

Deep SUNA

UV NITRATE SENSOR



Overview

The Deep SUNA UV nitrate sensor extends Sea-Bird Scientific's line of in situ nitrate sensors to the deep ocean. The Deep SUNA incorporates the proven MBARI-ISUS nitrate measurement technology, which is based on the absorption characteristics of nitrate in the UV light spectrum. The basic algorithm has been updated to incorporate real-time temperature and salinity data from AUV or mooring platforms.

Temperature Salinity Correction

The advanced nitrate algorithm now includes a temperature dependent correction of the observed bromide spectrum that uses in situ temperature and salinity data in real-time to subtract the bromide component from the overall absorption spectrum. This feature significantly reduces uncertainties in the measurement, improving both accuracy and precision.

Applications

- Profiling floats
- Gliders & other AUVs
- ROVs
- Moorings



Features

- Real-Full UV spectrum for maximum accuracy
- Real-time temperature/salinity compensation
- Real-time nitrate calculation
- Corrosion-proof anodized aluminum housing with 2000 meter depth rating
- Simple software-based, in-field reference checks
- User-friendly UCI software (Windows and Mac OS X compatible)

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.

Performance

Limit of Detection	0.5 μM (SW with T/S corr. processing) 2.0 μM (SW processing)
Range of Detection	3000 μM
Accuracy (greater of)	$\pm 2 \mu\text{M}$ ($\pm 0.028 \text{ mg/l-N}$) or $\pm 10\%$ of reading
Precision (short term)	0.3 μM (SW with T/S corr. processing) 2.4 μM (SW processing)
Drift (per hour lamp time)	0.3 μM (SW with T/S corr. processing) 1.0 μM (SW processing)

The Deep SUNA is designed to be more aerodynamic than the SUNA V2 and its use on a AUV should not alter the speed significantly. The Deep SUNA sample rate is the same as the SUNA V2 - 1Hz.

Optics

Path Length	10 nm
Wavelength Range	190-370 nm
Lamp Type	Continuous Wave, Deuterium Lamp
Lamp Lifetime	900 h

Electrical

Input Voltage	8-18 VDC
Power Consumption	7.5 W (0.625 A at 12 V) nominal

Mechanical

Material	Anodized Aluminium
Depth Rating	2000 m
Weight	1.8 kg
Displacement	1384 cm^3

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