

Full-Spectrum Quantum Sensor

Measure photosynthetically active radiation (PAR)

Get accurate and cost-effective measurement of photosynthetically active radiation (PAR) from all light sources used to grow plants.

Use it absolutely everywhere

The SQ-521 Full-Spectrum Quantum sensor measures the Photosynthetic Photon Flux Density (PPFD) in $\mu\text{mol m}^{-2} \text{s}^{-1}$ from a field of view of 180 degrees. Get superior, continuous PPFD measurements over plant canopies in outdoor environments, greenhouses, and growth chambers, and reflected or under-canopy (transmitted) measurements in the same environments.

Best full-spectrum sensor on the market

The Full-Spectrum Quantum sensor is so accurate, it's considered the best sensor on the market for difficult-to-measure indoor environments. It has an incredible spectral range of 389 to 692 nm \pm 5 nm, which means superior performance under variable sky conditions and increased accuracy under LED and other artificial light sources. Sensors are cosine-corrected to maintain their accuracy even when radiation comes from low zenith angles. Each sensor is carefully pre-calibrated for all light sources in controlled conditions and traceable to NIST reference standards.

Rugged, self-cleaning housing

The SQ-521 full spectrum quantum sensor is designed with a patented domed-shaped sensor head (diffuser and body) to facilitate runoff of dew and rain. This keeps the sensor clean and minimizes errors caused by dust blocking the radiation path. Sensors are housed in a rugged anodized aluminum body, plus each sensor comes with a special mounting bracket and leveling plate.

Easy setup. Easy data access.

The simple-to-set-up SQ-521 is plug and play with the ZL6 data logger, which self-identifies each sensor and includes a tilt sensor so you can see remotely if your quantum sensor is off level. Get instant and continuous data from the cloud wherever you are. See your data on computer, tablet or smartphone.

Quality—guaranteed

If you need high-quality, continuous PAR measurements over the long term, the rugged Apogee Full-Spectrum Quantum Sensor has got you covered. It's backed by an industry-leading four-year warranty and is considered THE gold standard for simple, accurate indoor/outdoor PAR measurements. Plus, it's compatible with ZENTRA Cloud for easy remote data access, so you can see your data anywhere, anytime.

[Request a quote](#)

California requires the following notice

WARNING: This product may contain chemicals including ethylene glycol, lead, nickel, styrene and cadmium, which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov



Specifications

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| Input voltage | 5.5 to 24 V DC |
| Current draw | 1.4 mA (quiescent), 1.8 mA (active) |
| Calibration uncertainty | ± 5% (see calibration traceability below) |
| Measurement range | 0 to 4000 $\mu\text{mol m}^{-2} \text{s}^{-1}$ |

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| Measurement repeatability | Less than 1% (Up to 5000 $\mu\text{mol m}^{-2}\text{s}^{-1}$) |
| Lon-term drift (nonstability) | Less than 2% per year |
| Response time | 0.6s, time for detector signal to reach 95% following a step change; fastest data transmission rate for SDI-12 circuitry is 1 s |
| Field of view | 180° |
| Spectral range | 389 to 692 nm \pm 5 nm (wavelengths where response is greater than 50%) |
| Spectral selectivity | Less than 10% from 412 to 682 \pm 5 nm (see spectral response below) |
| Directional (Cosine) response | \pm 2% at 45 ° zenith angle, \pm 5% at 75 ° zenith angle (see directional response below) |
| Azimuth error | Less than 0.5% |
| Tilt error | Less than 0.5% |
| Temperature response | -0.11 \pm 0.04 % per C (See temperature response below) |
| Uncertainty in daily total | Less than 5% |
| Detector | Blue-enhanced silicon photodiode |
| Housing | Anodized aluminum body with acrylic diffuser |
| IP rating | IP68 |
| Operating environment | -40 to 70 °C; 0 to 100% relative humidity; can be submerged in water up to depths of 30 m |
| Dimensions (serial #3033 and above) | 30.5 mm diameter, 37 mm height |
| Dimensions (serial #0-3032) | 24 mm diameter, 37 mm height |

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| Mass (5 m cable)(serial #3033 and above) | 140 g |
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| Mass (5 m cable)(serial #0-3032) | 100 g |
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| Cable length | 5 m |
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METER Em50/50G, EM60 series, ZL6 series, ZSC, ProCheck