MIKRON M300

Medium temperature large blackbody calibration source with high emissivity for calibration independent of the wavelength.

The Mikron® 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 to 1150°C (392 to 2102°F). A convenient microprocessor-based, digital PID controller holds the selected temperature to within 1°C, ensuring high accuracy calibration.

PRODUCT HIGHLIGHTS

- Superior accuracy within ±0.25% of reading ±1°C
- Large 51 mm (2") aperture diameter
- Rugged housing designed for fixed installation in a 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

TYPICAL APPLICATIONS

- Infrared temperature sensors
- Infrared thermal imaging systems
- Spectrographic analyzers
- Spectral radiometers
- Heat flux meters

AT A GLANCE

Temperature Range

200 to 1150°C (392 to 2102°F)

Measurement Uncertainty

±0.25% of reading ±1°C

Emissivity

1.0 effective @ 0.65 to 1.8 µm, ~0.998 for others

Heated Emitter Shape

Spherical

Aperture Diameter

51 mm (2")

Average Warm-Up Time

60 min from ambient (to 1000°C)

OVERVIEW

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. Advanced Energy supplies a unique selection of very precise calibration sources that are traceable to national standards. Quotations for custom designs and variations are available upon request.

Mikron 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.

TECHNICAL DATA

Measurement Specifications	
Temperature Range	200 to 1150°C (392 to 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 ε	1.0 effective @ 0.65 to 1.8 µm
	~0.998 for others
Standard Calibration Method	Radiometric (pyrometric)
Temperature Sensor	Thermocouple
Warm-up Time	60 minutes from ambient to 1000°C
Slew Rate to 1°C Stability	~5° per min ambient to 200°C
	~12° per min 300 < T < 800°C
	~8° per min avg T > 800°C
Slew Rate to 0.1°C Stability	~60 minutes between Δ 100°C setpoints

Communication and Electrical Specifications	
Remote Set Point	Via serial port
Method of Control	Digital self tuning PID controller
Power Requirements	208/230 VAC ±10% 50/60 Hz 11A Max

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

TECHNICAL DATA (CONTINUED)

Environmental Specifications	
Operating Ambient Temp	0 to 44°C (32 to 110°F)
Cooling	Fan cooled, air inlet on rear panel
Operating Humidity	90% RH max, 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

REFERENCE NUMBERS

PN	Description
18680-3	M300, 200 to 1150°C, 51 mm, RS232, 208 to 240 VAC @ 50 and 60 Hz

ACCESSORIES

PN	Description
14002-1	Cold aperture wheel assembly, 6 apertures 25.4 to 2.54 mm, for M300, M305, M330, M335, M390
14002	Cold aperture wheel assembly, 6 apertures 50 to 1.56 mm, for M300, M305, M330, M335, M390
19140-485	Optional: 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 targeting, focusable Optics 2
3840820	IGA 12-TSP, 1570 nm, 250” 1400°C, through-lens-sighting, laser targeting, focusable Optics 2

ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

AE's power solutions enable customer innovation in complex semiconductor and industrial thin film plasma manufacturing processes, demanding high and low voltage applications, and temperature-critical thermal processes.

With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

PRECISION | POWER | PERFORMANCE

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