ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/AUV104-EN REV. C

UVITEC™ FIELD METER

UV254

ENGINEERED
TO OUTRUN



MEASUREMENT MADE EASY

Water quality monitoring solutions

Features

- Split-Sense technology eliminates lamp drift for accurate, repeatable results.
- 90-second warm-up.
- No re-zeroing required.
- Rugged, field-ready design with optional battery pack.
- Measures at 253.7 nm, matching process UV disinfection.

Benefits

- Fast, practical, and cost-effective.
- Rapid grab sampling capability.
- Flexible data collection.
- Stable, precise readings within seconds.
- Suitable for wastewater to high-purity applications.

Understanding UV254 and 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 field meter

The UviTec UV254 Field Meter is engineered for professionals who demand speed, precision, and true portability in UV254 and UVT testing.

Built around UviTec's advanced Split-Sense technology, the meter automatically compensates for lamp drift and fluctuations, ensuring every reading is stable, repeatable, and trustworthy. Whether you're evaluating source water, troubleshooting treatment processes, or validating plant performance, the UviTec meter gives you reliable results in seconds.

Its unique memory calibration feature dramatically reduces the need for frequent purified water zeroing, saving time and eliminating pain points in field UV testing. With a rapid 90-second warm-up and intuitive operation, grab sampling becomes faster, easier, and more consistent. Add the optional Battery Pack, and you have a rugged, fully portable solution ready for sampling anywhere your work takes you.



01 UviTec UV254 field meter

ABB's UviTec UV254/UVT field meter utilizes advanced UV-VIS absorption spectroscopy to deliver real-time UV measurements in various water and wastewater applications. The device employs ABB's unique Split-Sense technology and emits light across 253.7 nm, using a low-pressure mercury lamp. By using a low-pressure mercury lamp at 253.7 nm, we ensure like-for-like measurement with real process conditions.

The system applies the Lambert-Beer Law: $A = \varepsilon \times c \times l$, where:

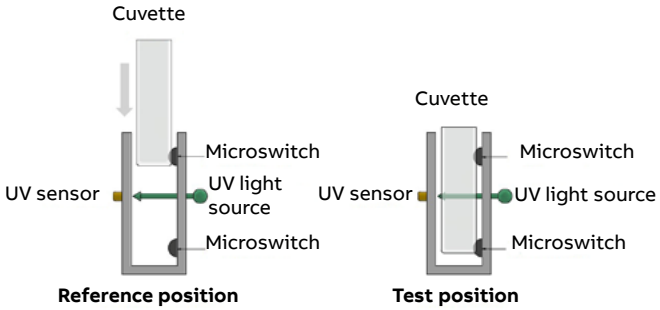
A = absorbance (Abs/cm)
c = concentration of organic compounds
ε = the molar absorptivity of the compounds
l = the measuring path length, in mm

UviTec Split-Sense Technology

Split-Sense is ABB's innovative optical compensation technology that ensures accurate and stable water quality measurements by automatically correcting for light source variations for each sample. The technology works by monitoring both the sample measurement signal and a reference signal, comparing the current lamp output to baseline performance to detect any fluctuations or drift.

When variations are detected, Split-Sense automatically adjusts the measurement calculation to compensate, ensuring that only actual water quality changes are reflected in the results while lamp performance issues are corrected behind the scenes. This eliminates the need for frequent calibration and re-zeroing to purified water before each test, as the calibration memory maintains measurement consistency throughout the lamp's lifetime.

The result is highly accurate, repeatable measurements test after test with minimal operator intervention, reduced maintenance requirements, and lower total cost of ownership. This provides operators the confidence to make critical process control decisions based on reliable, validated data.



Split-Sense technology

Areas of application

Municipal & Industrial UVT

- Disinfection optimization and performance enhancement
- Control UV dose & energy usage in treated effluent

Municipal Drinking Water UV254

- Coagulation optimization and cost saving
- DBP control (as bias to problematic organics)
- Organic removal to prevent DBPs, TOC reduction in treated water

The AUV104 can also be used to perform spot checks on ABB's UV254 and UVT analyzers, probes and bypass sensors. See UV254 Monitoring.

Specifications

Units
cm^{-1} or %

Accuracy
± 0.5 % FS

Resolution
0.001 UVA or 0.1 % UVT

Calibration
Calibration memory prevents the need to re-zero to purified water before each use

Self-diagnostics
Notification of system failure

Display
32 character backlit LCD

Wavelengths
253.7 nm

Light source
Low-pressure mercury UV lamp

Lamp life
2 years

Approvals
CE Mark

Dimensions (L × W ×H)
221 × 190 × 99 mm
(8.7 × 7.5 × 3.9 in)

Enclosure
IP67 when closed

Electrical
Non-battery pack version
- 12 V DC, 1 A wall adapter (accepts 90 to 250 V AC 50/60 Hz)
- 12 V DC car adapter (only available with non-battery pack versions)

Battery pack version
- 12 V battery charger with barrel connector for charging
- Internal 12 V battery

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

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

Weight
Non-battery pack version
1 kg (2.4 lb)

Battery pack version
1.81 kg (4 lb)

Technology
Split-Sense

Meter models and range

UviTec UV254 models include UV254 portable field meter, sampling cuvette, wall adapter and car adapter.

METER MODELS AND RANGE

Model	Path length	UVT (%)	UV254 (cm^{-1})
P050	1 mm	0 to 100	0 to 20
P100	2 mm	0 to 100	0 to 10
P110T	2 mm and 10 mm	0 to 100	—
P110A	2 mm and 10 mm	—	0 to 10
P200	10 mm	1 to 100	0 to 2
P300	40 mm	32 to 100	0 to 0.5

Battery pack

BATTERY PACK OPTIONS

Part number	Description
3KXA300000U0059	UviTec field meter replacement battery*

* Field meters not equipped with batteries may be returned to your local ABB sales unit for upgrade. Contact your local ABB partner for details.

Ordering information

UviTec UV254 field meter (ABB part number: 3KXA300104 V)	AUV104/	X	XXX(X)	Options
Series				
P Series UV254		P		
Path length				
1 mm			050	
2 mm			100	
10 mm			200	
40 mm			300	
2 mm and 10 mm (UVT%)			110T	
2 mm and 10 mm (UV254)			110A	

Optional ordering codes

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

Battery pack	
Battery pack upgrade	BU1
Documentation language	
English	M5
German	M1
Italian	M2
Spanish	M3
French	M4

Trademarks

- UviTec is a trademark of ABB

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ABB Measurement & Analytics

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