



*Our Planet Needs Us · Accept the Challenge*

## 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 wet-chemical 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 for the analysis of <b>Nitrate + Nitrite, Soluble Reactive Phosphorus, Ammonia + Ammonium, Silicate, Total Nitrogen and Total Phosphorus</b>	
Calibration via preserved on-board standard	High reliability and dedicated support
Default or user customized chemistry	Real-time data and remote login
Field proven	Reagents and standards available to U.S customers



*Our Planet Needs Us · Accept the Challenge*

## 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

- Ranges (detection limit to linear range)
  - High Sensitivity Detectors (6.4mm pathlength)
    - mg/L:** N+N 0.003 to 0.70, Nitrite 0.002 to 0.5, Phosphate 0.004 to 1.0, Ammonia/Ammonium 0.004 to 1.0, Silicate 0.005 to 1.7
    - micro mol/L:** N+N 0.2 to 50, Nitrite 0.2 to 35, Phosphate 0.3 to 25, Ammonia/Ammonium 0.3 to 20, Silicate 0.2 to 60
  - Low Sensitivity Detectors (2mm pathlength)
    - mg/L:** N+N 0.01 to 2.8, Nitrite 0.008 to 2.1, Phosphate 0.025 to 2.0, Ammonia/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, Ammonia/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 10 mg/l through dilution macro**
- 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 20min, Nitrite 15min, Phosphate 20min, Ammonium 20min, Silicate 16min
- **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

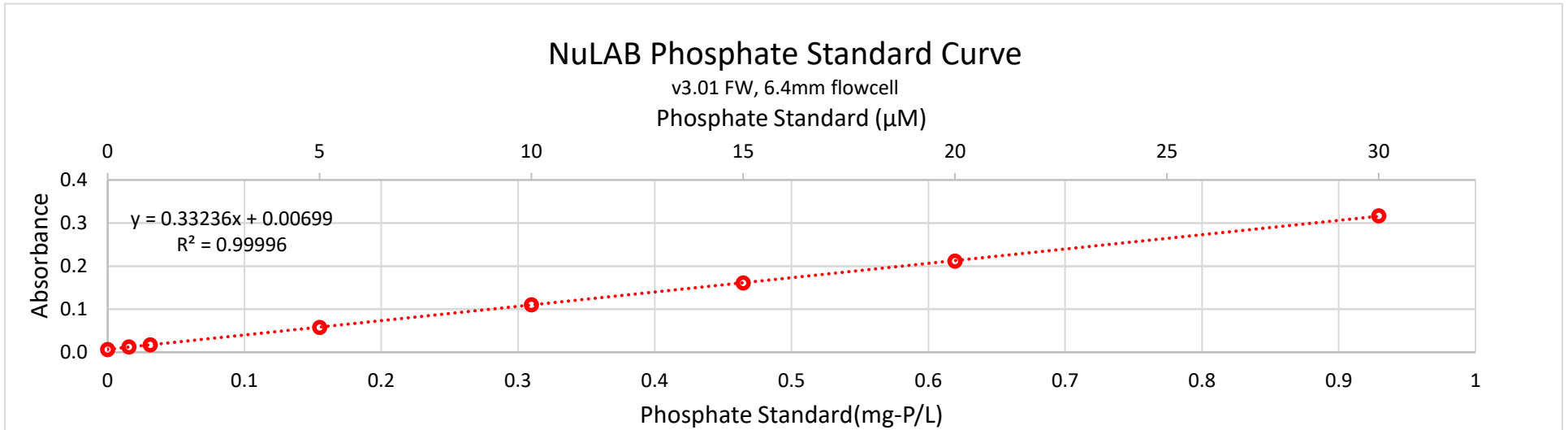
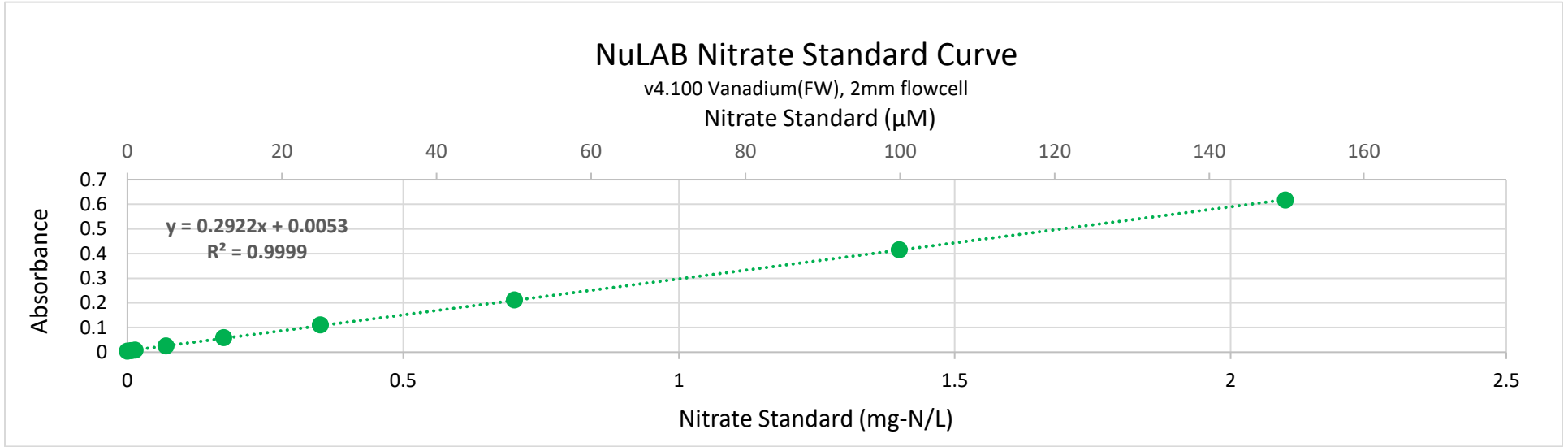
- Power: voltage 10 - 15 dc, current per channel (mA) heating max. 820, motors 160-260, idle 90
- Communications: RS232 9600,N,8,1
- Maximum inlet length: 1m, 0.66m vertical head



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

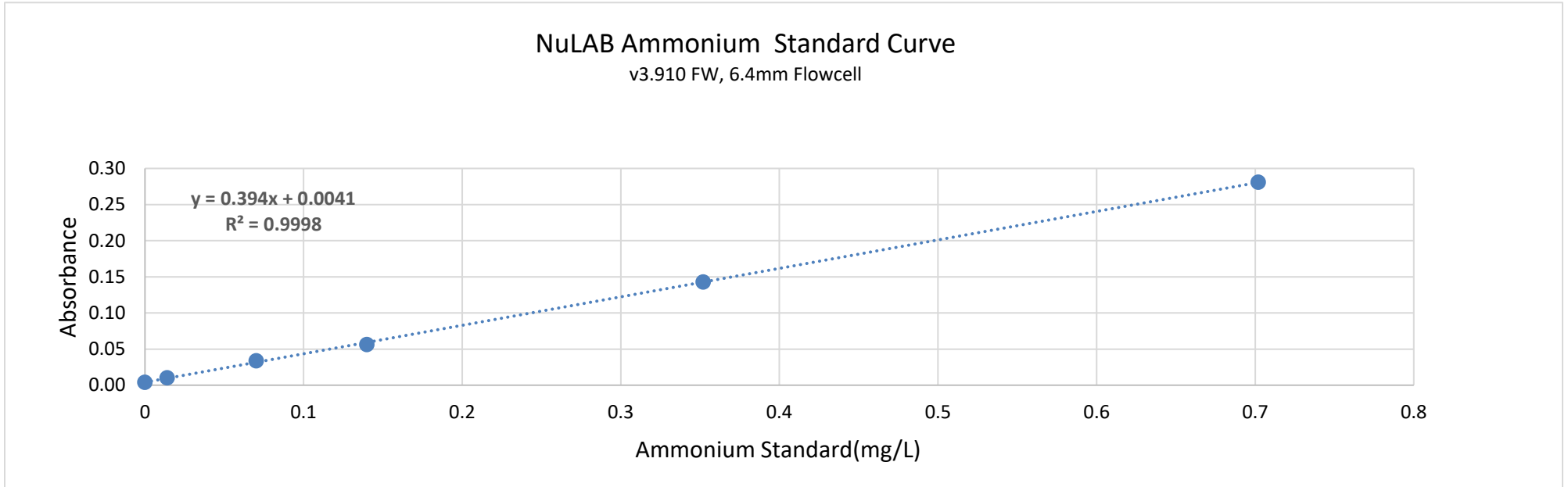


## Our Planet Needs Us · Accept the Challenge





*Our Planet Needs Us · Accept the Challenge*



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