



# ISO-CAL - 6 Range

## Hyperion • Drago

- Multi Function: Six Modes including Dry Block and Liquid Bath
- 65mm Volume: Ideal Liquid Bath
- Calibrate entire measurement loop - using a heat source rather than an electrical simulator, a test instrument and sensor can be calibrated as a system

The Hyperion and Drago have large calibration volumes, 65mm x 160mm deep, which makes them ideal to use as portable liquid baths. Stirred liquid baths are suitable for temperature sensors of all types, sizes and shapes. Liquid Baths can provide smaller calibration uncertainties than dry blocks and when used with suitable reference thermometers, accuracies of up to 0.005°C can be achieved.

These models are part of the award winning Isocal-6 family and with a reference probe can be used with different accessories for Dry Block, Infrared, Surface Calibration and even with ITS-90 Fixed Point Cells for uncertainties to 0.001°C. In Dry Block Mode, the large 65mm diameter block allows for the calibration of either larger probes or for calibrating many sensors simultaneously.

As a Liquid bath the sensors can be placed directly into the stirred liquid thus avoiding the need for specially drilled blocks. If the liquid is directly in the block then the controller only model, or Basic (B) model, can be selected. However, instead of putting liquids directly in the block liquid containers can be used to facilitate rapid change of fluids. For greater accuracy, or when using a liquid container, Dry Block Insert, Blackbody Target or the Surface Sensor Kit a separate reference thermometer should be used to compensate for the varying offset between the controller and the accessory temperature.

An ideal arrangement would be to include the handheld Isotech TTI-10 or the bench top Isotech milliK Precision Thermometer and Model 935-14-16 Semi Standard Platinum Resistance Thermometer.



<http://www.isotech.co.uk/industrial/>

Alternatively the SITE or ADVANCED model can be selected; the SITE includes a temperature indicator for a reference probe. The ADVANCED also includes inputs for test thermometers, automatic temperature cycling, logging and additional sophisticated features.

All models include I-Cal Easy LOG software and the ADVANCED models additionally include software to manage logged data and configure the unit, see page 14 for more details.



| PARAMETER   | Model  |                                  |
|---|--|----------------------------------|
|   | Hyperion 4936  | Drago 4934                       |
| Temperature Range                                   | -25°C to 140°C <sup>1</sup>  | 30°C to 250°C <sup>2</sup>       |
| <b>ADVANCED Range</b>                               |  |                                  |
| Stability: Dry Block / Liquid Bath                  | ±0.005°C   | 50°C ±0.005°C / 150°C ±0.03°C    |
| Display Resolution                                  | 0.001°C over whole range   | 0.001°C over whole range         |
| Accuracy: RTD Input Channels                        | ±0.1°C across range  |                                  |
| Accuracy: Thermocouple Input Channels               | E,J,K,N: ±0.2°C @ 660°C R: ±0.6°C S: ±0.7°C @ 660°C T ±0.2°C @ 150°C |                                  |
| CJC Accuracy  | ±0.35°C  |                                  |
| <b>BASIC / SITE Range</b>                           |  |                                  |
| Stability   | ±0.03°C  | ±0.03°C                          |
| Display Resolution                                  | 0.01°C from -19.99 to 99.99°C then 0.1C: 0.01°C Over PC Interface    |                                  |
| <b>COMMON Specifications</b>                        |  |                                  |
| Stability   | Blackbody ±0.3°C Surface Sensor ±0.5°C ITS-90 Cells ±0.0005°C        |                                  |
| Display Accuracy <sup>3</sup>                       | 0.15°C   | 0.15°C                           |
| Uniformity - Radial, Liquid Bath Mode               | <0.009°C   | <0.007°C                         |
| Uniformity - Axial, Liquid Bath Mode (40mm)         | <0.011°C   | <0.013°C                         |
| Uniformity - Radial, Dry Block Mode (Between Wells) | <0.008°C   | <0.008°C                         |
| Uniformity - Axial, Dry Block Mode (40mm)           | <0.040°C   | <0.040°C                         |
| Heating Time  | -20°C to 140°C: 40 Mins  | 30°C to 250°C: 40 Mins           |
| Cooling Time  | 140°C to 20°C: 90 Mins<br>20°C to -25°C: 80 Mins                     | 250°C to 100°C: 80 Mins          |
| Insert Size   | 65 x 160mm   |                                  |
| Insert Types  | Standard 8 x 8mm + 2 x 4.5mm, Undrilled or Custom Drilled            |                                  |
| Power   | 115 or 230Vac 50/60Hz 200 Watts                                      | 115 or 230Vac 50/60Hz 1000 Watts |
| Dimensions  | 384H (including handle) x 212W x 312D mm                             |                                  |
| Weight  | 12kg   | 8kg                              |

(1) In ambient of 20°C: Minimum Temperature is 45°C Below Ambient, Absolute Minimum -35°C

(2) In ambient of 20°C

(3) Dry Block Mode only: Comparing 4.5mm Well to Display Value.

|   | ADVANCED   | SITE               | BASIC  |
|---|--|--------------------|--------|
|   |  |                    |        |
| Digital Display of Set and Nominal Block Temperature  | Yes  | Yes                | Yes    |
| PC Interface  | Ethernet + USB Host  | Serial             | Serial |
| Test Thermostats                                      | Yes - Two Inputs   | Yes - Single Input | No     |
| Independent Temperature Indicator for Reference Probe | Yes  | Yes                | No     |
| Additional Inputs for Units Under Test                | Up to 3: Two universal inputs for PRT, Thermocouple or Process inputs and a further Thermocouple input | No                 | No     |
| Automatic Temperature Cycling                         | Yes  | No                 | No     |
| Data Logging  | Yes - Export to USB  | No                 | No     |
| Offset Elimination                                    | Yes - block can follow reference input   | No                 | No     |
| Choose English, French, Italian or Spanish Language   | Yes - on full colour display   | No                 | No     |
| In Built Web Server                                   | Yes  | No                 | No     |
| Tamper Proof Data                                     | Yes - Suitable for life science, automotive and aerospace applications                                 | No                 | No     |

# ISOCAL-6

## LIQUID & DRY BLOCK



### Metal Block Bath

Dry Block Calibrator provides fast and clean calibration of thermocouples, PRTs and other industrial sensors. Isotech blocks use a combination of multi zone and advanced materials technology to ensure constant temperature zones for high accuracy calibration.



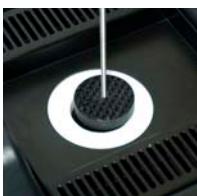
### Stirred Liquid Bath

Remove the metal block to convert to a stirred liquid bath. Liquid bath operation allows angled or awkward shaped probes to be calibrated. Accuracies are improved over Dry Blocks alone and with a suitable reference probe performance of 0.005°C is achievable.



### Stirred Ice / Water Bath

The ISOCAL-6 models that operate below 0°C can be used to provide a 0°C stirred ice / water bath. This provides a simple low cost way of checking that standards have not drifted in between calibrations.



### Blackbody Source

Adding the blackbody target allows the testing of infrared thermometers. Low cost non-contact IR thermometers are increasingly being used in industry and the ISOCAL-6 is ideal to test and check these devices. The IR thermometer is focused on the target and compared to a reference probe in the block pocket.



### Surface Sensor Calibrator

With the Surface Sensor Kit the test sensor is compared to a platinum resistance thermometer located just below the surface of the block. Again save the cost of buying additional equipment by adding accessories as required to expand the ISOCAL-6 for new calibration applications.



### ITS-90 Fixed Point Apparatus

For the best possible performance with uncertainties to 0.0005°C (0.5mK) add an ITS-90 Fixed Point Cell. The most popular is the B8 Water Triple Point Cell, it is surprisingly affordable and simple to use - the triple point can be both created and maintained in the apparatus without the need for any other equipment or supplies.



*World's First  
Multi-Functional  
Baths  
SIX FUNCTIONS*

## Hyperion / Drago Accessories



### Dry Block Mode with Inserts

**936-06-01a** Standard Insert is: 8 x 8mm + 2 x 4.5mm all 157mm Deep. All Inserts have a 4mm tapped hole to suit supplied extractor tool.

### Alternative Inserts

**936-06-01b** Blank Insert  
**936-06-01c** Special Insert.



### Stirred Liquid Mode with Liquid Container Kit

Allows liquid bath use, includes container, magnetic stirrer, probe guide and sealing cap.



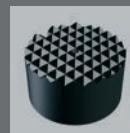
### Stirred Ice Bath Mode with Liquid Container Kit

Uses same liquid kit to provide 0°C reference as a stirred ice bath.

### Thermometer Support Kit 936-06-08

Supports up to eight thermometers into liquid. Suits probes 5mm - 8mm in diameter.

|                  |         |               |    |
|------------------|---------|---------------|----|
| <b>936-06-07</b> | C10 Oil | -35°C – 140°C | 1L |
| <b>580-06-09</b> | C20 Oil | 20°C – 200°C  | 1L |
| <b>915/09</b>    | VH Oil  | 150°C – 250°C | 1L |



### Infrared Calibration Mode with Blackbody Target

Use optional Probe 936-14-61DB.



### Surface Sensor Calibration with Surface Sensor Kit

Includes an Insert and an angled platinum resistance thermometer.



### ITS-90 Fixed Point Cells

**B8** Water Triple Point Cell (Hyperion)  
**17401** Slim Gallium Slim Cell  
**936-06-09** Cell Holder Assembly



### Calibration

Includes three point traceable calibration certificate for block temperature

### UKAS Calibration

UKAS Calibration available to order, legally traceable in more than 70 countries.



### Standard Probe 935-14-61/DB

Platinum Resistance Thermometer. 4mm diameter.



### Current Loop Interface 935-06-161

24VDC Power Supply and Terminal Box. Powers 4-20mA Current Transmitters with 4mm terminal posts for easy connection.

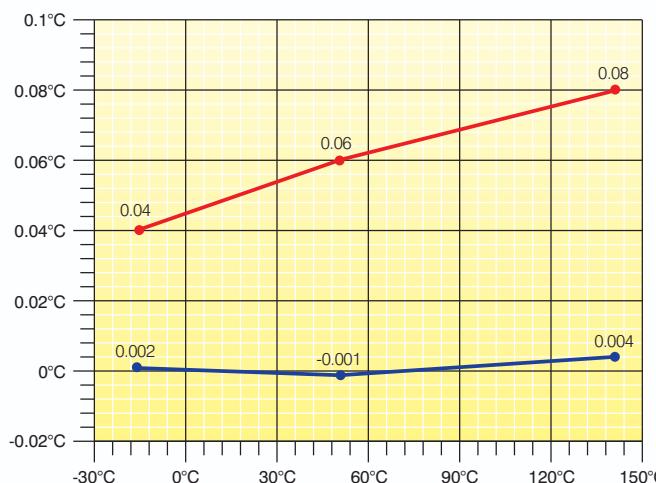


### Carrying Case 931-22-112

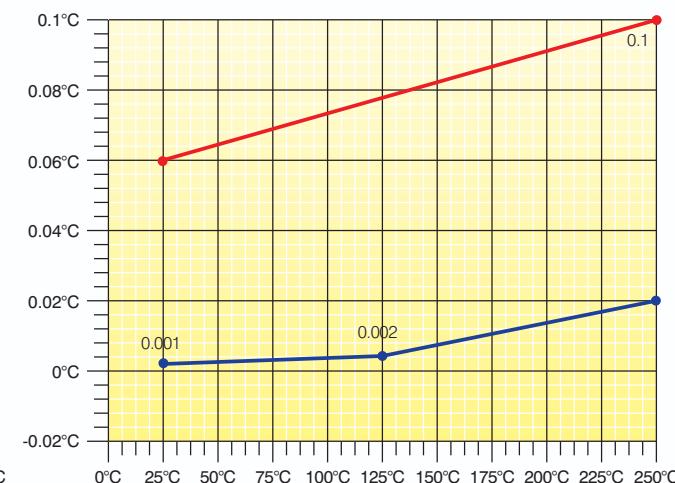
Sturdy case with room for accessories. Features wheels and pull out handle.

# Isocal-6 Performance and Use

**Hyperion** Performance - Dry Block



**Drago** Performance - Dry Block

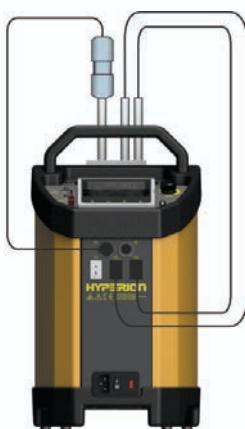


■ Audit Calibration (Similar Sensors) S model with UKAS option  
■ Radial Homogeneity

See Evaluation Reports for full details  
<http://www.isotech.co.uk>

## Alternative Methods of Calibrating with an Isocal-6

Advanced Model



### ADVANCED Model

- Digital Display of Set and Nominal Block Temperature
- Inbuilt three channel indicator for reference probe and units under test
- Advanced features including automatic Temperature Cycling and Logging
- Best Practice calibration with established traceability and uncertainty

Site Model



### SITE Model

- Digital Display of Set and Nominal Block Temperature
- Inbuilt single channel indicator for reference probe
- Best Practice calibration with established traceability and uncertainty

Basic Model



### BASIC Model

- For Quick and Easy Testing
- Digital Display of Set and Nominal Block Temperature
- Use with a separate external indicator to compensate for gradients and loading



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**UKAS Calibration** available for these systems - *International Traceability - Best Practice* See page 14