MIKRON Calibration Sources

Portable, sub-zero temperature blackbody calibration source. Compact, high resolution, and high temperature stability for low temperatures. (-20 ... 150 °C)

**M340**

- Compact, lightweight
- Exceptional accuracy
- High stability ± 0.1 °C
- High emissivity
- Very fast slew rates
- 2” aperture diameter
- High uniformity
- Easy to operate
- Manufactured and tested to meet rigid quality control standards
- Furnished with certificate of calibration traceable to NIST

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 M340 is a portable blackbody calibration source covering the range from sub-zero to 150 °C with 0.1° resolution. The thermoelectric heating/cooling mechanism is utilized to achieve a compact and easy-to-use blackbody source. The M340 has unusually high temperature stability and a stabilization time of only 10 minutes. Source temperature is closely controlled by a self-tuning PID controller which displays temperature on a digital readout.

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
- Radiometers
- Flux Meters
Technical Data

### Measurement Specifications

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| Temperature Uncertainty ³             | Standard Radiometric calibration: + 1 °C @ 8 … 14 µm 
Optional Thermometric calibration: ± 0.1 °C (only on 14750-4C & 14750-5C) |
| Display Accuracy vs. NIST Calibration| See supplied NIST calibration report                                   |
| Temperature Resolution                | 0.1 °C                                                                 |
| Stability ²                          | ± 0.1 °C per 8 hour period                                              |
| Source Non-Uniformity ³               | ± 0.2 °C less than 100 °C, ± 1.3 °C greater than 100 °C                |
| Heated Emitter Shape                  | Flat Plate                                                            |
| Exit Port Diameter                   | 2.00” (51 mm)                                                         |
| Emissivity                           | Radiometric calibration: 1.0 @ 8 … 14 µm 
Thermometric calibration: ~ 0.98                                           |
| Standard Calibration Method          | Radiometric (Pyrometric)                                               |
| Optional Calibration Method          | Thermometric (only on 14750-4C & 14750-5C)                             |
| Temperature Sensor                   | Precision platinum RTD                                                 |
| Warm-up Time ⁴                       | ~ 6 minutes from ambient to -15 °C or 100 °C                           |
| Slew Rate to 1 °C Stability ⁴        | ~ 40°/min from ambient … 150 °C 
~ 20°/min from 20 … 10 °C 
~ 3°/min from -10 … -20 °C                                                   |
| Slew Rate to 0.1 °C Stability        | Approximately 2 minutes between Δ 10 °C setpoints (slightly longer T < -10 °C) |

### Communications/Interface

- Remote Set Point: Via RS232
- Method of Control: Digital Self tuning PID Controller

### Environmental Specifications

- Operating Ambient Temp ²: 5 °C ... 40 °C
- Cooling: Peltier Modules for heating and cooling
- Operating Humidity: 90% RH max, non-condensing in heating mode. Environment dew point must be less than setpoint when in cooling mode. (N, purge connection available)
- Dimensions (H x W x D): 167 mm x 280 mm x 280 mm (6.5” x 11.0” x 11.0”)
- Method of Mounting: Bench/Table
- Weight: 7.1 kg (15.6 lbs)
- CE Certified: Yes

### Electrical

- Power Requirements: 115 V AC 50 & 60 Hz, 300 W maximum (optional 100 or 230 V AC)

¹ Accuracy is defined for ambient temperature of 18 °C … 23 °C.
² Provided stable AC mains voltage and minimum air flow across the exit port or emitter plate.
³ Emitter uniformity is defined for 1.6” (40 mm) diameter of central area.
⁴ Typical. Can vary from unit to unit.
⁵ To achieve low temperature setpoint of -20 °C, ambient must be ≤ 25 °C (77 °F).

### Reference Numbers

- 14750-4  M340, -20 ... 150 °C, 51 mm, 115 V AC @ 50 & 60 Hz
- 14750-5  M340, -20 ... 150 °C, 51 mm, 220 … 240 V AC @ 50 & 60 Hz
- 14750-4J M340, -20 ... 150 °C, 51 mm, 100 V AC @ 50 & 60 Hz, (Japan)
- 14750-4C M340, -20 ... 150 °C, 51 mm, 115 V AC @ 50 & 60 Hz, with calibration port
- 14750-5C M340, -20 ... 150 °C, 51 mm, 220 … 240 V AC @ 50 & 60 Hz, with calibration port