



NICO

15SXXXXXX



UV photometer

for continuous online measurement of nitrate in water

The measurement principle of **NICO** is based on the principle of photometry. By analyzing the absorption of light at three specific wavelengths, NICO enables precise determination of the nitrate content - taking turbidity and organic matter into account. Integrated temperature compensation also ensures stable and reliable measurement results.

Thanks to the TriOS G2 interface, the sensor can be conveniently configured via a web browser. Integration into existing process control systems or external data loggers is straightforward. NICO can be conveniently controlled via WLAN using a laptop, tablet or smartphone - without any additional software or app installation.

Thanks to the uniform device platform, all TriOS photometers offer a high level of compatibility for spare parts and accessories as well as efficient integration into existing systems.

Advantages

- Without sampling and sample preparation
- Delay-free
- Without reagents
- Optical windows with nano coating
- Proven UV absorption method

Applications

- Sewage treatment plants
- Environmental monitoring
- Drinking water monitoring
- Industrial applications
- Aquaculture

Technical specifications

Measurement technology	Light source	Xenon flash lamp
	Detector	4 photodiodes + filter
Measurement principle		Absorption (Attenuation)
Optical path		0.3 mm, 1 mm, 2 mm, 5 mm, 10 mm, 20 mm, 50 mm
Parameters		NO ₃ / NO ₃ -N, NO _x / NO _x -N (calibrated with NO ₃ standard solution)
Response time		20 s
Temperature compensation		No
Turbidity compensation		Yes

Data logger		~ 2 GB
Reaction time T100		20 s
Measurement interval		≥ 10 s
Interface	digital	Ethernet (TCP/IP) RS-485 (Modbus RTU)
Power supply		12 - 24 VDC (± 10 %)
Power consumption		≤ 7 W
Connection		Fixed cable with 8-pin M12 connection
Housing material		Stainless steel (1.4571/1.4404) or titanium (3.7035)
Dimensions (L x Ø)		~ 470 mm x 48 mm* ~ 18.5" x 1.9" *
Weight	VA	~ 3 kg ~ 6.6 lbs
	Ti	~ 2 kg ~ 4.4 lbs

* With 10 mm path

Sample temperature	0...+55 °C* +2...+40 °C for specified measurement accuracy	~ +32 to +131 °F* ~ +36 to +104 °F
Ambient temperature	0...+55 °C* +2...+40 °C for specified measurement accuracy	~ +32 to +131 °F* ~ +36 to +104 °F
Relative humidity	0 ... 95 % non-condensing	
Storage temperature	-20...+80 °C	~ -4 to +176 °F

* No ice crystals in the sample water

Max. pressure	with SubConn	30 bar	~ 435 psi
	with fixed cable	3 bar	~ 43.5 psi
	in FlowCell	1 bar, 2...4 L/min	~ 14.5 psi at 0.5 to 1.0 gpm
Inflow velocity		0.1...10 m/s	
Degree of protection	Sensor side	IP68	
	Controller side	IP65/ IP67	
Operating altitude		max. altitude 2000 m (6562 ft)	

Maintenance effort	≤ 0.5 h/month typical
Calibration/ maintenance interval	24 months
System compatibility	TriBox3, TriBox mini, Modbus RTU
Warranty	1 year (EU & US: 2 years)

Measurement ranges and detection limits

Path length	Parameter	Measurement range [mg/L]	Accuracy ^{1, 2, 3}	Precision ¹ [mg/L]	Detection limit ¹ [mg/L]	Limit of quantification ¹ [mg/L]
0.3 mm	Nitrate NO ₃ -N	0...165	± (5 % + 3.3)	0.50	1.65	5.0
	Nitrate NO ₃	0...730	± (5 % + 14.5)	2.22	7.26	22.2
1 mm	Nitrate NO ₃ -N	0...50	± (5 % + 1)	0.15	0.5	1.5
	Nitrate NO ₃	0...222	± (5 % + 4.4)	0.66	2.2	6.65
2 mm	Nitrate NO ₃ -N	0...25	± (5 % + 0.5)	0.075	0.25	0.75
	Nitrate NO ₃	0...111	± (5 % + 2.2)	0.33	1.1	3.32
5 mm	Nitrate NO ₃ -N	0...10	± (5 % + 0.2)	0.03	0.1	0.3
	Nitrate NO ₃	0...44	± (5 % + 0.88)	0.133	0.44	1.33
10 mm	Nitrate NO ₃ -N	0...5	± (5 % + 0.1)	0.015	0.05	0.15
	Nitrate NO ₃	0...22	± (5 % + 0.44)	0.067	0.22	0.67
20 mm	Nitrate NO ₃ -N	0...2.5	± (5 % + 0.05)	0.008	0.025	0.075
	Nitrate NO ₃	0...11	± (5 % + 0.22)	0.033	0.11	0.33
50 mm	Nitrate NO ₃ -N	0...1	± (5 % + 0.02)	0.003	0.01	0.03
	Nitrate NO ₃	0...4.43	± (5 % + 0.09)	0.014	0.044	0.133

Note: 1 mg/L NO₃-N corresponds to 4.43 mg/L NO₃.

¹ Under laboratory conditions

² Related to a nitrate standard solution

³ General: +/- (5 % + 2-fold detection limit)