

ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/AUV507-EN REV. B

UviTec™ Sensor

High nitrate/nitrite



Measurement made easy

Water quality monitoring solutions

About ABB Continuous Water Analysis

ABB's Continuous Water Analysis product line is a world leader with a broad portfolio that measures...

Aluminum, Ammonia, Benzene, BOD, COD, Chlorine, Chromium VI, Color, Conductivity, Dissolved Oxygen, DOC, Fluoride, Hydrazine, Hydrocarbons, Iron, Manganese, Monochloramine, Nitrate, Nitrite, Permanganate, pH, ORP, Phosphate, Silica, Sodium, Surfactants, TOC, TSS, Turbidity, UV254, UVT and more!

About UviTec products

UviTec products use spectrophotometric and fluorescence measuring techniques to deliver lab-quality water analysis results in the process environment. Through the power of UV/VIS technology, UviTec solutions enable rapid detection of a wide range of water quality parameters and compounds in real time.

Features & benefits of this product

- Affordable real-time nitrate (NO₃) and nitrite (NO₂) monitoring
- Ideal for monitoring high levels of nitrate and nitrite
- Multiple wavelength sensor uses UV LED technology for superior measurement performance
- Bypass-style sensor with multiple flow cell selections to meet application demands
- Operator-friendly, low-maintenance UV and Visible LED design
- Reagent-free optical measurements
- Simple to install and operate

UviTec High nitrate/nitrite sensor

ABB's bypass High Nitrate/Nitrite Sensor provides affordable real-time measurement of high levels of nitrate (NO₃) and nitrite (NO₂) in water or wastewater. Designed to meet the needs of many monitoring applications, the HNL series offers multiple flow cell designs and sensor path length selections to meet the desired measurement range.

Controllers and accessories

Our innovative modular product platform ensures our clients gain the real-time water quality monitoring system that meets their specific demands and budget. With multiple sensor, controller and accessory options available, ABB provides a total solution for all of your unique water quality needs.

Liquid Ai-compatible

Our Liquid Ai™ data services complement our real-time water quality monitoring systems. Our Remote Monitoring platform is a powerful data management and visualization tool that enables access to data anywhere, anytime.

Measurement principle

ABB's High Nitrate/Nitrite Sensor provides superior measurement performance across multiple wavelengths of light using UV and Visible LEDs. Many compounds absorb light in the UV-VIS spectrum, and how much the compounds absorb is directly proportional to their concentration. Compounds that may interfere with measurement are compensated for using additional reference wavelengths. ABB's innovative High Nitrate/Nitrite Sensor is advancing water and wastewater management.

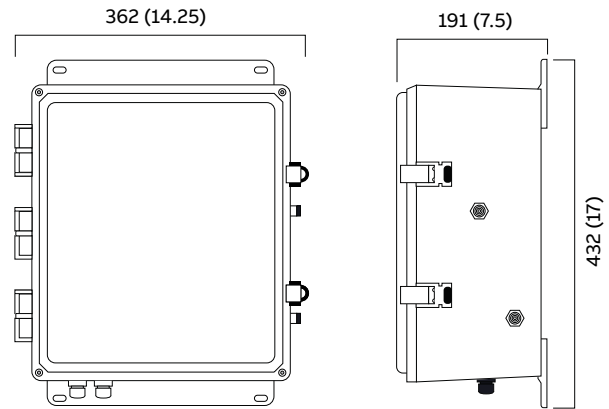
Areas of application

- Municipal drinking water.
- Municipal wastewater.
- Industrial process water.
- Industrial wastewater.

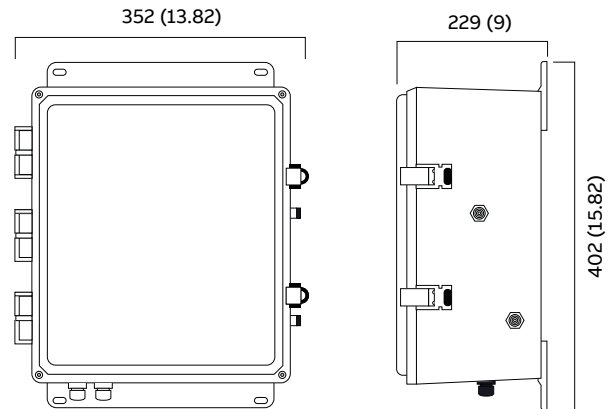
Dimensions

The High Nitrate/Nitrite Sensor is a bypass cabinet instrument installed directly on a wall, railing or system backboard. Sample is supplied to the sensor from either a pressurized source or from an open-channel using an accessory pumping system. Dimensions shown in mm (in).

Dimensions for 1000 & 2000 series models



Dimensions for 4000 series models



Sensor selection

Table 1 Sensor selection

Model	Description
1000	Ideal for closed-loop, high-pressure or high-solids wastewater monitoring applications
2000	Ideal for general water monitoring applications
4000	Ideal for high-purity water monitoring applications

Specifications

Model

1000 Series
2000 Series
4000 Series

Path length

1000 Series
0.5, 1, 2, 4, 10 mm
2000 Series
1, 2, 4, 8 mm
4000 series
25, 50, 100, 150 mm

Parameters

Nitrate (NO₃) and nitrite (NO₂)

Range

Depends on model selected.
Refer to Table 2 on page 5.

Accuracy

± 0.5 % full scale

Units

mg/L, ppm

Sampling time

30 seconds

Calibration

Factory calibrated. Field adjustment of calibration is possible.

Cleaning

In-situ chemical cleaning makes cleaning quick and easy.
Automatic chemical cleaning is optional.

Self-diagnostics

Detection and diagnosis of internal system fault

Alarms

Dry contact terminals allow for operator configurable alarms for: high and low set points, low lamp output, leaks, system fault, etc.

Humidity control

Humidity sensor with large plug-in regenerating desiccant system

Wavelengths

UV and visible light wavelengths

Light source

UV LED

Flow rate

1000 Series
500 to 1,000 mL/min
2000 & 4000 Series
300 to 1,000 mL/min

Pressure rating

1000 Series
5.86 bar (85 psi) max.
2000 & 4000 Series
1.38 bar (20 psi) max.

Fluid connections

1000 Series
9.5 mm (0.375 in) OD tube push-in fittings
2000 & 4000 Series
6.35 mm (0.25 in) OD tube push-in fittings

Wetted materials

1000 Series
Kynar®, FEP, quartz, SS316L, Viton™
2000 & 4000 Series
Kynar, polyethylene, quartz, SS 316L, Viton

Electrical/comm.

From Controller

Ambient temperature

0 to 45 °C (32 to 113 °F)

Water temperature*

0 to 90 °C (32 to 194 °F) at 21 °C (69.8 °F)
Ambient temperature

Enclosure

NEMA 4X, wall mountable

Weight

1000 & 2000 Series
9.97 kg (22 lb)
4000 Series
10.88 kg (24 lb)

Dimensions (H × W × D)

1000 & 2000 Series
432 × 362 × 190 mm
(17 × 14.25 × 7.5 in)
4000 Series
402 × 351 × 229 mm
(15.82 × 13.82 × 9.00 in)

* Water temperature range based on material compatibility only. Contact ABB to verify application.

Sensor models and range*

Includes high nitrate/nitrite sensor, flow cell, calibration bottle, and dehumidifier.

Controller and accessories sold separately.

Table 2 Sensor models and range

Model	Path length	NO ₃ (mg/L)	NO ₃ -N (mg/L)	NO ₂ -N (mg/L)	NO ₂ (mg/L)
HNL1005	0.5 mm	900 to 177,000	200 to 40,000	60 to 12,000	200 to 40,000
HNL1010	1 mm	450 to 88,500	100 to 20,000	30 to 6,000	100 to 20,000
HNL1020	2 mm	225 to 44,250	50 to 10,000	15 to 3,000	50 to 10,000
HNL1040	4 mm	100 to 22,000	25 to 5,000	7.5 to 1,500	25 to 5,000
HNL1100	10 mm	40 to 8,500	10 to 2,000	3 to 600	10 to 2,000
HNL2010	1 mm	450 to 88,500	100 to 20,000	30 to 6,000	100 to 20,000
HNL2020	2 mm	225 to 44,250	50 to 10,000	15 to 3,000	50 to 10,000
HNL2040	4 mm	100 to 22,000	25 to 5,000	7.5 to 1,500	25 to 5,000
HNL2080	8 mm	50 to 11,000	12.5 to 2,500	3.75 to 750	12 to 2,500
HNL4025	25 mm	20 to 3,500	4 to 800	1.2 to 240	4 to 800
HNL4050	50 mm	10 to 1750	2 to 400	0.6 to 120	2 to 400
HNL4100	100 mm	5 to 900	1 to 200	0.3 to 60	1 to 200
HNL4150	150 mm	3 to 600	0.7 to 140	0.2 to 40	0.7 to 130

Controllers

Controllers include proprietary inputs for UviTec sensors and accessories.

Table 3 UviTec Controllers

Part number	Name	Description
3KXA300301 V	UviTec Controller	Wall-mounted controller with 4-line x 20-character backlit LCD display. Includes Modbus® RTU (RS485), 1 channel of 4 to 20 mA out and digital I/O module
3KXA300302 V	UviTec Controller Pro	Wall-mounted controller with 307 mm (12.1 in) color LCD touch panel PC interface (PC external on door model). Includes Modbus TCP

* Stated ranges are based on testing in deionized water. Site-specific conditions, such as interfering substances in the water, may limit the measuring range and accuracy. Contact ABB to confirm model selection.

Accessories

Table 4 UviTec accessories

Part number	Name	Description
3KXA300000U0001	UviTec Clean System I	Automatic chemical cleaning system for use with 2000 series models
3KXA300000U0002	UviTec Clean System II	Automatic chemical cleaning system for use with 4000 series models
3KXA300000U0003	UviTec Pump Clean System I	Self-priming pump and automatic chemical cleaning for use with 2000 and 3000 series models
3KXA300000U0004	UviTec Pump Clean System II	Self-priming pump and automatic chemical cleaning for use with 4000 series models
3KXA300000U0013	UviTec Dual Feed II	Dual feed option includes Digital I/O module for use with controllers

Ordering information

UviTec Bypass Sensor for Nitrate/Nitrite (High Range) (ABB part number: 3KXA300507 V)	AUV507/	XXX	X	XXX	Options
Parameter					
Nitrate/Nitrite (High Range)		HNL			
Series					
1000 Series for closed loop, high pressure/high solids wastewater monitoring			1		
2000 Series for general water monitoring			2		
4000 Series for high purity water monitoring			4		
Path length*					
0.5 mm				005	
1 mm				010	
2 mm				020	
4 mm				040	
8 mm				080	
10 mm				100	
25 mm				025	
50 mm				050	
100 mm				100	
150 mm				150	

Optional ordering codes

Add 1 or more of the following codes after the standard ordering information to select any additional options if required:

Sample handling

Clean System I for use with 2000 series models (pressurized samples) – Modbus	SC3
Clean System II for use with 4000 series models (pressurized samples) – Modbus	SC4
Pump Clean System I for use with 2000 series models (non-pressurized samples) – Modbus	SP3
Pump Clean System II for use with 4000 series models (non-pressurized samples) – Modbus	SP4
Pump Clean Pro System for use with 1000 series models (pressurized)	SP5
Pump Clean Pro System for use with 1000 series models (non-pressurized)	SP6

Pump Clean Pro Upgrades (multiple sel)

Rinse valve	PUR
Second cleaning valve	PUS
Compressed Air system	PUC

Additional sample handling (multiple sel)

De-bubbler to remove bubbles from sample	SH1
Dual Feed II system enables measurement of two water samples with one analyzer	SH3

Documentation language

English	M5
German	M1
Italian	M2
Spanish	M3
French	M4

Liquid Ai – calibration service

Calibration health – One time (basic)	LC1
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Liquid Ai – Annual subscriptions

Remote monitoring dashboard – Annual	LD4
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Trademarks

- Liquid Ai is a trademark of ABB Limited.
- Kynar is a registered trademark of Arkema Inc.
- Modbus is a registered trademark of Schneider Electric USA, Inc.
- UviTec is a trademark of ABB Limited.
- Viton is a trademark of The Chemours Company FC, LLC

* Refer to path lengths available for each series in "Specifications" on page 4.

ABB Measurement & Analytics

For your local ABB contact, visit:
abb.com/contacts

For more product information, visit:
abb.com/measurement

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