

# Black Body Temperature Calibrators



- Extended Area Black Body
- High Temperature Black Body Furnace
- NABL Accredited Temperature Calibration
- Onsite Temperature Calibration

## Calibrators Temperature Representation for Non-Contact Type Calibration

Division of non-contact type calibrators according to the temperature range.

	Non Contact Type	Stability	Temperature Range (°C)
			-200 0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200
LBBCH	##	0.01	-40 110
LBBH	##	0.1	50 500
LBBDCH	##	0.01	-20 80
1200BB	##	0.5	300 1200
1500BB	##	0.5	500 1500
1700BB	##	1.5	500 1700
FATSCAL	##		600 3000

### ## Black Body

#### Master Sensor

Type	Range (°C)	Accuracy
AST AL30	0 to 1000°C	T<200°C : ±1.5%, T ≥ 200°C: ±1.0%
AST AL390	300 to 1400°C	T < 500°C : ±1.5% of measured value, T ≥ 500°C : ±1.0% of measured value
AST A250	250 to 2500°C	±0.3% of the measured value +1°C
AST A450	600 to 2500°C	±0.3% of the measured value +1°C
AST A250C	350 to 1350°C	±0.5% of measured value +1°C
AST A450C	600 to 2500°C	±0.5% of measured value +1°C
AST A150	75 to 700°C	Above 400°C: 0.5% of measured value in °C+1°C
AST E250PL	250 to 1800°C	±0.3% of the measured value +1°C
AST E450PL	600 to 1900°C	±0.3% of the measured value +1°C





# Extended Area Black Body



- High Stability
- High Uniformity
- Highly Stable Temperature Calibrator for Industrial Field Uses

## Extended Area Black Body

### Wide Temperature Range

LBBCH offer a temperature range from -40 °C to 100 °C

### Large emissive area

LBBCH has the large emitting surface area precise temperature control with good uniformity. It is available in the customize sizes.

### High Emissivity

The LBBCH Exceptionally high emissivity of  $0.98 \pm 0.02$ . Extremely quick to reach various temperatures, i.e. heats up room temp to +100 °C in 45 minutes. This saves time and increases productivity.

### Accuracy and performance

The LBBCH is high stable unit that also provides excellent calibration accuracy with stability  $\pm 0.1^\circ\text{C}$  or better.

### Easy to use

LBBCH has inbuilt PID controller or can be provided separately that shows real time display of the surface and set temperature

### Computer Interface

The customizable communication port enables communication with selected LBBCH calibrators for automation calibration and documentation easy.

Remote control via Ethernet link, Rs232 or USB port.

## LBBCH (-40 to 100°C)

Low temperature Extended area black body



Extended area black body is defined by the large emitting surface area precise temperature control with good uniformity. Tempsens make Blackbodies are state of the art, highly accurate and stable with different standard sizes and temperature ranges. The LBBCH Series Extended Area black bodies are low temperature infrared reference sources operating either in absolute or differential mode. This Black body series featuring the very high stability, they are particularly well adapted for the characterization and performance validation of a very wide range of IR Sensors, such as high resolution cameras for Thermography and long range thermal imagers. Essentially the black body emits a known amount of energy for an infinite number of wavelengths. This enables to draw the expected black body radiation curve for a given temperature. Temperature is accurately controlled by High accurate PID self tuning controller.

A recirculation chiller unit cools a black body to approximately the desire temprature and electronic control system and heaters unit assembly of thermoelectric coolers further control the black body surface temperature precisely and accurately to the desired set point.

LBBCH includes all the components needed for operation blackbody, Chiller unit, temperature controller.

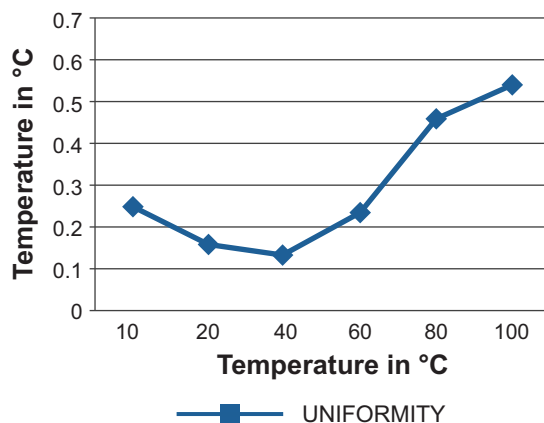
## SPECIFICATIONS

Parameter	LBBCH (-40°C to 100°C)	
	LBBCH100	LBBCH200
Emissive area	100 x 100mm <sup>2</sup>	200 x 200mm <sup>2</sup>
Temperature Range	-40° to 100°C	-40° to 100°C
Emissive area uniformity (1)	±0.2@50°C	±0.2@50°C
Emissivity	0.98 ±0.02	0.98 ±0.02
Stability	±0.1°C	±0.1°C
Display Resolution	0.1°C	0.1°C
Method of control	Digital self tuned PID Controller	Digital self tuned PID Controller
Head dimensions (mm <sup>3</sup> )	300(H) x 320(W) x 190 (D)mm	450(H) x 360(W) x 305(D)mm
Head Weight	15 KG	30 KG
Chiller Unit dimensions (mm <sup>3</sup> )	620(H) x 410(W) x 600 (D)mm	620(H) x 410(W) x 600 (D)mm
Chiller Unit Weight	50 KG	50 KG
Max. power consumption	2 KW	2.5 KW
Powersupply	230VAC, 1ph. 50Hz	230VAC, 1ph. 50Hz
Remote control	Ethernet/RS-232	Ethernet/RS-232
Operating Temperature Range (head)	10°C to +25°C	10°C to +25°C

\*1 at 80% of emissive area

\*At Ambient 23°C

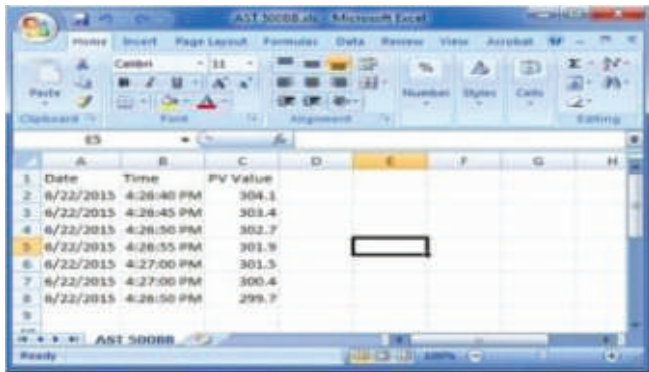
## GRAPHICAL REPRESENTATION





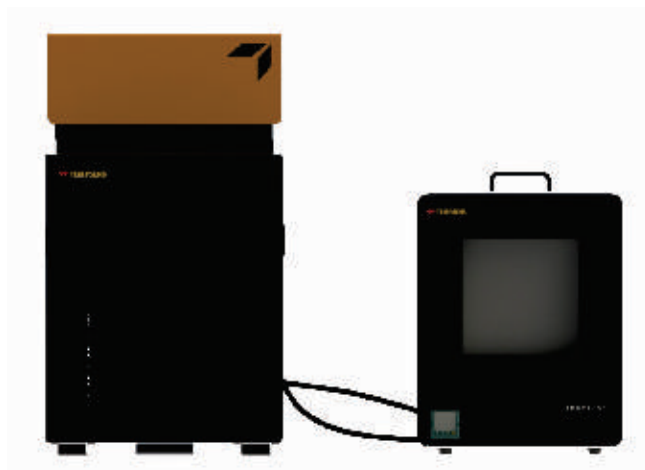
## ACCESSORIES

### SOFTWARE



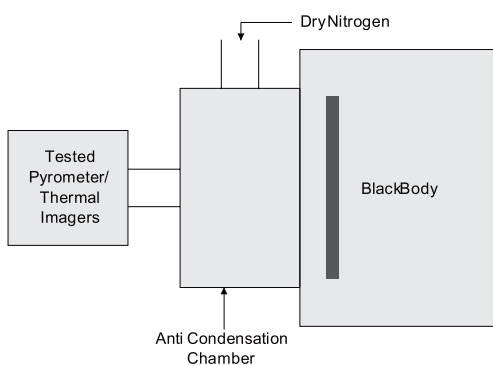
- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- NABL accredited calibration certificate 3 point (optional)

### CHILLER UNIT



- A recirculation chillers unit cools a black body to approximately the desire temperature.

### ANTI CONDENSATION CHAMBER



Along with LBBCH model tempsens blackbodies also offers anti condensation chamber around black body emitter for dry air/ nitrogen to prevent any ice build up or water vapor condensation in case black body operate below ambient. one end off the chamber will be fit to black body emitter and another hole of the chamber fits to optics of tested pyrometer or thermal imagers.

## Extended Area Black Body

### Wide Temperature Range

LBBCH SP offer a temperature range from -25 °C to 150 °C

### Large emissive area

LBBCH SP has the large emitting surface area precise temperature control with good uniformity. It is available in the customize sizes.

### High Emissivity

The LBBCH SP Exceptionally high emissivity of  $0.99 \pm 0.01$ .

### Accuracy and performance

The LBBCH SP is high stable unit that also provides excellent calibration accuracy with stability  $\pm 0.01^\circ\text{C}$ .

This TEC based black body extremely quick to reach various temperatures, i.e. heats up room temp to maximum in 15 minutes and cools down to minimum temperature in 20 minutes. This saves time and increases productivity.

### Easy to use

LBBCH SP has inbuilt PID controller or can be provided separately that shows real time display of the surface and set temperature

### Computer Interface

The communication port (RS232/ USB) enables communication with selected LBBCH SP calibrators for automation calibration and documentation thus it made documentation easy. Remote control via Ethernet link, Rs232 or USB port.

## LBBCH (-25 to 100°C)

Low temperature Extended area black body



Extended area black body is defined by the large emitting surface area precise temperature control with good uniformity. Tempsens make Blackbodies are state of the art, highly accurate and stable with different standard sizes and temperature ranges. The LBBCH SP Series Extended Area black bodies are low temperature infrared reference sources operating either in absolute or differential mode. This Black body series featuring the very high stability, they are particularly well adapted for the characterization and performance validation of a very wide range of IR Sensors, such as high resolution cameras for Thermography and long range thermal imagers. Essentially the black body emits a known amount of energy for an infinite number of wavelengths. This enables to draw the expected black body radiation curve for a given temperature. Temperature is accurately controlled by High accurate PID self tuning controller.

With the Tempsens make Compact Extended Area Black body Temperature Calibrator, you have chosen an extremely effective instrument which we hope will live up to all your expectations. This is a fast, timesaving, and reliable true industrial temperature calibrator designed for on-site use.

During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

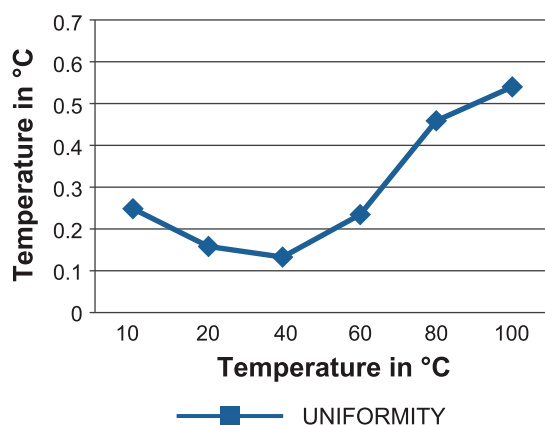
## SPECIFICATION

Parameter	LBBCH SP
Emissive area	50 x 50 mm <sup>2</sup>
Temperature range (Standard)*	-25°C to 100°C
Emissive area uniformity(1)	±0.2°C @ 50°C or better
Emissivity	0.98±0.02
Stability	±0.02°C or better
Heating Time	15 Min
Cooling Time	20 Min
Display resolution	0.01°C
Method of control	Digital self tuned PID Controller
Head dimensions W x H x D (mm <sup>3</sup> )	300(W) X 320(H) X 190(D) mm
Weight	15 kg
Max. power consumption	500 W
Power supply	230 VAC, 1 ph. 50 Hz
Operating temperature range (head)	10°C to +25°C

\*At 23°C Ambient

\*1 at 80% of emissive area

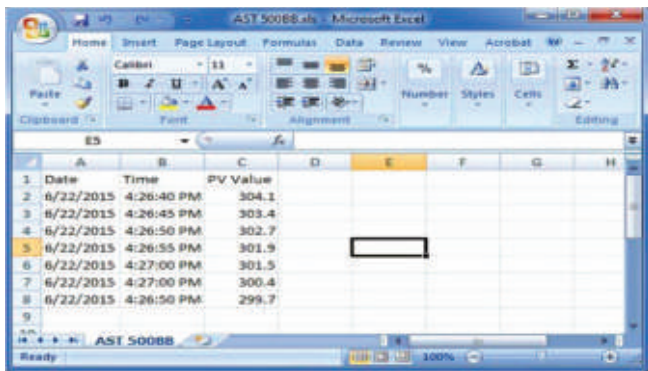
## GRAPHICAL REPRESENTATION





## ACCESSORIES

### SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

- Master pyrometer
- NABL accredited calibration certificate - 3 point (Optional)
- Operational Manual



### CARRY CASE (ONLY FOR LBB11CH MODEL)



- Tempsens makes customized carry case is a rugged, safe perfectly designed to carry our new Extended Area Black Body calibrator and different accessories.

## Extended Area Black Body

### Wide Temperature Range

LBBCH offer a temperature range from 0 °C to 110 °C

### Large emissive area

LBBCH has the large emitting surface area precise temperature control with good uniformity. It is available in the customize sizes.

### High Emissivity

The LBBCH Exceptionally high emissivity of  $0.98 \pm 0.02$ .Extremely quick to reach various temperatures, i.e. heats up room temp to +110 °C in 10 minutes. This saves time and increases productivity.

### Accuracy and performance

The LBBCH is high stable unit that also provides excellent calibration accuracy with stability  $\pm 0.01^\circ\text{C}$  at 110°C.

### Easy to use

LBBCH has inbuilt PID controller or can be provided separately that shows real time display of the surface and set temperature

### Computer Interface

The communication port (RS232/ USB) enables communication with selected LBBCH calibrators for automation calibration and documentation thus it made documentation easy. Remote control via Ethernet link, Rs232 or USB port.

## LBBCH ##

Highly Accurate Low Temperature Extended Area Black Body For Industrial / Laboratory Field Use



Extended area black body is defined by the large emitting surface area precise temperature control with good uniformity. Tempsens make Blackbodies are state of the art, highly accurate and stable with different standard sizes and temperature ranges. The LBBCH Series Extended Area black bodies are low temperature infrared reference sources operating either in absolute or differential mode. This Black body series featuring the very high stability, they are particularly well adapted for the characterization and performance validation of a very wide range of IR Sensors, such as high resolution cameras for Thermography and long range thermal imagers. Essentially the black body emits a known amount of energy for an infinite number of wavelengths. This enables to draw the expected black body radiation curve for a given temperature. Temperature is accurately controlled by High accurate PID self tuning controller.

With the Tempsens make Compact Extended Area Black body Temperature Calibrator, you have chosen an extremely effective instrument which we hope will live up to all your expectations. This is a fast, timesaving, and reliable true industrial temperature calibrator designed for on-site use.

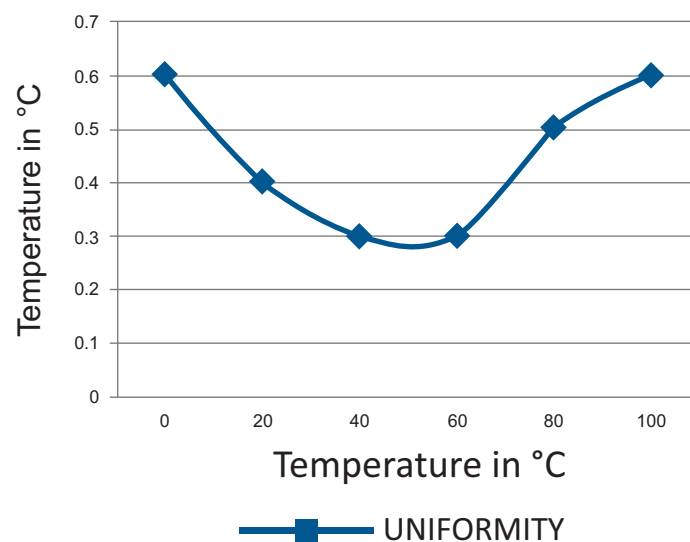
During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

## SPECIFICATIONS

Parameter	LBB11CH	LBB22CH	LBB33CH
Emissive area	100 x 100 mm <sup>2</sup>	200 x 200 mm <sup>2</sup>	300 x 300 mm <sup>2</sup>
Temperature range (Standard)	10°C to 110°C		
Temperature range (Optional)	0°C to 110°C		
Emissivity	0.98±0.02		
Stability	±0.01°C		
Display resolution	0.01°C up to 99.99 (0.1 above 100°C)		
Method of control	Digital self tuned PID Controller		
Emissive area uniformity (1)	±0.20°C @ 50 °C	±0.20°C @ 50 °C	±0.30°C @ 50 °C
Head dimensions W x H x D (mm <sup>3</sup> )	380 X 280 X 230 mm	495 x 480 x 300 mm	695 x 645 x 400 mm
Weight	15 kg	35 kg	45 kg
Max. power consumption	1 K W	1.5 K W	2 K W
Power supply	230 VAC, 1 ph. 50 Hz	230 VAC, 1 ph. 50 Hz	230 VAC, 1 ph. 50 Hz
Remote control	Ethernet, RS-232	Ethernet, RS-232	Ethernet, RS-232
Operating temperature range (head)	5°C to +25°C	5°C to +25°C	5°C to +25°C

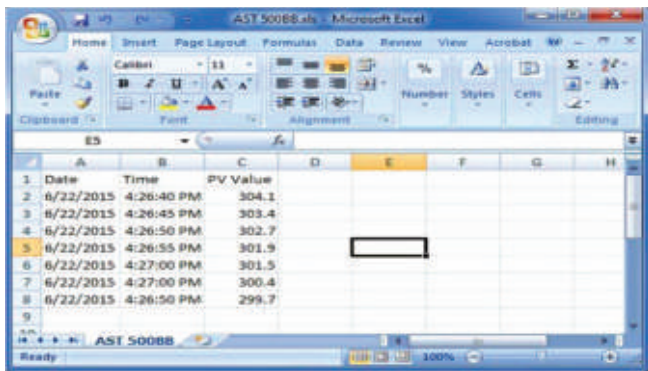
\*1 at 80% of emissive area

## UNIFORMITY OF LBBCH



## ACCESSORIES

### SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

- Master pyrometer
- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual



### CARRY CASE (ONLY FOR LBB11CH MODEL)



- Tempsens makes customized carry case is a rugged, safe perfectly designed to carry our new Extended Area Black Body calibrator and different accessories.



## Extended Area Black Body

### Wide Temperature Range

LBBH offer a wide temperature range from 50 °C to 500 °C

### Large emissive area

LBBH has the large emitting surface area precise temperature control with good uniformity. It is available in the customize sizes, more than 500x500mm is also available on request

### High Emissivity

The LBBH Exceptionally high emissivity of  $0.98 \pm 0.02$ , extremely quick to reach various temperatures, i.e. heats up room temp to +500 °C in 45 minutes. This saves time and increases productivity.

### Accuracy and performance

The LBBH is high stable unit that also provides excellent calibration accuracy with stability  $\pm 0.01^\circ\text{C}$  at 500°C.

### Easy to use

LBBH has inbuilt PID controller or can be provided separately that shows real time display of the surface and set temperature

### Computer Interface

The communication port (RS 232/ USB) enables communication with selected LBBH calibrators for automation calibration and documentation thus it made documentation easy. Remote control via Ethernet link, Rs232.

## LBBH

Highly Accurate High Temperature Extended Area Black Body For Industrial / Laboratory Field Use



Extended area Black body is defined by the large emitting surface area precise temperature control with good uniformity. The blackbody is designed to provide infrared radiation as an ideal blackbody emitter. Because of the large uniform surface area the body called extended area black body. These data ensure high accuracy for the calibration of thermal imagers over their full field of view, the non-uniformity correction of infrared cameras, the simultaneous test of several sensors during manufacturing process the measurement of the size of source effect on cameras. We separately provide high accurate programmable controller with black body source. High accuracy chamber have designed separately. The temperature of furnace is set or changes by the controller.

With the Tempsens make Compact Extended Area Black body Temperature Calibrator, you have chosen an extremely effective instrument which we hope will live up to all your expectations. This is a fast, timesaving, and reliable true industrial temperature calibrator designed for on-site use.

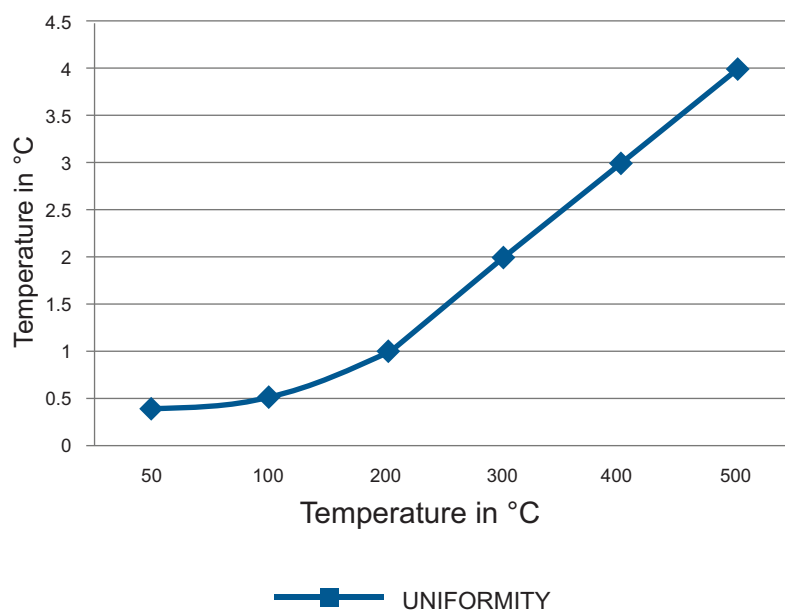
During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

## SPECIFICATIONS

Parameter	LBB11H	LBB22H	LBB33H
Emissive area	100x100 mm <sup>2</sup>	200x200 mm <sup>2</sup>	300x300 mm <sup>2</sup>
Temperature range	50 to 500°C		
Emissive area uniformity (1)	±2 at 400°C	±3 at 400°C	±4 at 400°C
Emissivity	0.98±0.02	0.98±0.02	0.98±0.02
Stability	±0.1°C		
Method of control	Digital self tuned PID Controller		
Display resolution	0.1°C		
Warm-up time from ambient to T <sub>max</sub>	30 min	45 min	60 min
Head dimensions W x H x D (mm <sup>3</sup> )	280 x 380 x 230 mm	480 x 500 x 300 mm	645 x 700 x 400 mm
Head weight	15 kg	30 kg	45 kg
Max. power consumption	2000 W	3000 W	5000 W
Power supply	230 VAC, 1 ph. 50 Hz	230 VAC, 1 ph. 50 Hz	230 VAC, 1 ph. 50 Hz
Remote control	Ethernet, RS-232	Ethernet, RS-232	Ethernet, RS-232
Operating temperature range (head)	15°C to 30°C	15°C to 30°C	15°C to 30°C

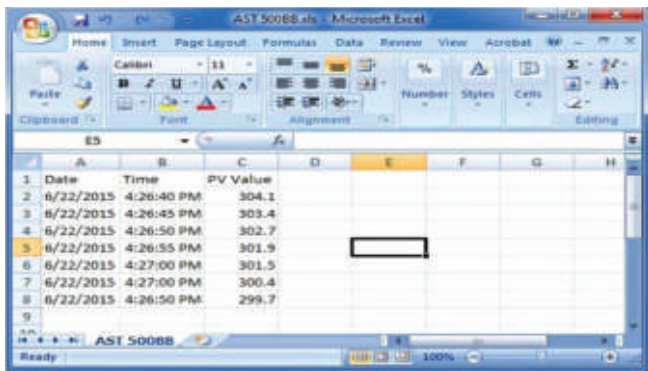
\*1 at 80% of emissive area

## UNIFORMITY OF LBBH



## ACCESSORIES

### SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

- Master pyrometer
- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual



### CARRY CASE (ONLY FOR LBB11H MODEL)



- Tempsens makes customized carry case is a rugged, safe perfectly designed to carry our new Extended Area Black Body calibrator and different accessories.
- For other model (LBB22H, LBB33H) carry case is optional.

## Extended Area Black Body

### Wide Temperature Range

LBBDCH offer a temperature range from 0°C to 115°C for absolute temperature and -25°C to 90°C for differential temperature range.

### Large Emissive Area

LBBDCH has the large emitting surface area precise temperature control with good uniformity. It is available in the customize sizes.

### High Emissivity

The LBBDCH Exceptionally high emissivity of 0.98  $\pm$ 0.02. Extremely quick to reach various temperatures, i.e. heats up room temp to +50°C in 15 minutes. This saves time and increases productivity.

### Accuracy and Performance

The LBBDCH is high stable unit that also provides excellent calibration accuracy with stability.

### Easy to Use

LBBDCH has inbuilt PID controller or can be provided separately that shows real time display of the surface and set temperature

### Computer Interface

The communication port enables communication with selected LBBDCH calibrators for automation calibration and documentation thus it made documentation easy. Remote control via Ethernet link, RS-232 or USB port.

## LBBDCH

Highly Accurate Low Temperature Differential Extended Area Black Body Industrial/Laboratory Field Use



Extended area black body is defined by the large emitting surface area precise temperature control with good uniformity. Tempsens make Blackbodies are state of the art, highly accurate and stable with different standard sizes and temperature ranges. The LBBDCH Series Extended Area black bodies are low temperature infrared reference sources operating either in absolute or differential mode. This Black body series featuring the very high stability, they are particularly well adapted for the characterization and performance validation of a very wide range of IR Sensors, such as high resolution cameras for Thermography and long range thermal imagers. Essentially the black body emits a known amount of energy for an infinite number of wavelengths. This enables to draw the expected black body radiation curve for a given temperature. Temperature is accurately controlled by High accurate PID self tuning controller.

With the Tempsens make Compact Extended Area Black body Temperature Calibrator, you have chosen an extremely effective instrument which we hope will live up to all your expectations. This is a fast, timesaving, and reliable true industrial temperature calibrator designed for on-site use.

During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.



## SPECIFICATIONS

Parameter	LBB11DCH	LBB33DCH
Emissive area	100 x 100 mm <sup>2</sup>	300 x 300 mm <sup>2</sup>
Absolute Temperature Range	0 to 115°C	10 to 80°C
Differential Temperature Range (Ambient 25°C)	-25°C to 90°C	-15°C to 55°C
Emissive area uniformity <sup>(1 &amp; 2)*</sup>	±0.20°C @50°C	
Emissivity	0.98±0.02	
Stability	±0.01°C	
Display	5" LCD °C or °F user selectable	
Controller Dimension	100(H) x 120(W) x 300(D) mm	
Display resolution	0.01°C	
Method of control	Digital self tuned PID Controller	
Head dimensions W x H x D (mm <sup>3</sup> )	300 X 320 X 190 mm	500 X 500 X 200 mm
Weight	20 kg	50 kg
Max. power consumption	1.0 K W	2.5 K W
Power supply	230 VAC, 1 ph. 50 Hz	
Remote control	Ethernet, RS-232	
Operating temperature range (head)	5°C to 25°C	

\*1 at 80% of emissive area

\*2 Uniformity will decrease during nitrogen purging

## USER INTERFACE

The Temperature Control window opens in either the Absolute or Differential working modes.

**Absolute Mode :** In absolute mode there will be temperature indication for Emitter plate and target but no temperature difference will be shown. We can controll only emitter temperature only.

**Differential Mode. :** In differential mode we can change temperature difference between emitter and target needed. We have to put delta T value as set point. Controller will automativally change emitter temperature to achieve desired delta T value.

**Absolute**

**T<sub>e</sub>** 44.89°C

**T<sub>t</sub>** 26.10

**To SET** 44.89 **SET**

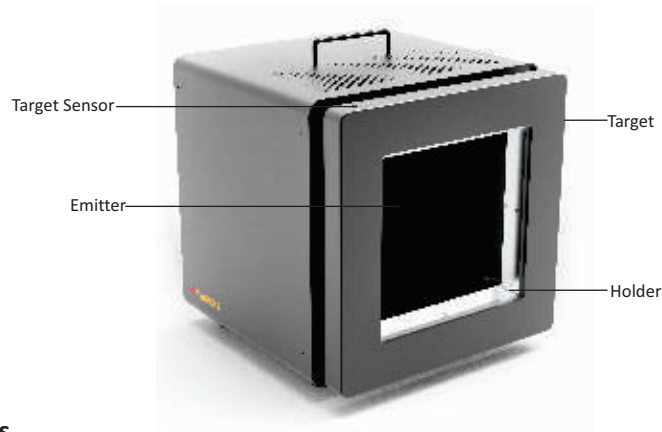
**Differential**

**ΔT** 1.24°C

**T<sub>e</sub>** 27.34 **T<sub>t</sub>** 26.10

**DT SET** 1.24 **SET**

## DESCRIPTION



### Absolute Mode Blackbodies

The Absolute Mode BB (Blackbody) consists of an emitter plate, which is thermoelectrically heated or cooled to a pre-defined absolute temperature. One PRT (Platinum Resistance Thermometer) is mounted in the emitter and is used by the controller to measure the emitter temperature.

### Differential Mode Blackbodies

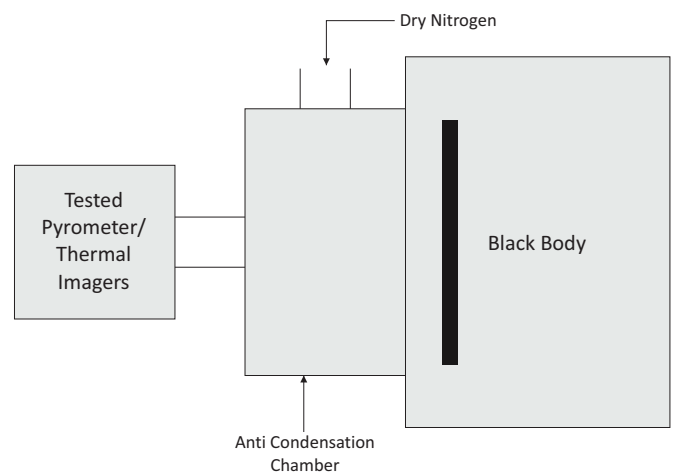
The Differential Mode BB consists of an emitter plate, which is thermoelectrically heated or cooled with respect to the target temperature (thus, the differential temperature between the Emitter and the target is controlled). The target plate is mounted in front of the emitter surface. Mounted in the emitter and target plates are two PRT sensors, used by the controller to measure their temperature difference.

The basic difference between absolute and differential BB is Target panel mounting arrangement at front.

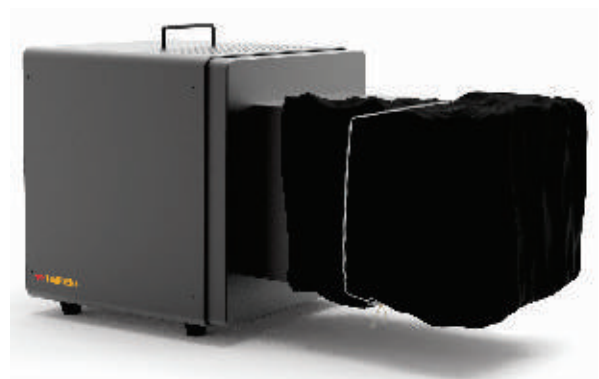
## ACCESSORIES

### Anti Condensation Chamber (Optional)

Along with LBBCH model blackbodies Tempsens also offers anti condensation chamber around black body emitter for dry air / nitrogen to prevent any ice build up or water vapor condensation in case black body operate below ambient. one end off the chamber will be fit to black body emitter and another hole of the chamber fits to optics of tested pyrometer or thermal imagers .

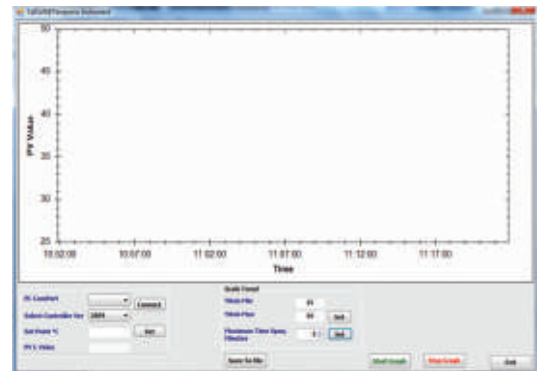
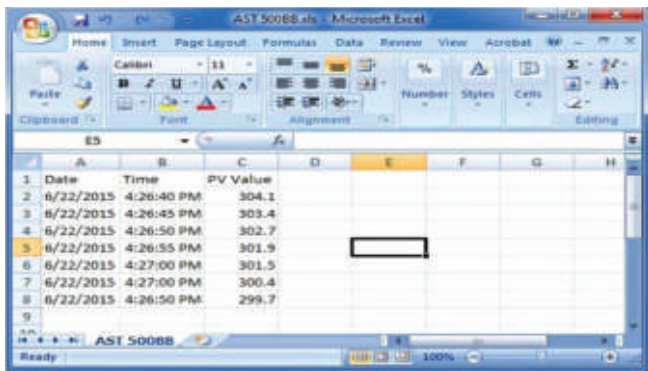


Size	150 (H) X 150 (W) X 200 (D)
Weight	3 Kg.



## ACCESSORIES

### SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

- Master pyrometer



- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual

### CARRY CASE (ONLY FOR LBB11DCH MODEL)



- Tempsens makes customized carry case is a rugged, safe perfectly designed to carry our new Extended Area Black Body calibrator and different accessories.



# High Temperature Black Body Furnace



- High Accuracy
- High Temperature
- Highly Stable Temperature Calibrator for Industrial Field Uses



## High Temperature Black Body Furnace

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### Wide Temperature Range

CALsys 1200BB offer a wide temperature range from 300 °C to 1200 °C

### Simple to use

The CALsys 1200BB block is ideal for Industrial/Laboratory field use. It is simple enough to testing and calibration uses.

### Speed

The Calsys 1200BB extremely quick to reach various temperatures.

### Accuracy and performance

The Calsys 1200BB is an easily portable unit that also provides excellent calibration accuracy with stability  $\pm 0.5^{\circ}\text{C}$  at  $1200^{\circ}\text{C}$ .

### Accredited calibration

Each Calsys 1200BB is delivered with an accredited calibration certificate.

### Computer Interface

The communication port (RS-232) enables communication with selected Calsys 1200BB calibrators for automation calibration and documentation thus it made documentation easy.

## Calsys 1200BB

Highly Accurate Temperature Calibrator For Industrial / Laboratory Field Use

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Calsys 1200BB offers easy to use blackbody calibrator with high temperature range from 300 to  $1200^{\circ}\text{C}$ . It is a highly stable standard furnace for calibrating pyrometer and non contact sensor. This calibrator can be used on site for high temperature calibration and also find application in pyrometer industry, non contact sensor calibration. the unique feature of this black body furnace is large temperature control black body target with dia of 46mm and 85mm depth which offers large view for IR camera . The temperature of the calibrator is set and controlled by a self tuned PID controller with automatic super fine adjustment. Our newly designed CALsys 1200BB model offers better esthetic design and performance wise upgraded to next level. The emissivity of the target is  $0.99(\pm 0.01)$ .

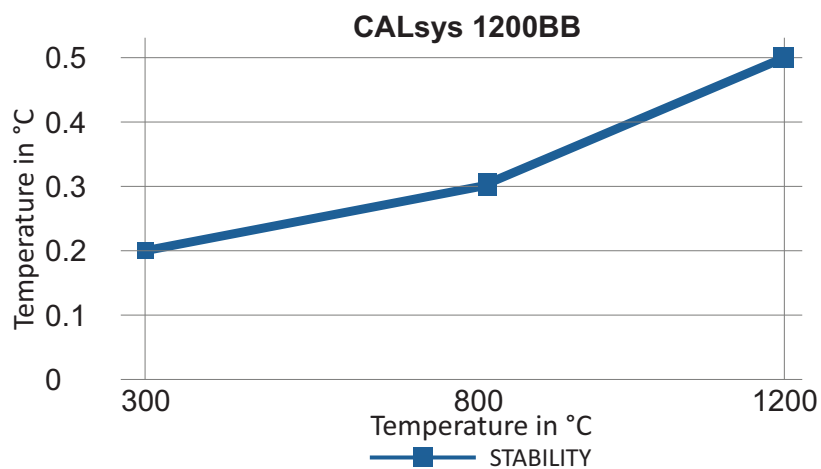
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## Specifications

Temperature range	300 °C to 1200 °C
Stability	±0.2°C at 300°C
	±0.3°C at 800°C
	±0.5°C at 1200°C
Cavity type	Silicon carbide
External Aperture	40mm dia
Cavity Diameter	46 mm (85mm depth)
Emissivity	0.98 (±0.02)
Method of Control	Self tuned PID controller
Heating time	1.5 Hrs
Resolution	1 °C
Display	LCD, °C or °F user-selectable
Size (H x W x D)	590(H) x 450(W) x 530(D) mm
Weight	55Kg
Power requirements	230 VAC, 2.5 KW(50 Hz)
Computer interface	RS - 232
Calibration	Accredited calibration certificate provided (Optional)
Environmental operating conditions	0 °C to 40 °C, 0 % to 90 % RH (non-condensing)
Specifications valid in environmental conditions	13 °C ... 33 °C

## STABILITY OF CALSYS 1200 BB



## Access Opening 1200BB

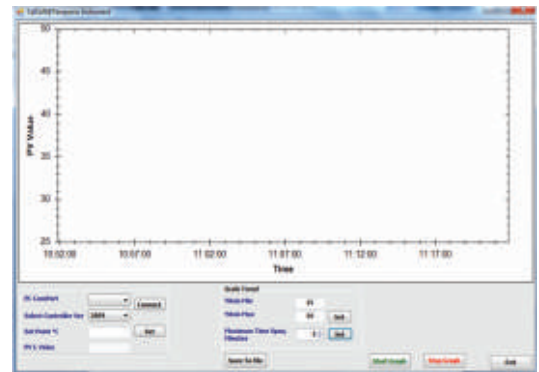
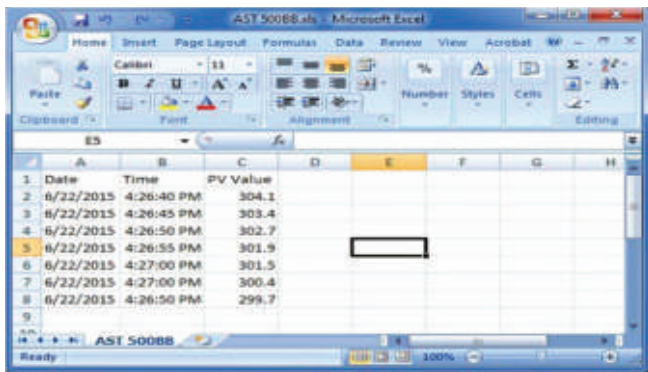
### Blackbody Cavity for CALsys 1200BB models

We use 46mm dia silicon carbide (Radiation cavity type) in CALsys 1200BB. We also offer customized access opening based on Customer requirements.



Silicon Carbide Cavity.

### SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

Master Pyrometer



- Black Body Cavity.....Part No. Eq3
- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual

## High Temperature Black Body Furnace

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### Wide Temperature Range

Calsys 1500BB offer a wide temperature range from 500 °C to 1500 °C

### Simple to use

The Calsys 1500BB block is ideal for Industrial / Laboratory field use. It is simple enough to testing and calibration uses.

### Speed

The Calsys 1500BB extremely quick to reach various temperatures. This saves time and increases productivity.

### Accuracy and performance

The Calsys 1500BB is an easily portable unit that also provides excellent calibration accuracy with stability  $\pm 1.0^{\circ}\text{C}$  at 1500 °C.

### Accredited calibration

Each Calsys 1500BB is delivered with an accredited calibration certificate.

### Computer Interface

The communication port (RS-232) enables communication with selected Calsys 1500BB calibrators for automation calibration and documentation thus it made documentation easy.

## Calsys 1500BB

Highly Accurate Temperature Calibrator For Industrial / Laboratory Field Use

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Calsys 1500BB offers easy to use blackbody calibrator with high temperature range from 500 to 1500°C. It is a highly stable standard furnace for calibrating pyrometer and non contact sensor. This calibrator can be used on site for high temperature calibration and also find application in pyrometer industry, non contact sensor calibration. the unique feature of this black body furnace is large temperature control black body target of 40mm and 85mm long. The temperature of the calibrator is set and controlled by a self tuned PID controller with automatic super fine adjustment. Our newly designed Calsys 1500BB model offers better esthetic design and performance wise upgraded to next level.

With the Tempsens make Temperature Calibrator, you have chosen an extremely effective instrument which we hope will live up to all your expectations. This is a fast, timesaving, and reliable true industrial temperature calibrator designed for on-site use.

During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

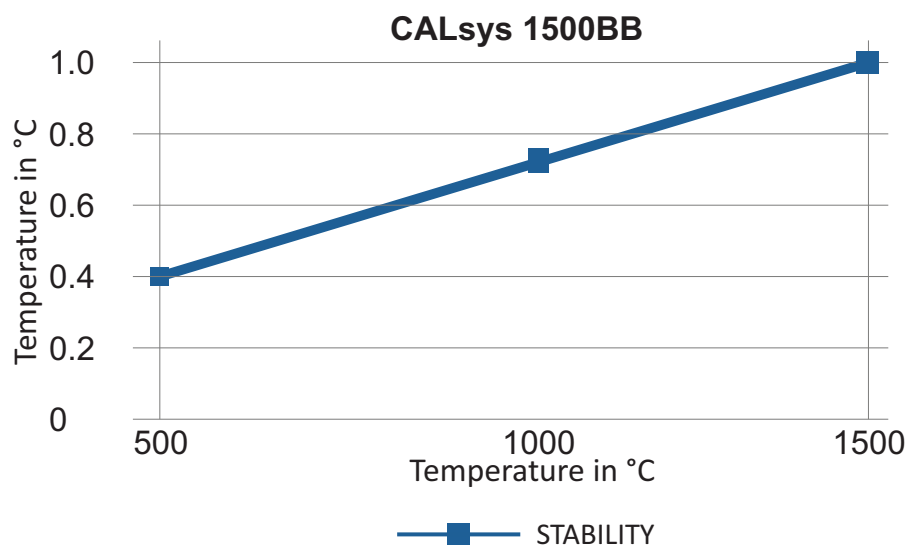
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## SPECIFICATIONS

Temperature range	500 °C to 1500 °C
Stability	±0.2°C at 500°C
	±0.3°C at 1000°C
	±0.5°C at 1500°C
Cavity type	Silicon carbide
External Aperture	40 mm dia
Method of Control	Self tuned PID controller
Cavity Diameter	46mm (85 mm depth)
Heating time	1.5 Hrs
Resolution	1 °C
Display	LCD, °C or °F user-selectable
Size (H x W x D)	590(H) x 450(W) x 530(D) mm
Weight	55Kg
Power requirements	230 VAC, 3.0 KW(50 Hz)
Computer interface	RS - 232
Calibration	Accredited calibration certificate provided (Optional)
Environmental operating conditions	0 °C to 40 °C, 0 % to 90 % RH (non-condensing)
Specifications valid in environmental conditions	13 °C ... 33 °C

## STABILITY OF CALSYS 1500 BB



## Access Opening 1500BB

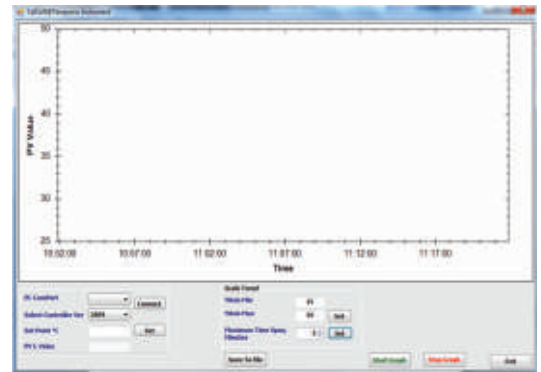
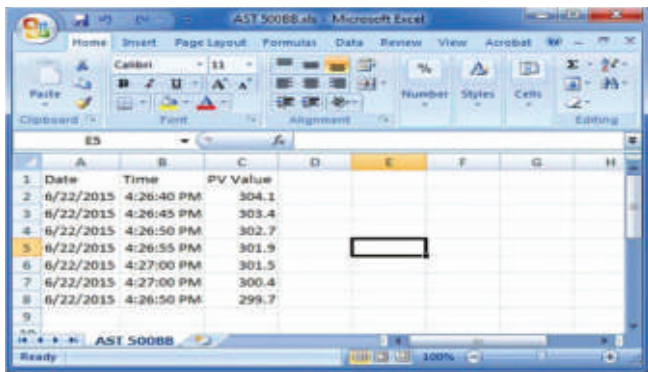
### Blackbody Cavity for CALsys 1500BB models

We use 46mm dia silicon carbide (Radiation cavity type) in CALsys 1500BB. We also offer customized access opening based on Customer requirements.



Silicon Carbide Cavity.

### SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

- Master Pyrometer



- Black Body Cavity.....Part No. Eq3
- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual

## High Temperature Black Body Furnace

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### Wide Temperature Range

Calsys 1700BB offer a wide temperature range from 500 °C to 1700 °C

### Simple to use

The Calsys 1700BB block is ideal for Industrial/ Laboratory field use. It is simple enough to testing and calibration uses.

### Speed

The Calsys 1700BB extremely quick to reach various temperatures. This saves time and increases productivity.

### Accuracy and performance

The Calsys 1700BB provides excellent calibration accuracy with stability  $\pm 1.5^{\circ}\text{C}$  at 1700 °C.

### Accredited calibration

Each Calsys 1700BB is delivered with an accredited calibration certificate.

### Computer Interface

The communication port (RS-232) enables communication with selected Calsys 1700BB calibrators for automation calibration and documentation thus it made documentation easy.

## Calsys 1700BB

Highly Accurate Temperature Calibrator For Industrial / Laboratory Field Use

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CALsys 1700BB offers easy to use blackbody calibrator with high temperature range from 500 to 1700°C. It is a highly stable standard furnace for calibrating pyrometer and non contact sensor. This calibrator can be used on site for high temperature calibration and also find application in pyrometer industry, non contact sensor calibration.. The unique feature of this black body furnace is large temperature control black body target of 29mm diameter. The temperature of the calibrator is set and controlled by a self tuned PID controller with automatic super fine adjustment. Our newly designed CALsys 1700BB model offers better esthetic design and performance wise upgraded to next level.

Tempsens make Temperature Calibrator extremely effective instrument which we hope will live up to all your expectations. This is a fast, timesaving, and reliable true industrial temperature calibrator designed for on-site use.

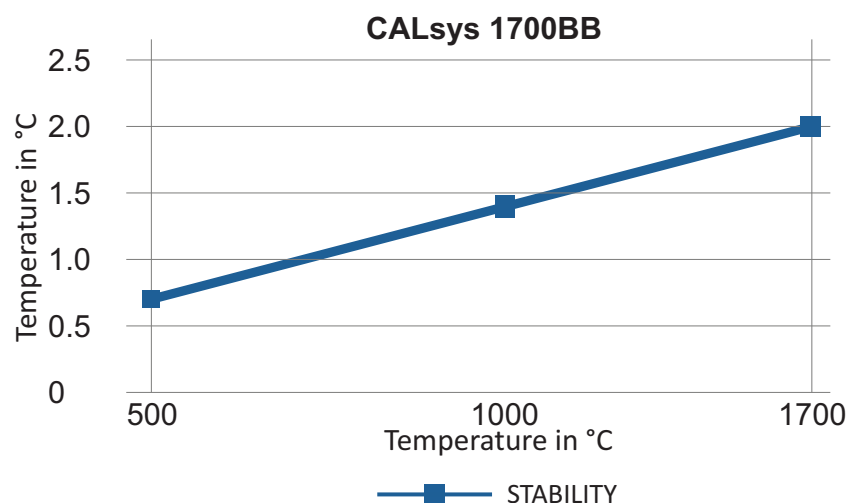
During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

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## SPECIFICATIONS

Temperature range	500 °C to 1700 °C
Stability	±0.5°C at 500°C
	±1.0°C at 1000°C
	±1.5°C at 1700°C
Stabilization time	15 to 20mins
Controlling sensor	B type duplex(PT/RH-PT)
Cavity type	ceramic
Cavity dimension	29mm End closed tube
Emissivity	0.97 (±0.02)
Heater	MoSi
Heating time	3 Hrs
Method of control	Digital self tuned PID Controller
Resolution	1 °C
Display	LCD, °C or °F user-selectable
Size (H x W x D)	700(H) x 500(W) x 550(D) mm
Weight	130Kg (Overall)
Power requirements	230 VAC 50/60Hz
Computer interface	RS - 232
Calibration	Accredited calibration certificate provided (Optional)
Environmental operating conditions	0 °C to 40 °C, 0 % to 90 % RH (non-condensing)
Specifications valid in environmental conditions	13 °C ... 33 °C

## STABILITY OF CALSYS 1700 BB





## Access Opening 1700BB

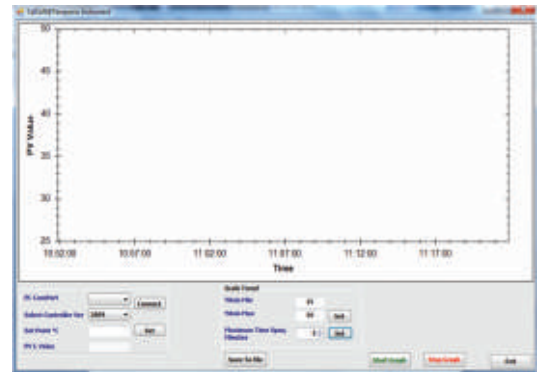
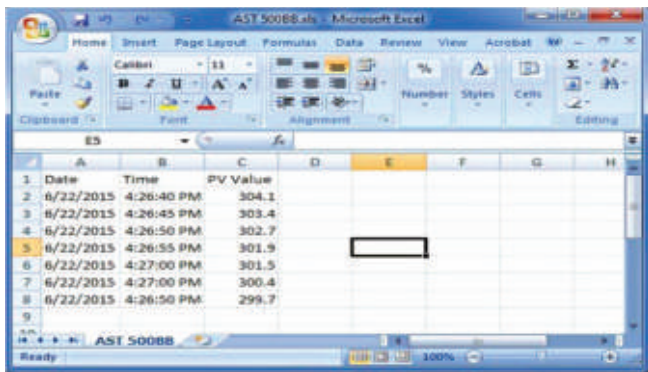
### Blackbody Cavity for CALsys 1700BB models

We use 29mm dia End closed tube (Radiation cavity type) in CALsys 1700BB. We also offer customized access opening based on Customer requirements.



Ceramic Cavity

### SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

- Mater pyrometer



- Black Body Cavity..... Part No. Eq3
- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual

## High Temperature Black-Body Calibrator

### Wide Temperature Range

FASTCAL 3000 offer a wide temperature range from 600°C to 3000 °C

### Safety Interlocks

Safety Interlocks with Cooling water for over temperature and over current protection. also with Low purge gas flow.

### Speed

The FASTCAL 3000 extremely quick to reach various temperatures, i.e. heats up 600°C to 3000°C in 5 minutes. This saves time and increases productivity.

### Accuracy and Emissivity

The FASTCAL 3000 provides excellent calibration with an effective emissivity of 0.99.

### Accredited calibration

Each FASTCAL 3000 is delivered with an accredited calibration certificate.

### Computer Interface

The communication port (RS-232/RS-485) enables communication with selected FASTCAL 3000 calibrators for automation calibration and documentation thus it made documentation easy.

## FASTCAL 3000

High Temperature Black-Body Calibrator for Industrial/ Laboratory Field Use



High temperature pyrometer calibration machine has been designed to provide stable and accurate temperature to enable professionals to calibrate Temperature Sensing Devices by comparison method. High temperature pyrometer calibration machine model has been named FASTCAL because of its fast calibration. The 'FASTCAL' model has been designed to be rugged and easily maintained.

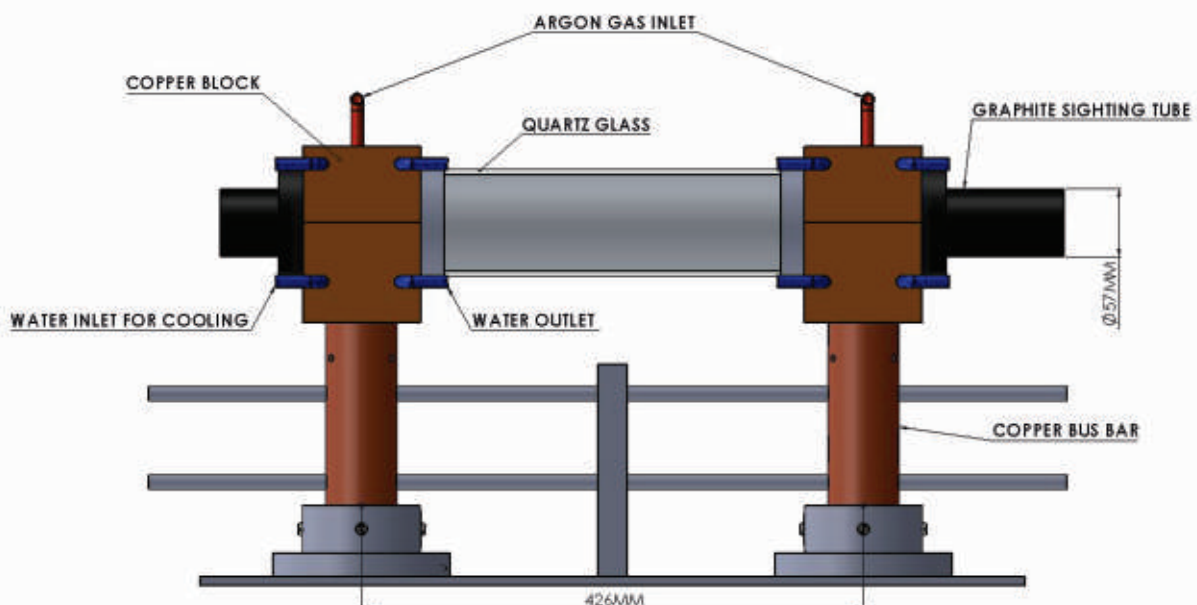
Deliver any temperature ranging between 700°C to 3000°C. A graphite strip is works as a cavity for blackbody calibrator under inert atmosphere the heated length of graphite element and aperture. These heating elements provide excellent uniformity and a heat-up time of within 5 minutes to reach 3000°C.

A self tune digital PID controller with adjustable set point And Infrared pyrometer to sense the Temperature holds the temperature within  $\pm 3$  deg c up to 3000°C assuring high Accuracy calibration. An independent over temperature alarm And cut out system, prevents heating elements burnout.The controller is mounted on the calibration source and remote set point programming may be achieved via the standard RS232 or optional RS485 communication port.

## SPECIFICATIONS

Temperature Range	600°C to 3000°C
Method of Control	PID controller Eurotherm make 2604
Controlling Sensor	Pyrometer, Make AST Model 250
Wavelength	1000 nm or 1600 nm (Pyrometer)
Temperature Resolution	0.1 °C
Emissivity	0.99
Cavity	Graphite Dual cavity blackbody, one side for control and one side for measurement
Heating Aperture	25mm, other size also available as per user request.
Cooling	Water cooling system through chiller unit.
Water in Chiller	Only Demineralised Water
Purge Gas	Argon gas flow with 10-12 LPM respective.
Purity of Gas	99.99%
Heating Time	Approx 5 Minute from 600 to 3000°C
Safety Interlocks	Cooling water over temperature, Low purge gas flow, cooling water flow, over current and over temperature protection.
Remote Controller	Set Point control and temperature monitoring by RS 232/485/USB
Ambient Temperature	Ambient $\pm 15^{\circ}\text{C}$
Power	440VAC, Two Phase AC 50/60 Hz 60 KW or Customized
Dimension of chiller	1310mm(H) x 820mm(W) x 850mm(D)
Dimension of FASTCAL 3000	1880mm(H) x 900mm(W) x 1205mm(D)
Weight of Chiller	200 kg
Weight of FASTCAL 3000	755 Kg approx.

## FASTCAL 3000 Graphite Cavity Assembly

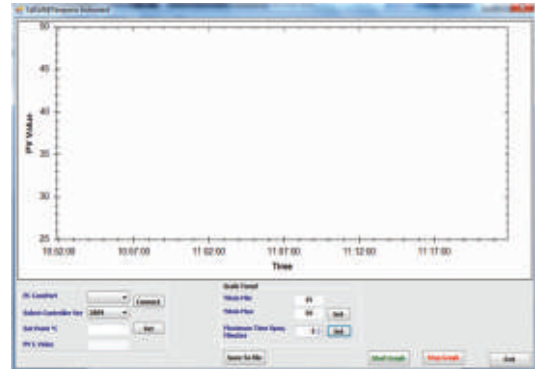
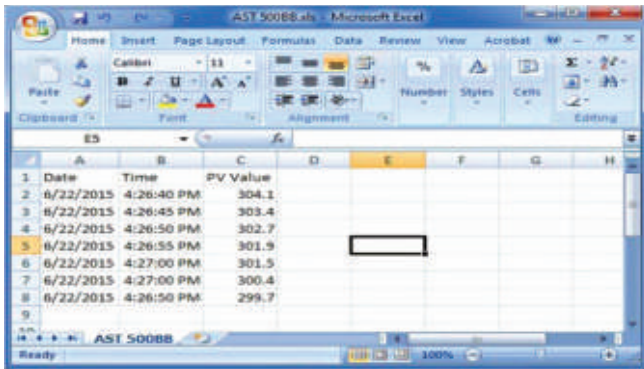


## Standard Accessories

- **Chiller Unit** : Chiller unit separately provided with FASTCAL 3000 for cooling purposes also use for safety interlock for high temperature protection
- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual



## SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

## Black Body Cavity Assembly Parts



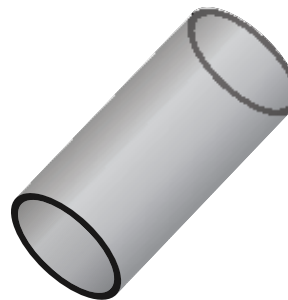
Graphite Cavity



Graphite Block Front



Graphite Block Back



Quartz tube



# CAL FAST BB



- High Accuracy
- Wide Temperature Range
- Highly Stable Temperature Calibrator for Industrial Field Uses

## Black Body Calibrators

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### Wide Temperature Range

CAL FAST 400 BB offer a wide temperature range from 40 °C to 400 °C

### Lightweight & portable

The CAL FAST 400 BB block is ideal for Industrial/ Laboratory field use. It only weighs about 2 kg, and it is small enough to carry around.

### Speed

The CAL FAST 400 BB extremely quick to reach various temperatures, i.e. it cools down to 150 °C in 30 minutes and heats up from room temperature to 400°C in 12 minutes. This saves time and increases productivity.

### Accuracy and performance

The CAL FAST 400 BB is an easily portable unit that also provides excellent calibration accuracy with stability  $\pm 0.1^{\circ}\text{C}$  (15 min)

### Accredited calibration

Each CAL FAST 400 BB is delivered with an accredited calibration certificate.

### Computer Interface

The communication port (RS-232) enables communication with selected CAL FAST 400 BB calibrators for automation calibration and documentation thus it made documentation easy.

## CAL FAST 400 BB

Portable, Light weight, Black Body Temperature Calibrator for Industrial/ Laboratory Field Use

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CAL FAST 400 BB offers medium temperature range from 50 to 400°C. It is a highly stable standard black body calibrator for calibrating non-contact type sensor like Pyrometer/IR Thermometers. The temperature of the calibrators is set and controlled by a self-tuned PID controller with automatic super fine adjustment. In the double display, the actual and set temperature values are shown. The BB cavity diameter is 50 mm with emissivity 0.97

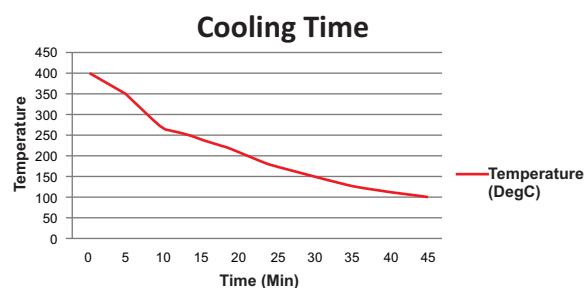
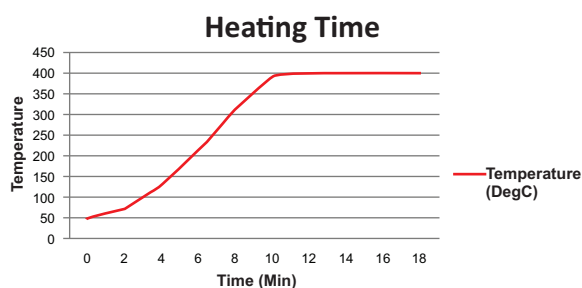
With the Tempsens make Compact Temperature Calibrator, you have chosen an extremely effective instrument which we hope will live up to all your expectations. This is a fast, timesaving, and reliable true industrial temperature calibrator designed for on-site use.

During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

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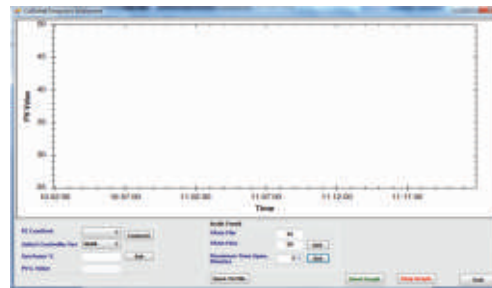
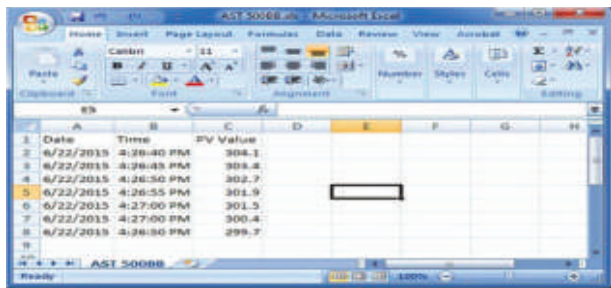
## SPECIFICATIONS

Temperature range	40°C to 400°C (Extended range up to 450°C)
Temperature Resolution	0.1°C
Stability (15 min)	±0.1°C
Time to Reach Max. Temperature	12 Mins
Controlling Sensor	N type Thermocouple
Method of Control	Digital self tuned PID Controller
BB Cavity Aperture	50 mm
BB Cavity Emissivity	0.97 (±0.02)
Computer Interface	RS - 232 (Optional)
Operating Temperature	20 to 45°C
Power Requirement	230 VAC, 500 W
Dimensions	120(H) x 200(W) x180(D) mm
Instrument Weight	2 Kg



## ACCESSORIES

### SOFTWARE (OPTIONAL)



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

- Master pyrometer



- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual



# Dual Black Body Temperature Calibrator



- High Stability
- High Uniformity
- Highly Stable Temperature Calibrator for Industrial Field Uses



## Extended Area Black Body

### Wide Temperature Range

LBBCH offer a temperature range from -20 °C to 100 °C for Block - I and 50°C to 500°C for Block - II

### Large emissive area

LBBCH has the large emitting surface area precise temperature control with good uniformity. It is available in the customize sizes.

### High Emissivity

The LBBCH Exceptionally high emissivity of  $0.99 \pm 0.01$ . Extremely quick to reach various temperatures, i.e. heats up room temp to maximum in 15 and 30 minutes. This saves time and increases productivity.

### Accuracy and performance

The LBBCH is high stable unit that also provides excellent calibration accuracy with stability  $\pm 0.01^\circ\text{C}$  for Block-I and  $\pm 0.1$  for Block-II

### Easy to use

LBBCH has inbuilt PID controller or can be provided separately that shows real time display of the surface and set temperature

### Computer Interface

The communication port (RS232/ USB) enables communication with selected LBBCH calibrators for automation calibration and documentation thus it made documentation easy. Remote control via Ethernet link, Rs232 or USB port.

## LBBCH DUAL

Highly Accurate Low Temperature Extended Dual Area Black Body For Industrial / Laboratory Field Use



Extended dual area black body is defined by the large emitting surface area precise temperature control with good uniformity. Tempsens make Blackbodies are state of the art, highly accurate and stable with different standard sizes and temperature ranges. The LBBCH Series Extended dual Area black bodies are low temperature infrared reference sources operating either in absolute or differential mode. This Black body series featuring the very high stability, they are particularly well adapted for the characterization and performance validation of a very wide range of IR Sensors, such as high resolution cameras for Thermography and long range thermal imagers. Essentially the black body emits a known amount of energy for an infinite number of wavelengths. This enables to draw the expected black body radiation curve for a given temperature. Temperature is accurately controlled by High accurate PID self tuning controller.

With the Tempsens make Compact Extended dual Area Black body Temperature Calibrator, you have chosen an extremely effective instrument which we hope will live up to all your expectations. This is a fast, timesaving, and reliable true industrial temperature calibrator designed for on-site use.

During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

## SPECIFICATIONS

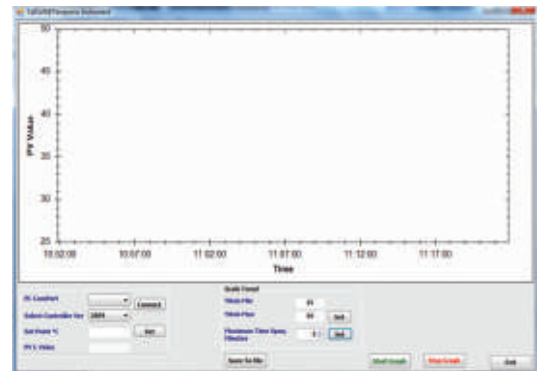
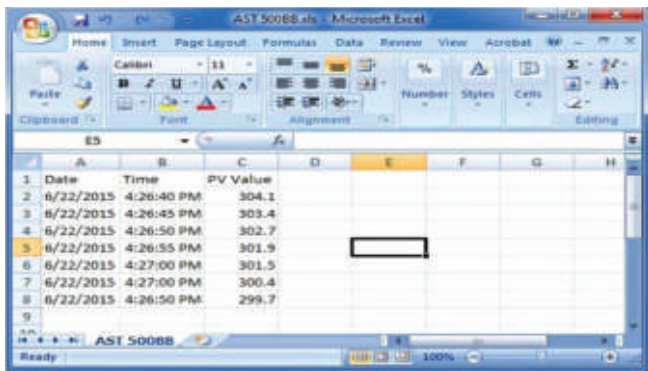
Parameter	Block - I	Block - II
Emissive area	50 x 50 mm	50x50 mm
Temperature range (Standard)	-20°C to 100°C	50°C to 500°C
Emissive area uniformity (1)	±0.20°C @ 50 °C	±0.4°C @ 100°C
Emissivity	0.99±0.01	0.99±0.01
Stability	±0.01°C	±0.1°C
Heating Time	15 Min	30 Min
Cooling Time	20 Min	60 Min (Max to 150°C)
Display resolution	0.01°C	0.1°C
Method of control	Digital self tuned PID Controller	
Head dimensions W x H x D (mm <sup>3</sup> )	450(W) X 300(H) X 350(D) mm	
Weight	20 kg	
Max. power consumption	1.5 K W	
Power supply	230 VAC, 1 ph. 50 Hz	
Operating temperature range (head)	5°C to +25°C	

\*1 at 80% of emissive area

\*Tested at (23°C ±2°C)

## ACCESSORIES

### SOFTWARE



- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.

### MASTER SENSOR (OPTIONAL)

- Master pyrometer
- NABL accredited calibration certificate - 3 points (Optional)
- Operational Manual



### CARRY CASE (OPTIONAL)



- Tempsens makes customized carry case is a rugged, safe perfectly designed to carry our new Extended dual Area Black Body calibrator and different accessories.