TAKE CONTROL KNOW WHAT'S IN YOUR WATER

UV TRANSMITTANCE BROCHURE

UV TRANSMITTANCE (UVT) IS RECOGNIZED AS A CRITICAL PARAMETER BY UV MANUFACTURERS, OPERATIONAL PERSONNEL, AND GOVERNMENT AGENCIES FOR UV DISINFECTION APPLICATIONS.

..."UVT has a strong effect on the dose delivery of a UV reactor. As UVT decreases, the intensity throughout the reactor decreases, which reduces the dose the reactor delivers[1]"...

..."The most important water quality characteristic affecting UV facility design is UVT because the UVT of the water directly influences UV dose delivery[1]"...

...."UVT analyzers are essential if UVT is part of the dose-monitoring strategy[1]"...

Importance of UV Transmittance

Ultraviolet (UV) Disinfection is an effective treatment technology in the water and wastewater industry used to address the risk from disease causing microorganisms, improving water quality for public safety. Assessment of the water quality, most commonly measured as UV Transmittance, is a critical aspect for design, calculation of UV dose delivery, and assessing operational problems.

UV TRANSMITTANCE (UVT)...

... is defined as the amount of light passing through a water sample compared to the amount of light passing through a pure water sample.

... is a relative measurement expressed as a percentage UVT(%).

... is typically measured at 254 nm through a 10 mm sample cell.

The UVT of the water relates to the quantity of organics, colloidal solids, and suspended matter that will absorb and scatter UV light. For this reason, UVT will directly impact the amount of UV light available for inactivation of microorganisms.

Discover the world of REALTECH INC.

SHINING LIGHT ON WATER QUALITY

WITH 10 YEARS OF DESIGN AND APPLICATION EXPERIENCE, REAL TECH INC. MANUFACTURES THE MOST INNOVATIVE ULTRAVIOLET TRANSMITTANCE (UVT) TECHNOLOGY ON THE MARKET TODAY. REAL TECH'S PASSION FOR UV PHOTOMETERIC INSTRUMENTATION IS DISPLAYED IN THE FULL SERIES OF PRODUCTS TO MEASURE A WIDE RANGE OF UVT.

Understanding the importance of UVT monitoring, Real Tech offers comprehensive solutions for every UV Disinfection application avoiding a one size fits all approach. With client satisfaction in the forefront, our instrumentation combines simplicity, accuracy, and competitive pricing.

Founded in 2004, the Real UV254 P200 was the first instrument to market for Real Tech Inc.

TECHNOLOGY

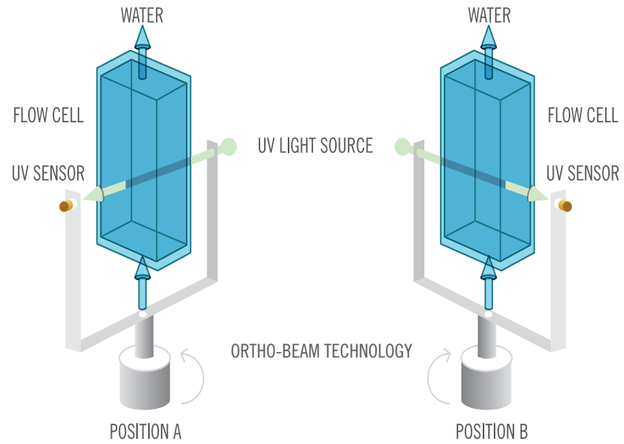
Real Tech Inc.'s innovative technologies solve the challenges of using UV/Vis light for water quality analysis in the most simple and effective manner.

SPLIT-SENSE

- Improved ease of use for rapid grab sample testing
- Unique ability to remember the portable meter's calibration
- Eliminates the need to calibrate (zero) the meter to known pure (DI) water source before taking a test
- Extremely stable and accurate readings

SPLIT-SENSE PRO

- Ideal for very short or long measurement paths
- Automatic compensation for drifts and fluctuation over time

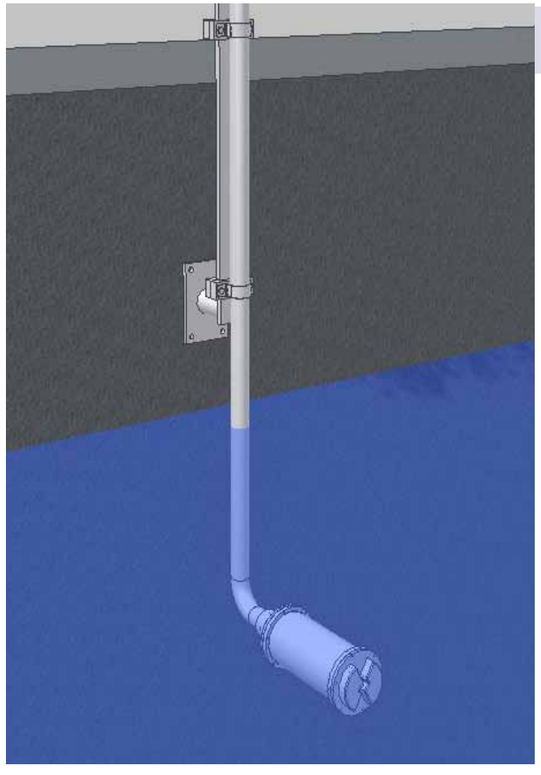


ORTHO-BEAM TECHNOLOGY

- Multiple path length measurement technique allows testing without the need for frequent calibration with DI water
- Accounts for quartz fouling that is present in both path lengths
- Lowers maintenance and operator intervention
- Automatically compensates for lamp fluctuations and drift over time

WASTEWATER DOSE CONTROL

UV Transmittance (UVT) is one of the most important operational parameters related to a UV disinfection system's performance. Large wastewater UV disinfection systems are typically designed with a method that allows the delivered UV dose to be calculated based on UV intensity, flow rate and UVT. Real-time analysis of UVT is essential to ensure an effective UV dose.



PRODUCT SELECTION

MODEL:
Real UV254 M1500

FORM:
Submersible Probe

RANGE:
15-100% UVT

OPTIONS:
Real Controller
Real Air Clean System I
Real UV254 P Series Portable Meter for 'Custom Calibration'

FOR UVT UNDER 15%: M2000 MODELS WITH REAL PUMP CLEAN SYSTEM

DRINKING/PROCESS WATER DOSE CONTROL

Large drinking water and process water UV disinfection systems are often designed with a method that allows the UV dose delivery to be calculated based on UV intensity, flow rate, and UVT, such as the USEPA UVDGM Calculated Dose Approach method[1]. Real-time analysis of UVT is required for a calculated UV dose strategy.

PRODUCT SELECTION

MODEL:
Real UV254 M3000

FORM:
By-Pass Analyzer

RANGE:
15-100% UVT

OPTIONS:
Real Clean System I
Real UV254 P Series Portable Meter for 'Custom Calibration'

FOR UVT ABOVE 85%: M3500 or M4000 MODELS

"When the UVT is greater than 90%, it is recommended that a 4-cm or greater pathlength cuvette be used[1]."

DOSE MONITORING

The USEPA UVDGM[1], DVGW[2], and ÖNORM[3] UV Intensity set-point approach is common for small UV disinfection systems. Though not required for a set point approach, UV transmittance (UVT) measurements are a valuable tool in diagnosing operational problems, thus saving the operator time. Investing in a low cost UVT instrument will also ensure that the water quality meets the minimum design criteria at all times, giving the operator peace of mind.

PRODUCT SELECTION

MODEL:
Real UV254 M3000

FORM:
By-Pass Analyzer

RANGE:
15-100% UVT

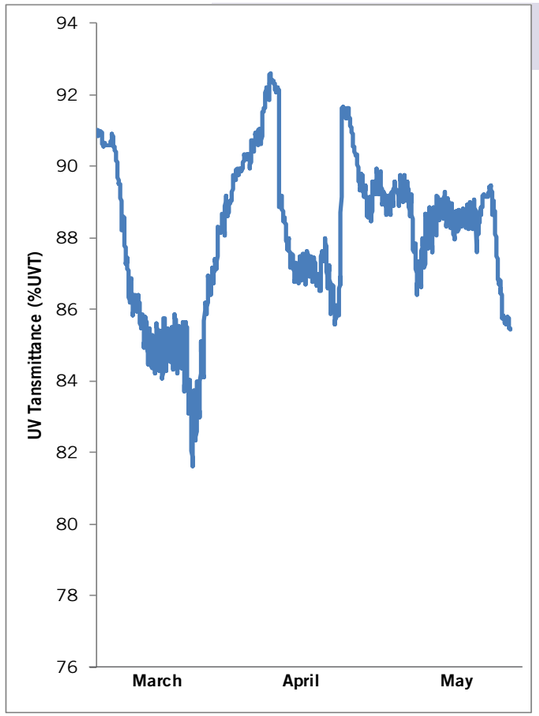
OPTIONS:
Real Clean System I

FOR WASTEWATER: Real UV254 M1500 Probe

FOR GRAB SAMPLING: Real UV254 P Series Portable Meter

DESIGN AND SIZING

UV Transmittance (UVT) data is essential whether designing a new construction UV facility or replacing an existing chlorination system. An increase or decrease in UVT will directly impact UV intensity, influencing the dose delivered for inactivation. Gathering a full range of expected UVT in all conditions will ensure that over-design or frequent off-specification operation is avoided.



PRODUCT SELECTION

MODEL:
Real UV254 M3000

FORM:
By-Pass Analyzer

RANGE:
15-100% UVT

OPTIONS:
Real Clean System I

FOR WASTEWATER: Real UV254 M1500 Probe

FOR GRAB SAMPLING: Real UV254 P Series Portable Meter

SERVICE

When a UV reactor goes into alarm or poor microbiological counts are found, service is needed. The cause could be related to fouling of the quartz sleeve, UV lamp failure, fouling of the UV sensor, condensation on the sensor window or low UV transmittance (UVT). The first step for an operator or service technician to diagnose the failure is to test the UVT of the water. If results indicate UVT is below the validated conditions, action can be taken to enhance pre-treatment. If results prove the UVT is within the validated range, the technician can proceed to troubleshoot further. This initial step will save a technician time and user expense.

PRODUCT SELECTION

MODEL:
Real UV254 P Series

FORM:
Portable Meter

RANGE:
5-100% UVT

OPTIONS:
Battery Pack

UVT PRODUCT SELECTION

P Portable Series

M Online Series

M Probe Series

P Series

PORTABLE UV TRANSMITTANCE METER

OPTIONAL BATTERY PACK FOR REMOTE SAMPLING

- ACCURATE, STABLE, AND RELIABLE %UVT READINGS
- FAST RESPONSE
- EASE OF USE
- RUGGED PORTABLE DESIGN
- CALIBRATION MEMORY ELIMINATES THE NEED FOR DI ZERO BEFORE EACH TEST
- LOW CAPITAL COST
- LONG LIFE LAMP

	P200 SERIES	P300
RANGE	5-100 %UVT	47 - 100 %UVT
ACCURACY	+- 0.5 % FS	
RESOLUTION	0.1 %UVT	0.01 %UVT
UNITS	cm^{-1}	
PATH LENGTH	10mm	40mm
SAMPLING TIME	n/a	
CALIBRATION	Calibration memory prevents the need to re-zero to DI water.	
CLEANING	n/a	
SELF DIAGNOSTICS	Notification of system failure	
OPERATOR INTERFACE	Easy to use. No complex configuration required	
DISPLAY	32 character backlit LCD	
ALARMS	n/a	
HUMIDITY CONTROL		
OUTPUTS		
WAVELENGTH	253.7nm	
LIGHT SOURCE	Low-pressure mercury UV lamp / UV LED	
LAMP LIFE	2 years	
DIMENSIONS	8.7”L x 7.5”W x 3.9”H (254 cu in)	
ENCLOSURE	Rugged, compact, watertight and dustproof	
FLOW RATE	n/a	
PRESSURE RATING		
FLUID CONNECTIONS		
ELECTRICAL	12VDC 1A wall adapter (accepts 90-250VAC 50/60Hz), 12VDC car adapter	
STORAGE TEMP	-20 to 60°C (-4 to 140°F)	
OPERATING TEMP	0 to 45°C (32 to 113°F)	
WEIGHT	4 lbs	
WARRANTY	2 years limited warranty	
TECHNOLOGY	Split-Sense	
OPTIONS	Battery power-pack	

M Series

ONLINE UV TRANSMITTANCE MONITOR

OPTIONAL AUTOMATIC CHEMICAL CLEANING SYSTEMS

- BY-PASS STYLE ANALYZER
- ACCURATE, STABLE, RELIABLE, AND PRECISE %UVT READINGS
- FAST RESPONSE
- CONFIGURABLE ALARMS: LOW UVT SET POINT, ETC.
- OPERATOR FRIENDLY AND EASY TO USE
- 4-20 MA OUTPUT FOR SCADA OR UV CONTROL PANEL COMMUNICATION
- INNOVATIVE TECHNOLOGY WITH MULTIPLE PATH LENGTH SELECTION
- P200 METER FOR CUSTOM CALIBRATION AND UVT VALIDATION
- LOW MAINTENANCE AND LOW OPERATING COSTS
- LONG LIFE LAMP

	M3000 SERIES	M3500 SERIES	M4000 SERIES
RANGE	15 - 100 %UVT	55 - 100 %UVT	89 – 100 %UVT
ACCURACY	+- 0.5 % FS		
RESOLUTION	0.1 %UVT	0.01 %UVT	0.001% UVT
UNITS	cm^{-1}		
PATH LENGTH	10mm X 20mm	50mm	250mm
SAMPLING TIME	10 seconds		
CALIBRATION	In-situ zeroing to any sample with known UVT. No further calibration required		
CLEANING	In-situ cleaning makes cleaning quick and easy. Automatic chemical cleaning is optional.		
SELF DIAGNOSTICS	Detection and diagnosis of internal system fault		
OPERATOR INTERFACE	Five push buttons to control a comprehensive hierarchical menu system		
DISPLAY	4 line x 20 character backlit LCD with LED alarm indicator		
ALARMS	Dry contact terminals allow operator configurable alarms for: high and low UVT/UVA setpoints, low lamp output, leak detected, system fault, etc.		
HUMIDITY CONTROL	Humidity sensor with large regeneratable desiccant system		
OUTPUTS	Self-powered 4-20mA, RS232 serial for PC		
WAVELENGTH	253.7nm		
LIGHT SOURCE	Low-pressure mercury UV lamp / UV LED		
LAMP LIFE	2 years		
DIMENSIONS	16”H x 14”W x 8”D	17”H x 15”W x 7”D	
ENCLOSURE	NEMA 4X, wall mountable		
FLOW RATE	300 - 1000 mL/min		
PRESSURE RATING	20 PSI	100 PSI	
FLUID CONNECTIONS	1/4” tube push-in fittings		
ELECTRICAL	24VDC 40W power adapter (accepts 90-250VAC 50/60Hz)		
STORAGE TEMP	-20 to 60°C (-4 to 140°F)		
OPERATING TEMP	0 to 45°C (32 to 113°F)		
WEIGHT	22 lbs	24 lbs	
WARRANTY	2 years limited warranty		
TECHNOLOGY	Ortho-Beam	Split-Sense Pro	
OPTIONS	• Real Clean System I or II • Real Pump Clean System I or II		

M Series

ONLINE UV TRANSMITTANCE PROBE

OPTIONAL CONTROLLER AND AUTOMATIC AIR CLEANING SYSTEMS

- SUBMERSIBLE PROBE ANALYZER
- ACCURATE, STABLE, RELIABLE, AND PRECISE %UVT READINGS
- FAST RESPONSE
- CONFIGURABLE ALARMS: LOW UVT SET POINT, ETC.
- OPERATOR FRIENDLY AND EASY TO USE
- 4-20 MA OUTPUT FOR SCADA OR UV CONTROL PANEL COMMUNICATION
- INNOVATIVE PATENT TECHNOLOGY
- P200 FOR CUSTOM CALIBRATION AND UVT VALIDATION
- LOW MAINTENANCE AND LOW OPERATING COSTS
- LONG LIFE LAMP

	M1500
RANGE	15 – 100% UVT
ACCURACY	+ - 0.5 % FS
UNITS	cm^{-1}
PATH LENGTH	10mm
SAMPLING TIME	10 seconds
CALIBRATION	Exclusive technologies allow for continuous automatic calibration during operation
CLEANING	Optional Real Air Clean automatic pressurized air cleaning system
SELF DIAGNOSTICS	Continuous detection of leaks, lamp output, humidity, temperature and electrical fault
OPERATOR INTERFACE	• Push button driven comprehensive hierarchical menu system (with optional Real Controller) • RS232/USB interface to PC based Windows application
DISPLAY	4 line x 20 character backlit LCD (with optional Real Controller)
ALARMS	Onscreen alarms
HUMIDITY CONTROL	Humidity sensor with desiccant pack
OUTPUTS	• Self-powered 4-20 mA output (with optional Real Controller) • RS232/USB interface for datalogging via PC
WAVELENGTH	253.7 nm
LIGHT SOURCE	Low pressure mercury UV lamp / UV LED
LAMP LIFE	2 years
DIMENSIONS	4” diameter x 10” length
ENCLOSURE	Stainless steel with max rated depth of 36’ (optional Real Controller is rated NEMA 4)
ELECTRICAL	24 VDC 120W power adapter included (power adapter accepts 90-250 VAC 50/60 Hz)
STORAGE TEMP	-20 to 60°C (-4 to 140°F)
OPERATING TEMP	0 to 45°C (32 to 113°F)
WEIGHT	8 lbs
WARRANTY	2 year limited warranty
TECHNOLOGY	Ortho-Beam
OPTIONS	• Real Air Clean Systems • Real Controller • Mounting Kit

Optional Products & Accessories

Real Tech has designed a variety of options and accessories with our clients' best interests in mind. Optimal configuration ensures the highest level of performance for each respective UVT monitoring application and water source.

REAL UV254 P SERIES PORTABLE

BATTERY PACK
Battery pack for P series instruments for remote testing allows for UVT grab sampling to truly be performed anywhere, anytime.

REAL UV254 M SERIES ONLINE

REAL CLEAN SYSTEM I
Automatic chemical cleaning system designed for by-pass style continuous analyzer. Powered and programmed through the online analyzer, cleaning cycles can easily be configured to clients' specific cleaning frequency requirements.

REAL CLEAN SYSTEM II
Automatic chemical cleaning system designed for the 3500 and 4000 models. Powered and programmed through the analyzer, the system employs a faster pumping time and recycles the cleaning solution to accomodate a longer path length design.

REAL PUMP CLEAN SYSTEM
In open channel or non-pressurized systems, the pump systems can accompany any by-pass online analyzer and is self-priming. Pump System options can come complete with a Real Clean System in one system.

Real Clean System I

SEAWATER UPGRADE
Allows use of any by-pass style analyzer to accommodate seawater conditions.

HIGH TEMPERATURE UPGRADE
Allows use of any by-pass style analyzer in water temperatures up to 95°C.

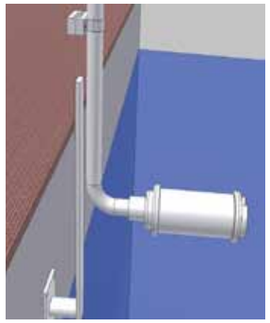
REAL UV254 M SERIES PROBE

REAL CONTROLLER
Wall mounted operator interface with push button control, backlit LCD screen,LED alarm indicator and self-powered 4-20 mA output. Allows for multiple M probe series connections.

REAL AIR CLEAN SYSTEM I
The automatic pressurized air cleaning system offers the most effective cleaning for submersible probes. It is installed in the Real Controller box for sites without compressed air. Includes an air compressor, reservoir, and valve.

REAL AIR CLEAN VALVE MODULE I
A valve module installed in the Real Controller box for sites with compressed air available. Includes a reservior, and valve.

MOUNTING KIT I & II
Ideal to accompany any new M Series submersible probe installation. Includes a mounting backet and a 4 foot arm (I) or 8 foot arm (II).



Mounting Kit

VALIDATION and CUSTOM CALIBRATION with the REAL UV254 P SERIES PORTABLE METER

The P series meters are ideal to validate the accuracy of any M series analyzer. A variance of +-0.5% UVT between the M series analyzer and the P series meter would indicate a need for calibration. To minimize maintenance hours, Real Tech has incorporated a unique 'Custom Calibration' function to each M series analyzer that allows the instruments to be calibrated to a known UVT, without the need for DI calibration or taking the analyzer offline. The process involves three simple steps.

1. Take a grab sample with a P series meter and record the UVT of the water.
2. Press the Zero button on the M Online series or Real Controller and use the down arrow to select "Custom Zero" then press the Enter button.
3. Use the up/down arrow keys until the known UVT of the water is displayed then press Enter. The monitor is now calibrated.

REFERENCES

[1] USEPA (2006). Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule. EPA815-R-06-007.

[2] DVGW (2006). UV Disinfection Devices for Drinking Water Supply-Requirements and Testing. German Standard W294.

[3] ÖNORM (2003). Plants for Disinfection of Water using Ultraviolet Radiation. Austrian standard 5873-2.

REAL TECH INC.

SHINING LIGHT ON WATER QUALITY

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