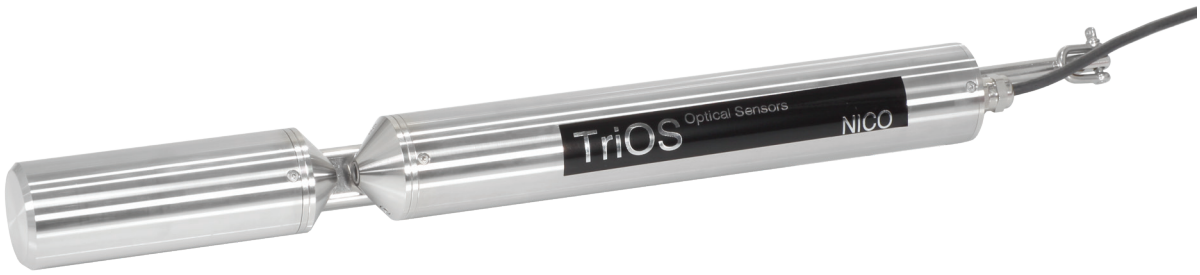
NICO
Photometer

Measurement of nitrates as a function of turbidity and organic substances



Applications

- Control of treatment in a treatment plant
- Environmental and resource monitoring
- Drinking water measurement

Advantages

- Troubled UV absorption measurement method
- Automatic compensation according to the turbidity of the water and organic substances
- Automatic cleaning by compressed air or wiper
- No reagent
- Optical window coated to minimize clogging

The new economical sensor for nitrate measurement

NICO is an optical sensor for the online measurement of nitrates in drinking water, wastewater and in the resource.

Equipped with three detection channels, this submerged photometer allows precise determination of nitrates by absorption, taking into account the turbidity and organic substances present.

A fourth intensity sensor automatically compensates for wear on the emission lamp and an internal temperature correction increases measurement stability.

The NICO probe features the new G2 interface which allows quick access to sensor data and configurations using a web browser on PC, tablet and smartphone.

The sensor is installed directly in the environment, even in very heavy water, or as a bypass with a measuring cell (plate and measuring station).

The unified platform of all TriOS photometers also facilitates a standardized system of spare parts and consumables, allowing the use of a wide range of accessories for our devices.

NICO has many accessories to optimize its integration into processes such as pipe mounting and cleaning automation.

A xenon flash lamp emits broad spectrum light directed in a beam of parallel wavelengths towards the optical path through the medium. Compounds in water absorb light at specific wavelengths.

3 photodiodes capture the light thus received on the other side of the optical path and measure the attenuation of light on the wavelengths 212 nm, 254 nm and 360 nm.

The sensor then calculates the light absorption at 212 nm for the detection of NO3-N, and corrects this value based on the absorptions at 254 and 360 nm for organic compounds and turbidity.

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Technical specifications

Measuring technology	Light source	Xenon flash lamp, broad spectrum UV - visible - IR
	4 detectors	1 x 212 nm receiving photodiode (NO_3-N, NO_3, NO_X-N, NO_X)
		1 x 254 nm receiving photodiode (SAC_{254})
		1 x 360nm reception photodiode (turbidity)
		1 x reference photodiode for emission light control
Principle of measurement		Mitigation measure
Optical path		0,3 mm, 1 mm, 2mm, 5 mm, 10 mm, 50 mm

Parameters		NO_3-N, NO_3, NO_X-N, NO_X (calibrated with standard NO_3 solution)
Measuring ranges	1 mm optical path	0,5 ... 60 mg/l NO_3-N / 0 ... 266 mg/l NO_3 *
	10 mm optical path	0,05 ... 6 mg/l NO_3-N / 0 ... 26,6 mg/l NO_3 *
Measuring accuracy	1 mm optical path	± 5 % + 1 mg/l NO_3-N / ± 5 % + 4,4 mg/l NO_3 *
	10 mm optical path	± 5 % + 0,1 mg/l NO_3-N / ± 5 % + 0,44 mg/l NO_3 *
Turbidity compensation		Automatique
Internal memory		2 GB
T100 response time		20 seconds
Measurement interval		≥ 10 s

Materials		Stainless steel (1.4571 / 1.4404) or titanium (3.7035)
Dimensions (L x d)		470 mm x 48 mm (with 10 mm optical path)
Weight		3 kg stainless steel - 2 kg titanium

Interface	Digital	Ethernet (TCP/IP)
		RS-485 (Modbus RTU)
Power supply		12 ... 24 VCC (± 10%)
Consumption		≤ 7 W

Maintenance		<0.5 h / month (standard use)
Calibration interval		24 month
Warranty		24 months in the European Union

Maximum pressure	SubConn connector	30 bar.
	Fixed connector	3 bar.
	FlowCell	1 bar. , 2 ... 4 l/min
Protection type		IP 68

Medium temperature / sample	+ 2 ... + 40 °C
Ambient temperature	+ 2 ... + 40 °C
Storage temperature	- 20 ... + 80 °C
Inflow velocity	0,1 ... 10 m/s

* Based on a standard calibration solution - note: 1 mg / L NO_3-N corresponds to 4.43 mg / L NO_3