ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/AUV601-EN REV. C

UviTec Sensor

Spectrum (Deuterium)



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
- Highly accurate real-time water quality information
- Data-rich, full-scanning UV-VIS sensor (190 to 750 nm)
- Wastewater to high purity measurement ranges
- Bypass-style sensor with multiple flow cell selections to meet application demands
- Simple optical measurements, no reagents
- Multiple parameter configuration available

UviTec Spectrum sensor

ABB's data-rich bypass UviTec Spectrum sensor provides real-time measurement of a wide array of parameters and compounds in water or wastewater. Designed to meet the needs of many monitoring applications, the PL series offers multiple flow cell designs and sensor 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. Our Remote Monitoring platform is a powerful data management and visualization tool that enables access to data anywhere, anytime.

Measurement principle

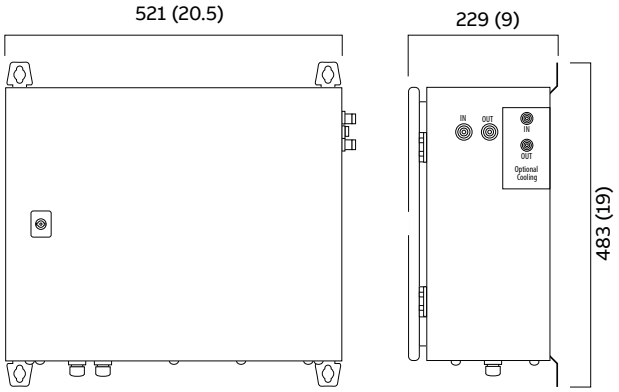
ABB's UviTec Spectrum sensor utilizes UV-VIS light between 190 to 750 nm for measurement, continuously scanning the water every minute of every day collecting hundreds of data points. The sensor benefits from ABB's innovative Split-Sense Pro technology that compensates for lamp drift and fluctuations, providing an accurate and stable output overtime. PL series spectrum sensor parameters include BOD, COD, TOC, DOC, UV254, UVT, TSS, nitrate, nitrite, nitrite & nitrate, algae, permanganate, monochloramine, color, dyes, pesticides, polymers, oil-in-water, diesel fuel, BTEX, surfactants, soaps, black liquor, H_2S, O_3, THM, HAA, contaminant alarms, spectral fingerprint, custom alarm and more, dependant on application and industry.

Areas of application

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

Dimensions

The UviTec Spectrum 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 in mm (in).



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 mm

Parameters
BOD, COD, TOC, DOC, UV254, UVT, TSS, nitrate, nitrite, nitrite & nitrate, algae, permanganate, monochloramine, color, dyes, pesticides, polymers, oil-in-water, diesel fuel, BTEX, surfactants, soaps, black liquor, H_2S, O_3, THM, HAA, contaminant alarms, spectral fingerprint, custom alarm

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

Units
Parameter specific (mg/L, cm-1, % or PCU)

Sampling time
1 minute

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, leak detected, system fault, etc.

Humidity control
Humidity sensor with large plug-in regenerating desiccant system

Wavelengths
Full scanning between 190 to 750 nm

Light source
Deuterium and tungsten

Lamp life
4,000 h each

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
19.95 kg (44 lb)

Dimensions (H × W × D)
483 × 521 × 229 mm
(19.0 × 20.5 × 9.0 in)

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

Sensor models and range*

Includes UV-VIS spectrum sensor, flow cell, calibration bottle and dehumidifier.
Controller and accessories sold separately.

Table 2 Sensor models and range**

Model	Path length	BOD (mg/L)	COD (mg/L)	TOC/DOC (mg/L)	UV254 (cm-1)	Color (PCU)	NO_3-N (mg/L)	NO_3 (mg/L)	NO_2-N (mg/L)
PL1005	0.5 mm	0 to 3,000	0 to 6,000	0 to 1,600	0 to 40	0 to 20,000	0 to 100	0 to 440	0 to 100
PL1010	1 mm	0 to 1,500	0 to 3,000	0 to 800	0 to 20	0 to 10,000	0 to 50	0 to 220	0 to 50
PL1020	2 mm	0 to 750	0 to 1,500	0 to 400	0 to 10	0 to 5,000	0 to 25	0 to 110	0 to 25
PL1040	4 mm	0 to 375	0 to 750	0 to 200	0 to 5	0 to 2,500	0 to 12.5	0 to 55	0 to 12.5
PL1100	10 mm	0 to 150	0 to 300	0 to 80	0 to 2	0 to 1,000	0 to 5	0 to 22	0 to 5
PL2010	1 mm	0 to 1,500	0 to 3,000	0 to 800	0 to 20	0 to 10,000	0 to 50	0 to 220	0 to 50
PL2020	2 mm	0 to 750	0 to 1,500	0 to 400	0 to 10	0 to 5,000	0 to 25	0 to 110	0 to 25
PL2040	4 mm	0 to 375	0 to 750	0 to 200	0 to 5	0 to 2,500	0 to 12.5	0 to 55	0 to 12.5
PL2080	8 mm	0 to 187	0 to 375	0 to 100	0 to 2.5	0 to 1,250	0 to 6.25	0 to 27.5	0 to 6.25
PL4025	25 mm	0 to 60	0 to 120	0 to 32	0 to 0.8	0 to 400	0 to 2	0 to 8.8	0 to 2
PL4050	50 mm	0 to 30	0 to 60	0 to 16	0 to 0.4	0 to 200	0 to 1	0 to 4.4	0 to 1

Range for algae, permanganate, dyes, pesticides, oil-in-water, diesel fuel, BTEX, black liquor, soaps, surfactants, H_2S, O_3, THM, HAA, contaminant alarms, spectral fingerprint, custom alarm are site-specific. Contact ABB for details.

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 × 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 approximate, dependent on industry, site and application.

** Higher maximum range possible with use of Dilution System option.

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
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 Spectrum (Deuterium) Sensor (ABB part number: 3KXA300601 V)	AUV601/	XX	X	XXX	Options
Parameter					
Spectrum (Deuterium)		PL			
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	

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 subscriptions	
Anomaly detection – Annual	LA4
Remote monitoring dashboard – Annual	LD4

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

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.

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For more product information, visit:
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