

# Liquid Baths

## Introduction to Liquid Baths

### Liquid Baths:

Temperature Range -25°C to 250°C

Portable Stirred Liquid Baths have a large well which is filled with liquid. The liquid is stirred and heated or cooled to the desired temperature.

The temperature sensors are placed directly into the liquid avoiding the need for specially drilled blocks. They are ideal for awkward shaped and short sensors. Angled probes will not readily fit into a metal block but can be placed into the liquid.

Accuracies are in general better than dry block baths due to lack of air gaps and the temperature uniformity of the stirred liquid.

#### Liquid Bath Advantages

- Calibrate awkward shaped sensors.
- High Accuracy.
- Excellent temperature uniformity.
- Sensors placed into liquid, no specially drilled inserts required.

### Portable Liquid Baths

To calibrate temperature sensors to 250°C look no further than these portable stirred liquid baths. The Hyperion calibrates from -25°C (At ambient of 20°C) to 140°C and the Drago from 30 to 250°C. The calibration volume is 65mm diameter and the useable depth of 160mm gives more than twice the volume of alternative products.

Stirred liquid baths are suitable for temperature sensors of all types, shapes and sizes, angled probes, bent probes and short probes with large mounting heads can all be readily accommodated, an advantage over Dry Block Calibrators.

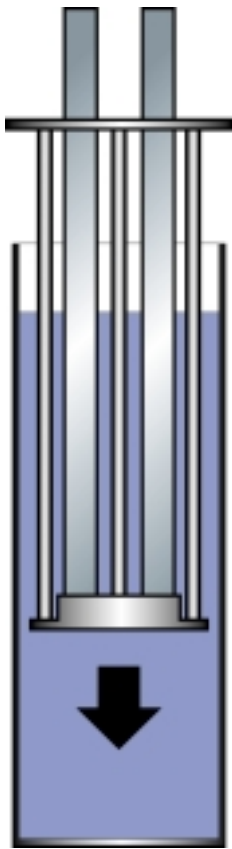
If a laboratory standard temperature indicator is added much greater accuracies than those from Dry Blocks alone can be achieved and with suitable reference thermometers performance of up to 0.005°C is achievable.

These models include a high accuracy inbuilt digital temperature indicator and a reference probe. This independent measurement system is used as a reference to which the thermometers under test are compared. This method gives good accuracy largely eliminating temperature gradient and loading errors and provides traceable temperature calibration.

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### Liquid Bath Accessories

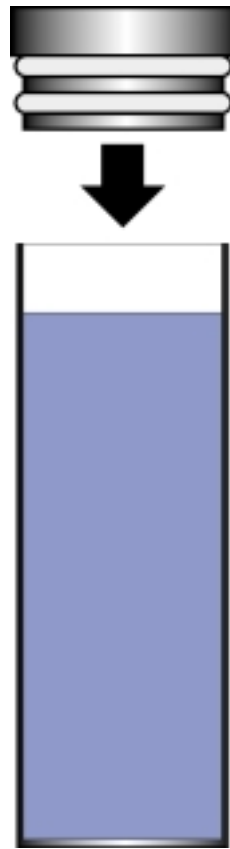


**Thermometer Support Kit**

*Supplied as standard.*

Simply place the probes in the basket.

Part Number 936-06-02

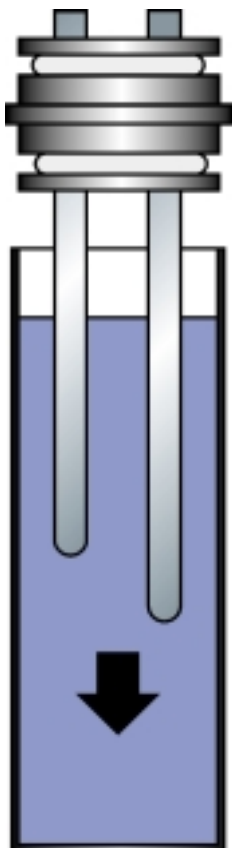


**Lid**

*Supplied as standard.*

Seals the bath and prevents spills whilst the unit is being moved.

Part Number 936-02-14



**Support Kit**

*Optional.*

Use in place of the basket to suspend up to eight probes with a diameter range of 5 - 8mm. Useful with liquid in glass thermometers as well as RTDs and TCs. Fits both directly into the block or into the optional liquid containers.

Part Number 936-06-08



**Metal Insert**

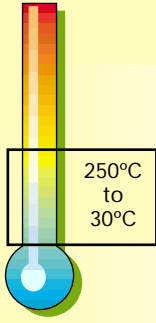
*Optional.*

A Metal Insert can be placed into the calibration volume to convert for Dry Block use. The standard block has eight 8mm pockets and two 4.5mm pockets all 157mm deep. Blank and specially drilled inserts are available.

Standard Insert Part Number 936-06-01

# 934 DRAGO PLUS

## ISOCAL-6® Range



To calibrate temperature sensors to 250°C look no further than Isotech's portable stirred liquid baths. The Drago calibrates from 30 to 250°C and the Hyperion from 45°C below ambient to 140°C, see page 10. The large calibration volume is more than twice the size of alternative products. The useable area is a full 65mm diameter with a depth of 160mm, the overall well depth of 190mm allows room for space at the top and the bottom magnetic stirrer.

Stirred liquid baths are suitable for temperature sensors of all types, shapes and sizes. Accuracies are much greater than those from Dry Blocks alone and with suitable reference thermometers performance of up to 0.005°C is achievable.

The Drago is available in two models. If the liquid is directly in the block then the controller only model, or Basic (B) model, can be selected. This model is also suitable where an external indicator and standard will be used. Alternatively the site model (S) includes a built in temperature indicator for high accuracy or for best accuracy an external indicator can be used, an ideal combination is a TTI model and 935-14-16 Standard Probe, see Indicators, Probes and Accessories section. The S model can be provided with UKAS certification.

The Drago can also be used with the supplied Cal NotePad software to automatically calibrate thermostats.

When using a separate indicator and probe then different accessories can be added for Dry Block, Blackbody, Surface Sensor, Liquid Containers and even ITS-90 fixed point operation.

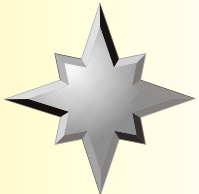


Includes as standard: Windows Software, Computer Interface and a Ramp to Set Point Feature. Increased resolution of  $\pm 0.01$  available throughout the range via the PC interface and from 0.01 to +99.99 locally on the auto-ranging front display. The controller features multi-point block to display correction giving good absolute accuracy.

The S model has universal sensor input allowing Platinum Resistance Thermometers, Thermocouples (types K, N, R, S, L, B, PL2, T, J and E) along with Linear Process Inputs including 4-20mA current transmitters to be displayed on the inbuilt indicator. The indicator can be programmed with up to five calibration points to provide high accuracy digital probe matching. The indicator and controller are both addressable over the communications link.

**NEW!** The Site model can now be used with the supplied Cal NotePad software to test thermostats.

Indicators  
Pages 54 - 59



Probes  
Pages 62 - 67

Software  
Pages 74 - 79

## Features

- **65mm Diameter Calibration Volume.**
- **Portable Liquid Bath** for high accuracy calibration of awkward shaped sensors.
- **Convertible for Dry Block Operation** and more.
- **Calibrate all Sensor types.**
- **Windows Software and PC Interface as standard.**



934 DRAGO<sup>PLUS</sup>ISOCAL-6<sup>®</sup> Range

## Options

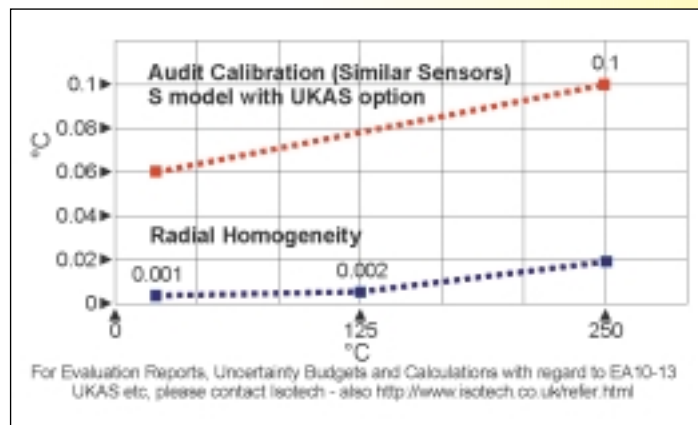
Stirred Liquid Bath Water / Ice Bath	936-06-02	Includes a container, magnetic stirrer and probe guide
Metal Block Insert	936-06-01a	Standard Insert 8 x 8mm + 2 x 4.5mm diameter holes 157mm deep
	936-06-01b	Blank Insert
	936-06-01c	Special Insert. <i>Contact Isotech with your requirements</i>
Blackbody Target	936-06-03	Use with Standard Probe (935-14-61DB)
Surface Sensor Kit	936-06-04	Includes an Insert and an angled PRT.
Fixed Point Cells	17401 Slim	Gallium Slim Cell
Standard Probe	935-14-61DB	Platinum Resistance Thermometer
UKAS Calibration	UKAS Calibration available to Order	
Carrying Case	931-22-65	Sturdy case accommodates the unit
C20 Oil	580-06-09	1 Litre of C20 Oil (from ambient to + 200°C)
Very High Temp. Oil	915/09	1 Litre of V.H.T. Oil (from + 150°C to 250°C)
Thermometer Holder	936-06-08	Fits into the top of the block or liquid container and supports up to eight thermometers into the liquid. Suits probes of 5mm to 8mm in diameter.

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.



To see the ISOCAL-6 in use ask for our 27 minute video supplied on CD-Rom

Note: Instead of putting liquids directly in the block liquid containers can be used to facilitate rapid change of liquids. 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. Suitable choices include the SITE model with probe or a stand alone indicator such as an Isotech TTI model.

Drago<sup>PLUS</sup> Performance - Dry Block

Model No. DRAGO<sup>PLUS</sup>

Temperature Range + 30°C to + 250°C  
in an ambient of 25°C or below

Absolute stability over 30 minutes

Stirred Liquid Bath	±0.025°C
Dry Block Bath	±0.03°C
Ice / Water Bath	±0.001°C
Blackbody Source	±0.3°C
Surface Sensor Calibrator	±0.5°C
ITS-90 Fixed Point Apparatus	±0.0005°C

Computer Interface Included with Windows Software

Thermal Performance As a liquid comparison bath  
Uniformity down to ±0.005°C  
over the full range

Calibration volume 65mm diameter by 160mm deep

Display Resolution 0.01 Up to 99.99  
0.1 100.0 to 250.0°C  
PC can display 0.01 across whole  
range with the software included

Indicator units °C, °F, K

Power 100 to 120V (50/60 Hz) or  
200 to 240V (50/60 Hz)  
1000 Watts

Overall dimensions Height 302mm  
Width 176mm  
Depth 262mm

Weight 8kg

How to Order Drago<sup>PLUS</sup>  
Please specify model type required  
Please specify voltage required  
Please specify options required