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ECO FL

FLUORESCENCE

Overview

The Environmental Characterization Optics (ECO) series of single channel fluorometers delivers both high resolution and wide ranges across our entire line of parameters using 14 bit digital processing. The ECO series excels in biological monitoring and dye trace studies. The potted optics block results in long term stability of the instrument and the optional anti-biofouling technology delivers truly long term field measurements.

ECO FL fluorometers measure fluorescence from chlorophyll-a, fDOM, uranine, rhodamine, and phycocyanin and phycoerythrin.

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

Fluorescent Dissolved Organic Matter (fDOM) ECO allows you to obtain fDOM fluorescence across a wide range of environments, from mangrove swamps to oligotrophic blue water.

Uranine (fluorescein) & Rhodamine: The ideal combination of linearity, sensitivity and range for dye studies. Detection limits in parts per trillion allows for precise patch determination and first arrival timing as well as reducing the necessary initial dye concentration.

ECO phycobilin fluorometers have the high resolution necessary for early detection of either blue-green **(phycocyanin)** or brown **(phycoerythrin)** algae. These fluorometers are relative measurement instruments and should be calibrated by cell counts for a particular water mass.

Features

- Ships with ECOView Host software
- Analog and Digital Output
- Analog scaling to maximize analog resolution
- Optional integrated Bio-wiper™ and/or copper faceplate for antifouling
- Optional internal batteries and memory; 100K + samples
- Full ocean depth model available

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Options

- FL(RT) Provides analog or RS-232 serial output with 16,300-count (approximate) range. "Real Time" instruments provide continuous operation when powered.
- FL(RT)D Provides the capabilities of the FL(RT) with 6,000-meter depth rating.
- FLS Provides the capabilities of the FL with an integrated anti-fouling Bio-wiper™.
- FLB Provides the capabilities of the FL with internal memory and batteries for autonomous operation.
- FLSB Provides the capabilities of the FLS with internal memory and batteries for autonomous operation.

Field Specifications

The specifications below represent the expected performance of the instrument when deployed in the field. Under controlled circumstances in a lab, we would expect the instrument to outperform these specifications.

We have chosen to display field specifications to give our users a true measure of how Sea-Bird Scientific instruments perform in harsh environments and applications. It is critical to keep this in mind when comparing specifications with instruments from other manufacturers.

Optical	
Chlorophyll-a ex/em: Sensitivity Range	470/695 nm 0.02 µg/L 0–125 µg/Lf
fDOM: Sensitivity Range	ex/em: 370/460 nm 0.09 ppb/count 0–500 ppb
Uranine: Sensitivity Range	eex/em: 470/530 nm 0.05 ppb/count 0–400 ppb
Rhodamine:	ex/em: 530/595 nm
Phycoerythrin:	ex/em: 530/595 nm
Phycocyanin: Sensitivity Range	ex/em: 630/680 0.03 ppb/count 0–230 ppbLinearity
Linearity (all)	99% R2

Environmental	
Temperature Range	0 - 30 °C
Depth Rating*	600 m (std) 6000 m (deep)
Materials	Acetal copolymer

Mechanical	
Diameter	6.3 cm
Length	12.7 cm
Weight in air	0.4 kg
Weight in water	0.02 kg

Electrical	
Digital output resolution	14 bit
Internal data logging	Optional
Internal batteries	Optional
Connector	MCBH6MP
Input	7-15 VDC
Current, typical	50 mA
Current, sleep	140 µA
Data memory	108,000 samples
Sample rate	User selectable to 8 Hz
RS-232 output	19200 baud
Analog output signal	0-5 v
Anti-fouling Bio-wiper™	Optional*
Current, Bio-wiper™ cycle	140 mA

*The limit depth for ECO with Anti-fouling Bio-wiper™ and Internal Batteries (models B, S and SB) rated to 300 m.

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