

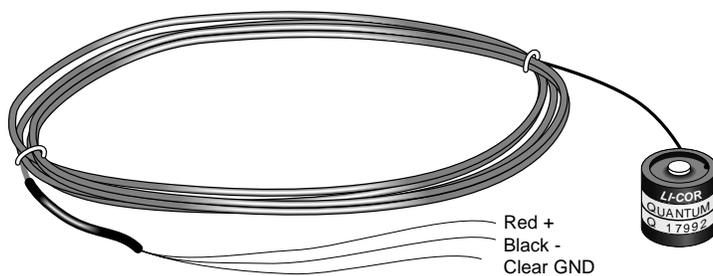
# Solar Radiation Sensors

## 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  $\mu\text{A}$  to  $\text{mV}$  allowing the LI190SB and LI200X to be measured directly by a Campbell Scientific datalogger (CR510, CR10(X), 21X, CR23X, CR5000, and CR7).

### LI190SB Quantum Sensor

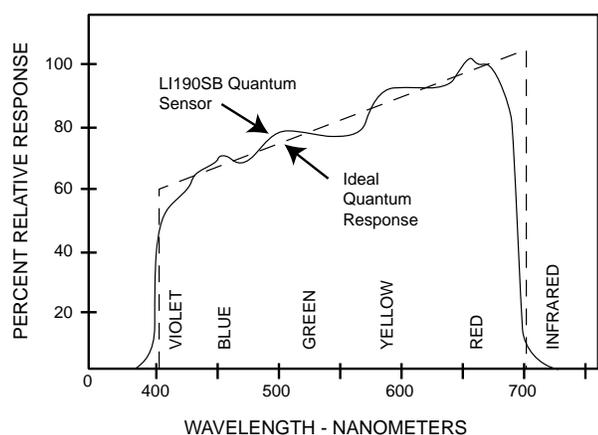
LI190SB accurately measures Photosynthetic Photon Flux Density (PPFD) in both natural and artificial light. PPFD is the number of photons in the 400 to 700 nm waveband incident per unit time on a unit surface. Because PPFD describes photosynthetic activity, the LI190SB is ideal for growth chambers and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



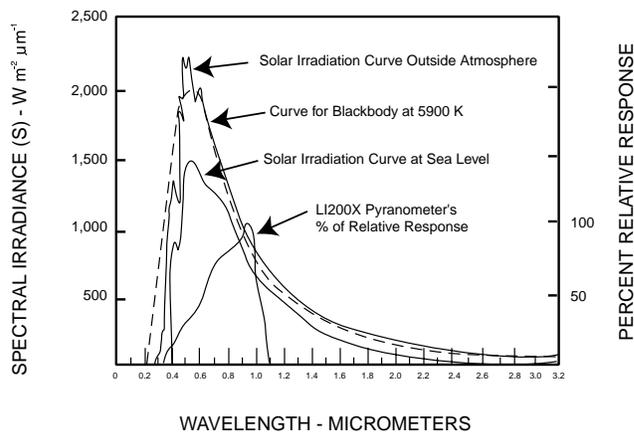
LI190SB Quantum Sensor. The LI200X has a similar appearance and identical wiring.

### LI200X Silicon Pyranometer

The LI200X Silicon Pyranometer is calibrated against an Eppley Precision Spectral Pyranometer (PSP) to accurately measure sun plus sky radiation. 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

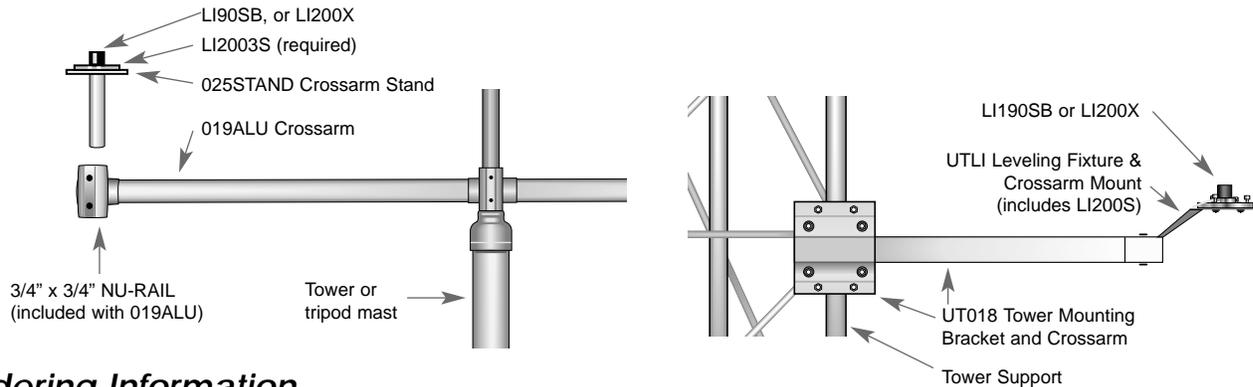


**CAMPBELL SCIENTIFIC, INC.**

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## Sensor Mounts

To ensure accurate measurements, the sensors are leveled with a LI2003S base/leveling fixture which incorporates a bubble level and three adjusting screws. The LI2003S mounts to a tripod or tower as shown below.



## Ordering Information

**LI190SB-L11 or LI200X-L11:** 11' lead length for placing the sensor at 6' to 10' height such as atop the CM6/CM10 (6' and 10') tripod or UT10 10-foot tower, or attached to a leg of the UT30 or UT20 tower (with UTLI crossarm).

**LI190SB-L34 or LI200X-L34; LI190SB-L24 or LI200X-24:** 34' lead length for mounting atop a UT30 30-foot tower and 24' lead length for mounting atop a UT20 20-foot tower (recommended only where shading at lower levels is a problem).

**LI190SB or LI200X -L:** User-specified lead length. Enter lead length after the L.

## Common Specifications

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

Response Time: 10  $\mu\text{s}$

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

Cosine Correction: Cosine corrected up to  $80^{\circ}$  angle of incidence

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

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  $\mu\text{A}$  per 1000  $\mu\text{moles s}^{-1} \text{m}^{-2}$

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

Shunt Resistor: 604  $\Omega$

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  $\text{kW m}^{-2} \text{mV}^{-1}$

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

Shunt Resistor: Adjustable, 40.2 to 90.2  $\Omega$ , factory set to give the above sensitivity

Light Spectrum Waveband: 400 to 1100 nm



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