

BIR

4-Channel Radiance Instrument

The new BIR (Biospherical Instruments Radiance) is a compact radiance-only version of our popular PRR radiometers. The BIR is equipped to measure upwelling radiance at four user-defined channels. Available wavelengths range from 313 to 875nm.

The BIR combines optical design elements of our PRR series, with the low-power electronics of our digital output single-channel sensors. This compact instrument features more than 5 decades of dynamic-range and is suitable for a variety of field research applications.

This instrument connects directly to a Windows PC, laptop computer, or PC-based data acquisition system. All power is supplied by the host computer's comport. "LOGGERLight" Windows-based data-acquisition software is included. The BIR is fully waterproof and rated to a depth of 100 meters. The radiometer may be ordered with integral water temperature / depth sensors for a complete profiling package.

Having very low power requirements ($>2\text{mA}$ / channel), the BIR is suitable for solar and/or battery-powered moorings. The BIR may also be backpacked into remote locations for use in shallow ponds or mountain streams.



This 4-channel radiometer is fully powered by the host PC's comport

Key Features

Measures immersed radiance at four user-defined wavelengths*

Suitable for both profiling and stationary field measurements

Integral sensors are available for measurement of water temperature and depth to 100 meters

Serial output allows direct connection to a Windows PC or PC-based datalogging system

Very low power requirements make the BIR ideal for use on solar / battery-powered moorings

Windows®-based "LOGGERLight" data-acquisition software is included

* 313, 320, 330, 340, 380, 395, 412, 443, 465, 490, 510, 520, 532, 555, 565, 589, 625, 665, 670, 683, 694, 710, 765, 780, 875nm
Natural Fluorescence[Luz(Chl)] is also available

System Electronic Specifications

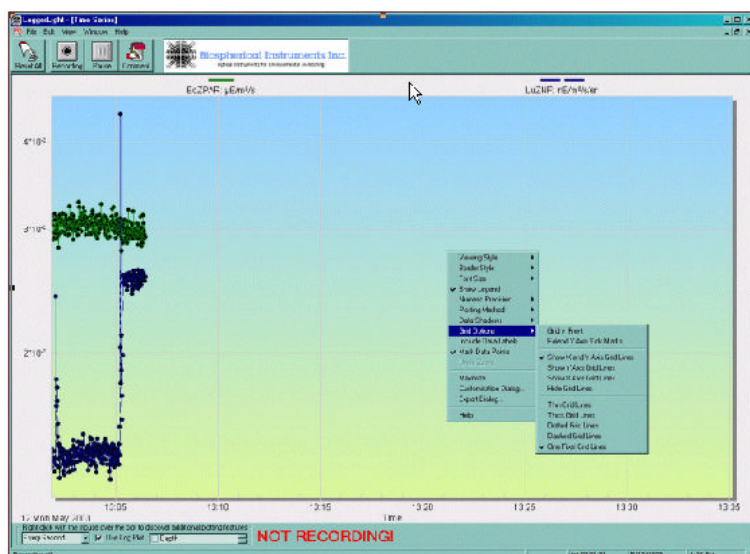
The BIR communicates directly with a Windows PC, using serial (RS-232) connection. Signals from each photodetector are digitized with a 24-bit ADC. An identification tag is provided to separate data streams from multiple BIR (and BIC) instruments which may be running on the same comport. The controlling PC may poll the channels for data up to several times per second.

Power Requirements

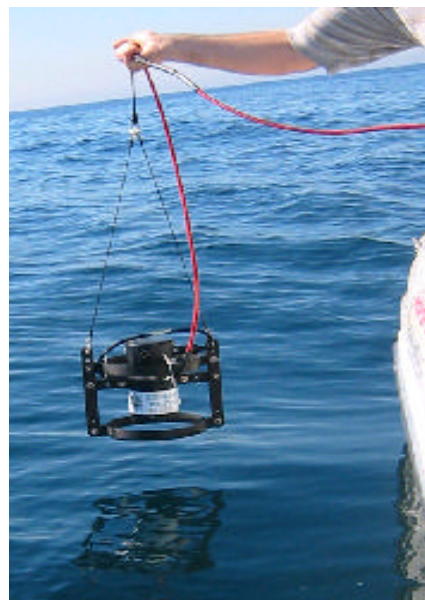
The power requirements of these instruments is very low, <2mA per channel, for use on solar or battery-powered moorings.

Sensitivity and Dynamic Range

The sensitivity of these radiometers range from $1 \times 10^{-6} \mu\text{E}/\text{cm}^2/\text{s}$ in water. The dynamic range is somewhat dependent on wavelength and how often the data-acquisition system is averaging the data. As a guideline, data collection with no averaging will provide over 5 orders of magnitude of dynamic range, while averaging over 10 second intervals extends the dynamic range to approximately 6 orders of magnitude.



Windows®-based “LOGGERLight” data acquisition software is included



Compact and lightweight, the BIR is ideal for use in field research activities

BIR Mechanical Specifications

Diameter: 10.2 cm

Length: 20.0 cm

Depth Range: 100 m

Materials: PET plastic housing

Weight: 2.0 kg in air, near neutral in water

Temperature Rating: 0°C to 50°C

BIR Optical Specifications

Optical Collector: UV-Quartz window

Spectral Range: 313-875 nm

Standard Wavelengths: 313, 320, 330, 340, 380, 395, 412, 443, 465, 490, 510, 520, 532, 555, 565, 589, 625, 665, 670, 683, 694 710, 765, 780 and 875nm.

Natural Fluorescence [Luz(ChL)] is also available

Bandwidth: 10 nm FWHM standard

Detectors: Custom 13 mm² silicon photodiodes

Filter Type: Custom low-fluorescence interference

Field of View: 10° half angle in water (SeaWiFS-compatible)



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