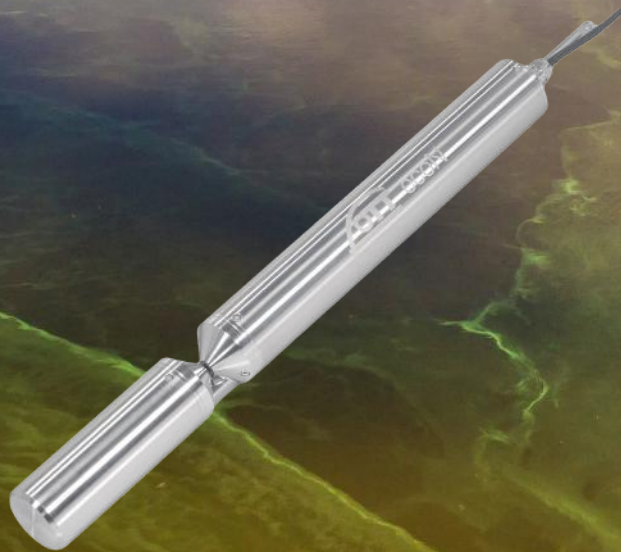




OTT ecoN

Low maintenance UV nitrate sensor



Low maintenance UV nitrate sensor

OTT econ

Advancing UV nitrate sensors, the OTT econ combines field reliability with a user friendly, low operational cost, future ready platform. It uses optical UV adsorption technology for the determination of nitrate concentrations in fresh surface and groundwater. The calculation of nitrate from the filtered absorption spectrum includes compensations for turbidity and organic interferences. Nitrate measurements and sensor status information is available in real-time for integration into data acquisition systems. The anti-fouling wiper reduces maintenance requirements and extends deployment times for continuous monitoring locations.

Important - this sensor is only for use in environmental fresh surface water and groundwater applications.



Applications

Fresh surface and groundwater:

- Lakes and reservoirs
- Streams and rivers
- Groundwater aquifers

Ideal For

- Nitrate loading and reduction studies
- Academic research
- Regulatory monitoring
- Wetland management

Reliable and high quality nitrate measurement at low operational cost

Features/Benefits

Smart optical technology

- Individual absorption channels deliver cost effective data
- Separate reference signal provides greater accuracy
- Smart channel processing reduces drift and eliminates bias
- Turbidity and dissolved organic matter compensations for data quality

Access with web browser

- No need to install software to access and manage instrument
- Minimizes IT security concerns
- Greater flexibility as different Operating Systems can be used

Anti-fouling wiper

- Wiper removes bio-fouling even in harsh conditions
- Minimizes the likelihood of noisy data caused by debris
- Simple to exchange wiper blades without the use of tools
- Reduces the amount of maintenance and increases deployment length
- Nano coating on lens reduces biofouling and prolongs life

Calibration verification

- Does not require annual factory calibrations reducing maintenance costs— Use standard solutions to verify performance and provide traceability — Verification of Zero baseline using ultrapure water
- Supports additional DOM compensation adjustment based on laboratory results

Flexible sensor options

- Ability to use sensor for different site conditions
- Less restrictions in instrument selection and usage
- On-board logger supporting portable applications with external power supply



Wiper reduces bio-fouling

Flexibility to equip evolving monitoring needs

Measurement Principle

The ecoN measurement principle uses the proven method of absorbance by nitrate at a specific wavelength which is measured by a photometer and then converted for the determination of the nitrate concentration. The sensor consists of key optical elements including a Xenon flash lamp source, a lens system, filters and photodiodes. The nitrate concentration is proportional to the remaining light intensity that has passed through the medium.

The ecoN sensor uses the absorption at 212 nm for the detection of NO₃-N. Advanced signal processing coupled with the absorption at 254 nm and 360 nm is used for the correction of organic compounds and turbidity.

Site Selection Considerations

OTT ecoN has a choice of 4 different path lengths that suit the wide variety of freshwater nitrate concentrations and turbidity conditions.

General guidance includes:

Shorter Path Lengths

- Greater Nitrate detection range
- Less sensitivity at low-level concentrations— Better at minimizing the impacts of turbidity

Longer Path Lengths

- Reduced Nitrate detection range
- Greater sensitivity at low-level concentrations
- Increase impacts from interferences such as turbidity



Solar power surface water monitoring station

System Approach

Online nitrate monitoring systems consist mainly of three components which are the nitrate sensor, a multi-parameter sonde and a data logger as the centerpiece of the system. The OTT ecoN is designed to interact with a variety of data loggers such as OTT netDL, Sutron SatLink3 and XLink. A system approach provides a multitude of advantages including wiper control, access to the quality control data, USB interface for local communication, Wi-Fi operation with wireless devices, full IP compatibility, data transmission via satellite and remote maintenance opportunities.



Integrate into a remote data acquisition system

Adaptable Path Lengths

A key part of the measurement system is the path length between the lens system, as the range of detectable nitrate concentrations is influenced by this distance. Choosing the correct path length based on the expected concentrations is important and additional influences such as turbidity ranges should also be considered. An advantage of the modular approach of the OTT ecoN lies in the ability to have the lens system and calibration adapted by factory trained personnel. IP compatibility, data transmission via satellite and remote maintenance opportunities.



Path length between lens system

Simple measurement verification for QA/QC

Practical design for reliability

The OTT ecoN has a precise high quality stainless steel construction and lens system providing a robust, corrosion resistant instrument. Making it easier to maintain and clean for calibration checks. The optional horizontal mounting brackets and compact design allows for a simple installation in discrete locations or river bank rail mount system. For vertical mounting, the OTT ecoN comes equipped with a convenient suspension device, versus using the communication cable for instrument deployment and retrieval.

Software interface

Quick and secure access to the instrument is achieved by using the smart G2 interface box that enables direct connection to the OTT ecoN using a web browser. Easily access live nitrate measurements, internal data logging files, optical performance indicators and system settings.

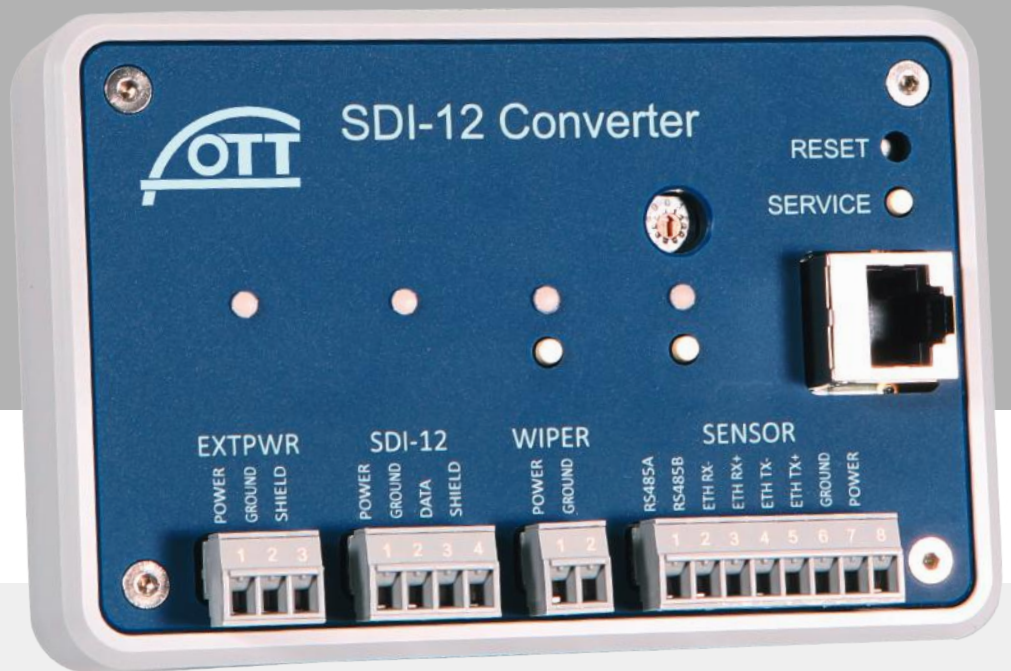
The internal data files can be exported to CSV formats for further analysis.



Local access to settings with the G2 interface

Accessory

OTT ecoN Converter



OTT ecoN Modbus to SDI-12 Protocol Converter

The SDI-12 converter allows you to remotely access your data with ease by acting as an interface between your OTT ecoN sensor and the SDI-12 interface of the peripherals.

Receive continuous information on the current operation mode and power supply, thanks to the converter's four status LEDs.

Enjoy remote configuration through the Ethernet interface and measurement controls.

- Low standby power of < 20 mW to operate with just a battery
- Four status LEDs for current operation mode and power supply info
- Ethernet interface allows for data export and sensor configuration via web interface
- Controls measurements with G2 sensors and wiper cleaning cycles
- Three modes for Sensor Scan, Wiper Cleaning, and Service Mode

Technical Specifications

Feature	Value
Light source	Xenon flash lamp
Detector	4 photo diodes + filter
Measurement principle	Attenuation
Optical path	1 mm, 2 mm, 5 mm, 10 mm
Parameter	NO3-N, NO3, NOx-N, NOx (calibrated with NO3 standard solution)
Measuring range	1 mm path: 0.5...60 mg/L NO3-N 2 mm path: 0.25...30 mg/L NO3-N 5 mm path: 0.1...12 mg/L NO3-N 10 mm path: 0.05...6 mg/L NO3-N
Measurement accuracy	1 mm = ± (5 % + 1.0 mg/L NO3-N) 2 mm = ± (5 % + 0.5 mg/L NO3-N) 5 mm = ± (5 % + 0.2 mg/L NO3-N) 10 mm = ± (5 % + 0.1 mg/L NO3-N)
Turbidity compensation	Yes
Data logger	2 GB
T100 response time	20 s
Measurement interval	≥ 10 s
Housing material	Stainless steel (1.4571/1.4404)
Dimensions (L x Ø)	470 mm x 48 mm (10 mm path) 18.5 inch x 1.9 inch (with 10 mm path)
Weight	3 kg (6.6 lbs)
Interface digital	Ethernet (TCP/IP) RS-485 (Modbus RTU) SDI-12
Power consumption	≤ 7 W
Power supply	12...24 VDC (± 10 %)
System compatibility	Modbus RTU
Warranty	US: 2 years
Max. pressure	3 bar (43.5 psig)
Protection type	IP68 NEMA 6P
Sample temperature	+2...+40 °C



Standard calibration solution verification with VALtub half-cup



Web browser software



Insights for Experts

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