

**HydroMetrics™****Nitrate GW50
Groundwater Optical
Nitrate Sensor**

Introduction

Many countries around the world are in the process of adopting nitrate caps via land discharge allowances to manage nitrate losses into freshwater bodies and groundwater drinking supplies from agricultural production. One area that remains unclear is how nitrate losses will be reliably measured to monitor and enforce these limits.

Current approaches are principally based on modelling, rather than direct measurement of nitrate losses, as options such as regular physical sampling or real-time sensors are too expensive to be scalable. To address this, Lincoln Agritech has developed a low-cost sensor capable of measuring the concentration of nitrates in groundwater via monitoring wells.

General Specifications

- Groundwater deployment to measure nitrate - nitrogen concentrations.
- Deployment in low ionic strength groundwater means organic carbon or chloride interferences are minimal.
- Designed to allow installation in 50 mm wells. These are often able to be installed by low cost direct push technologies, reducing the overall installation cost.
- Remote data-logging capability for real-time data.
- A fit for purpose Nitrate Sensor at a low price point that enables feasible deployment across multiple sites at the catchment or farm scale.
- Low power consumption (solar power installation possible).
- The sensor utilises optical sensor technology to extend the service interval when compared to other lower cost technologies such as Ion Selective Electrodes, which often suffer from significant calibration drift. This makes the HydroMetrics optical sensor more suitable for long term unattended deployment.
- Periodic cleaning rather than calibration required, reducing ongoing maintenance.
- Continuous monitoring as opposed to laboratory analysis is rapidly growing within the agricultural community due to increased data frequency.



Technical Specification

Measurement technology (light source)	Xenon flash
Measurement principle	UV Absorbance
Measurement cell	8 mm tube
Parameter	NO ₃ -N
Measurement range	0 – 50 mg/L (without measurement cell alteration)
Measurement accuracy	+/- 5% +0.1 mg N/L (against standards)
Turbidity compensation	Yes
Data logger	~ 16 GB internal storage
Measurement interval	≥ 1 min
Housing material	316 stainless steel
Dimensions (ø x L)	42.2 mm x 455 mm
Weight	3.44 kg (including 10m of cable)
Interface	SDI-12 / RS-232
Power consumption	< 100 mW
Power supply	11.5 – 15.5 V
Guarantee	1 year
Max pressure	2.0 bar as standard

Sensors are designed by Lincoln Agritech Ltd, New Zealand.
Specifications are subject to change without notification.

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