

# 510 Medusa & 511 Medusa 3

## P.O.T.T.S. Range

Isotech has a wide range of Dry Blocks to suit probes requiring a large immersion depth. These products feature large and deep calibration volumes. As such they are less portable than other Dry Blocks in this databook but have higher capacities and retain outstanding temperature uniformity, this uniformity is so good that these larger products are ideal to realize the Fixed Points of ITS-90.

The most accurate way to calibrate temperature sensors is by immersing them in a series of very pure substances as they freeze or melt. The freezing (or melting) temperatures of pure substances are fixed and absolute and have been given legal status in the form of the International Temperature Scale of 1990.

When calibrating sensors by directly immersing them in various Points on The Temperature Scale, there is no need to compare the sensor's calibration to another sensor. Thus the calibration is closer to the ITS-90 Scale and has therefore more authority and smaller uncertainties.

The Medusa 510 has a maximum operating temperature of 550°C. The Medusa 3 Model 511 can be used to 700°C and features three zone control. In addition to the main heating zone there are additional top and bottom heaters which compensate for the end losses creating a constant temperature zone across the well.

For Comparison Calibration the Medusa should be used with an insert, the standard insert has six 8mm pockets 250mm deep. Also available is an insert 44mm diameter x 170mm deep which is suspended from the top of the block so that the height is user adjustable. For flexibility the Medusa can also be used with accessories for infrared thermometers and surface sensors. The Medusa is available in two models, the BASIC (B) and the SITE (S).

The Site model includes a timer which can set the bath between two temperatures, and automate ITS-90 fixed point operation. For Surface Sensor and Blackbody use an external thermometer is recommended. For laboratory accuracy the Medusa can be used with a high-end temperature indicator such as an Isotech TTI model.

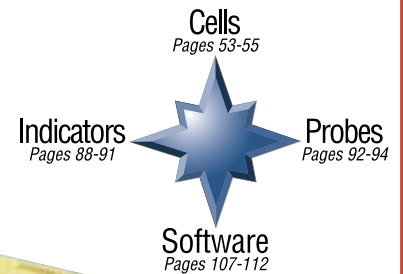
Includes as standard: Windows Software, Computer Interface and a Ramp to Set Point Feature. Increased resolution of  $\pm 0.01$  available throughout the range via the PC interface and from  $-19.99$  to  $+99.99$  locally on the auto-ranging display. The controller features multi-point block to display correction giving excellent absolute accuracy.

The SITE model has a 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 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.

### Features

- Automated Calibration Using Fixed Point Cells
- Temperature Range 30°C to +700°C
- Calibrate Absolutely at the Fixed Points of ITS-90 or by Comparison



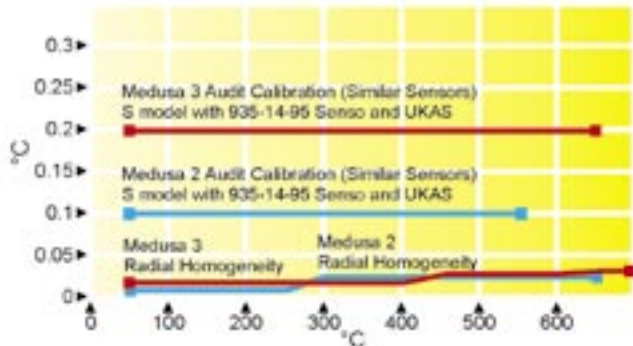
### FIXED POINT CELLS AVAILABLE

Medium	Temperature	Uncertainty
Gallium	29.7646°C	$\pm 0.001^\circ\text{C}$
Indium	156.598°C	$\pm 0.001^\circ\text{C}$
Tin	231.928°C	$\pm 0.002^\circ\text{C}$
Zinc	419.527°C	$\pm 0.005^\circ\text{C}$
Lead	327.462°C	$\pm 0.010^\circ\text{C}$
Zinc	419.527°C	$\pm 0.005^\circ\text{C}$
Aluminum	660.323°C	$\pm 0.010^\circ\text{C}$



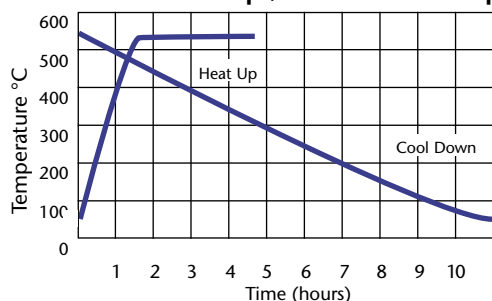


### 510 Medusa Performance



For Evaluation Reports, Uncertainty Budgets and Calculations with regard to EA 10-13 UKAS etc, please contact Isotech

### Medusa 1 Heat Up / Cool Down Graph



### SPECIFICATIONS

Model No.	510 MEDUSA	511 MEDUSA 3
Temperature Range	30°C to 550°C	50°C to 700°C
Absolute Stability over 30 minutes	Metal Block Bath Blackbody Source Surface Sensor Calibrator ITS-90 Fixed Point	±0.03°C ±0.1°C ±0.5°C ±0.001°C
Computer Interface	Included with Windows Software (page 107)	
Cooling Time	550°C to 30°C in 5 hours	
Heating Time	30°C to 550°C in 90 minutes	
Uncertainties	Refer to Uncertainties Graph	
Calibration Volume	45mm diameter by 285mm deep	
Standard Insert	Six 8mm pockets all 250mm deep	
Display Resolution	0.01 to 99.99 0.1 from 100.0 to 700.0. PC can display 0.01 across whole range with software included	
Indicator units	°C, °F, K	°C, °F, K
Power	110 VAC ±10% (50 / 60 Hz) 1000 Watts	220 VAC ±10% (50 / 60Hz) 1800 Watts
Overall dimensions	Height 430mm Width 310mm Depth 300mm	Height 430mm Width 310mm Depth 300mm
Weight	37.48 lbs (17kg)	55.12 lbs (25kg)

Indium, Tin, Lead and Zinc Fixed Points all look the same, being an ingot of very pure metal placed in a graphite crucible which, to keep dirt, moisture and air out are sealed, usually in quartz glass. To avoid the use of quartz glass the graphite crucibles are sealed into metallic containers without contamination of the pure ingot inside the crucible.

As well as a fixed point apparatus the Medusa apparatus can be used as a comparison bath by the addition of a drilled insert, and the use of the in-built indicator and sensor as a reference.



Accessories are also available to convert the Medusa into a black body source and a surface sensor calibrator.

### Calibration and Uncertainty

A certificate, traceable to NIST, is included as standard.

The accuracy of the Medusa will depend very much on the mode of use, see the Uncertainty Graph for typical uncertainties. The Medusa meets the Calibration Capacity requirements of EA-10/13, "EA Guidelines on the Calibration of Temperature Block Calibrators."

### ACCESSORIES

	510-06-01:	Standard Insert <i>Included</i>
	510-06-02:	Blank Insert
	510-06-03:	Special Insert <i>Contact Isotech with your requirements</i>
	510-06-04:	Adjustable Equalizing Block
	511-06-01:	Standard Insert <i>Included</i>
	511-06-02:	Blank Insert
	511-06-03:	Special Insert <i>Contact Isotech with your requirements</i>
	511-06-04:	Adjustable Equalizing Block
510 Blackbody Kit	510-06-05:	Includes a Blackbody Target and Sensor
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510 Surface Sensor Kit	510-06-06:	Includes an insert and angled thermocouple
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ITS-90 Fixed Points	ITL-17401-M:	Gallium Slim Cell
	ITL-17668-M:	Indium Slim Cell
	ITL-17669-M:	Tin Slim Cell
	ITL-17670-M:	Lead Slim Cell
	ITL-17671-M:	Zinc Slim Cell
	ITL-17672-M:	Aluminum Slim Cell
	510-05-00:	Slim Cell Holder
Standard Probe	935-14-95:	Platinum Resistance Thermometer for use up to 650°C
Carrying Case	931-22-58:	Sturdy case accommodates the unit with room for accessories

### HOW TO ORDER

510 Medusa	30°C to 550°C
511 Medusa 3	50°C to 700°C