

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 straight-forward macros that can be customized by users or Green Eyes to achieve specific analytical goals.



Green Eyes' NuLAB – Autonomous Nutrient Monitor

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



Specification

Physical

- Analyzer: 42 cm x 22 cm x 20 cm (H x W x D)
- Weight: 4.9 kg (add 1.1 kg for optional internal relays) plus reagents

Analytical

- Standard Ranges (detection limit to linear range)
 - Standard Ranges (detection limit to linear range, micro- M)
 - High Sensitivity Detectors (10mm)
 - 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 (2mm)
 - 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 14min, Nitrite 9min, Phosphate 16min, Ammonium 20min, 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.

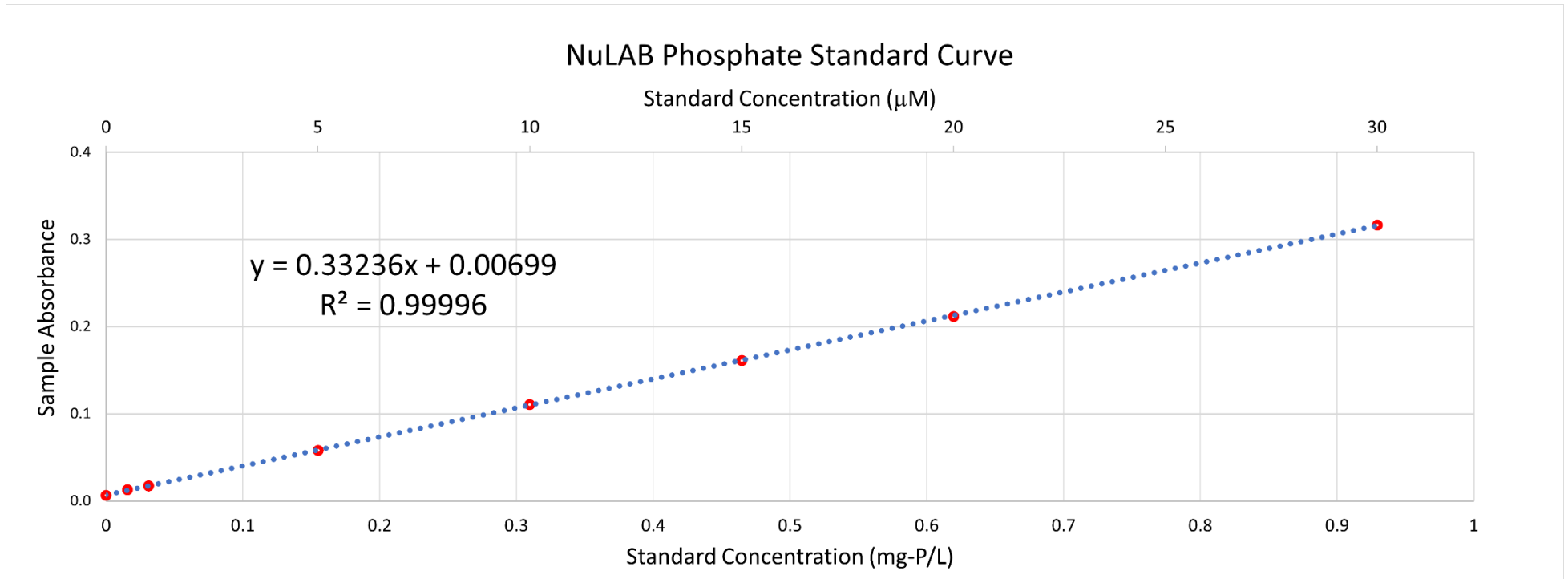
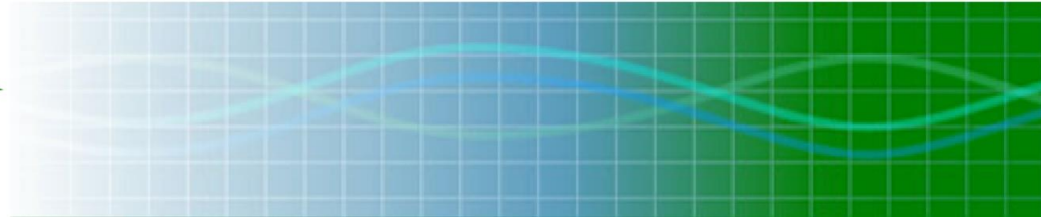
General

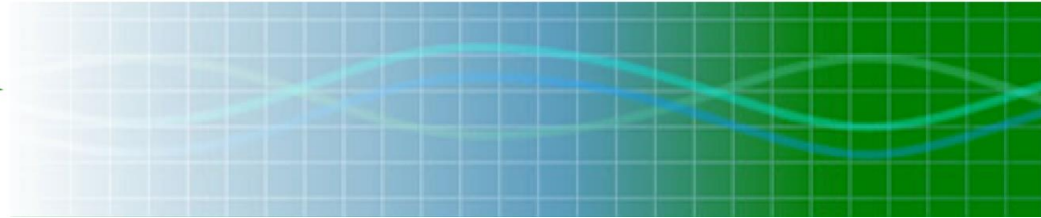
- Power: voltage 10 - 15 dc, current per channel (mA) heating max. 820, motors 160-260, idle 90
- Communications: RS232 9600,N,8,1
- Maximum inlet length: 1m, 0.66m vertical head

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





Standard Curve (Sample Absorbances)

