

SeaOWL UV-A SLC™

Sea Oil-in-Water Locator

The Sea-Bird Scientific SeaOWL UV-A™ SLC introduces a new in-situ oil-in-water sensor specifically designed for integration into the Teledyne Webb Research Slocum glider. Based upon the highly successful WET Labs' ECO sensor, Sea-Bird Scientific has developed an industry leading detection technology creating a 5X optical resolution improvement over its predecessor.

SeaOWL UV-A™ SLC measures crude oil-in-water using the same UV-A excitation and blue emission wavelengths (370 nm EX/ 460 nm EM) currently used in the ECO CDOM fluorometer. The SeaOWL UV-ATM SLC improves the resolution and range of the ECO with a greater depth of field, optimized electronics and dynamic gain stage modulation. The new dynamic gain provides industry leading sensitivity across a large detection range making saturation unlikely in even the most heavily impacted environments. The compact SeaOWL UV-A™ SLC design also includes chlorophyll fluorescence and 700 nm backscattering measurements to discriminate crude oil from phytoplankton and other natural sources of FDOM.



Features

- Industry leading optical resolution
- Wide dynamic gain prevents measurement saturation even within heavily impacted environments
- Three parameters in a single sensor: chlorophyll, backscattering, and Fluorescent Dissolved Organic Matter (FDOM)
- Backscattering and chlorophyll fluorescence provide discrimination of crude oil from phytoplankton and other natural sources of FDOM.

Optical

Backscattering wavelength	700 nm
Backscattering sensitivity 700 nm ^A	1E-06 m ⁻¹ sr ⁻¹
Backscattering range 700 nm ^A	0-0.04 m ⁻¹ sr ⁻¹
Chlorophyll EX/EM	470/690 nm
Chlorophyll sensitivity	0.003 µg/l
Chlorophyll range	0.003–250 µg/l
FDOM EX/EM	370/460 nm
FDOM sensitivity	0.009 ppb QSDE
FDOM range	0.009–900 ppb QSDE
Oil Calibration	
Oil limit of detection ^B	< 80ppb crude oil
Oil sensitivity ^C	3 ppb crude oil

A) Backscattering specifications are derived from a vicarious calibration with an MCOMS backscattering sensor. Scale factors for backscattering incorporate the target weighting function and the solid angle subtended for the MCOMS optical backscattering sensor. The SeaOWL UV-ATM SLC is highly linear in response to changes in the particle concentration of a specific particle

B) The estimated limit of detection (LOD) for the ECO CDOM fluorometer is <300 ppb crude oil (Conmy et al., 2014), i.e. 30 counts. Using the same count to LOD relationship, LOD for SeaOWL UV-A SLC was derived.

C) Applying the ECO CDOM fluorometer crude oil calibration from Conmy et al., 2014, yields this scale factor.

Mechanical

Diameter	75.7 mm (2.980")
Length	57.6 mm (2.268")
Weight in air (approx.)	399 g
Displacement	128 mL
Pressure housing material	Aluminum 6061-T6

Environmental

Temperature range of calibration ^D	-2 to 38 °C
Storage temperature range	-20 to 50 °C
Depth rating	1000 m

Electrical

Digital output resolution	14 Bit
Communication	RS-232
Sample rate	1 Hz
Connector style	4 Wire Bulkhead
Input voltage 7–15 volts	7–15 volts
Current, typical (@7V)	81 mA

D) The temperature range through which the instruments are tested for operation. The -2° C minimum covers all natural waters on Earth. Please contact Sea-Bird Scientific for testing to higher temperatures.