

## ECO Fluorometers

WET Labs offers the *Environmental Characterization Optics (ECO)* series, a modular suite of fluorometers to allow for a wide variety of applications and deployments. Standard ranges are given below, others are available.

### Chlorophyll-a

Chlorophyll-a fluorescence serves as a valuable indicator of active phytoplankton biomass and chlorophyll concentrations in waters. This measurement is used for tracking biological variability and abundance in the water column.

Ex/Em: 470/695 nm • Sensitivity: 0.025 µg/l  
Linearity: 99% R<sup>2</sup> • Range: 100 µg/l

### Colored Dissolved Organic Matter

The CDOM *ECO* allows you to obtain CDOM fluorescence across a wide range of environments, from mangrove swamps to oligotrophic blue water.

Ex/Em: 370/460 nm • Sensitivity: 0.025 ppb QS  
Linearity: 99% R<sup>2</sup> • Range: 100 ppb

### Uranine (fluorescein) & Rhodamine

The qualities of the *ECO* line are now available for flow and dye tracing studies. Specify measurement sensitivity when ordering.

|                                                    |                   |
|----------------------------------------------------|-------------------|
| <b>Uranine</b>                                     | <b>Rhodamine</b>  |
| Ex/Em: 470/530 nm                                  | Ex/Em: 540/570 nm |
| Sensitivity: 1 ppb • Linearity: 99% R <sup>2</sup> |                   |
| Range: 4000 ppb                                    |                   |



### Phycoerythrin

Detection of the cyanobacteria fraction of the phytoplankton community is now easier and less expensive with the introduction a new *ECO* sensor that allows for detection of red cyanobacteria fluorescence.

**Phycoerythrin**  
Ex/Em: 540/570 nm • Sensitivity: 1 ppb • Linearity: 99% R<sup>2</sup> • Range: 4000 ppb



- **FL(RT)**—Provides analog or RS-232 serial output with 16,300-count (approximate) range. This unit provides continuous operation when powered.
- **FL(RT)D**—Provides the capabilities of the FL(RT) with 6,000-meter depth rating.
- **FL**—Provides the capabilities of the FL(RT) with periodic sampling.
- **FLS**—Provides the capabilities of the FL with an integrated anti-fouling *bio-wiper*™.
- **FLB**—Provides the capabilities of the FL with internal batteries for autonomous operation.
- **FLSB**—Provides the capabilities of the FLS with internal batteries for autonomous operation.

### ECO Fluorometer Specifications

|                                               | FL(RT)                | FL(RT)D               | FL                    | FLS                   | FLB                   | FLSB                  |
|-----------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>Mechanical</b>                             |                       |                       |                       |                       |                       |                       |
| <i>Diameter</i>                               | 2.48 in<br>(6.3 cm)   | 2.48 in<br>(6.3 cm)   | 2.48 in<br>(6.3 cm)   | 2.48 in<br>(6.3 cm)   | 2.48 in<br>(6.3 cm)   | 2.48 in<br>(6.3 cm)   |
| <i>Length</i>                                 | 5.0 in<br>(12.7 cm)   | 7 in<br>(17.8 cm)     | 5.0 in<br>(12.7 cm)   | 5.25 in<br>(13.3 cm)  | 10.0 in<br>(25.4 cm)  | 10.25 in<br>(26.0 cm) |
| <i>Weight (in air)</i>                        | 0.9 lbs<br>(0.4 kg)   | 2.86 lbs<br>(1.3 kg)  | 0.9 lbs<br>(0.4 kg)   | 1.1 lbs<br>(0.5 kg)   | 2.1 lbs<br>(0.96 kg)  | 2.1 lbs<br>(0.96 kg)  |
| <i>Weight (in water)</i>                      | 0.05 lbs<br>(0.02 kg) | 1.66 lbs<br>(0.75 kg) | 0.05 lbs<br>(0.02 kg) | 0.19 lbs<br>(0.08 kg) | 0.3 lbs<br>(0.14 kg)  | 0.3 lbs<br>(0.14 kg)  |
| <i>Pressure housing</i>                       | ABS                   | ABS                   | ABS                   | ABS                   | ABS                   | ABS                   |
| <b>Environmental</b>                          |                       |                       |                       |                       |                       |                       |
| <i>Temperature range</i>                      | 0–30 deg C            | 0–30 deg C            | 0–30 deg C            | 0–30 deg C            | 0–30 deg C            | 0–30 deg C            |
| <i>Depth rating</i>                           | 600 m                 | 6000 m                | 600 m                 | 300 m                 | 600 m                 | 300 m                 |
| <i>Pressure/temperature sensor (optional)</i> | Y                     | Y                     | Y                     | Y                     | Y                     | Y                     |
| <b>Electrical</b>                             |                       |                       |                       |                       |                       |                       |
| <i>Digital output resolution</i>              | 14 bit                | 14 bit                | 14 bit                | 14 bit                | 14 bit                | 14 bit                |
| <i>Analog output signal</i>                   | 0–5 V                 | 0–5 V                 | 0–5 V                 | 0–5 V                 | 0–5 V                 | 0–5 V                 |
| <i>Internal data logging</i>                  | N                     | N                     | Y                     | Y                     | Y                     | Y                     |
| <i>Internal batteries</i>                     | N                     | N                     | N                     | N                     | Y                     | Y                     |
| <i>Connector</i>                              | MCBH6M                | MCBH6M                | MCBH6M                | MCBH6M                | MCBH6M                | MCBH6M                |
| <i>Input voltage</i>                          | 7–15 VDC              | 7–15 VDC              | 7–15 VDC              | 7–15 VDC              | 7–15 VDC              | 7–15 VDC              |
| <i>Current, typical</i>                       | 80 mA                 | 80 mA                 | 80 mA                 | 80 mA                 | 80 mA                 | 80 mA                 |
| <i>Current, sleep</i>                         | --                    | --                    | 85 µA                 | 85 µA                 | 85 µA                 | 85 µA                 |
| <i>Data memory</i>                            | --                    | --                    | 1 MB (65,000 samples) | 1 MB (65,000 samples) | 1 MB (65,000 samples) | 1 MB (65,000 samples) |
| <i>Sample rate</i>                            | to 8 Hz               | to 8 Hz               | to 8 Hz               | to 8 Hz               | to 8 Hz               | to 8 Hz               |
| <i>RS-232 output</i>                          | 19200 baud            | 19200 baud            | 19200 baud            | 19200 baud            | 19200 baud            | 19200 baud            |
| <i>Anti-fouling bio-wiper™</i>                | N                     | N                     | N                     | Y                     | N                     | Y                     |
| <i>Bio-wiper™ cycle</i>                       | -                     | -                     | -                     | 110 mA                | -                     | 110 mA                |

Specifications subject to change without notice.



# **ECO-FLxx**

## **Specification Sheet**

WET Labs, Inc.  
P.O. Box 518  
Philomath, OR 97370  
Tel: 541-929-5650  
fax: 541-929-5277  
email: [wetlabs@wetlabs.com](mailto:wetlabs@wetlabs.com)  
<http://www.wetlabs.com>

### **Revision History**

| <b>Revision</b> | <b>Date</b> | <b>Revision Description</b>                     | <b>Originator</b> |
|-----------------|-------------|-------------------------------------------------|-------------------|
| A               | 3/08/00     | Begin revision control                          | H. Van Zee        |
| B               | 10/26/00    | Correct spec info for DFLB (DCR 69)             | H. Van Zee        |
| C               | 1/16/01     | Change AFLT to AFLD (DCR 80)                    | H. Van Zee        |
| D               | 5/21/01     | Correct input voltage minimum (DCR 109/110)     | H. Van Zee        |
| E               | 1/23/02     | Remove "new" reference (DCR 190)                | H. Van Zee        |
| F               | 3/13/02     | Correct DFLS/DFLB weights (DCR 201)             | H. Van Zee        |
| G               | 4/16/02     | Add max. samples (DCR 215)                      | D. Whiteman       |
| H               | 5/1/02      | Change reference to AFLx (DCR 218)              | H. Van Zee        |
| I               | 7/8/02      | Add battery option to spec table (DCR 228)      | H. Van Zee        |
| J               | 10/15/02    | Update specification table (DCR 248)            | H. Van Zee        |
| K               | 11/12/02    | Add analog capability (DCR 254)                 | I. Walsh          |
| L               | 2/24/03     | Replace "shutter" with "bio-wiper™" (DCR 280)   | H. Van Zee        |
| M               | 3/26/03     | Correct reference from FLD to FL(RT)D (DCR 287) | A. Derr           |
| N               | 11/24/03    | Add other measurement parameters (DCR 340)      | H. Van Zee        |
| O               | 5/11/04     | Add optical parameters (DCR 390)                | I. Walsh          |
|                 |             |                                                 |                   |
|                 |             |                                                 |                   |