

MIKRON M310-HT

Portable, compact low temperature blackbody calibration source with a large surface area. Ambient +5 to 450°C (+9 to 842°F).



The Mikron® M310-HT is a portable blackbody calibration source utilizing a digital indicating temperature controller that may be set to any temperature between ambient 5 to 450°C (9 to 842°F). A precision platinum RTD temperature sensor is embedded in the blackbody emitter, providing high accuracy and repeatability. The temperature controller uses the industry standard PID algorithms to control the emitter temperature to within 0.3°C of the set points. The blackbody emitter mechanism uses a resistive heating device that provides a long life, short stabilization times, and stable temperature control.

PRODUCT HIGHLIGHTS

- Excellent general purpose calibration
- High effective emissivity 1.00 @ 8 to 14 μm
- High accuracy, high resolution
- Excellent stability $\pm 0.3^\circ\text{C}$ per 8 hour period
- Manufactured and tested to meet rigid quality control standards
- Furnished with certificate of calibration traceable to NIST
- RS232 serial communication included

TYPICAL APPLICATIONS

- Infrared temperature sensors
- Infrared thermal imaging systems
- Spectrographic analyzers
- Radiometers
- Flux meters

AT A GLANCE

Temperature Range

Ambient +5 to 450°C (+9 to 842°F)

Measurement Uncertainty

0.25% of reading $\pm 1^\circ\text{C}$

Emissivity

1.00 effective emissivity @ 8 to 14 μm

Heated Emitter Shape

Flate plate

Aperture Diameter

76 mm (3.00 in)

Average Warm-Up Time

< 30 min from ambient (to 400°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	Ambient +5 to 450°C (+9 to 842°F)
Temperature Uncertainty ¹	0.25% of reading ±1°C
Display Accuracy vs. NIST Calibration	See supplied NIST calibration report
Temperature Resolution	0.1°C
Stability ²	0.3°C per 8-hour period
Source Non-Uniformity	Approximately ±1°C @ 250°C or ±2°C @ 400°C
Heated Cavity Shape	Flat plate
Exit Port Diameter	76 mm (3.00 in)
Emissivity ϵ	1.00 effective emissivity @ 8 to 14 μm
Standard Calibration Method	Radiometric at 8 to 14 μm
Temperature Sensor	Precision platinum RTD
Warm-up Time	< 30 minutes from ambient to 400°C
Slew Rate to 1°C Stability	Approximately 6 min for a + 50°C change
Slew Rate to 0.1°C Stability	Approximately 10 min for a +50°C change

Environmental Specifications	
Operating Ambient Temp	0 to 44°C (30 to 110°F)
Cooling	Fan cooled, air inlet on rear panel
Operating Humidity	90% RH max, non-condensing
Dimensions (H x W x D)	207.3 mm x 280.4 mm x 266 mm (8.2" x 11" x 10.5")
Weight	5.6 kg (12.4 lbs)
CE Certified	Yes

¹ Accuracy calibration performed radiometrically, the uncertainty of emissivity and transfer standard are already included.

² Provided stable AC mains voltage and minimum air flow across the exit port or emitter plate.

TECHNICAL DATA (CONTINUED)

Communication and Electrical Specifications	
Remote Set Point	Via RS232
Method of Control	Digital PID controller
Power Requirements	115 VAC ±10% 50 and 60 Hz 920 VA fused max, 600 W heater (230 VAC Optional)

REFERENCE NUMBERS

PN	Description
14760-1-1-1-2-0-2	M310-HT, Ambient 5 to 450°C, 76 mm, 115 VAC @ 50 and 60 Hz, RS232, North American cable
14760-2-2-1-2-1-2	M310-HT, Ambient 5 to 450°C, 76 mm, 230 VAC @ 50 and 60 Hz, RS232, German cable



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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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