

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 ± 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.

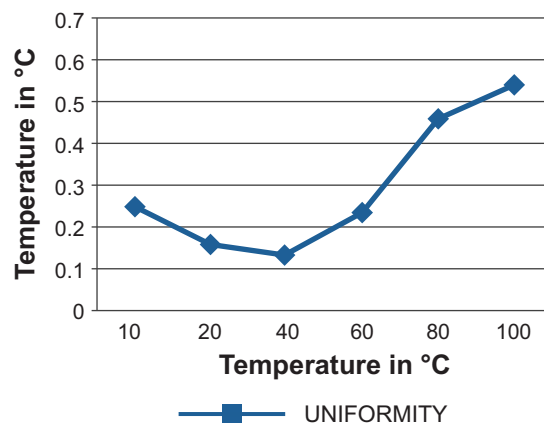
SPECIFICATIONS

Parameter	LBBCH (-40°C to 100°C)	
	LBBCH100	LBBCH200
Emissive area	100 x 100mm ²	200 x 200mm ²
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 ³)	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 ³)	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

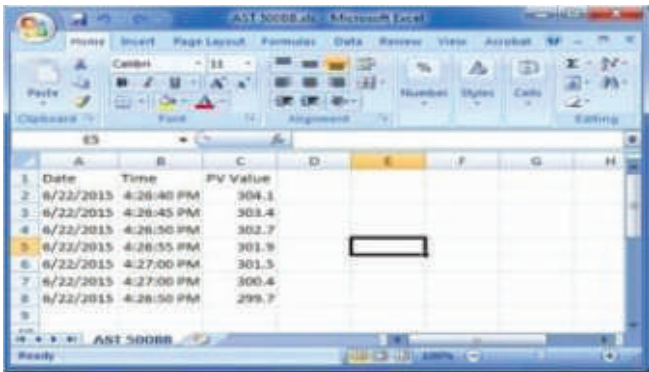
*At Ambient 23°C

GRAPHICAL REPRESENTATION



ACCESSORIES

SOFTWARE



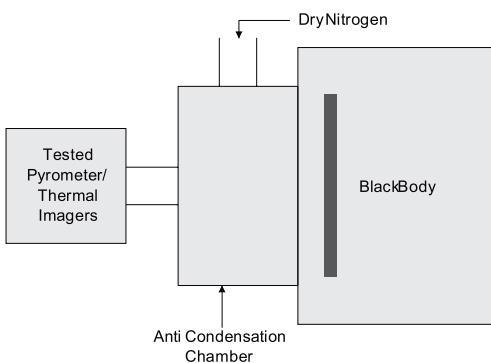
- CalSoft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- NABL accredited calibration certificate 3 point (optional)

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 ± 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. Tempensens 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 Tempensens 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.

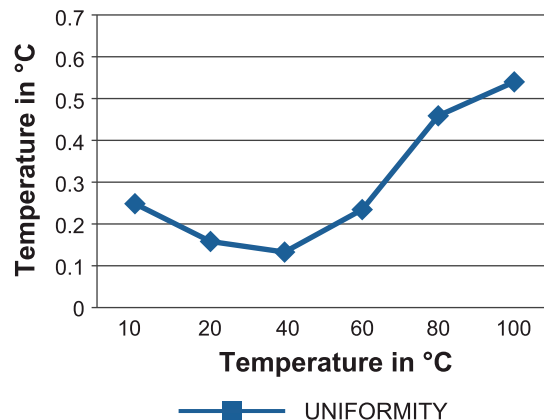
SPECIFICATION

Parameter	LBBCH SP
Emissive area	50 x 50 mm ²
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 ³)	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

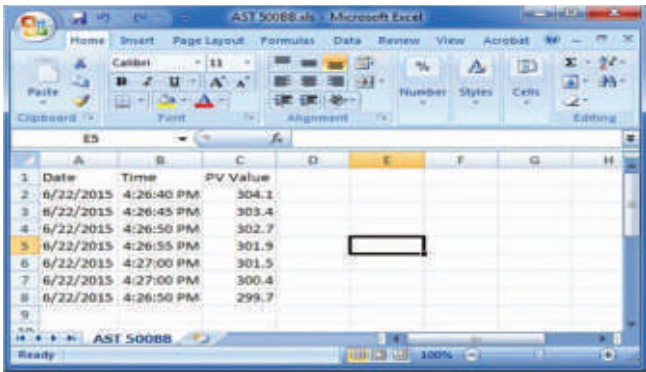
*1 at 80% of emissive area

GRAPHICAL REPRESENTATION

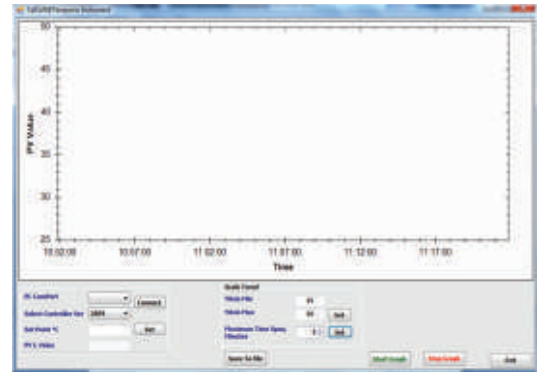


ACCESSORIES

SOFTWARE



1	Date	Time	PV Value
2	6/22/2015	4:26:40 PM	304.1
3	6/22/2015	4:26:45 PM	303.4
4	6/22/2015	4:26:50 PM	302.7
5	6/22/2015	4:26:55 PM	301.9
6	6/22/2015	4:27:00 PM	301.5
7	6/22/2015	4:27:00 PM	300.4
8	6/22/2015	4:26:50 PM	299.7



- 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 ± 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. Tempensens 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 Tempensens 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.

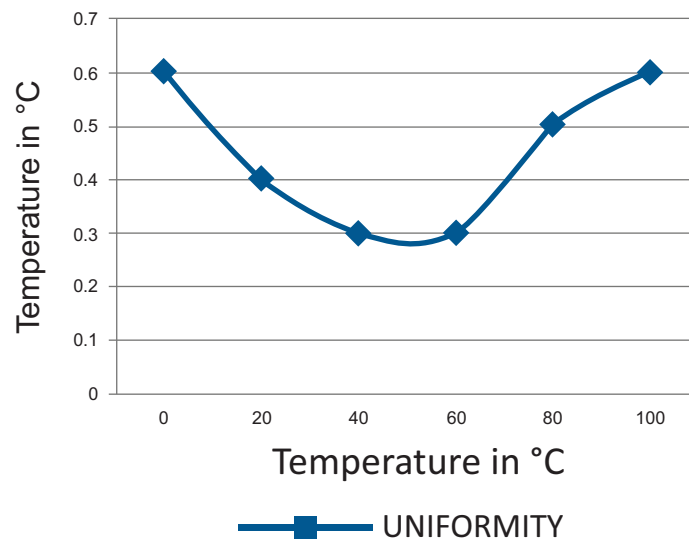
During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

SPECIFICATIONS

Parameter	LBB11CH	LBB22CH	LBB33CH
Emissive area	100 x 100 mm ²	200 x 200 mm ²	300 x 300 mm ²
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 ³)	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

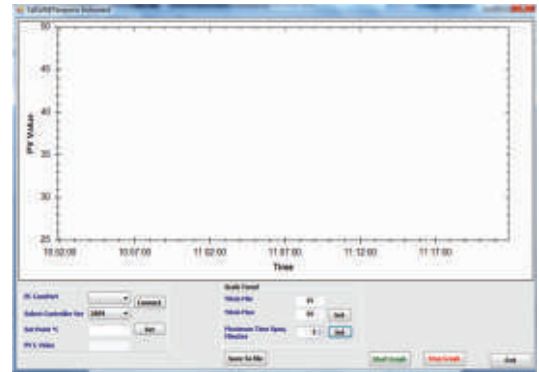
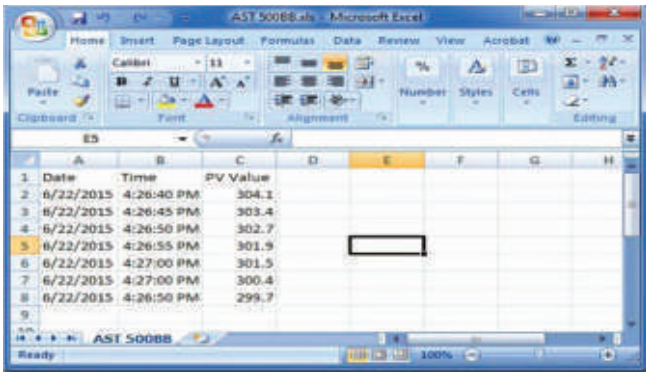
*1 at 80% of emissive area

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 ± 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.

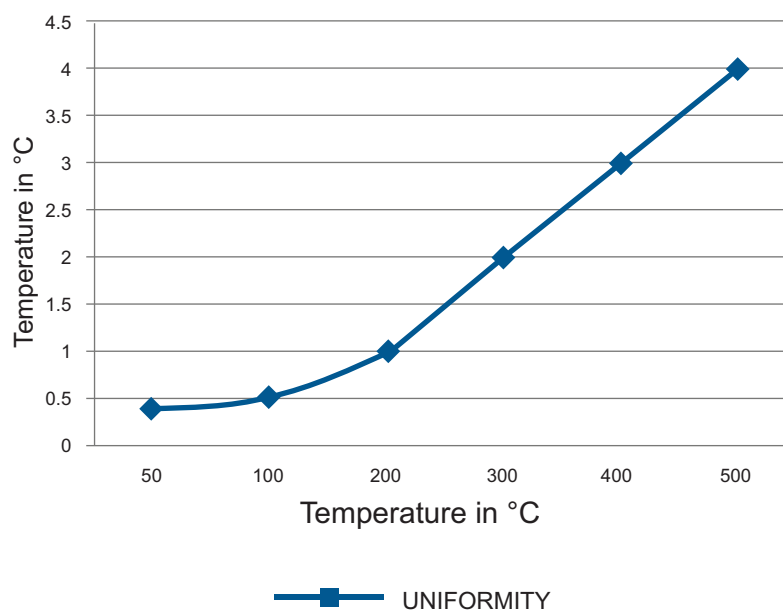
During the past several years, we have acquired extensive knowledge of industrial temperature calibration. This expertise is reflected in our products which are all designed for daily use in an industrial environment.

SPECIFICATIONS

Parameter	LBB11H	LBB22H	LBB33H
Emissive area	100x100 mm ²	200x200 mm ²	300x300 mm ²
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 _{max}	30 min	45 min	60 min
Head dimensions W x H x D (mm ³)	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

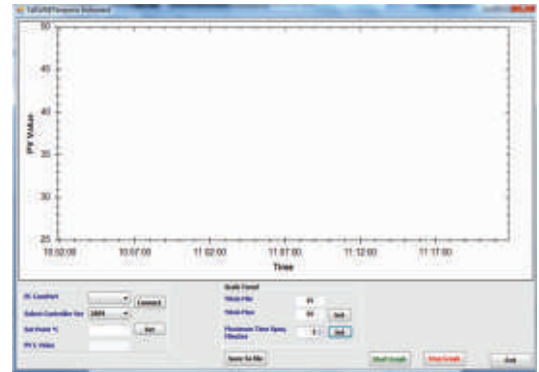
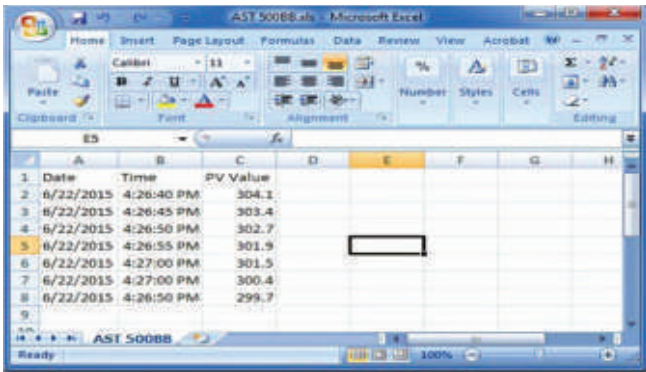
*1 at 80% of emissive area

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 ±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. Tempensens 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 Tempensens 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 ²	300 x 300 mm ²
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 ^{(1 & 2)*}	±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 ³)	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

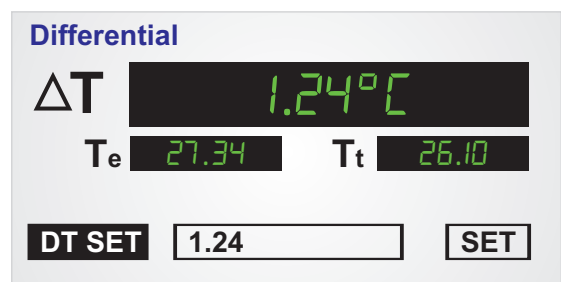
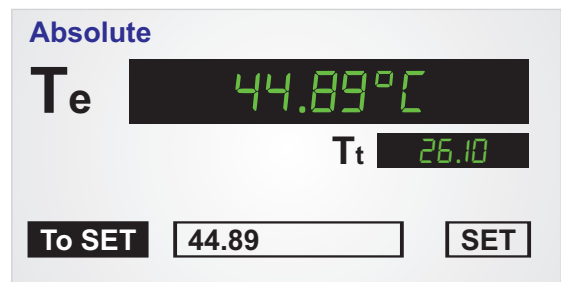
*2 Uniformity will decrease during nitrogen purging

USER INTERFACE

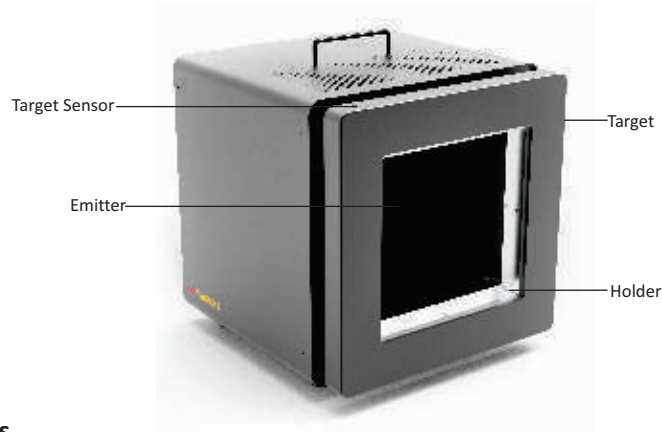
The Temperature Control window opens in either the Absolute or Differential working modes.

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.



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

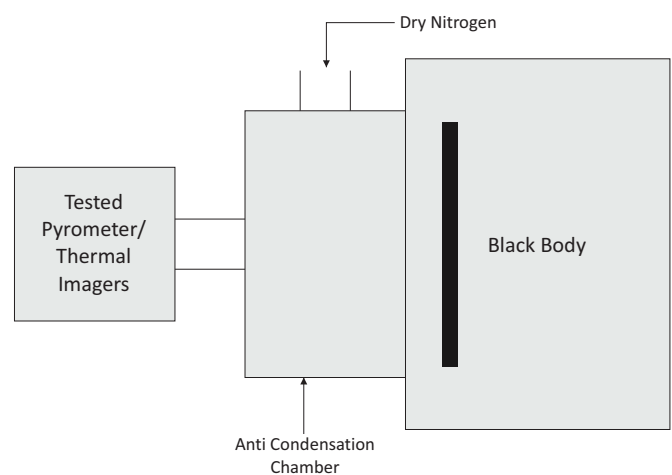
The Differential Mode BB consists of an emitter plate, which is thermoelectrically heated or cooled with respect to the target temperature (thus, the differential temperature between the Emitter and the target is controlled). The target plate is mounted in front of the emitter surface. Mounted in the 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.

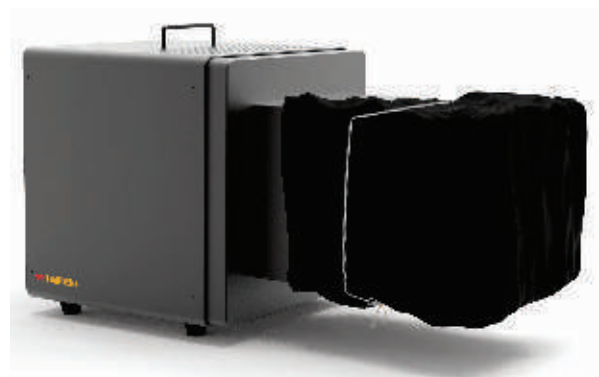
ACCESSORIES

Anti Condensation Chamber (Optional)

Along with LBBCH model blackbodies Tempens 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 of the chamber will be fit to black body emitter and another hole of the chamber fits to optics of tested pyrometer or thermal imagers .

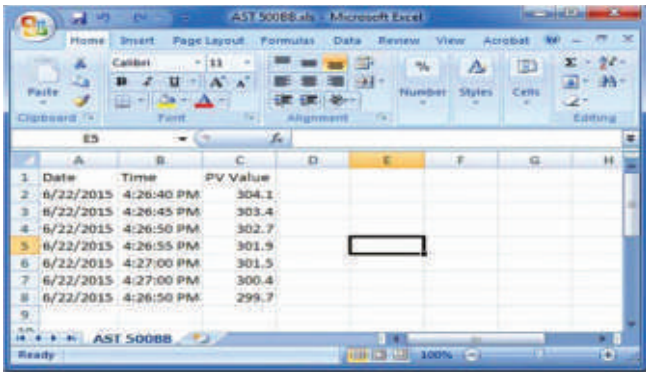


Size	150 (H) X 150 (W) X 200 (D)
Weight	3 Kg.

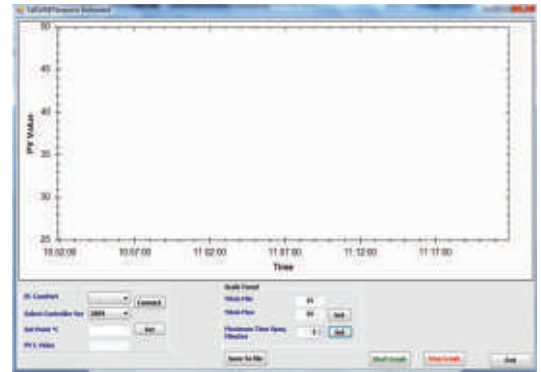


ACCESSORIES

SOFTWARE



	A	B	C	D	E	F	G	H
1	Date	Time	PV Value					
2	6/22/2015	4:26:40 PM	304.1					
3	6/22/2015	4:26:45 PM	303.4					
4	6/22/2015	4:26:50 PM	302.7					
5	6/22/2015	4:26:55 PM	301.9					
6	6/22/2015	4:27:00 PM	301.5					
7	6/22/2015	4:27:00 PM	300.4					
8	6/22/2015	4:26:50 PM	299.7					
9								



- 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.