Backscattering

ECO BB

WET Labs manufactures a line of optical tools for determination of bio-optical and physical parameters within natural waters. These instruments are designed as a modular suite of sensors with special features for specific application support. The *Environmental Characterization Optics* (***ECO***) series incorporates a common set of options with a single basic design to make the sensors ideal for a wide variety of deployments. Features include:

- Compact size
- Integrated self-logging
- Configurable output
- High precision and stability
- Optional integrated anti-fouling

WET Labs, Inc. produces a single-angle sensor for determination of optical backscattering. Based upon recent work by Drs. Emmanuel Boss and Scott Pegau of Oregon State University*, the *ECO* BB measures scattering at 117 degrees. This angle was determined as a minimum convergence point for variations in the volume scattering function (VSF) induced by suspended materials and water itself. As a result, the signal measured by this meter is less determined by the type and size of the materials in the water, and is more directly correlated to the concentration of the materials. Conversely, the meter provides unparalleled accuracy, for any single-angle measurement, in determining the optical backscattering coefficient—an important parameter for remote sensing and in-water bio-optical applications.

New!

Now available with turbidity (NTU) calibration!

E. Boss and W. S. Pegau, "Relationship of light scattering at an angle in the backward direction to the backscattering coefficient," Applied Optics. **40(30):5503–5507 (2001).*

WET Labs

ECO BB

Specifications

***ECO* BB(RT)—**Provides analog or RS-232 serial output with 4,000-count range. This unit provides continuous operation when power is supplied.

***ECO* BB(RT)D**—Provides the capabilities of the BB(RT) with 6,000-meter depth rating.

***ECO* BB—**(Standard configuration) Provides the capabilities of the BB(RT) with periodic sampling.

***ECO* BBB**—Provides the capabilities of the BB with internal batteries for autonomous operation.

***ECO* BBS**—Provides the capabilities of the BB with an integrated anti-fouling *bio-wiper*™.

***ECO* BBSB**—Provides the capabilities of the BBS with internal batteries for autonomous operation.

Mechanical

Diameter	6.3 cm (std)
Length	12.7 cm (std)
Length	25.6 cm (deep)
Weight in air	0.4 kg (std)
Weight in air	1.3 kg deep
Weight in water	0.02 kg (std)
Weight in water	0.75 kg (deep)
Pressure housing	Acetal copolymer (std)
Pressure housing	Titanium (deep)

Optical

Wavelength	470, 532, 660 nm
Sensitivity, 470	1.2 x 10^{-5} m^{-1} sr^{-1}
Sensitivity, 532	7.7 x 10^{-6} m^{-1} sr^{-1}
Sensitivity, 660	3.8 x 10^{-6} m^{-1} sr^{-1}
Range, typical	~ 0.0024–5 m^{-1}
Linearity	99% R^2

Electrical

Digital output resolution	12 bit
RS-232 output	19200 baud
Analog output signal	0–5 V
Internal data logging	optional
Internal batteries	optional
Connector	MCBH6M
Input	7–15 VDC
Current, typical	80 mA
Current, sleep	85 µA
Data memory	65,000 samples
Sample rate	to 8 Hz
Anti-fouling Bio-wiper™	optional
Bio-wiper™ cycle	140 mA

Environmental

Temperature range	0–30 deg C
Depth rating	600 m (std)
Depth rating	6000 m (deep)
Pressure/temperature sensor	optional

Specifications subject to change without notice.