

Deep SUNA

UV Nitrate Sensor

The Deep SUNA UV nitrate sensor extends Satlantic'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.

Features

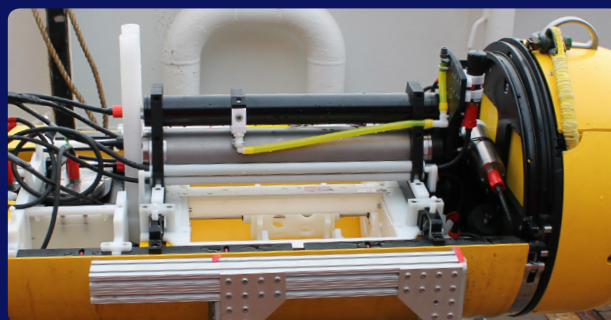
- Real-Full UV spectrum for maximum accuracy
- Real-time temperature/salinity compensation
- Real-time nitrate calculation
- Corrosion-proof anodized aluminum housing with 2000 meter depth rating
- Simple software-based, in-field reference checks
- User-friendly UCI software (Windows and Mac OS X compatible)

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



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 V@ - 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

