



## NuLAB

### Autonomous Nutrient Monitor for the Field, Plant or Lab

The NuLAB adapts established wet chemical methods to a field chemical analyzer. Precise volumes of sample, on-board standard and reagents connected to a rotary valve are mixed by a syringe pump and reacted solutions are analyzed in high precision colorimeters. In essence, the NuLAB is a rugged "chemistry robot" capable of various simultaneous analysis. Sample data is calibrated via preserved on-board standards that are analyzed at user specified intervals. Sample and reagent volumes, mixing times and flushing are controlled by text based macros that can be customized to achieve specific analytical goals.



Sensitive and specific wet chemistry methods	Individual channels for the analysis of nitrate, ortho-phosphate, ammonium and silicate
Calibration via preserved <b>on-board standard</b>	High reliability and dedicated support
Default or user customized chemistry	Biofouling control built in
Field Proven	Reagents and standards available to U.S customers



## Specifications

### Physical (two channel unit, add 50% for additional channel)

- Analyzer: 39 cm x 34 cm x 20 cm (H x W x D)
- Weight: 6 kg plus reagents

### Analytical

#### - Standard Ranges (detection limit to linear range)

- Standard Ranges (detection limit to linear range, micro M)

##### High Sensitivity Detectors

**mg/L:** N+N 0.003 to 0.70, Nitrite 0.002 to 0.5, Phosphate 0.006 to 0.8, Ammonium 0.004 to 0.3, Silicate 0.008 to 1.7

**micro mol/L:** N+N 0.2 to 50, Nitrite 0.15 to 35, Phosphate 0.2 to 25, Ammonium 0.3 to 20, Silicate 0.3 to 60

##### Low Sensitivity Detectors

**mg/L:** N+N 0.01 to 2.8, Nitrite 0.008 to 2.1, Phosphate 0.025 to 2.0, Ammonium 0.02 to 1.0, Silicate 0.04 to 2.8

**micro mol/L:** Nitrate 0.8 - 200, Nitrite 0.6 - 150, Phosphate 1.0 - 75, Ammonium 1.5 to 75, Silicate 1.5 to 100

- Precision (one SD @ midrange of scale): Nitrate 3%, Nitrite 2%, Phosphate 3%, Ammonium 3%, Silicate 3%
  - Expanded Ranges: Up to 5 mg/l through auto-dilution
  - Accuracy: Based on the accuracy of the preserved on-board standard and sample replicate precision
  - Analyses: Typically 1000 per channel, per deployment. Controlled by reagent payload and chemistry
  - Analysis Time: N+N 13min, Nitrite 9min, Phosphate 14min, Ammonium 17min, Silicate 16
- **Note:** detection limit calculated as 3 x SD of reagent blank; linear range is variable upon detector path length and chemistry. Contact Green Eyes for specific information.

### General

- Power: voltage 10 - 15 dc, current per channel (mA) heating max. 820, motors 160-260, idle 90
- Communications: RS232 9600,N,8,1
- Not submersible

**Please contact Green Eyes to learn more about collecting high quality time-series nutrient data**



*NuLab monitoring nutrients in a waterproof enclosure on a Florida bay*