

# BBS1500-40

## Blackbody Calibration Source

Large Aperture, Radiometric Temperature Source for Calibration of Pyrometers



Medium-high Temperature, High Emissivity/Uniformity Blackbody for Precision Calibration of IR Thermometers, Thermal Imaging Detectors and Cameras, Heat Flux Meters, Spectrophotometers and Radiometers up to 1500°C.

### FEATURES

- Wide/adjustable temperature range from 250 to 1500°C (482 to 2732°F) with 40 mm (1.57") aperture
- For precise calibration of pyrometers with spot sizes up to 24 mm
- Set point in 1° increments with a temperature stability of better than 0.5° over 30 min
- Fast heat up time - 1450°C in 40 minutes
- Cylindrical cavity for uniform temperature radiation
- Set point and actual temperature values are displayed simultaneously
- Auxiliary connections:
  - Interface for communication via PC with software
  - Pyrometer analog output for analog calibration
- Provides 24 V DC power to operate the Metis, Sirius or Diadem pyrometers
- Cooling fan for safe enclosure operating temperature
- Traceability to International Temperature Standard ITS 90 when using a Diadem transfer standard pyrometer

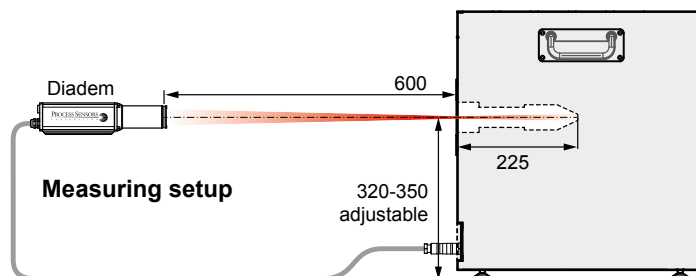
## Characteristics / Application

The BBS1500-40 is a highly stable radiation source which is ideally used for the calibration of short wavelength pyrometers between 250 and 1500°C.

The pyrometer to be tested is compared with a transfer standard pyrometer for traceability to the international temperature scale ITS 90. The calibration is achieved radiometrically in lieu of a thermometric method with the use of the ultra-high accuracy certified PSC transfer standard Diadem pyrometer.

Set point and actual temperature values are displayed simultaneously. The set point can be easily changed using the arrow keys.

The BBS1500-40's fast responding heat-up time reaches the operating temperature of 1450°C within 40 minutes of power-up. A precision temperature controller maintains the adjusted temperature value with a stability of  $\pm 0.5K$ .



## Technical Data BBS1500-40

Temperature range	250°C to 1500°C (482 to 2732°F)	Method of control	PID controller
Temperature uniformity	Spot size Ø 10 mm: $\pm 0.5^\circ C$ Spot size Ø 24 mm: $\pm 1.5^\circ C$	Display actual value / setpoint / heating / temp. resolution	7 segment LED, 13 mm, red / dot matrix 5 mm, red / pilot light / temperature resolution 1°C
Stability	$< \pm 0.5K$ over 30 min	Power supply	200–240 V AC, 50–60 Hz, max. 3 kVA
Display accuracy	$\pm 0.5\%$	Housing	Steel, powder coated
Heat up time	40 min. to reach 1450°C, additional 20 min. to reach specified stability	Device fuse	16 A slow blow fuse
Cavity	Silicon carbide	Housing dimension	534 x 427 x 495 mm (HxWxD)
Aperture	Ø 40 mm (1.57")	Weight	26 kg (57 lb.)
Depth	230 mm (up to front panel)	Ambient temperature	0 to 35°C (32 to 95°F) Storage temp. -20 to 50°C (-4 to 122°F)
Emissivity	0.993 $\pm 0.004$ at wavelength ranges between 500 and 3500 nm	Relative humidity	No condensing conditions
Heating elements	6 x Silicon carbide	CE label	According to EU directives for electromagnetic immunity

## Transfer Standard Pyrometer DIADEM

### Features:

- Display resolution 0.01°
- Accuracy only 0.15% of reading +1K



A transfer standard pyrometer (TSP) is a highly accurate and long-term stable pyrometer that is used for comparative measurements between the TS pyrometer and the pyrometer to be tested. Subsequently, the TSP temperature is transferred to the pyrometer to be tested.

The advantage of calibration with the BBS1500-40 and the Transfer Standard Pyrometer is that it produces a cost effective procedure with the highest possible calibration accuracy.

- The high temperature stability of the BBS1500-40 enables precision temperature detection with the TS pyrometer and the transfer to the test pyrometer.
- Diadem pyrometers are traceable to the international temperature scale ITS 90. They are calibrated with PTB-calibrated reference devices and adjusted. Additionally, they are transportable and easily verifiable as opposed to calibration sources.

### Recommended TSP models:

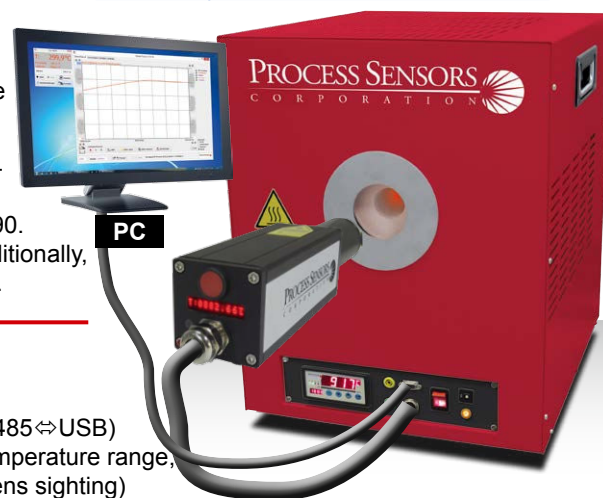
Model DIADEM	Spectral range	Temperature range
DS09	0.7–1.1 $\mu m$	600 to 1500°C (1112 to 2732°F)
DI16	1.45–1.8 $\mu m$	300 to 1500°C (572 to 2732°F)
Optics	Measuring distance	
OD09-0A	600 mm	

## Reference Numbers

BBS1500-40	Calibration source BBS1500-40 (incl. Software <i>SensorTools</i> and interface converter RS-485 $\leftrightarrow$ USB)
DIADEM DS09 / DI16	Precision Transfer Standard Pyrometer, to select with temperature range, optics and sighting system (laser targeting light or thru-lens sighting)
AL12-02	Pyrometer connection cable 2.5 m
WB (wiring box)	Ready-made connection kit with desktop power supply, connecting cables and interface converter

Process Sensors reserves the right to make changes in scope of technical progress or further developments.

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