



QSL and QSPL-2100

Scalar PAR Irradiance Sensors allow direct connection to any PC or Laptop Computer



The QSL-2100 quantum scalar sensor features a 1.9 cm diameter Teflon® spherical optical collector and is designed to provide accurate measurement of photosynthetically active irradiance (PAR) in aquatic or dry environments. The small size of the scalar collector and convenient hand wand ensure that Biospherical Instruments' QSL sensors provide accurate light measurements from virtually all directions.

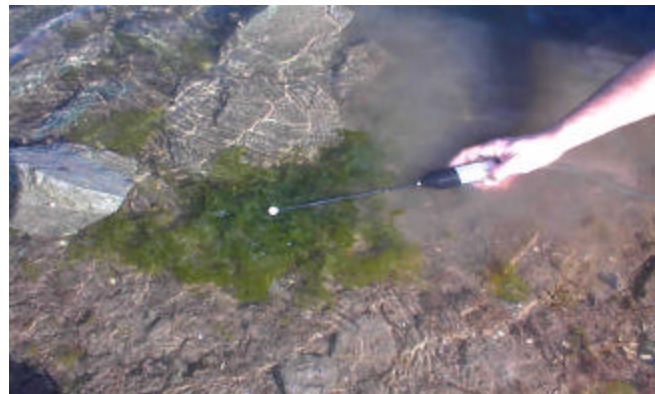
QSL (splash-proof) and QSPL (submersible) sensors are suitable for applications in the lab or in the field. These unique sensors are often used to measure light in incubation chambers organisms such as photosynthetic bacteria, plankton, macroalgae, and higher plants. The QSL- and QSPL 2101 features a smaller scalar collector (1.3 cm) specifically designed for insertion in vials of the type commonly used in photosynthetrons.

The QSL-2100 and QSL-2101 sensors are splash-proof and may be immersed for short periods of time, making them ideal for conducting field-studies in leaf canopies, streambeds and shallow ponds. The new QSPL sensors are fully waterproof and designed for total submersion in aquatic research studies. The QSPL sensors are equipped with a marine-grade bulkhead connector and is pressure-rated to 600 meters.

The QSL and QSPL-2100/2101 sensors feature a Teflon® spherical optical collector ,1.9 cm and 1.3 cm in diameter respectively. Mounted on a 25-cm stainless-steel wand, this proven design allows convenient scalar measurement of photosynthetically active light.

QSL and QSPL sensors are supplied with Windows®-based LOGGER-2100 software, providing direct connection to a PC or laptop computer. LOGGER-2100 allows both live-display and time series logging of irradiance values. Incorporating a low-power circuitry, energy for these sensor is supplied by the computer's serial port, eliminating the need for internal batteries.

QSL sensor models are splash-proof and may be immersed for short periods

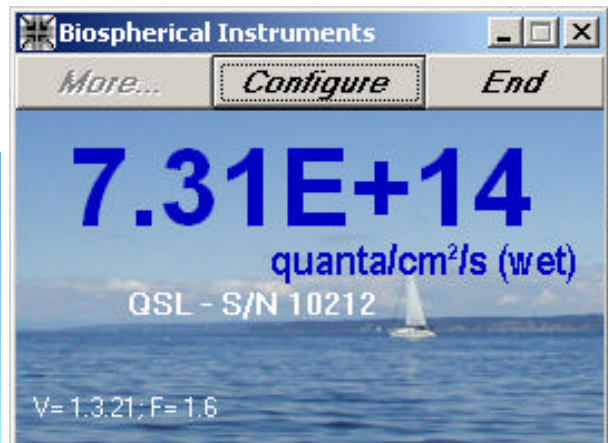
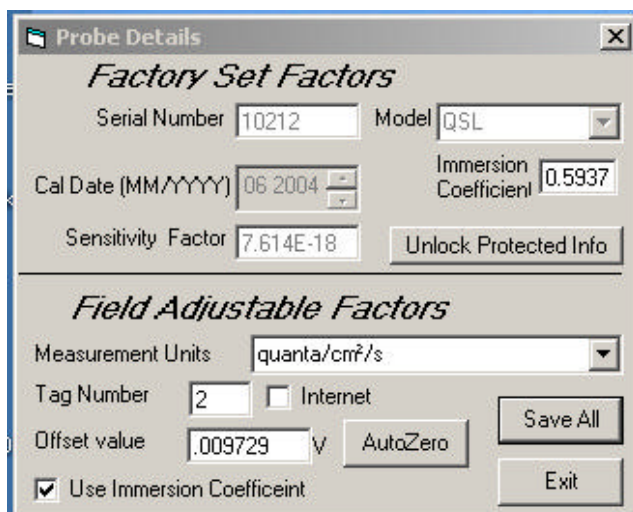




The Q SPL sensor models are equipped with marine-grade bulkhead connectors and pressure-rated to 600 meters.



Fully calibrated and traceable to NIST, each sensor contains imbedded calibration factors.



BSI's LOGGER-2100 software displays calibrated data in either Quanta or μ Einsteins

Specifications

Irradiance Collector: 1.9 cm diameter (QSL/QSPL-2100) or 1.3 cm diameter (QSL/QSPL-2101) Teflon® sphere, optically connected to the detector by a 25-cm long, epoxy-sealed, stainless-steel light pipe.

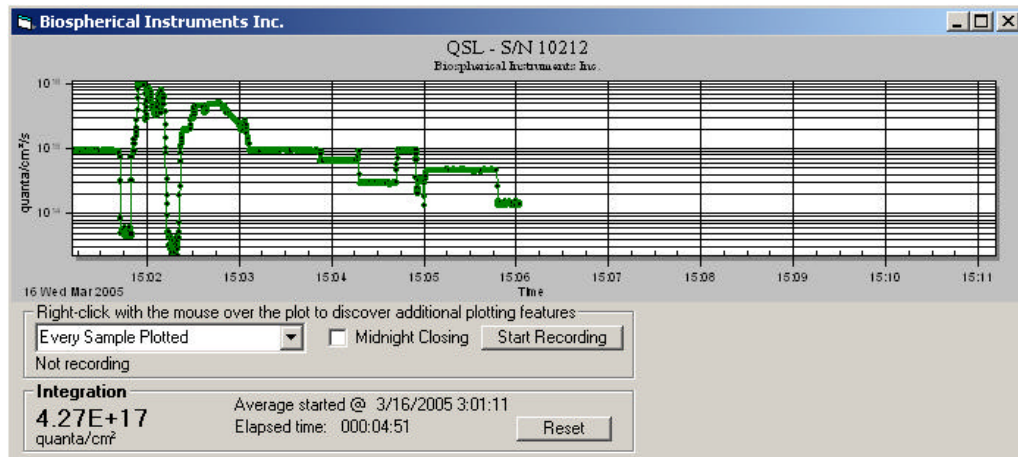
Photodetector: Blue-enhanced, high-stability silicon detector with dichroic blocking filters.

PAR Spectral Response: Equal quantum response 400 to 700 nm (PAR - Photosynthetically Active Radiation), response optimized to better than $\pm 10\%$. Individual detector response plots are optionally available.

Directional Response: Equal $\pm 7\%$ response from 0° (apparent zenith) response to $\pm 90^\circ$, with some fall-off occurring approaching $\pm 165^\circ$ due to intrusion of the stainless steel casing. The directional response of individual sensors is optimized during assembly before spectral calibration. Individual detector directional response plots are optionally available.

Sensitivity: Nominal sensitivity 1 volt = 1×10^{17} quanta/(cm²·sec) (slightly less than full sunlight). Noise level typically less than 1 millivolt; temperature coefficient of the dark signal is less than 10 microvolts/°C, and response temperature coefficient is less than 0.15%/°C.

LOGGER-2100
supports time-series logging of calibrated irradiance values



Software: LOGGER-2100 software is included with each sensor and is compatible with Windows 7, VISTA and XP. Data are in PC compatible digital format. The user may configure output for display in Quanta or Microeinstains.

Calibration: Each sensor contains internally imbedded calibration factors for both wet and dry measurements. Biospherical Instruments calibrates sensors using procedures and source Standard of Spectral Irradiance traceable to NIST.

Power Requirements: Batteries are not required. All power is supplied by the host computer's comport.

Packaging: The sensor is supplied with a padded box for safe transport of the probe and cable.

QSL-2000 Sensor Dimensions: 36cm x 4cm diameter.

QSPL-2000 Sensor Dimensions: 36cm x 5cm diameter.

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