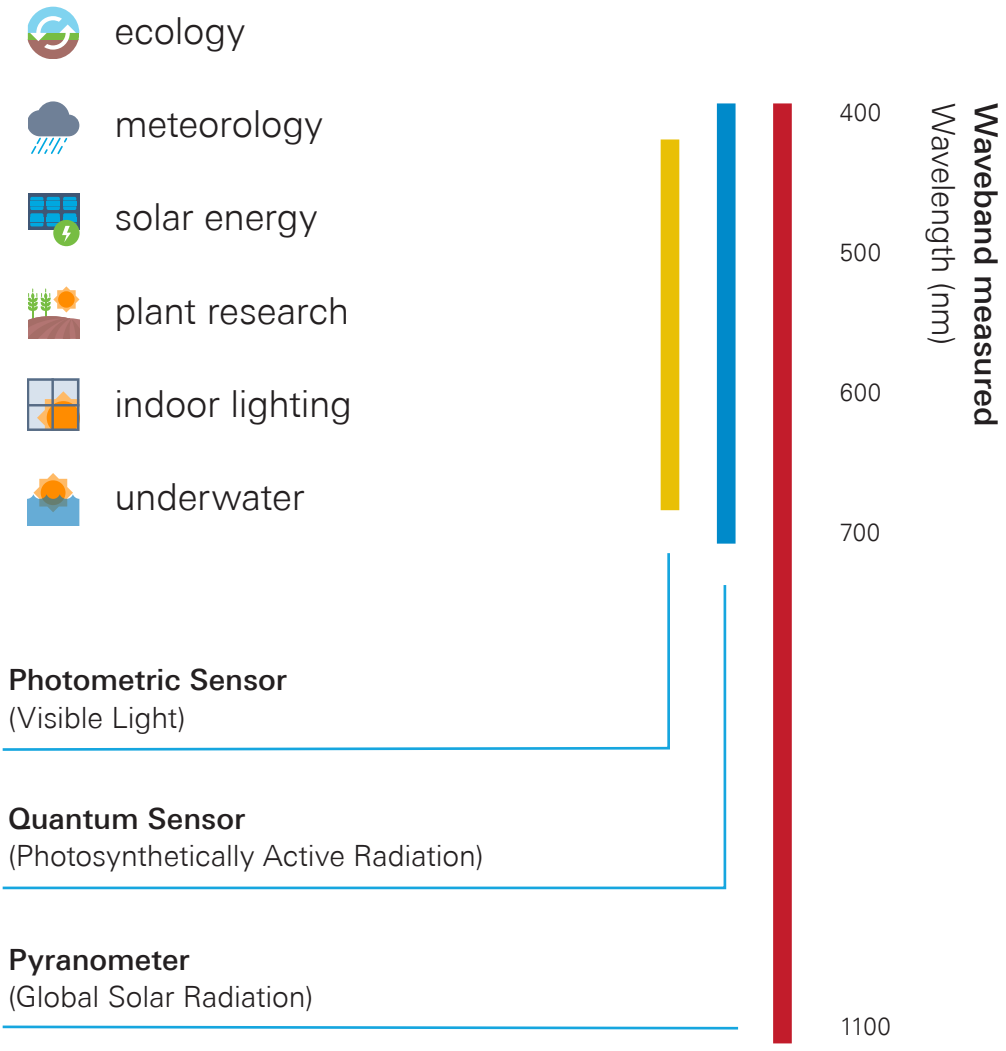
Light Measurement

The Standard for over 45 Years

Introduction

LI-COR radiation sensors measure the flux of radiant energy—the energy that drives plant growth, warms the earth, and lights our world. The properties of radiant flux depend on the wavelength of the radiation. Pyranometers are sensitive to the broadest waveband. Photometric sensors measure visible radiation (light). Quantum sensors measure Photosynthetically Active Radiation (PAR)—the radiant energy used in photosynthesis. These three sensor types cover a wide range of applications:



The Sensors

LI-COR sensors are weather resistant, low maintenance, and cosine corrected. From the shape of the crown to the photodiodes and optical filter glass, every aspect is the result of scientific inquiry.

The sensor design features a large drain to shed water, and a more robust housing to help prevent water ingress, increasing the lifespan of the sensors and reducing measurement drift. A detachable sensor head allows for replacement and factory recalibration without removing the cable from the mounting structure.

LI-200R Pyranometer

The LI-200R Pyranometer is meant to be used outdoors under unobstructed natural daylight conditions. It measures global solar radiation—the combination of direct and diffuse solar radiation—in the 400 to 1100 nm range. Measurement units are in watts per square meter (W m^{-2}).

Ideal for agricultural, meteorological, solar energy, and environmental research, the LI-200R is available with a variety of cable lengths and output signals for compatibility with most data loggers.

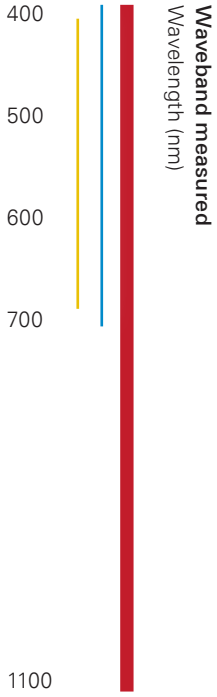
Why choose the LI-200R?

- Weather resistant and durable in long-term outdoor deployments
- Measures global solar radiation under unobstructed natural daylight conditions
- Uniform sensitivity up to 82° incident angle
- Detachable sensor simplifies installation and removal, making it ideal for platforms with complex cabling

How does it work?

The LI-200R measures global solar radiation with an unfiltered silicon photodiode. Its measurements correspond closely to first-class thermopiles when used outdoors under unobstructed natural daylight conditions.

The crown of the sensor rapidly sheds water, and also physically blocks light from outside the hemisphere of sensitivity, providing a precise cosine response.



LI-200R Specifications

Absolute Calibration: Calibrated against an Eppley Precision Spectral Pyranometer (PSP) under natural daylight conditions. Calibration uncertainty under these conditions is estimated as ± 3% typical, within ± 60° angle of incidence.*

Sensitivity: Typically 75 µA per 1,000 W m^{-2}

Linearity: Maximum deviation of 1% up to 3,000 W m^{-2}

Stability: < ± 2% change over a 1 year period

Response Time: Less than 1 µs (2 m cable terminated into a 147 Ohm load)

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

Operating Temperature Range: –40 °C to 65 °C

Relative Humidity Range: 0% to 100% RH, Non-Condensing

Detector: High stability silicon photovoltaic detector (blue enhanced)

Sensor Housing: Weatherproof anodized aluminum body with acrylic diffuser and stainless steel hardware; O-ring seal on the sensor base

Size: 2.36 cm diameter x 3.63 cm (0.93" x 1.43")

Weight: 24 g head; 60 g base and cable (2 m) with screws

Cable Length: 2 m, 5 m, 15 m, 50 m (6.5', 16.4', 49.2', 164')

Specifications subject to change without notice.

*Preliminary specification

LI-COR Biosciences

4647 Superior Street
Lincoln, Nebraska 68504

Phone: +1-402-467-3576
Toll free: 800-447-3576

envsales@licor.com
envsupport@licor.com
www.licor.com/env

LI-COR GmbH, Germany

Siemensstraße 25A
61352 Bad Homburg
Germany

Phone: +49 (0) 6172 17 17 771

envsales-gmbh@licor.com
envsupport-eu@licor.com

LI-COR Ltd., United Kingdom

St.John's Innovation Centre
Cowley Road
Cambridge
CB4 0WS
United Kingdom

Phone: +44 (0) 1223 422102

envsales-UK@licor.com
envsupport-eu@licor.com

ISO 9001:2015 certified

For patent information, visit www.licor.com/patents.

The LI-COR board of directors would like to take this opportunity to return thanks to God for His merciful providence in allowing LI-COR to develop and commercialize products, through the collective effort of dedicated employees, that enable the examination of the wonders of His works.

"Trust in the LORD with all your heart and do not lean on your own understanding. In all your ways acknowledge Him, and He will make your paths straight."

– Proverbs 3:5,6

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