

ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/AUV504-EN REV. B

UviTec™ Sensor

BOD/COD



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 BOD/COD monitoring
- 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 LED design
- Reagent-free optical measurements
- Simple to install and operate

UviTec BOD/COD sensor

ABB's bypass BOD/COD sensor provides affordable real-time measurement of organic matter in water or wastewater. Designed to meet the needs of many monitoring applications, the UviTec BOD/COD sensor 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 controller and accessory options available such as automatic chemical cleaning systems that lower maintenance while improving system performance, 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 quality monitoring systems. Calibration Health Monitoring ensures accuracy and reliability are maintained so our clients can have the utmost confidence in their results, while our Remote Monitoring platform enables access to data anywhere, anytime.

Measurement principle

ABB's BOD/COD sensor provides superior measurement performance across multiple wavelengths of light using UV LEDs. Many compounds absorb light in the UV-VIS spectrum including organic compounds. The sensor measures organics in a multi-dimensional way that results in improved correlations to aggregate organics water quality parameters, such as BOD, COD, and TOC. This also allows the sensor to be able to detect changes in the composition of organics independently of their concentration. ABB's innovative BOD/COD sensor is advancing wastewater management.

Areas of application

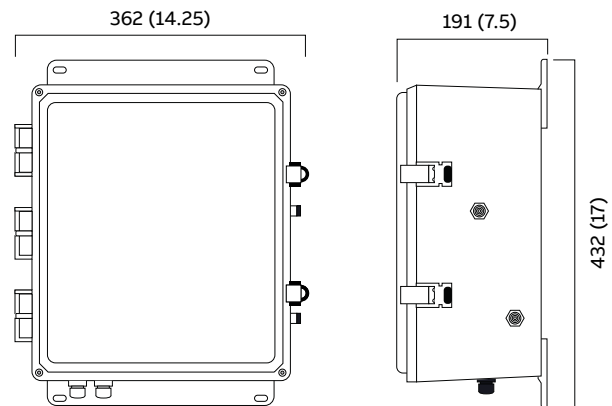
- Municipal drinking water.
- Municipal wastewater.
- Industrial process water.
- Industrial wastewater.

Dimensions

The UviTec BOD/COD 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



Sensor selection

Table 1 Sensor selection

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

Specifications

Model

1000 Series
2000 Series

Path length

1000 Series
0.5, 1, 2, 4, 10 mm
2000 Series
1, 2, 4, 8 mm

Parameters

BOD, COD, TOC

Range

Depends on model selected.
Refer to tables in "Sensor models and range" on page 5.

Units

mg/L

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

Multiple wavelengths

Light source

UV LED

Flow rate

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

Pressure rating

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

Fluid connections

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

Wetted materials

1000 Series
Kynar®, FEP, quartz, SS316L, Viton™
2000 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

9.97 kg (22 lb)

Dimensions (H × W × D)

432 × 362 × 190 mm
(17 × 14.25 × 7.5 in)

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

Sensor models and range

Includes BOD/COD sensor, flow cell, calibration bottle and dehumidifier. Controller and accessories sold separately.

Measurement ranges are estimations based on previous field data, and may vary based on plant-specific details. Full measurement range may be greater than the ranges stated in the table below, although accuracy may be significantly reduced outside these stated ranges.

Contact ABB for your application-specific demands.

Municipal

Product number	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)
BL1005	0.5 mm	0 to 6,000	0 to 14,000	0 to 3,500
BL1010	1 mm	0 to 3,000	0 to 7,000	0 to 1,750
BL1020	2 mm	0 to 1,500	0 to 3,500	0 to 875
BL1040	4 mm	0 to 750	0 to 1,750	0 to 440
BL1100	10 mm	0 to 300	0 to 700	0 to 175
BL2010	1 mm	0 to 3,000	0 to 7,000	0 to 1,750
BL2020	2 mm	0 to 1,500	0 to 3,500	0 to 875
BL2040	4 mm	0 to 750	0 to 1,750	0 to 440
BL2080	8 mm	0 to 375	0 to 875	0 to 220

Dairy

Product number	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)
BL1005	0.5 mm	0 to 20,000	0 to 50,000	0 to 12,500
BL1010	1 mm	0 to 10,000	0 to 25,000	0 to 6,250
BL1020	2 mm	0 to 5,000	0 to 12,500	0 to 3,125
BL1040	4 mm	0 to 2,550	0 to 6,250	0 to 1,560
BL1100	10 mm	0 to 1,000	0 to 2,500	0 to 625
BL2010	1 mm	0 to 10,000	0 to 25,000	0 to 6,250
BL2020	2 mm	0 to 5,000	0 to 12,500	0 to 3,125
BL2040	4 mm	0 to 2,550	0 to 6,350	0 to 1,560
BL2080	8 mm	0 to 1,250	0 to 3,125	0 to 780

Beverage

Product number	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)
BL1005	0.5 mm	0 to 16,000	0 to 48,000	0 to 12,000
BL1010	1 mm	0 to 8,000	0 to 24,000	0 to 6,000
BL1020	2 mm	0 to 4,000	0 to 12,000	0 to 3,000
BL1040	4 mm	0 to 2,000	0 to 6,000	0 to 1,500
BL1100	10 mm	0 to 800	0 to 2,400	0 to 600
BL2010	1 mm	0 to 8,000	0 to 24,000	0 to 6,000
BL2020	2 mm	0 to 4,000	0 to 12,000	0 to 3,000
BL2040	4 mm	0 to 2,000	0 to 6,000	0 to 1,500
BL2080	8 mm	0 to 1,000	0 to 3,000	0 to 750

Brewery

Product number	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)
BL1005	0.5 mm	0 to 16,000	0 to 48,000	0 to 12,000
BL1010	1 mm	0 to 8,000	0 to 24,000	0 to 6,000
BL1020	2 mm	0 to 4,000	0 to 12,000	0 to 3,000
BL1040	4 mm	0 to 2,000	0 to 6,000	0 to 1,500
BL1100	10 mm	0 to 800	0 to 2,400	0 to 600
BL2010	1 mm	0 to 8,000	0 to 24,000	0 to 6,000
BL2020	2 mm	0 to 4,000	0 to 12,000	0 to 3,000
BL2040	4 mm	0 to 2,000	0 to 6,000	0 to 1,500
BL2080	8 mm	0 to 1,000	0 to 3,000	0 to 750

Meat processing

Product number	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)
BL1005	0.5 mm	0 to 12,000	0 to 20,000	0 to 5,000
BL1010	1 mm	0 to 6,000	0 to 10,000	0 to 2,500
BL1020	2 mm	0 to 3,000	0 to 5,000	0 to 1,250
BL1040	4 mm	0 to 1,500	0 to 2,500	0 to 600
BL1100	10 mm	0 to 600	0 to 1,000	0 to 250
BL2010	1 mm	0 to 6,000	0 to 10,000	0 to 2,500
BL2020	2 mm	0 to 3,000	0 to 5,000	0 to 1,250
BL2040	4 mm	0 to 1,500	0 to 2,500	0 to 625
BL2080	8 mm	0 to 750	0 to 1,250	0 to 310

Pulp & paper

Product number	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)
BL1005	0.5 mm	0 to 1,400	0 to 4,000	0 to 1,000
BL1010	1 mm	0 to 700	0 to 2,000	0 to 500
BL1020	2 mm	0 to 350	0 to 1,000	0 to 250
BL1040	4 mm	0 to 175	0 to 500	0 to 125
BL1100	10 mm	0 to 70	0 to 200	0 to 50
BL2010	1 mm	0 to 700	0 to 2,000	0 to 500
BL2020	2 mm	0 to 350	0 to 1,000	0 to 250
BL2040	4 mm	0 to 175	0 to 500	0 to 125
BL2080	8 mm	0 to 90	0 to 250	0 to 60

* Stated ranges are approximate, dependent on site and application. Contact ABB to confirm model selection.

* TSS measurement output possible. Contact ABB to confirm.

Controllers

Controllers include proprietary inputs for UviTec sensors and accessories.

Table 2 UviTec Controllers

Part number	Name	Description
3KXA300301 V	UviTec Controller	Wall-mounted controller with 4-line × 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

Accessories

Table 3 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
3KXA300000U0009	UviTec Pump Clean Pro System (pressurized)	For high solids sample water, automatic chemical cleaning and pumping system for up to 7.62 m (25 ft) vertical lift or 30.48 m (100 ft) horizontal in pressurized installation (no air compressor)
3KXA300000U0010	UviTec Pump Clean Pro System (non-pressurized)	For high solids sample water, automatic chemical cleaning and pumping system for up to 7.62 m (25 ft) vertical lift or 30.48 m (100 ft) horizontal in non-pressurized/ open channel installation (no air compressor)
3KXA300000U0013	UviTec Dual Feed II	Dual feed option includes Digital I/O module for use with controllers

Ordering information

UviTec BOD/COD Sensor (ABB part number: 3KXA300504 V)	AUV504/	XX	X	XXX	Options
Parameter					
BOD/COD		BL			
Series					
1000 Series for closed loop, high pressure/high solids wastewater monitoring			1		
2000 Series for general water monitoring			2		
Path length*					
0.5 mm				005	
1 mm				010	
2 mm				020	
4 mm				040	
8 mm				080	
10 mm				100	

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 (standard)	LC2
Calibration health – One time (advanced)	LC3

Liquid Ai – Annual subscription

Remote monitoring dashboard – Annual	LD4
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* Refer to path lengths available for each series in "Specifications" on page 4.

Trademarks

- Kynar is a registered trademark of Arkema Inc.
- Liquid Ai is a trademark of ABB Limited.
- 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

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For more product information, visit:
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