

BB - Backscattering Meter

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
- Optional integrated anti-fouling
- High precision and stability



**Now available
with turbidity
(NTU) calibration!**

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.

*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).

REF – C-Star iss A APR 2009

Specifications subject to change without notice.

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

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

Optical

| | |
|-------------------------|---|
| Wavelength | 470, 532, 660 nm |
| <i>Sensitivity, 470</i> | $1.2 \times 10^{-5} \text{ m}^{-1} \text{ sr}^{-1}$ |
| <i>Sensitivity, 532</i> | $7.7 \times 10^{-6} \text{ m}^{-1} \text{ sr}^{-1}$ |
| <i>Sensitivity, 660</i> | $3.8 \times 10^{-6} \text{ m}^{-1} \text{ sr}^{-1}$ |
| <i>Range, typical</i> | $\sim 0.0024\text{--}5 \text{ m}^{-1}$ |
| <i>Linearity</i> | 99% R ² |

Electrical

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

Environmental

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