

Medium temperature large blackbody calibration source with high emissivity for calibration independent of the wavelength. Temperature range: 200 ... 1150 °C (392 ... 2102 °F).

M300

- Superior accuracy within $\pm 0.25\%$ of reading $\pm 1\text{ }^{\circ}\text{C}$
- Large 51 mm (2") aperture diameter
- High effective emissivity 1.0 @ 0.7 ... 1.8 μm , 0.998 typical at other wavelengths
- Rugged housing designed for fixed installation in laboratory or test department
- Manufactured and tested to meet rigid quality control standards
- Furnished with certificate of calibration traceable to NIST
- RS232 (standard) or RS485 (option) serial communication output



Blackbody calibration sources are infrared radiators used for calibrating and verifying the output signals of infrared thermometers (pyrometers), thermal imaging systems, heat flux measurement systems, or spectrographic analysis systems. LumaSense supplies a unique selection of very precise calibration sources that are traceable to national standards.

The M300 is a high standard, precision blackbody calibration source designed with a unique uniformly heated spherical cavity that achieves a near ideal emissivity of 0.998 or better.

The M300 will accurately deliver any temperature between 200 °C to 1150 °C (392° to 2102 °F). A convenient micro-processor-based, digital PID controller holds the selected

temperature to within 1 °C, thus assuring high accuracy calibration.

LumaSense calibration sources have long been the gold standard to calibrate the instruments that keep your operations up and running. These blackbodies are superior because of the emissivity values, homogeneous emission areas, and a wide range of different sized apertures to adapt to the desired target area. In addition, fast heat-up times and high temperature stability are guaranteed. The quality of our calibration sources is guaranteed by tests, burn-in times, and radiometric calibrations. On most models, a certificate is provided to document the traceability to the international temperature scale ITS90 and NIST.

Typical Applications

- Infrared Temperature Sensors
- Infrared Thermal Imaging Systems
- Spectrographic Analyzers
- Spectral Radiometers
- Heat Flux Meters

Technical Data

Measurement Specifications

Temperature Range:	200 ... 1150 °C (392 ... 2102 °F)
Temperature Uncertainty:	± 0.25% of reading ±1 °C (when using Calibration Certificate correction factors)
Temperature Resolution:	0.1 °C
Stability ¹ :	± 0.5 °C per 8-hour period
Source Non-Uniformity:	± 0.1 % of reading ±1 °C
Heated Cavity Shape:	Spherical
Exit Port Diameter:	51 mm (2")
Emissivity:	1.0 effective @ 0.65 ... 1.8 µm, ~ 0.998 for others
Standard Calibration Method:	Radiometric (pyrometric)
Temperature Sensor:	Thermocouple
Warm-up Time:	Approximately 1 hour from ambient to 1000 °C
Slew Rate to 1 °C Stability:	~ 5° / min ambient to 200 °C ~ 12° / min 300 < T < 800 °C ~ 8° / min avg T > 800 °C
Slew Rate to 0.1 °C Stability:	~ 60 minutes between Δ100 °C setpoints

¹ Provided stable AC mains voltage and minimum air flow across the exit port or emitter plate.

Communications/Interface

Remote Set Point:	Via serial port
Method of Control:	Digital PID controller

Environmental Specifications

Operating Ambient Temp:	0 ... 44 °C (32 ... 110 °F)
Cooling:	Fan cooled, air inlet on rear panel
Operating Humidity:	< 90% RH non-condensing
Dimensions (H x W x D):	640 mm x 500 mm x 572 mm (25.2" x 19.7" x 22.5")
Weight:	80 kg (175 lbs.)
CE Certified:	Yes

Electrical

Power Requirements:	208 / 230 V AC ± 10% 50 / 60 Hz 11A Maximum
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Reference Numbers

18680-3 M300, 200 ... 1150 °C, 51 mm, RS232, 208 ... 240 V AC @ 50 & 60 Hz

Accessories

- 14002-1 Cold aperture wheel assembly, 6 apertures 25.4 ... 2.54 mm, for M300, M305, M330, M335, M390
- 14002 Cold aperture wheel assembly, 6 apertures 50 ... 1.56 mm, for M300, M305, M330, M335, M390
- 19140-485 Serial Communication Output RS485 (built-in ex works) for M300, M305, M315X, M335, M345X, M360, M360A, M390
- 3840810 IGA 12-TSP, 1570 nm, 200" 1020 °C, through-lens-sighting, laser target., focus. Optics 2
- 3840820 IGA 12-TSP, 1570 nm, 250" 1400 °C, through-lens-sighting, laser target., focus. Optics 2

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