

Solar Radiation Sensors

LI-COR's LI190SB Quantum Sensor & LI200X Silicon Pyranometer

LI190SB and LI200X measure solar radiation with a silicon photovoltaic detector mounted in a cosine-corrected head. A shunt resistor in the sensor's cable converts the signal from microAmps to millivolts, allowing the LI190SB and LI200X to be measured directly by a Campbell Scientific datalogger. Please note that the LI190SB and LI200X are not compatible with our CR200-series dataloggers.

LI190SB Quantum Sensor

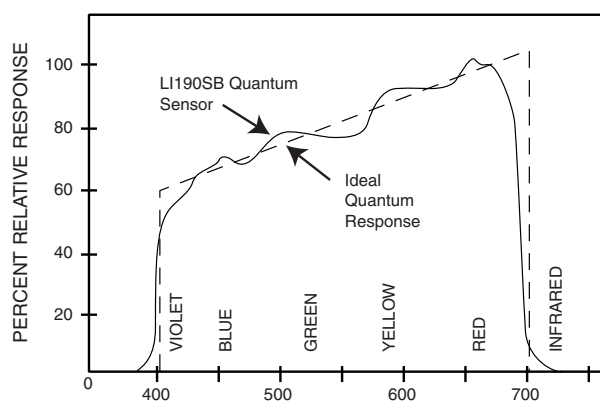
LI190SB accurately measures Photosynthetic Photon Flux Density (PPFD) in both natural and artificial light. PPFD is the number of photons in the 400 to 700 nm waveband incident per unit time on a unit surface. Because PPFD describes photosynthetic activity, the LI190SB is ideal for growth chambers and greenhouses.



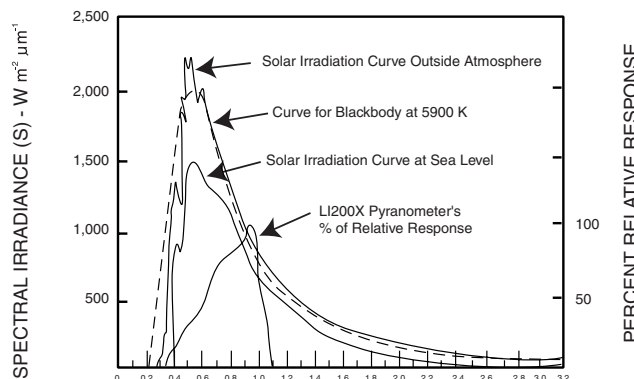
LI190SB Quantum Sensor. The LI200X has a similar appearance and identical wiring.

LI200X Silicon Pyranometer

The LI200X Silicon Pyranometer is calibrated against an Eppley Precision Spectral Pyranometer (PSP) to accurately measure sun plus sky radiation. The LI200X is used extensively in solar, agricultural, meteorological, and hydrological applications. The LI200X should not be used under vegetation or artificial lights because it is calibrated for the daylight spectrum (400 to 1100 nm).



LI190SB Spectral Response



LI200X Spectral Response

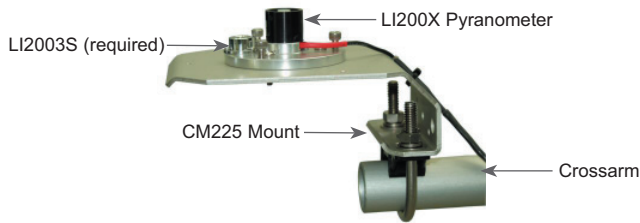


CAMPBELL SCIENTIFIC, INC.

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Sensor Mounts

To ensure accurate measurements, the sensor should be leveled using a LI2003S leveling fixture which incorporates a bubble level and three adjusting screws. The LI2003S leveling fixture mounts to a tripod or tower using the CM225 mount. For most applications, Campbell Scientific recommends attaching the CM225 to a CM202, CM204, or CM206 crossarm. The CM225 can also be attached to a tripod or tower mast.



To attach the CM225 to a CM202, CM204, or CM206 crossarm, place the u-bolt in the holes on the bottom of the bracket (shown).
If the CM225 is attached to a mast, place the u-bolt in the holes in the side of the bracket.

Ordering Information

- LI190SB-L Quantum Sensor with user specified lead length. Enter the lead length after the L. For example, LI190SB-L11, orders an 11' lead length.
- LI200X-L Silicon Pyranometer with user specified lead length. Enter the lead length after the L. For example, LI200X-L11, orders an 11' lead length.
- LI2003S Base and leveling fixture required to level the sensor.
- CM225 Mount for attaching to the LI2003S and sensor to a tripod, tower, or vertical pipe.

Common Specifications

Stability: < $\pm 2\%$ change over a 1 year period

Response Time: 10 μ s

Temperature Dependence: 0.15% per $^{\circ}$ C maximum

Cosine Correction: Cosine corrected up to 80° angle of incidence

Operating Temperature: -40° to $+65^{\circ}$ C

Relative Humidity: 0 to 100%

Detector: High stability silicon photovoltaic detector (blue enhanced)

Sensor Housing: Weatherproof anodized aluminum case with acrylic diffuser and stainless steel hardware

Size: 0.94" dia x 1.00" H (2.38 x 2.54 cm)

Weight: 1 oz. (28 g)

LI190SB Specifications

Calibration: $\pm 5\%$ traceable to the U.S. National Institute of Standards Technology (NIST)

Sensitivity: Typically 5 μ A per 1000 μ moles $s^{-1} m^{-2}$

Linearity: Maximum deviation of 1% up to 10,000 μ moles $s^{-1} m^{-2}$

Shunt Resistor: 604 Ω

Light Spectrum Waveband: 400 to 700 nm

LI200X Specifications

Accuracy: Absolute error in natural daylight is $\pm 5\%$ maximum; $\pm 3\%$ typical

Sensitivity: 0.2 kW $m^{-2} mV^{-1}$

Linearity: Maximum deviation of 1% up to 3000 W m^{-2}

Shunt Resistor: Adjustable, 40.2 to 90.2 Ω , factory set to give the above sensitivity

Light Spectrum Waveband: 400 to 1100 nm



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Printed May 2006