HOBO® MX2309 Temp/RH/Solar Data Logger Spec Sheet

The HOBO MX2309 Temp/RH/Solar Data Logger measures temperature, relative humidity (RH), and global solar radiation (GSR) in a single device. This Bluetooth®-enabled logger is designed for wireless communication with a phone, tablet, or computer. Using the HOBOconnect® app, you can easily configure the logger then download logged data to view or export for further analysis. The logger can calculate minimum, maximum, average, and standard deviation statistics and be configured to indicate alarms at thresholds you specify. The logger also supports burst logging, in which data is logged at a faster interval when sensor readings are above or below certain limits. It offers a wide range of solutions for monitoring temperature, RH, and GSR in numerous applications.

HOBO MX2309 Data Logger

Models:

- MX2309, temp/RH/solar

Included Items:

- Screws
- Cable ties

Required Items:

- HOBOconnect app
- Mobile device with Bluetooth and iOS, iPadOS®, or Android™, or a Windows computer with a native BLE adapter or supported BLE dongle

Accessories:

- Solar radiation shield (RS1)
- Mounting bracket for solar radiation shield (MX2300-RS-BRACKET)
- Mounting and leveling fixture for sensor (2003S)
- Replacement battery (HRB-2/3AA)

Specifications

Temperature Sensor	
Range	-40 to 65 °C (-40 to 149 °F)
Accuracy	±0.2 °C (typical) within -40 to 65 °C
Resolution	0.008°C (.014 °F)
Drift	<0.01°C (0.018°F) per year
Response Time* Without Solar Radiation Shield	17 minutes in air moving 1 m/sec
Response Time* With Solar Radiation Shield	24 minutes in air moving 1 m/sec
Relative Humidity (RH) Sensor**	
Range	0 to 100% RH, -40° to 65 °C (-40° to 149 °F); exposure to conditions below -20°C (-4°F) or above 95% RH may temporarily increase the maximum RH sensor error by an additional 1%
Accuracy	±2.5% from 10% to 90% (typical) to a maximum of ±3.5% including hysteresis at 25°C (77°F); below 10% RH and above 90% RH ±5% typical
Resolution	0.01% RH
Drift	<1% per year typical
Response Time* Without Solar Radiation Shield	30 seconds in air moving 1 m/sec
Response Time* With Solar Radiation Shield	40 seconds in air moving 1 m/sec
Global Solar Radiation (GSR) Sensor	
Range	0 to 1280 W/m² (full sunlight)
Accuracy	±3% typical, ± 5% maximum (LI-200R Absolute Calibration)***
Offset	± 0.5 W/m²
Resolution	0.05 W/ m²
Spectral Range	400–1100 nm
Linearity	Maximum deviation of 1%
Stability	<= 2% change over one year
Temperature Dependence	±0.15% per ˚C maximum
Cosine Correction	Cosine corrected up to 82˚ angle of incidence
Azimuth	<±1% error over 360˚ at 45˚ elevation
Tilt	No error induced from orientation
Detector	High stability silicon photovoltaic detector (blue enhanced)
Sensor Housing	Weatherproof anodized aluminum case with acrylic diffuser and stainless steel hardware. O-ring seal on the sensor base.

Sensor Size	2.36 cm diameter x 3.63 cm (0.95” x 1.43”)
Cable Length	1.8 m
Calculated Metrics	Accumulated solar radiation in MJ/m², daily light integral (DLI) of solar radiation in MJ/m²/day, vapor pressure deficit (VPD) in kPa, and dew point
Logger	
Operating Range	-40 to 65 °C (-40 to 149 °F)
Radio Power	0.4mW (-4 dBm)
Transmission Range	Approximately 30.5 m (100 ft) line-of-sight
Wireless Data Standard	Bluetooth Low Energy (Bluetooth Smart)
Logging Rate	1 second to 18 hours
Logging Modes	Fixed interval (normal, statistics) or burst
Memory Modes	Wrap when full or stop when full
Start Modes	Immediate, push button, date & time, or next interval
Stop Modes	When memory is full, push button, date & time, or after a set logging period
Time Accuracy	±1 minute per month 0° to 50°C (32° to 122°F)
Battery Type	2/3 AA 3.6 Volt lithium, user replaceable
Battery Life	2 years, typical with logging interval of 1 minute and Bluetooth Always On enabled; 5 years, typical with logging interval of 1 minute and Bluetooth Always On disabled. Faster logging intervals and statistics sampling intervals, burst logging, remaining connected with the app, excessive downloads, and paging may impact battery life.
Memory	195,000 measurements, maximum
Full Memory Download Time	Approximately 4-5 minutes; may take longer the further the device is from the logger
Dimensions	Logger housing: 10.8 x 5.08 x 2.24 cm (4.25 x 2.0 x 0.88 in.) LI-190R: 2.36 cm diameter × 3.63 cm (0.93 × 1.43 in.)
Weight	Logger: 149 g (5.26 oz)
Materials	Acetal, silicone gasket, stainless steel screws
Environmental Rating	NEMA 6 and IP67
CE	The CE Marking identifies this product as complying with all relevant directives in the European Union (EU).
UKCA	The UKCA marking identifies this product as complying with all relevant directives in the UK Declaration of Conformity.
FC	See last page.

* Typical, to 90% of change

** Per RH sensor manufacturer data sheet

*** Calibrated against an Eppley Precision Spectral Pyranometer (PSP) under natural daylight conditions. Absolute uncertainty under these conditions is ± 3% typical; ± 5% maximum.