



BIC Compact 4-Channel Radiometer

Biospherical Instruments' BIC family of radiometers are scaled-down version of our widely used PUV/GUV and PRR instrument systems. The standard BIC measures downwelling (cosine) irradiance in three monochromatic wavebands as well as PAR (400-700nm). Wavelengths are available ranging from 305 nm in the UVB to 875 nm in the near infrared. BIC photodetectors share a common Teflon® collector for maximum accuracy over time. BICs are available in submersible and surface reference versions.

A submersible BIC fitted with optional temperature and pressure transducers may be combined with a matching surface reference BIC to provide accurate vertical profiles of irradiance down to 100m.

Compact and lightweight, the BIC features a wide dynamic-range (>5 decades) and is suitable for a variety of aquatic research applications.

The BIC connects to either a PC workstation or laptop computer (not included) for all data-acquisition duties. Windows®-based LoggerLight software is included.



Aquatic BIC Radiometer with optional temperature and pressure sensors

Key Features

Measures cosine irradiance in three user-selected wavelengths* and PAR (400-700nm)

Serial output affords direct connection with a computer or PC-based datalogger

Suitable for both aquatic profiling and remote field measurements

Optional sensors for water temperature and depth

Windows®-based data-acquisition software

Specifications

Acquisition and communication. BICs communicate with a PC or PC-based data acquisition system, using serial (RS-232) data. Photodetector outputs are digitized with a 24-bit ADC (analog -to-digital converter) and the reading packed into binary bytes for rapid transmission to the computer. An identification tag is provided to separate data streams from up to nine different BICs running from the same comport (DSM-2100 Digital Signal Manifold required).

Power Requirements. 5.8 - 15 VDC minimum at less than 20 mA. DSM-2100 (sold separately) can provide needed power.

Sensitivity and Dynamic Range. Noise equivalent irradiance is $1 \times 10^{-6} \mu\text{E} \cdot \text{cm}^{-2} \cdot \text{s}^{-1}$. Maximum irradiance level in air is typically $0.45 \mu\text{E} \cdot \text{cm}^{-2} \cdot \text{s}^{-1}$. Dynamic range is somewhat dependent on wavelength and the period over which the data acquisition system is averaging the data. As a guide, data collection with no averaging will provide over five orders of magnitude of dynamic range; averaging over 10 second periods extends the dynamic range to approximately 6 orders of magnitude.

Order Separately. The following are available optionally: 305 nm filter/photodetector, water temperature and depth, BIC lowering frame, QSC-2100 underwater cable, QSC-2145 surface reference cable, and DSM-2100 Digital Signal Manifold to connect multiple instruments on one serial port.

Optical Specifications

Bandwidth: 10 nm FWHM standard except 305nm (controlled by atmospheric ozone cutoff)

Available Wavelengths: 305 (optional), 313, 320, 340, 380, 395, 412, 443, 455, 465, 475, 490, 510, 520, 532, 555, 565, 589, 625, 665, 670, 683, 694, 710, 765, 780, 875 nm and PAR (400-700 nm)

Filter Type: Custom 5 cavity interference filters low-fluorescence design

Cosine Collector: Teflon®-covered quartz. Submersible BICs are optimized for use in water.

Angular Response: $\pm 2\%$ from 0° to 65° ;
 $\pm 10\%$ from 65° to 85°

Submersible BIC

Diameter: 10.2 cm

Length: 20.0 cm

Depth Range: 100 m (Max operating)

Materials: PET plastic housing

Weight: 2.0 kg in air, near neutral in water

Temperature Rating: 0°C to 50°C

Surface Reference BIC

Diameter: 10.2 cm

Length: 20.0 cm

Materials: Aluminum housing (anodized and powder-coated)

Weight: 3.0 kg in air

Cosine Collector: Teflon®-covered quartz. Surface reference BICs are optimized for use in air.

Temperature Rating: -10°C to 50°C



Compact and lightweight, BIC radiometers are very portable and ideal for field research



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