Scientech

Temp/RH/Solar Data Logger

MX2309

The MX2309 pairs research-grade sensing with wireless convenience, integrating the renowned LI-COR LI-200R pyranometer that delivers solar radiation measurements with scientific-grade accuracy (calibration uncertainty of ±3% typical).

This all-in-one device captures a comprehensive climate picture, combining an external LI-200R pyranometer (measuring total solar irradiance in the 400–1100 nm range) and built-in temperature and relative humidity sensors. This enables the calculation of critical metrics such as Accumulated Solar Radiation (MJ/ m²), Daily Light Integral (DLI of Solar, MJ/m²/day), Vapor Pressure Deficit (VPD, kPa), and Dew Point. Providing laboratory-quality measurements of solar climate conditions in an affordable, mobile logger, the rugged, battery-powered MX2309 is easily deployed and expands monitoring capabilities to an even broader range of environmental and energy applications.

Users can mount the sensor in the field, and setup and data retrieval are seamlessly simple—no cables or additional download devices needed using the free HOBOconnect app on your phone or tablet. Effortlessly configure the logger and download data via Bluetooth (up to a 100 ft range), which allows you to deploy in and download data from hard-to-reach spots.

Expand your remote monitoring by adding an MX Data Plan, which allows you to upload data to LI-COR Cloud remote software for further analysis, sharing, and more.

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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!

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Technical 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
		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

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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

Subject to Change

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