

A person wearing a plaid shirt is holding a long, silver, rectangular LI-191R Line Quantum Sensor. The sensor is held horizontally, extending from the left side of the frame towards the right. The background is a blurred green field. In the lower-left corner, a portion of a black data logger with a keypad and a small screen is visible.

LI-191R Line Quantum Sensor

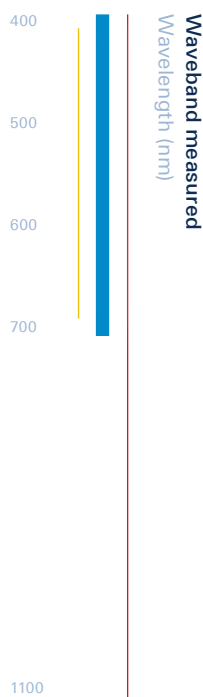
The LI-191R Line Quantum Sensor measures PAR integrated over its 1-meter length. It is used to measure sunlight under a plant canopy, where the light field is non-uniform. The LI-191R makes it easy to measure under-canopy light in many plots quickly and consistently. It measures light in units of Photosynthetic Photon Flux Density (PPFD), which is expressed as $\mu\text{mol s}^{-1} \text{m}^{-2}$.

Why choose the LI-191R?

- Improved water resistance for long-term outdoor deployment
- Integrated measurements using a single detector prevents variance found in sensors that use multiple detectors
- Selected by the National Ecological Observatory Network (NEON®) for integrated PAR measurements

How does it work?

The LI-191R uses a 1-meter long quartz rod under a diffuser to direct light to a single filtered silicon photodiode. The entire LI-191R diffuser is sensitive to light over its 1-meter length. Since the diffuser is one continuous piece, the LI-191R essentially integrates an infinite number of points over its surface into a single value that represents light from the entire 1-meter length. Optical filters block radiation with wavelengths beyond 700 nm, which is critical for under-canopy measurements, where the ratio of infrared to visible light may be high. The unique design of the LI-191R provides an excellent quantum response that is close to the ideal quantum response.



LI-191R Line Quantum Sensor Specifications

- Absolute Calibration: $\pm 10\%$ traceable to National Institute of Science and Technology (NIST). The LI-191R is calibrated via transfer calibration using a reference LI-190R Quantum Sensor. Transfer error is $\pm 5\%$ (included in the $\pm 10\%$)
- Sensitivity: Typically $7 \mu\text{A}$ per $1,000 \mu\text{mol s}^{-1} \text{m}^{-2}$
- Linearity: Maximum deviation of 1% up to $10,000 \mu\text{mol s}^{-1} \text{m}^{-2}$
- Response Time: $10 \mu\text{s}$
- Temperature Dependence: $\pm 0.15\%$ per $^{\circ}\text{C}$ maximum
- Cosine Correction: Acrylic diffuser
- Azimuth: $< \pm 2\%$ error over 360° at 45° elevation
- Operating Temperature Range: -40°C to 65°C
- Relative Humidity Range: 0% to 95% RH, Non-Condensing
- Sensitivity Variation over Length: $\pm 7\%$ maximum using a 2.54 cm ($1''$) wide beam from an incandescent light source.
- Sensing Area: $1 \text{ m} \times 12.7 \text{ mm}$ ($39.4'' \times 0.50''$)
- Detector: High stability silicon photovoltaic detector (blue enhanced)
- Sensor Housing: Weatherproof anodized aluminum housing with acrylic diffuser and stainless steel hardware.
- Size: $121.3 \text{ L} \times 2.54 \text{ W} \times 2.54 \text{ cm D}$ ($47.7'' \times 1.0'' \times 1.0''$)
- Weight: 1.4 kg (3.0 lbs.)
- Cable Length: 2 m , 5 m ($6.5'$, $16.4'$)

Specifications subject to change without notice.