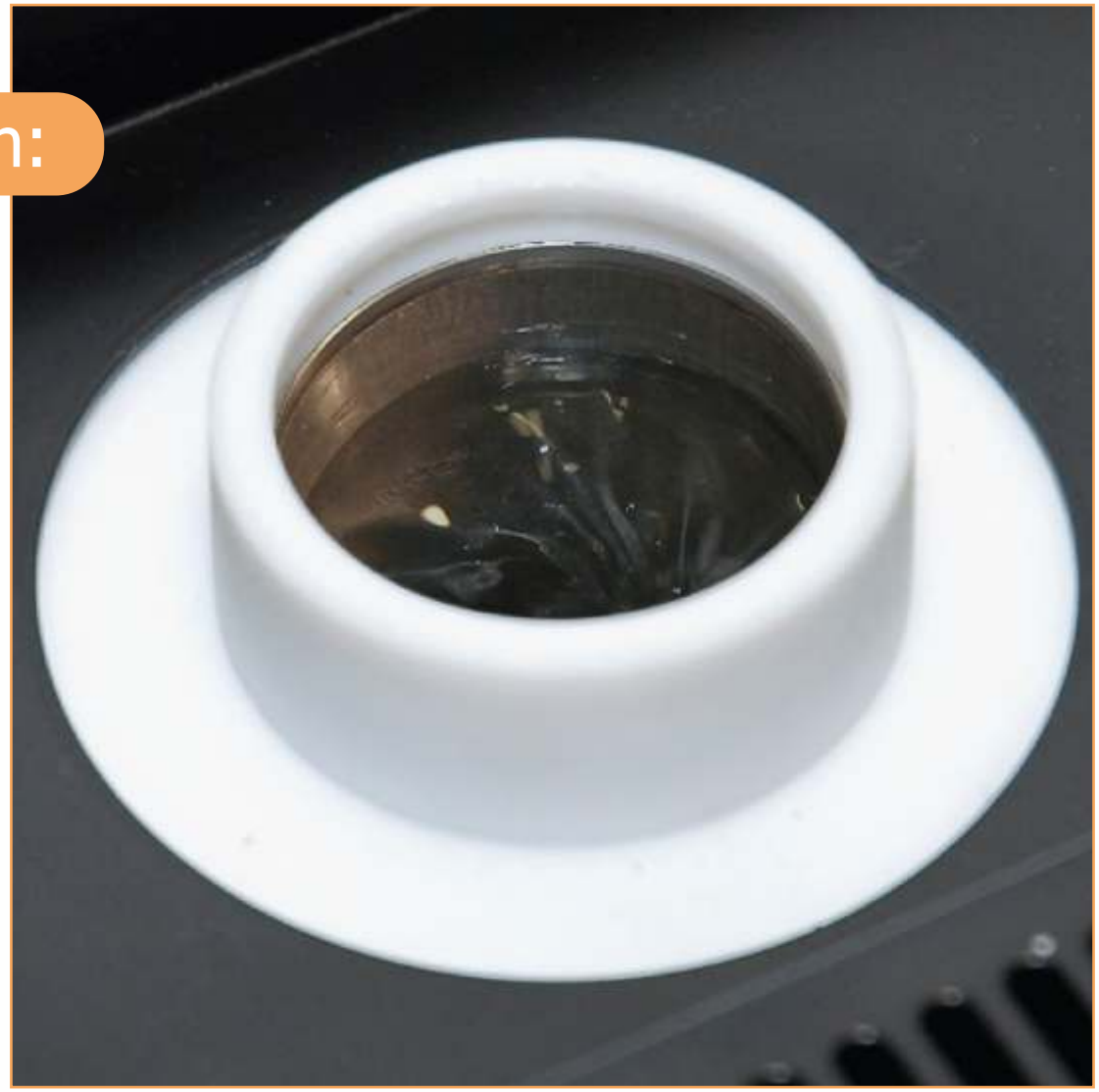


1. Metal Block Bath:

- Fast, Convenient, Mess free operation

2. Stirred liquid bath operation:

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



Play

3. Stirred ice bath:

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

Play

4. Blackbody source:

- Test & Check low cost IR Thermometers

Play

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)

Play

Higher Temperatures

Models covering 30°C to 700°C

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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

Higher Temperature: 150°C to 1200°C

Thermocouple Calibration Furnace

Portable Thermocouple Calibration Furnace

PROS

- High Temperature Thermocouple Calibration
- Portable

CONS

- Minimum Temperature 150°C

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.

Part Three: Advanced, Site or Basic

ADVANCED

SITE

BASIC

CHOOSING A DRY BLOCK

Basic, Site or Advanced

BASIC Models

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Fast-cal

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4000 Series

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Oceanus-6

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

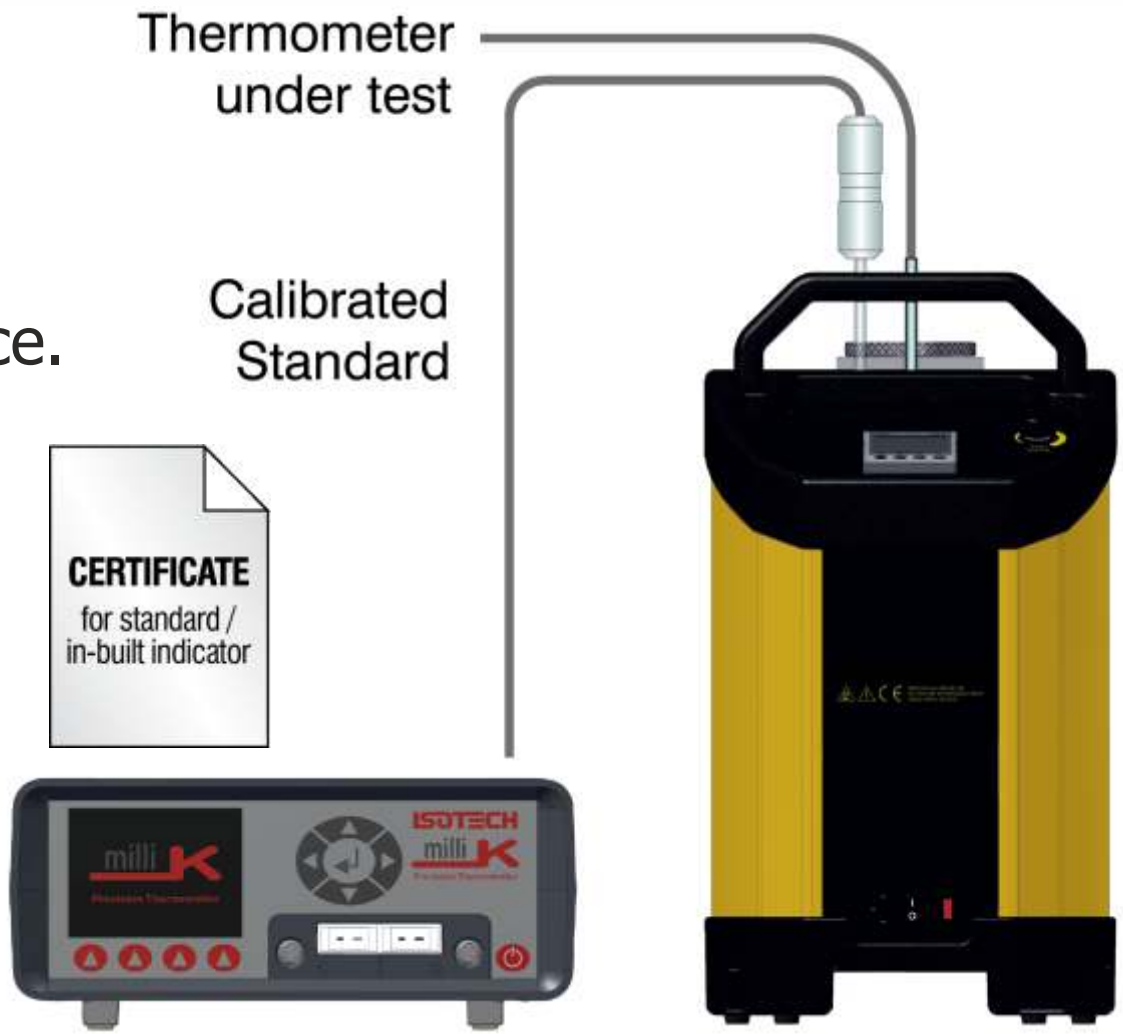
Using a Basic Calibrator

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

Useful for moderate temperature ranges and quick testing.

Using a Basic Calibrator

Can be used with an external indicator for better performance.



CHOOSING A DRY BLOCK

Basic, Site or Advanced

SITE Models

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Fast-cal

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4000 Series

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Oceanus-6

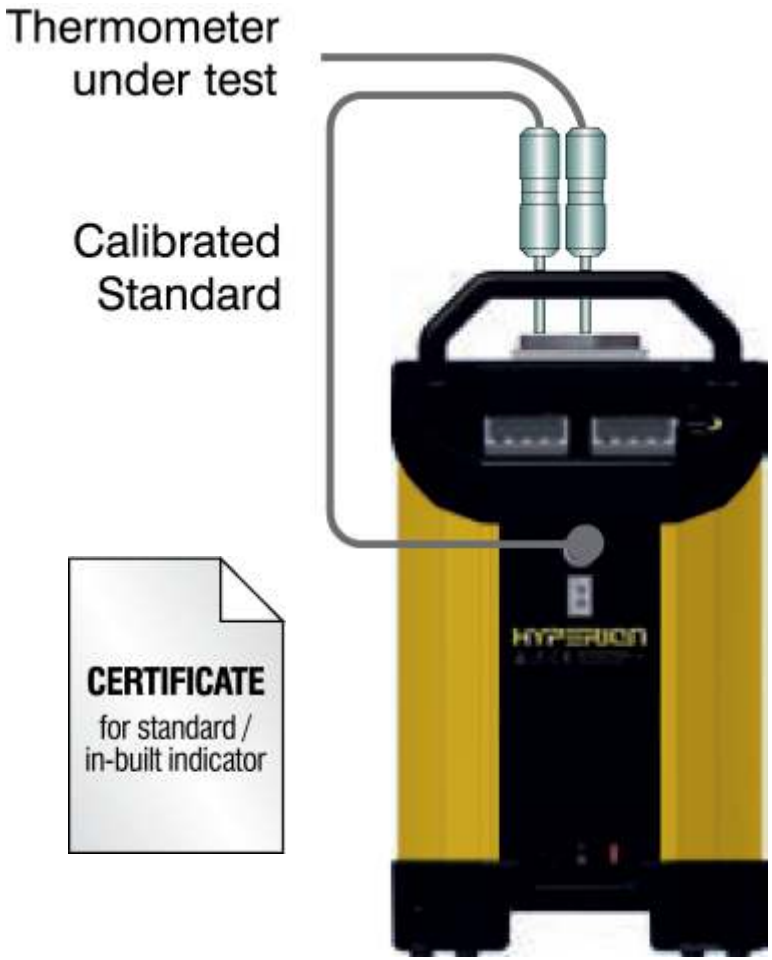
SITE Version

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.

SITE

Using the Site (S) Model



ADVANCED Models

ADVANCED Version

Now up to three input channels.

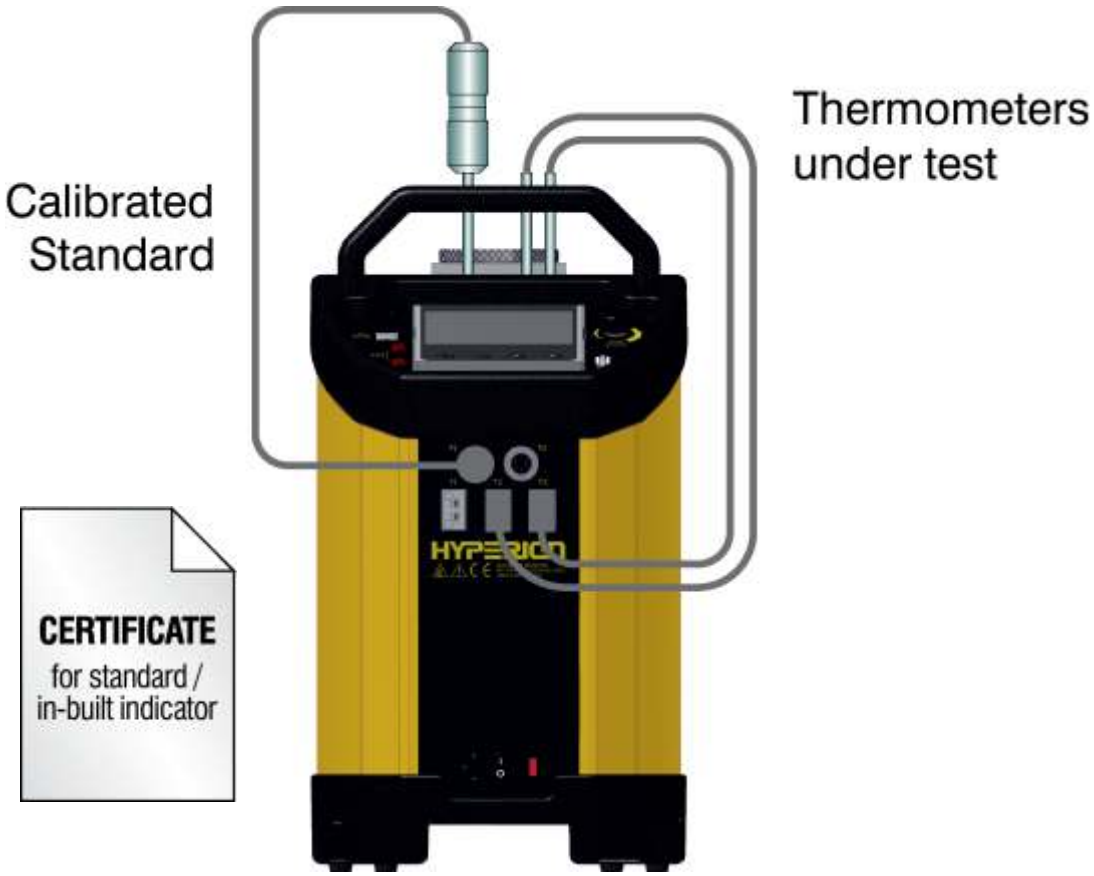
- Datalogging
- Ethernet
- Automatic Temperature Stepping
- Offset Elimination

& Many more features.

ADVANCED

ADVANCED Version

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



Learn More: Further Information.

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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

1. **Does the supplier have an accredited laboratory?** *UKAS accreditation, "the means by which, in the public interest, the integrity and competence of independent evaluators is confirmed and declared". 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 confirmation of integrity and competence.*
2. **Experience** *Does the producer have experience? Do they understand the difference between accuracy and uncertainty? Can they tell you how to calculate the uncertainty of a probe being calibrated in the block? Isotech can.*
3. **Expandable** *Can the Dry Block be used with other sensors? Are there accessories available for future expansion? With Isotech products they are.*
4. **PC Support** *Can it be connected to a computer? Is there software available, can it be automated? Isotech Dry Block Calibrators have a range of software options.*
5. **Documented** *Is the both fully documented? Can you download a full evaluation report from the Web Site? Does it come with a comprehensive handbook and tutorial? Is training available? Isotech provide all of these free of charge.*
6. **Practical** *Isotech Dry Blocks are practically 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 weights. It is surprising how large some other blocks are, even though they take the same number of probes. Beware if the specification does not include the weight.*
7. **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

ISOTECH

MODEL **ADVANCED**

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

View easily in all conditions
- Large Bright Colour Display
- Similar to Smartphone
- Crystal clear display with full colour graphics

Thermostat testing
- Test Two Thermostats Simultaneously

View from anywhere
- 21st Century Connectivity with Ethernet and inbuilt webserver
- Connect to the network and view the calibrator from anywhere, on your Notepad, Tablet or Smartphone

Save time and money

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

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
- 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 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

The software you need
- PC tools for reviewing data with support for secure file format, managing temperature programs, easy configuration and data logging.

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)								
	-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	150°C → 1200°C

Special Applications: **Please Contact Us**

Have probes that don't fit?

Need Advice?

CONTACT US:

+44(0)1704 543830

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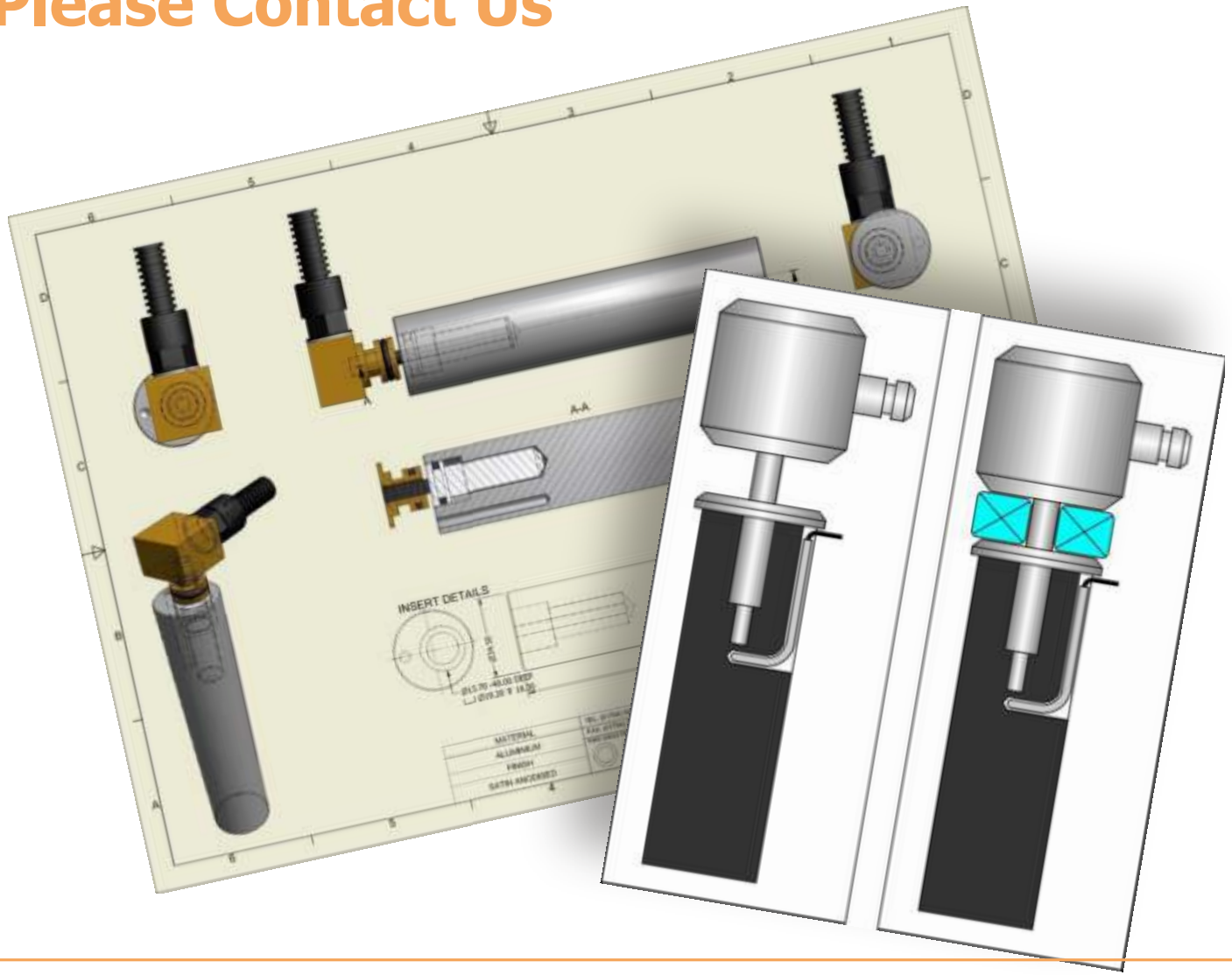
Consultancy Page



Part Four: Calibration Options

All Isotech Dry Blocks include a traceable calibration certificate.

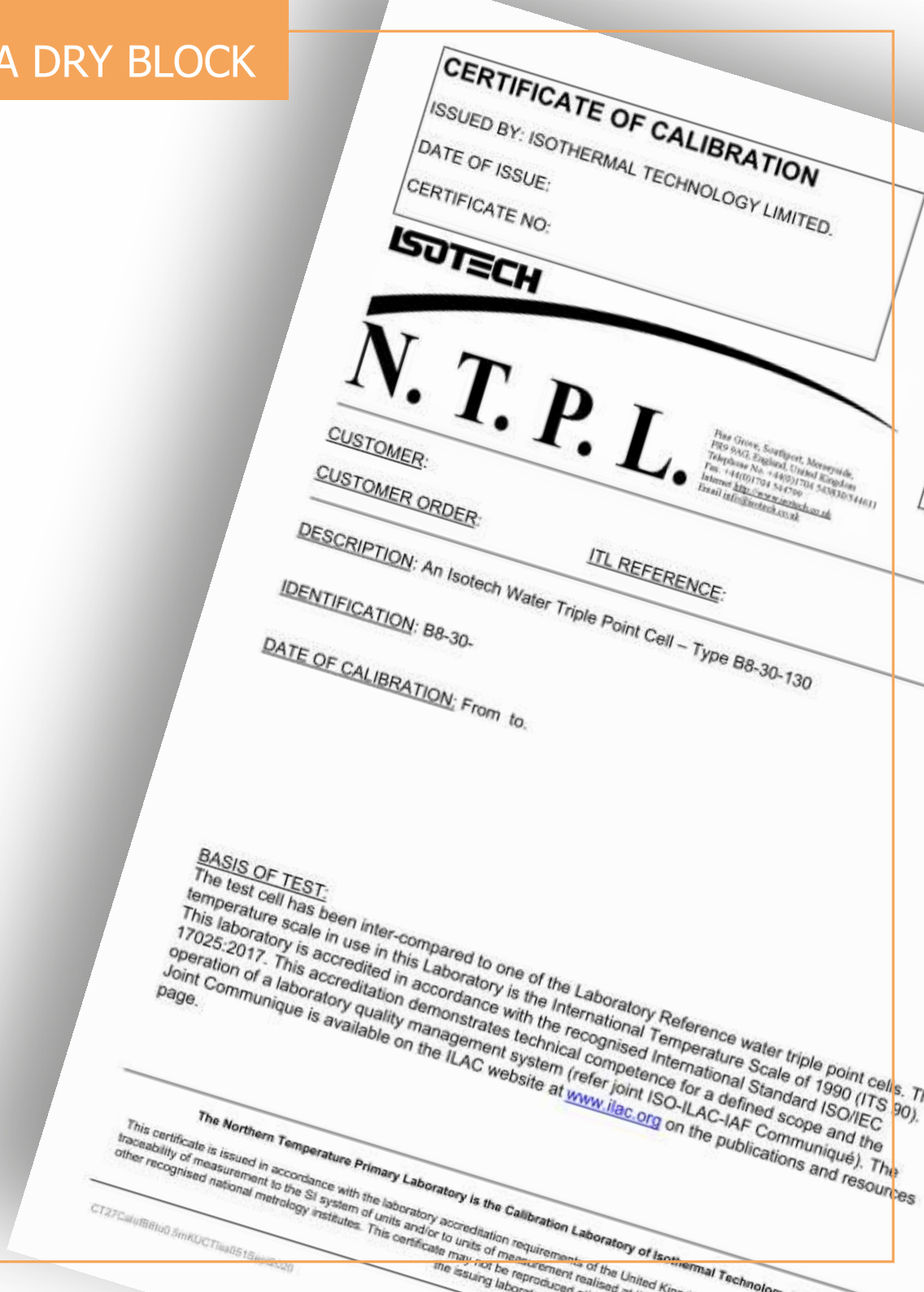
Basic models cover block temperature.

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

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



CERTIFICATE OF CALIBRATION

ISSUED BY: ISOTHERMAL TECHNOLOGY LIMITED.

DATE OF ISSUE:

CERTIFICATE NO:

ISOTECH

N. T. P. L.

CUSTOMER:

CUSTOMER ORDER:

ITL REFERENCE:

DESCRIPTION: An Isotech Water Triple Point Cell – Type B8-30-130

IDENTIFICATION: B8-30-

DATE OF CALIBRATION: From to.

BASIS OF TEST:
The test cell has been inter-compared to one of the Laboratory Reference water triple point cells. T
temperature scale in use in this Laboratory is the International Temperature Scale of 1990 (ITS 90).
This laboratory is accredited in accordance with the recognised International Standard ISO/IEC
17025:2017. This accreditation demonstrates technical competence for a defined scope and the
operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué). The
Joint Communique is available on the ILAC website at www.ilac.org on the publications and resources
page.

The Northern Temperature Primary Laboratory is the Calibration Laboratory of Isothermal Technolo

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kin
traceability of measurement to the SI system of units and/or to units of measurement realised at
other recognised national metrology institutes. This certificate may not be reproduced
the issuing labor

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

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