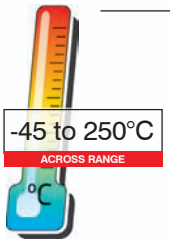


ISOCAL - 6 Range
Europa Venus Calisto

- Multi Function: Six Modes including Dry Block and Liquid Bath
- Fast Response 35mm x 160mm Calibration Volume
- Calibrate Whole Measurement Loop

These models will calibrate temperature probes from -45°C to 250°C with unrivalled flexibility. As a traditional Dry Block, several thermometers can be quickly calibrated.

Accessories are available to convert to a stirred liquid bath, for surface sensor calibration, to calibrate infrared thermometers and even to use as an ITS-90 Fixed Point System with calibration uncertainties as small as 0.0005°C. With excellent stability and distributed heating cooling zones for good uniformity these calibrators offer proven thermal performance.

These award winning calibrators are easy to use and are available in three versions - the Basic, the Site and the ADVANCED. The Basic has a digital display of set and nominal temperature, the Site additionally includes an in-built independent temperature indicator for a reference probe. The ADVANCED controller has inputs for reference and test thermometers with a further range of sophisticated features including automatic temperature cycling, secure data logging and full colour high resolution display.

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.

These models meet the calibration capacity requirements of EURAMET calibration Guide 13 “EA Guidelines on the Calibration of Temperature Block Calibrators”

ADVANCED

SITE

BASIC

Parameter	Model		
	Europa 4520	Venus 4951	Calisto 4953
Temperature Range	-45°C to 140°C (1)	-35°C to 140°C (2)	30°C to 250°C (3)
ADVANCED Range			
Stability: Dry Block / Liquid Bath	±0.01°C	±0.01°C	±0.02°C
Display Resolution	0.001°C over whole range	0.001°C over whole range	0.01°C over whole range
Accuracy: RTD Input Channel	±0.1°C across range		
Accuracy: Thermocouple Input Channel	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		
BASIC/SITE Range			
Stability	±0.03°C	±0.03°C	±0.03°C
Display Resolution	0.01°C from -19.99 to 99.99°C then 0.1°C: 0.01°C Over PC Interface		
COMMON Specification			
Stability	Blackbody ±0.3°C Surface Sensor ±0.5°C ITS-90 Cells ±0.0005°C		
Display Accuracy [4]	0.15°C	0.15°C	0.25°C
Uniformity - Between Wells Dry Block Mode (Radial)	<0.008°C	<0.008°C	<0.02°C at 250°C
Uniformity - Lower 40mm (Axial) Dry Block Mode	<0.040°C	<0.040°C	<0.25°C
Uniformity - Radial Liquid Bath Mode	<0.02°C	<0.02°C	<0.011°C at 250°C
Uniformity - Lower 40mm (Axial) As Liquid Bath	<0.026°C	<0.026°C	<0.02°C at 250°C
Heating Time	-30°C to 140°C: 15 Mins	-30°C to 140°C: 15 Mins	25°C to 250°C: 15 Mins
Cooling Time	140°C to 0°C: 15 Mins	140°C to 0°C: 15 Mins	250°C to 30°C: 25 Mins
Calibration Volume	35 x 160mm		
Standard Insert	6 pockets, 2 x 4.5mm, 2 x 6.4mm, 1 x 8.0mm, 1 x 9.5mm diameter, all 157mm deep		
Insert Types	Choice of Three - See Accessories		
	Ethernet - supporting software and USB Host		
CJC Accuracy:	0.35°C		
Dimensions	384H (including handle) x 212W x 312D mm		
Power	300 Watts	150 Watts	300 Watts
Voltage	115Vac or 230 Vac 50/60Hz		
Weight	14kg	10.2kg	8kg

(1) In ambient of 20°C: Minimum Temperature is 65°C Below Ambient, Absolute Minimum -55°C
(2) In ambient of 20°C: Minimum Temperature is 55°C Below Ambient, Absolute Minimum -45°C
(3) In ambient of 20°C
(4) 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

ISOTECH

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

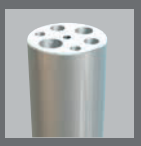
With the Surface Sensor Kit the test sensor is compared to a platinum resistance thermometer located just below the surface of the block. Again save the cost of buying additional equipment by adding accessories as required to expand the ISOCAL-6 for new calibration applications.

ITS-90 Fixed Point Apparatus

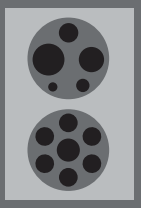
For the best possible performance with uncertainties to 0.0005°C (0.5mK) add an ITS-90 Fixed Point Cell. The most popular is the B8 Water Triple Point Cell, it is surprisingly affordable and simple to use - the triple point can be both created and maintained in the apparatus without the need for any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

World's First Multi-Functional Baths
SIX FUNCTIONS

Europa Venus Calisto
Accessories



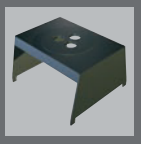
Dry Block Mode with Inserts
951-02-15 An Insert is included: (2 x 4.5mm, 2 x 6.4mm, 1 x 8mm & 1 x 9.5mm) x 157mm Deep.
All Inserts have a 4mm tapped hole to suit supplied extractor tool.



Alternative Inserts
951-06-07 Alternative Insert type B 13mm, 10mm, 8mm, 5mm and 3.5mm dia. holes, all 157mm deep
951-06-08 Alternative Insert type C 8mm, 6 x 6.5mm dia. holes, all 157mm deep
951-02-15a Blank Insert without pockets for local machining. Includes M4 tapped hole for supplied extractor tool.
951-02-15c Custom insert. Isotech can provide custom drilled pockets, minimum of 3mm separation between holes.
Contact Isotech with your requirements

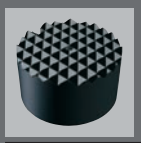
Stirred Liquid Mode with Liquid Container Kit 951-06-01
Allows liquid bath use, includes container, magnetic stirrer, probe guide and sealing cap.

Stirred Ice Bath Mode with Liquid Container Kit
Uses same liquid kit to provide 0°C reference as a stirred ice bath (Not Calisto)



Thermometer Support Kit 921-02-06
Allows three thermometers to be suspended in the bath, including liquid in glass types.

520-05-01	C10 Oil	-35°C – 140°C	0.1L
951-06-06	C20 Oil	20°C – 200°C	0.1L
953-04-01	VH Oil	150°C – 250°C	0.1L



Infrared Calibration Mode with Blackbody Target 951-06-04
Use optional Probe **935-14-82/DB** placed in the auxiliary block pocket for use as a reference.

Surface Sensor Calibration with Surface Sensor Kit 951-06-02
Includes angled platinum resistance thermometer.

ITS-90 Fixed Point Cells 17724M
Slim Mercury Cell (Europa Only).
B8 Water Triple Point Cell (Venus and Europa)
17401M Slim Gallium Cell (Europa, Venus and Calisto)

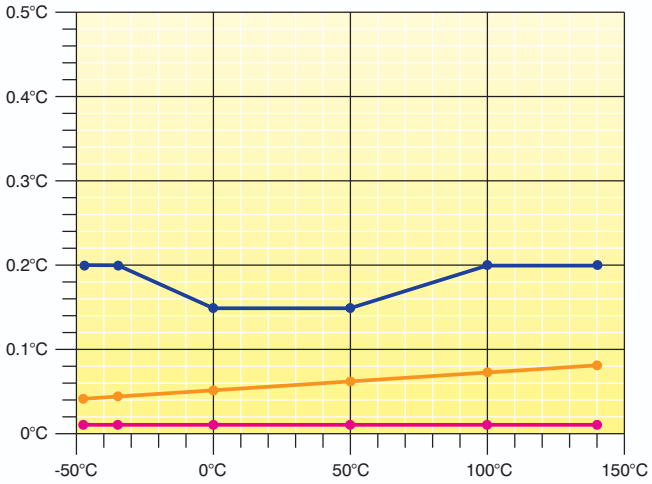
Standard Probe 935-14-82/DB
Platinum Resistance Thermometer. Probe diameter 4mm, recommended pocket size 4.5mm. Angled head feature avoids sensors in block.

Current Loop Interface 935-06-161
24VDC Power Supply and Terminal Box. Powers 4-20mA Current Transmitters with 4mm terminal posts for easy connection.

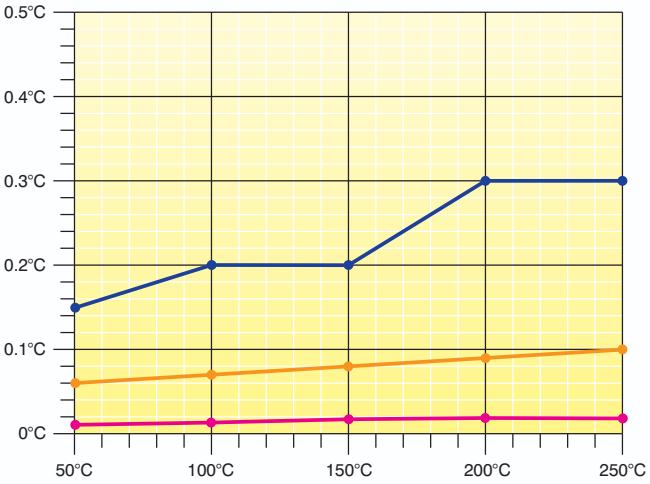
Carrying Case 931-22-111
Sturdy case with room for accessories. Features wheels and pull out handle.

Isocal-6 Performance and Use

Venus and **Europa**



Calisto

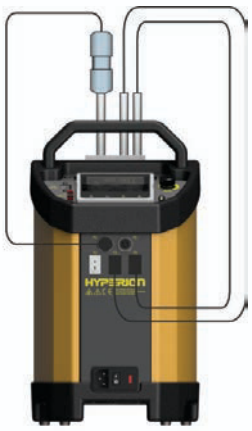


- Uncertainty with Reference Probe with optional UKAS Calibration
- Audit Calibration: Method comparing a PRT to UKAS Calibrated model
- Radial Homogeneity. Use for similar probes and external indicator

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

Alternative Methods of Calibrating with an Isocal-6

Advanced Model



ADVANCED Model

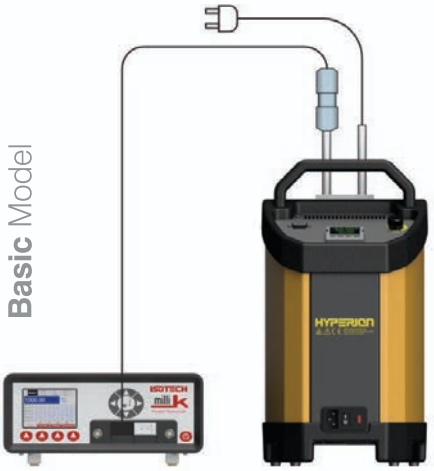
- Digital Display of Set and Nominal Block Temperature
- Inbuilt three channel indicator for reference probe and units under test
- Advanced features including automatic Temperature Cycling and Logging
- Best Practice calibration with established traceability and uncertainty

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

UKAS CALIBRATION 0175

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