

ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/AUV505-EN REV. B

# UviTec™ Sensor

## TOC



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# 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 TOC monitoring
- Multiple wavelength sensor uses UV LED technology for superior measurement performance
- Wastewater to high purity measurement ranges
- 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 TOC sensor

ABB's bypass UviTec TOC sensor provides affordable real-time measurement of organic matter in water or wastewater. Designed to meet the needs of many monitoring applications, the OL 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 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 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 TOC 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 organic water quality parameters, such as TOC and DOC. This allows the sensor to be able to detect changes in the composition of organics independently of their concentration. ABB's UviTec TOC sensor is advancing water and wastewater management.

## Areas of application

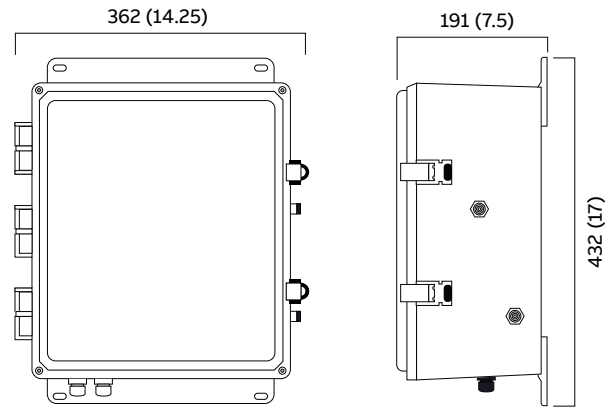
- Municipal drinking water.
- Municipal wastewater.
- Industrial process water.
- Industrial wastewater.

## Dimensions

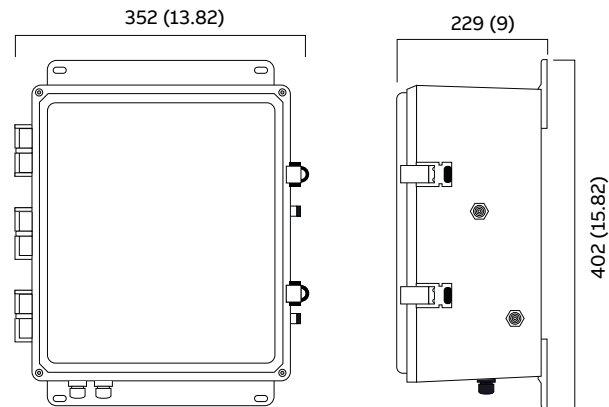
The UviTec TOC sensor is a bypass cabinet instrument installed directly on a wall, railing, or system backboard. Sample is supplied to the sensor from either a pressurized source or from an open-channel using an accessory pumping system.

Dimensions shown in mm (in).

### Dimensions for 1000 & 2000 Series



### Dimensions for 4000 Series



## 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, 250, 100, 150 mm

### Parameters

TOC, DOC

### Range

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

### 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

Multiple 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 ( $\frac{3}{8}$  in) OD tube push-in fittings  
2000 & 4000 Series  
6.35 mm ( $\frac{1}{4}$  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  
10.9 kg (24 lb)

### Dimensions (H × W × D)

1000 & 2000 Series  
432 × 362 × 190 mm  
(17 × 14.25 × 7.5 in)  
4000 Series  
402 × 351 × 228 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 TOC sensor, flowcell, 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	TOC/DOC (mg/L)
OL1005	0.5 mm	0 to 3,500
OL1010	1 mm	0 to 1,750
OL1020	2 mm	0 to 875
OL1040	4 mm	0 to 440
OL1100	10 mm	0 to 175
OL2010	1 mm	0 to 1750
OL2020	2 mm	0 to 875
OL2040	4 mm	0 to 440
OL2080	8 mm	0 to 220
OL4025	25 mm	0 to 70
OL4050	50 mm	0 to 35
OL4100	100 mm	0 to 18
OL4150	150 mm	0 to 12

### Dairy

Product number	Path length	TOC/DOC (mg/L)
OL1005	0.5 mm	0 to 12,500
OL1010	1 mm	0 to 6,250
OL1020	2 mm	0 to 3,125
OL1040	4 mm	0 to 1,560
OL1100	10 mm	0 to 625
OL2010	1 mm	0 to 6250
OL2020	2 mm	0 to 3,125
OL2040	4 mm	0 to 1,560
OL2080	8 mm	0 to 780

### Beverage

Product number	Path length	TOC/DOC (mg/L)
OL1005	0.5 mm	0 to 12,000
OL1010	1 mm	0 to 6,000
OL1020	2 mm	0 to 3,000
OL1040	4 mm	0 to 1,500
OL1100	10 mm	0 to 600
OL2010	1 mm	0 to 6,000
OL2020	2 mm	0 to 3,000
OL2040	4 mm	0 to 1,500
OL2080	8 mm	0 to 750

### Brewery

Product number	Path length	TOC/DOC (mg/L)
OL1005	0.5 mm	0 to 12,000
OL1010	1 mm	0 to 6,000
OL1020	2 mm	0 to 3,000
OL1040	4 mm	0 to 1,500
OL1100	10 mm	0 to 600
OL2010	1 mm	0 to 6,000
OL2020	2 mm	0 to 3,000
OL2040	4 mm	0 to 1,500
OL2080	8 mm	0 to 750

### Meat processing

Product number	Path length	TOC/DOC (mg/L)
OL1005	0.5 mm	0 to 5,000
OL1010	1 mm	0 to 2,500
OL1020	2 mm	0 to 1,250
OL1040	4 mm	0 to 600
OL1100	10 mm	0 to 250
OL2010	1 mm	0 to 2,500
OL2020	2 mm	0 to 1,250
OL2040	4 mm	0 to 625
OL2080	8 mm	0 to 310

### Pulp & paper

Product number	Path length	TOC/DOC (mg/L)
OL1005	0.5 mm	0 to 1,000
OL1010	1 mm	0 to 500
OL1020	2 mm	0 to 250
OL1040	4 mm	0 to 125
OL1100	10 mm	0 to 50
OL2010	1 mm	0 to 500
OL2020	2 mm	0 to 250
OL2040	4 mm	0 to 125
OL2080	8 mm	0 to 60

\* Stated ranges are approximate, dependent on industry, site and application. Contact ABB to confirm model selection.  
 \* Higher maximum range possible with use of Dilution System option.

## 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 TOC Sensor (ABB part number: 3KXA300505 V)	AUV505/	XX	X	XXX	Options
<b>Parameter</b>					
TOC		OL			
<b>Series</b>					
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		
<b>Path length*</b>					
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:

Code	Description	Options
<b>Sample handling</b>		
	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
<b>Pump Clean Pro Upgrades (multiple sel)</b>		
	Rinse valve	PUR
	Second cleaning valve	PUS
	Compressed Air system	PUC
<b>Additional sample handling (multiple sel)</b>		
	De-bubbler to remove bubbles from sample	SH1
	Dual Feed II system enables measurement of two water samples with one analyzer	SH3
<b>Documentation language</b>		
	English	M5
	German	M1
	Italian	M2
	Spanish	M3
	French	M4
<b>Liquid Ai – Calibration service</b>		
	Calibration health – One time (standard)	LC2
	Calibration health – One time (advanced)	LC3
<b>Liquid Ai – Annual subscriptions</b>		
	Remote monitoring dashboard – Annual	LD4

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

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## 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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