
ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/AUV402-EN REV. B

UviTec™ Probe

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 organics monitoring
- Multiple wavelength sensor uses patent-pending technology for superior measurement performance
- Robust submersible probe with titanium or stainless steel housing
- Operator-friendly, low-maintenance UV LED design
- Reagent-free optical measurements
- Simple to install and operate

UviTec BOD/COD probe

ABB's robust UviTec BOD/COD probe provides affordable real-time measurement of organic matter in water or wastewater. The probe's rugged body is built to withstand harsh environments, with titanium or stainless steel options. Designed to meet the needs of many monitoring applications, the BA series offers multiple path length selections for 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. 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 UviTec BOD/COD probe utilizes patent-pending technology to provide 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 and COD. 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 probe is advancing wastewater management.

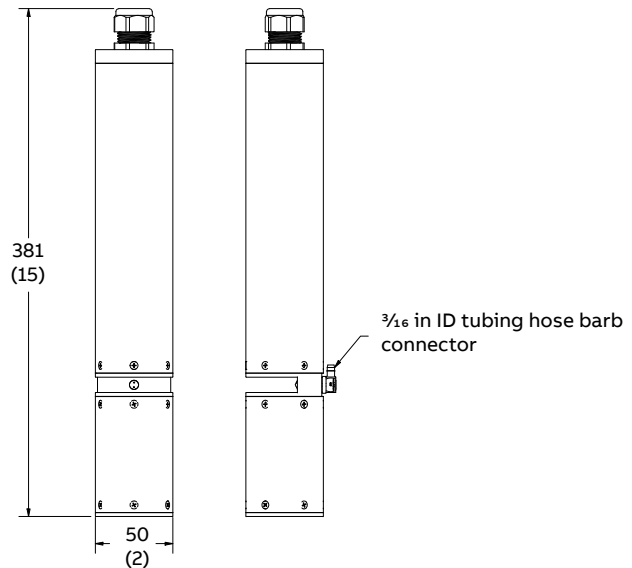
Areas of application

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

Dimensions

The probe is a submersible instrument installed directly in-situ using a pole mounting kit, chain mount, or tri-clamp. Dimensions shown in mm (in).

Probe dimensions



Probe mount options

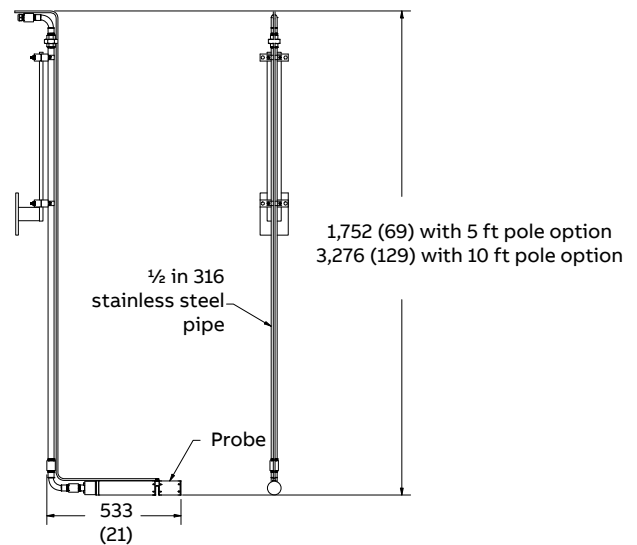


Figure 1 Pole mount

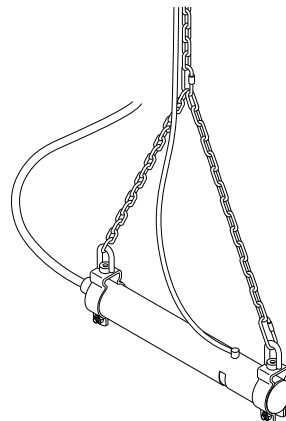


Figure 2 Chain mount

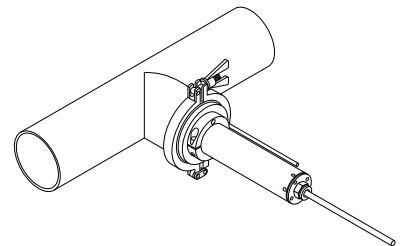


Figure 3 Tri-clamp

Specifications

Model

BA-X
BA-S

Path length

0.5, 1, 2, 4, 10 mm

Parameters

BOD, COD, TOC, TSS

Range

Depends on model selected.
Refer to "Probe models and range" on page 5.

Units

mg/L

Sampling time

10 seconds

Calibration

Factory calibrated. Field adjustment of calibration is possible.

Cleaning

Automatic compressed air or pressurized water cleaning with optional Probe Clean System

Self-diagnostics

Detection and diagnosis of internal system fault

Alarms

Continuous detection of leaks, lamp output, humidity, temperature and electrical fault

Humidity control

Humidity sensor with desiccant pack

Wavelengths

Multiple wavelengths

Light source

UV LED

Electrical/comm.

From Controller

Pressure rating

1.03 bar (15 psi)

Operating temperature*

0 to 45 °C (32 to 113 °F)

Housing material

BA-X
Titanium (Grade 2)
BA-S
Stainless steel (SS 316)

Wetted materials

BA-X
Titanium, epoxy, sapphire, SS 316, Viton™
BA-S
Epoxy, sapphire, SS 316, Viton

Weight**

BA-X
1.5 kg (3.31 lb)
BA-S
2.5 kg (5.25 lb)

Ingress protection type

IPX8

Dimensions (H × Ø)

381 × 51 mm (15 × 2.0 in)

* Operating (water) temperature absolute maximum 55 °C (131 °F). Instrument performance reduced when operating outside recommended operating range. Contact ABB to verify application.

** Weight does not include cable. Cable weight: 0.70 kg (1.55 lb).

Probe models and range

Includes titanium (-X) or stainless steel (-S) BOD/COD probe and 10.6 m (35 ft) of communication cable.

Controller, mounting kit and cleaning system 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

Model	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	TSS (mg/L)*
BA-X2005/ BA-S2005	0.5 mm	0 to 6,000	0 to 14,000	0 to 3,500	0 to 40,000
BA-X2010/ BA-S2010	1 mm	0 to 3,000	0 to 7,000	0 to 1,750	0 to 20,000
BA-X2020/ BA-S2020	2 mm	0 to 1,500	0 to 3,500	0 to 875	0 to 10,000
BA-X2040/ BA-S2040	4 mm	0 to 750	0 to 1,750	0 to 440	0 to 5,000
BA-X2100/ BA-S2100	10 mm	0 to 300	0 to 700	0 to 175	0 to 2,000

Brewery

Model	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	TSS (mg/L)*
BA-X2005/ BA-S2005	0.5 mm	0 to 16,000	0 to 48,000	0 to 12,000	0 to 40,000
BA-X2010/ BA-S2010	1 mm	0 to 8,000	0 to 24,000	0 to 6,000	0 to 20,000
BA-X2020/ BA-S2020	2 mm	0 to 4,000	0 to 12,000	0 to 3,000	0 to 10,000
BA-X2040/ BA-S2040	4 mm	0 to 2,000	0 to 6,000	0 to 1,500	0 to 5,000
BA-X2100/ BA-S2100	10 mm	0 to 800	0 to 2,400	0 to 600	0 to 2,000

Dairy

Model	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	TSS (mg/L)*
BA-X2005/ BA-S2005	0.5 mm	0 to 20,000	0 to 50,000	0 to 12,500	0 to 40,000
BA-X2010/ BA-S2010	1 mm	0 to 10,000	0 to 25,000	0 to 6,250	0 to 20,000
BA-X2020/ BA-S2020	2 mm	0 to 5,000	0 to 12,500	0 to 3,125	0 to 10,000
BA-X2040/ BA-S2040	4 mm	0 to 2,500	0 to 6,250	0 to 1,560	0 to 5,000
BA-X2100/ BA-S2100	10 mm	0 to 1,000	0 to 2,500	0 to 625	0 to 2,000

Meat processing

Model	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	TSS (mg/L)*
BA-X2005/ BA-S2005	0.5 mm	0 to 12,000	0 to 20,000	0 to 5,000	0 to 40,000
BA-X2010/ BA-S2010	1 mm	0 to 6,000	0 to 10,000	0 to 2,500	0 to 20,000
BA-X2020/ BA-S2020	2 mm	0 to 3,000	0 to 5,000	0 to 1,250	0 to 10,000
BA-X2040/ BA-S2040	4 mm	0 to 1,500	0 to 2,500	0 to 625	0 to 5,000
BA-X2100/ BA-S2100	10 mm	0 to 600	0 to 1,000	0 to 250	0 to 2,000

Beverage

Model	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	TSS (mg/L)*
BA-X2005/ BA-S2005	0.5 mm	0 to 16,000	0 to 48,000	0 to 12,000	0 to 40,000
BA-X2010/ BA-S2010	1 mm	0 to 8,000	0 to 24,000	0 to 6,000	0 to 20,000
BA-X2020/ BA-S2020	2 mm	0 to 4,000	0 to 12,000	0 to 3,000	0 to 10,000
BA-X2040/ BA-S2040	4 mm	0 to 2,000	0 to 6,000	0 to 1,500	0 to 5,000
BA-X2100/ BA-S2100	10 mm	0 to 800	0 to 2,400	0 to 600	0 to 2,000

Pulp & paper

Model	Path length	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	TSS (mg/L)*
BA-X2005/ BA-S2005	0.5 mm	0 to 1,400	0 to 4,000	0 to 1,000	0 to 40,000
BA-X2010/ BA-S2010	1 mm	0 to 700	0 to 2,000	0 to 500	0 to 20,000
BA-X2020/ BA-S2020	2 mm	0 to 350	0 to 1,000	0 to 250	0 to 10,000
BA-X2040/ BA-S2040	4 mm	0 to 175	0 to 500	0 to 125	0 to 5,000
BA-X2100/ BA-S2100	10 mm	0 to 70	0 to 200	0 to 50	0 to 2,000

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

* TSS measurement range is approximate and dependent upon site specific conditions. For a more accurate TSS output a dedicated TSS or Turbidity sensor should be installed as part of the system.

Controllers

Controllers include proprietary inputs for UviTec sensors and accessories.

Table 1 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 2 UviTec accessories

Part number	Name	Description
3KXA300000U0029	UviTec Probe Clean System	Cleaning valve module requires on-site compressed air or pressured water for automatic probe cleaning
3KXA300000U0030	UviTec Compressed Air System	Compressor for air cleaning when compressed air not available on-site
3KXA300000U0031	Probe mounting kit I	Probe mounting kit includes wall mount and two mounting brackets. No pole included.
3KXA300000U0032	Probe mounting kit II	Probe mounting kit includes wall mount and two mounting brackets. 1.5 m (5 ft) pole included.
3KXA300000U0033	Probe mounting kit III	Probe mounting kit includes wall mount and two mounting brackets. 3 m (10 ft) pole included.
3KXA300000U0034	Tri-clamp	Stainless steel clamp for mounting probe in line with process pipe.
3KXA300000U0035	Chain mount	Stainless steel chain for mounting probe in open channel

Ordering information

UviTec BOD/COD Probe (ABB part number: 3KXA300402 V)		AUV402/	XX	XX	XXX	Options
Parameter						
BOD/COD			BA			
Probe material						
Stainless steel				S2		
Titanium				X2		
Path length						
0.5 mm					005	
1 mm					010	
2 mm					020	
4 mm					040	
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:

Cleaning system (multiple sel)

Probe Clean System	PCS
Compressed Air System	PUC

Probe mounting

Pole mount kit I – No pole included	MK1
Pole mount kit II – 5 ft pole included	MK2
Pole mount kit III – 10 ft pole included	MK3
Tri-clamp	MT1
Chain mount	MC1

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 subscriptions

Remote monitoring dashboard - Annual	LD4
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Trademarks

- 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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