



BIOSPHERICAL INSTRUMENTS

## Q-Series PAR Sensors

Rugged Single-Channel Radiometers for Marine and Terrestrial Environmental Monitoring



**Compact & Durable** for Marine Deployments with Profilers, CTDs, Gliders, Buoys, Large and Small vessels

**High Accuracy & Large Dynamic Range** for Field Work and Laboratory Research

**Fast Sampling Rates** for Rapid Environmental Awareness in Aquaculture, Water Quality and Weather Stations

Nearly **Flat Quantum Response** over the **PAR spectral range** (400-700nm)

**Configurable** for your desired Directional Response, Depth Rating and Signal Output

Learn More At [www.biospherical.com](http://www.biospherical.com)  
Contact Us [sales@biospherical.com](mailto:sales@biospherical.com)

San Diego, California

# Q-Series Specifications



## Collector Geometry

### Scalar Irradiance

**Response:** does not vary with direction, the angle of response is near 4 pi steradian

**Material:** 3/4" or 1/2" Teflon Sphere Optically connected by a stainless steel encased light pipe.

**Directional Response:** Deviations from ideal uniform response are:

- < 3% for incidence angle <90°
- < 10% for incidence angle <125°

## Output Options

### Digital ASCII Output—2150 Models

The 2150 model is a digital output sensor with ability to connect **directly to a PC or laptop computer or seamlessly integrate** into other systems. Utilizes proprietary *Logger 2150* software the sensor to output an ASCII Data Stream. Data acquisition and **user selectable transmission rates** are supported from to 250 Hz

### Linear Analog Output—2200/2250 Models

The 2200 model is a linear analog output version featuring **high quality, low drift** electrometer-grade amplifiers and are compatible with most commercially available 16-bit loggers. This model is best suited for **high resolution data transmitting** that produces a pure analog output.

### Logarithmic Analog Output—2350 Models

The 2350 model is a logarithmically compressed analog voltage output version made for **easy integration** with other sensors such as CTDs or into systems like gliders. This model is intended for low resolution data acquisition systems (less than 16 bit).

### Cosine Irradiance

**Response:** varies with the cosine of the angle of incidence

**Directional Response:** Deviations from ideal cosine response are:

- < 3% between ±0 to 65°
- < 10% between ±65 to 86°

**Material:** 1.1cm diameter solid acrylic diffuser

## Physical Specifications

**Diameter:** 4 - 5 cm

**Length:** 17.5 - 36 cm

**Weight:** 0.65 kg (up to 1.5kg with shield)

**Depth Rating:** up to 10,000 m (geometry & connector dependent)

**Temperature Range:** -10 to 50°C

**Housing:** Hard anodized, O-ring sealed aluminum

**Connector:**

Marine Grade: MCBH4M

Marine Grade High Pressure: BH4M

Surface Reference: Switchcraft EN3P5M

## Electronic Specifications

**Power Requirement:** 6-15V at less than 4mA

**Photodetector:** High-reliability silicon photodiode designed for precision radiometry.

**Time Constant:** < 10 ms, limited by maximum sampling rate of 250 Hz. High sampling rates require higher baud rates.

**Stability of dark reading:** < 0.003  $\mu\text{E m}^{-2} \text{sec}^{-1}$  (tested between 0 to 50 °C)

**Saturation:** approximately 5000  $\mu\text{E m}^{-2} \text{sec}^{-1}$  when immersed in water

**Responsivity temperature coefficient:** < 0.05% per °C