MX2309

HOBO MX2309 Temp/RH/Solar Data Logger

Measures Temperature, RH & Solar Radiation with LI-COR 200R Pyranometer

Research-grade, multiparameter microclimate monitoring solution with effortless Bluetooth data offload that continuously measures global solar radiation, temperature, and humidity. Ideal for agricultural, environmental research, ecology, and energy applications.

Important Information
Requires a compatible mobile device or Windows computer and the HOBOconnect app. System requirements for the app can be found at bottom of the HOBOconnect software page.Get cloud storage and access to the powerful tools of LI-COR Cloud® IoT software! (formerly HOBOlink) Add an MX Data Plan!

Compatible with
HOBOconnect® Monitoring App

Supported Measurements

PAR, Relative Humidity, Temperature

Features

Wireless Bluetooth Data Offload Fast, easy logger setup and download via phone or tablet (up to ~100 ft range) Research-grade Solar Radiation Measurements Integrated LI-COR 200R sensor measures total solar irradiance in the 400–1100 nm range with ±3% typical calibration uncertainty Integrated Temp & RH Monitoring Logged temperature and humidity alongside solar radiation for a complete view of environmental conditions Rugged, Weatherproof Design Durable IP67/NEMA 6 housing stands up to humid, wet, and dusty environments found in greenhouses, growth chambers, or outdoor field sites Long Battery Life & Memory User-replaceable battery lasts up to ~2+ years and ample data storage supports extended deployments Alarms and Alerts See out-of-range conditions with logger's LED readout, and configure threshold alerts using HOBOconnect for proactive monitoring Easy Deployment Users can deploy the logger in minutes, configure logging intervals via the HOBOconnect app, and wirelessly retrieve data (without a laptop) in the field!

HOBO MX2309 Temp/RH/Solar Data Logger (MX2309) 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

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

Global Solar Radiation 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% up to 3,000 W m-2
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 (095” x 1.43”)
Cable Length	1.8 m

Calculated Metrics

Accumulated Solar Radiation in MJ/m², Daily Light Integral (DLI) of Solar in MJ/m²/day, Vapor Pressure Deficit (VPD) in kPa, and Dew Point

Response Time (typical, to 90% of charge)

Temperature	Without Solar Radiation Shield: 17 minutes in air moving 1 m/sec With RS1 Solar Radiation Shield: 24 minutes in air moving 1 m/sec
Relative Humidity (RH)	Without Solar Radiation Shield: 30 seconds in air moving 1 m/sec With RS1 Solar Radiation Shield: 40 seconds in air moving 1 m/sec

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 c
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

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