ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/AUV204-EN REV. D

UVITEC™ ANALYZER

UV254

ENGINEERED
TO OUTRUN



MEASUREMENT MADE EASY

Water quality monitoring solutions

Reliable UV254/UVT measurements utilizing UviTec Ortho-Beam & Split-Sense Pro technologies

- Minimal maintenance, maximum uptime.
- Lab-quality accuracy in real time.
- Dual-wavelength intelligence.
- Long-term stability without drift.

Easy to maintain

- Optional chemical cleaning to prevent mineral fouling.
- Straightforward annual service.
- Simple diagnostic messages.

Key features

- Easy to install, plug-and-play.
- Auto-zeroing after every measurement.
- Custom calibration features.
- Multiple flow cell path lengths for various applications.

Introduction to UV254 & UVT

UV254, or ultraviolet absorbance at 254 nanometers, measures the concentration of aromatic organic compounds in water, primarily humic and fulvic acids from natural organic matter.

UV-C light at 254 nm is the industry standard for germicidal disinfection because it effectively damages microbial DNA and RNA by forming thymine dimers that prevent replication. UV 254 nm is preferred over alternatives because it is non-thermal, non-toxic, leaves no chemical residue, and offers an optimal balance between effectiveness and cost-efficiency in the removal of bacteria, viruses, fungi, and spores

UVT (UV Transmittance) measures the percentage of UV light at 254 nm that passes through water, providing a complementary view of overall water clarity and quality.

UVT is essential for validating UV disinfection system effectiveness. Most systems require minimum 65 to 75 % UVT to ensure adequate pathogen inactivation and regulatory compliance.

When drinking water is disinfected with chlorine, it is important to monitor and understand the organic content of the source water. Dissolved organic carbon (DOC), for instance, can promote the formation of disinfection by-products (DBPs) such as trihalomethanes (THMs) and haloacetic acids (HAA5). UV254 can serve as a rapid surrogate measurement for DOC and can help predict the formation of potential DBPs.

For drinking water utilities, monitoring UV254 enables proactive optimization of coagulation and filtration processes to remove organic precursors before disinfection, while UVT monitoring ensures that treated water maintains the clarity needed for effective UV disinfection, preventing regulatory violations and protecting public health.

In wastewater reuse and industrial applications, UV254 provides real-time tracking of treatment efficiency and early detection of organic pollution events, while UVT validates that advanced treatment trains are producing water suitable for reuse or discharge. Unlike laboratory TOC analysis that can take hours or manual grab sampling for turbidity, both UV254 and UVT offer reagent-free optical measurement from a single sensor, making them essential tools for process control, compliance verification, and safeguarding water quality from source to tap.

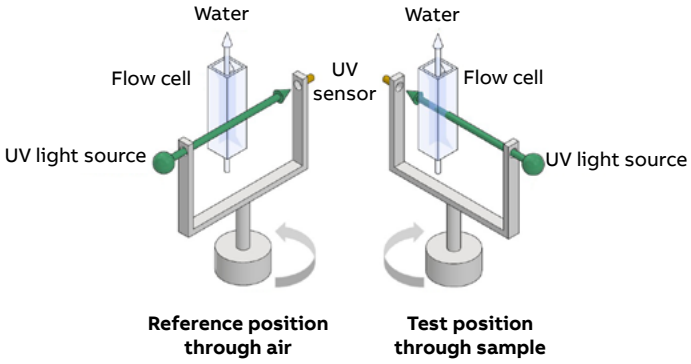
UviTec UV254 Analyzer

The UviTec UV254/UVT Analyzer transforms organics monitoring into a real-time control point, delivering continuous precision data that improves process efficiency, compliance, and operating costs. By measuring UV254 absorbance at 254 nm, an industry-proven indicator of organic load, DBP formation potential, and UV demand, the system provides decision-ready insights without relying on grab samples or lab delays.

Our unique Ortho-Beam and Split-Sense Pro technologies automatically compensate for lamp drift, fouling, and optical interference, ensuring accurate, stable readings even in challenging wastewater environments. This translates into immediate operational gains: optimized UV disinfection energy, reduced coagulant consumption, early detection of source water changes, and tighter DBP precursor control; thus,delivering lower costs, higher efficiency, and stronger regulatory confidence.

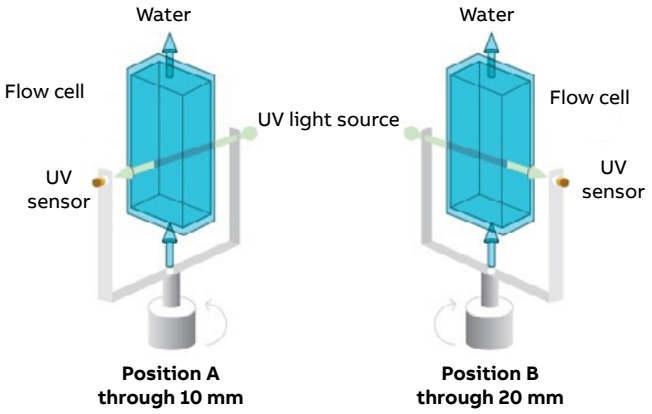
Split-Sense Pro and Ortho-Beam technologies

The UviTec UV254 Analyzer feature innovative Split-Sense Pro or Ortho-Beam technologies that deliver lab-quality accuracy with minimal maintenance requirements. Split-Sense Pro automatically compensates for lamp fluctuations and drift, dramatically reducing calibration frequency and ensuring highly accurate, reliable measurements test after test throughout the lamp's lifetime.



01 Split-Sense Pro technology

Ortho-Beam technology uses a unique dual path length approach, measuring absorbance through a 10 mm path and a 20 mm path. This enables it to intelligently distinguish between actual water quality changes and lamp performance issues while also compensating for fouling on the flow cell walls. This combination eliminates sensor drift over time, provides long-term stability with factory calibration, and reduces total cost of ownership. Together, these technologies ensure the highest level of confidence in organics monitoring, delivering consistent, real-time results with minimal operator intervention and maximum up-time.



02 Ortho-Beam technology

Areas of application

Municipal & Industrial UVT

- Disinfection optimization & performance enhancement.
- Control UV dose & energy usage in treated effluent.
  - Typical monitoring point pre-UV disinfection.

Municipal Drinking Water UV254

- Coagulation optimization & cost saving.
- DBP control (as bias to problematic organics).
- Organic removal to prevent DBPs, TOC reduction in treated water.
  - Typical monitoring point pre-coagulation and/or post coagulation.

Specifications

Technology
3000 Series
Ortho-Beam
4000 Series
Split-Sense Pro

Path length
3000 Series
10 × 20 mm
4000 Series
50, 100, 150, 250 mm

Parameters
UVT, UV254

Range
Depends on model selected. Refer to on page 6.

Accuracy
± 0.5 % FS

Units
% or cm^{-1}

Sampling time
10 seconds

Calibration
In-situ zeroing to any sample with known UVT.
No further calibration required.

Cleaning
Manual cleaning or automatic chemical cleaning options available.

Self-diagnostics
Detection and diagnosis of internal system fault

Operator interface
Five push buttons to control a comprehensive hierarchical menu system

Display
4 × 20 backlit LCD with LED alarm

Alarms
1 × dry contact terminal allows 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

Approvals
CE Mark

Outputs
1 × 4-20 mA output total: user configurable, self-powered
Optional analog output:
Single channel analog output: 1 × output total (must be configured at ordering)
1 × RS232 serial for PC connection

Wavelength
253.7 nm (Optional 550 nm turbidity compensation upgrade)

Light source
Low-pressure mercury UV lamp

Lamp life
2 years

Process flow rate
300 to 1,000 mL/min

Process pressure rating
1.38 bar (20 psi) max.

Process fluid connections
6.35 mm (0.25 in) OD tube push-in fittings

Wetted materials
Kynar®, polyethylene, quartz, SS 316L, Viton™

Electrical
24 V DC

Ambient temperature
0 to 45 °C (32 to 113 °F)

Process water temperature*
0 to 90 °C (32 to 194 °F) at 21 °C (69.8 °F) ambient temperature

Storage temperature
-20 to 60 °C (-4 to 140 °F)

Enclosure
NEMA 4X, wall-mountable, IP65

Weight
3000 Series
10 kg (22 lb)
4000 Series
10.9 kg (24 lb)

Dimensions (H × W × D)
3000 Series
432 × 362 × 190 mm (17 × 14.25 × 7.5 in)
4000 Series
451 × 394 × 171 mm (17.75 × 15.5 × 6.75 in)

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

Analyzer models and range*

Includes UV254 analyzer, flow cell, calibration bottle, dehumidifier and standard power supply.
Automatic chemical cleaning system and additional accessories sold separately.

UVITEC UV254 ANALYZER MODELS

Series	Path length	UV254 (cm^{-1})	UVT (%)
M3000	10 mm × 20 mm	0 to 1	10 to 100
M4050	50 mm	0 to 0.4	40 to 100
M4100	100 mm	0 to 0.2	63 to 100
M4150	150 mm	0 to 0.13	74 to 100
M4250	250 mm	0 to 0.08	83 to 100

Accessories

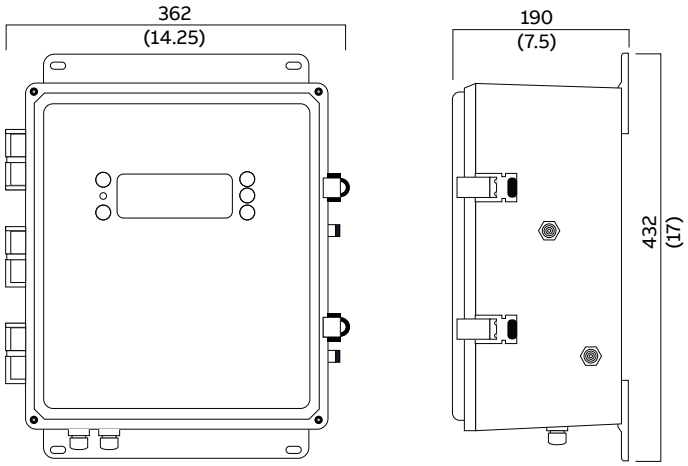
UVITEC ACCESSORIES

Part number	Name	Description
3KXA300000U0001	UviTec Clean System I	Automatic chemical cleaning system for use with 3000 Series
3KXA300000U0002	UviTec Clean System II	Automatic chemical cleaning system for use with 4000 Series
3KXA300000U0013	UviTec Dual Feed II	Dual feed option includes Digital I/O module for use with controllers

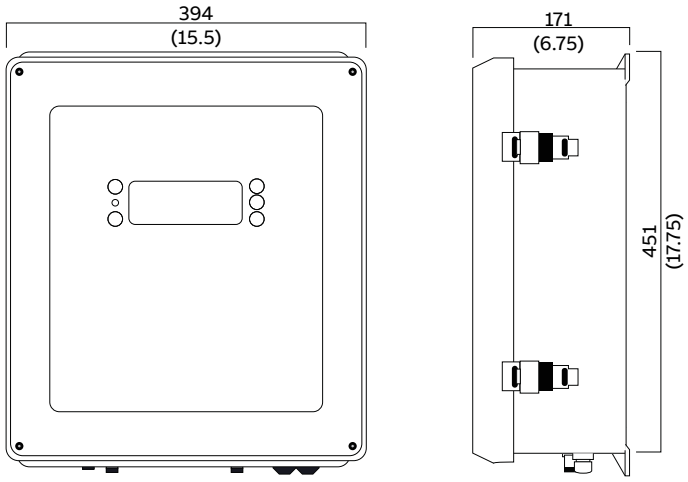
Dimensions

The UV254 analyzer is a bypass cabinet instrument installed directly on a wall, railing or system backboard. Sample is supplied to the analyzer from either a pressurized source or from an open channel using an accessory pumping system. Dimensions shown in mm (in).

Dimensions for 3000 series



Dimensions for 4000 series



* Stated ranges are approximate, dependent on industry, site and application – contact ABB to confirm model selection

Ordering information

UviTec UV254 Analyzer (ABB part number: 3KXA300204 V)	AUV204/	X	X	XXX	Options
Type					
M Series UV254		M			
Series					
3000 Series for general water monitoring (Ortho-Beam)			3		
4000 Series for high purity water monitoring			4		
Path length*					
10 × 20 mm				000	
50 mm				050	
100 mm				100	
150 mm				150	
250 mm				250	

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

Analyzer upgrades (multiple sel)	
Turbidity compensation for M Series analyzers	AUT
Additional 4 to 20 mA channel	AUC
Sample handling	
Clean System I for use with 3000 series models (pressurized samples)	SC1
Clean System II for use with 4000 series models (pressurized samples)	SC2
Additional sample handling (multiple sel)	
De-bubbler to remove bubbles from sample	SH1
Dual Feed I system enables measurement of two water samples with one analyzer	SH2
Documentation language	
English	M5
German	M1
Italian	M2
Spanish	M3
French	M4

* Refer to path lengths available for each series in "Specifications" on page 5.

Trademarks

- Kynar is a registered trademark of Arkema Inc.
- UviTec is a trademark of ABB Limited.
- Viton is a trademark of The Chemours Company FC, LLC.

Additional information
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB AG.

ABB Measurement & Analytics

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

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

© Copyright 2026 ABB. All rights reserved.
Specifications subject to change without notice.

DS/AUV204-EN Rev. D 06.2026