

# MEGATRON<sup>®</sup>

WATER DISINFECTION SYSTEM



Model M250

## ABOUT US

Since 1963, Atlantic Ultraviolet Corporation has pioneered the discovery and development of beneficial uses of ultraviolet energy. Over the years these efforts have led to the development of valuable, cost effective and environmentally sound techniques and products now known and respected throughout the world.

Atlantic Ultraviolet's application specialists assist customers in the selection of germicidal lamps and equipment. Their specialized knowledge is a valuable resource in formulating effective and cost-conscious ultraviolet solutions.

Extensive inventories and a dedicated staff enable Atlantic Ultraviolet to fulfill its commitment to provide fast deliveries and responsive customer service.



## GERMICIDAL ULTRAVIOLET

Ultraviolet Disinfection is a unique and rapid method of disinfection without the use of heat or chemicals.

**MEGATRON®** Ultraviolet Water Disinfection Systems utilize germicidal ultraviolet lamps that produce short-wave radiation that is lethal to bacteria, viruses and other microorganisms present in water.

Economical and safe, **MEGATRON®** Ultraviolet Water Disinfection Systems offer rapid disinfection without the use of heat or dangerous chemicals – often for the lowest cost available by any means.

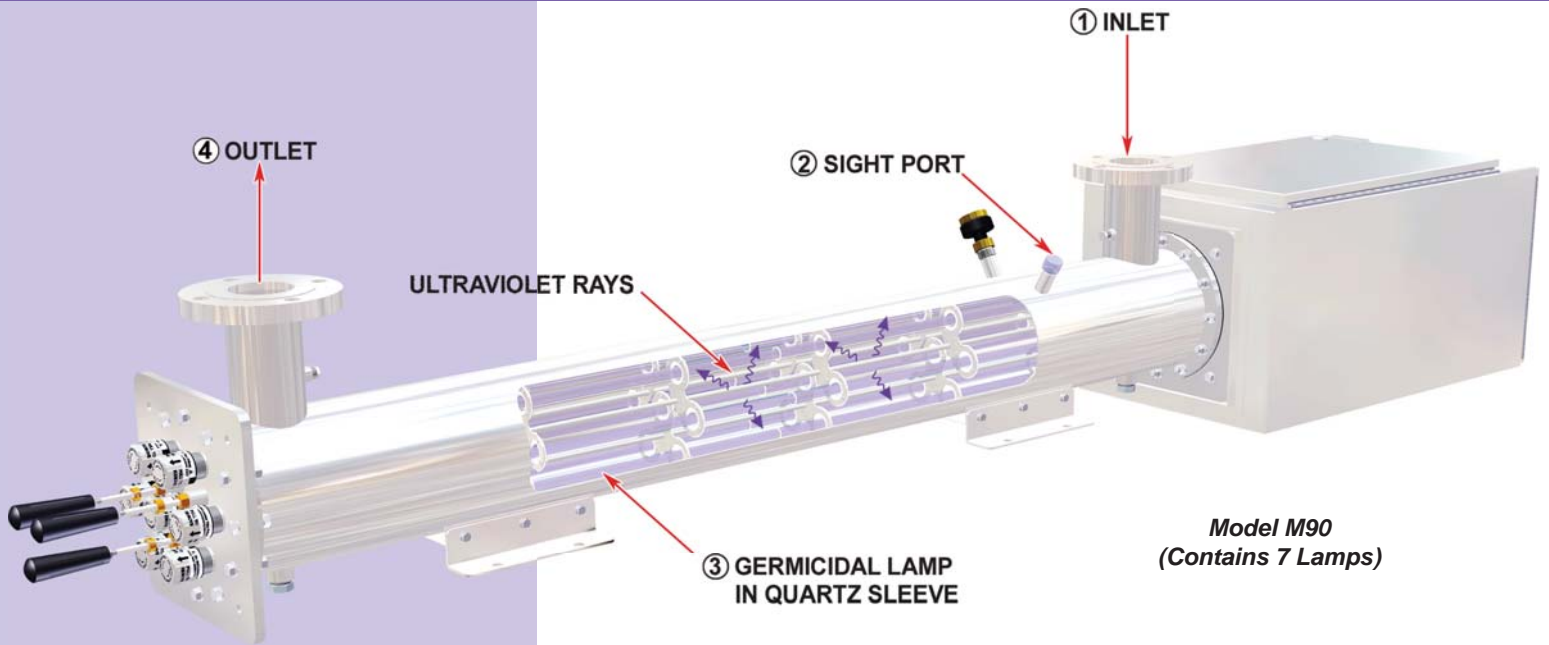
An ever-growing range of industries and consumer applications have found ultraviolet to be the ideal solution for their water treatment requirements.

Awareness of the environmental impact of chemical disinfectants and evolving discharge regulations have made ultraviolet purification a technology of choice in water recycling and disinfection of processed wastewater discharges.



**Model M250**

# PRINCIPLE OF OPERATION



## ADVANTAGES

### Effective

Virtually all microorganisms are susceptible to MEGATRON® ultraviolet disinfection

### Economical

Hundreds of gallons are purified for each penny of operating cost

### Safe

No danger of overdosing, no addition of chemicals

### Fast

Water is ready for use as soon as it leaves the purifier – no further contact time required

### Easy

Simple installation and maintenance

### Automatic

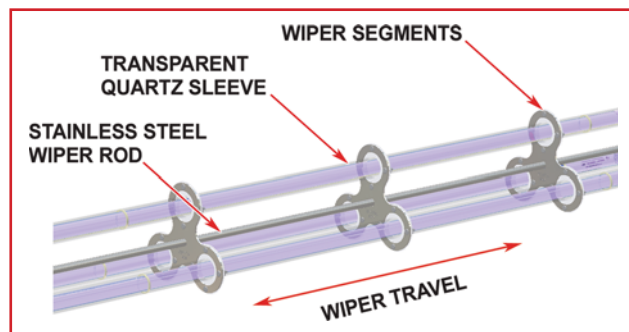
Provides continuous disinfection without special attention or measurement

### Chemical Free

No chlorine taste or corrosion problems

### Versatile

Capacities available from seventy to thousands of gallons per minute (g.p.m.)



- ① The water enters the stainless steel disinfection chamber and flows into the space between the quartz sleeves and chamber wall where suspended microscopic organisms are exposed to intense shortwave germicidal ultraviolet radiation.
- ② Translucent sight port and front panel indicator lights provide positive indication of germicidal lamp operation.
- ③ Manual or automatic wiper system facilitates routine cleaning of quartz sleeves without disassembly or shutdown of disinfection systems.
- ④ Water leaving the purifier is instantly ready for use.

## SPECIAL FEATURES

### MODULAR DESIGN

Each **MEGATRON**<sup>®</sup> is a completely self-contained disinfection system. The electrical enclosure and disinfection chamber form an independent unit simplifying installation; simply secure, plumb and supply suitable single-phase power. Multiple units can be interconnected to comply with nearly any flow requirement.

All internal electronic modules can be removed and replaced, simplifying troubleshooting, and reducing any possible down time.

### ELECTRONIC BALLASTS

State-of-the-art electronic ballasts developed specifically for the operation of ultraviolet lamps. These ballasts are smaller, lighter, and more efficient; operate cooler, provide higher ultraviolet lamp output with a reliable, long life.

### MANUAL WIPER SYSTEM

Permits mechanical cleaning of the quartz sleeves without service interruption, or disassembly of the system.

### AUTOMATIC WIPER SYSTEM (Optional)

Once programmed, permits unattended mechanical cleaning of the quartz sleeves.

### SIGHT PORT

Translucent plug mounts to the disinfection chamber and provides positive indication of germicidal lamp operation.

### QUARTZ SLEEVE

Fused, high quality quartz, protects and insulates the ultraviolet lamps to insure high output over a range of operating temperatures.

### REMOTE OUTPUTS

**12v DC:** Provides an output corresponding to the ULTRAVIOLET INTENSITY and power for a low-voltage audio alarm, 50mA max.

**4-20mA:** Provides an output corresponding to the ULTRAVIOLET INTENSITY. Output must be displayed by a PLC, computer, or 4-20mA meter, which can interpret the signal.

**DRY CONTACTS:** Provides SPDT output corresponding to UV NORMAL or UV LOW status of the monitor. Contacts are rated at 50v 100mA max.

### LAMP OPERATION INDICATORS

Provide positive indication of each germicidal lamp's operation.

### DIGITAL ULTRAVIOLET MONITOR

Displays the intensity of germicidal ultraviolet energy within the disinfection chamber. Signals are provided by the Ultraviolet Sensor Probe.



### ELAPSED TIME INDICATOR

Non-resettable display of accumulated operating hours.

**ULTRAVIOLET SENSOR PROBE**

Mounts to the disinfection chamber, senses the intensity of germicidal ultraviolet energy that penetrates the quartz sleeve and water within the disinfection chamber.

**SAMPLING PORTS**

Located on the inlet/outlet and allow inline sample gathering, monitoring or other user specific requirement.

**CHAMBER HEAD PLATES**

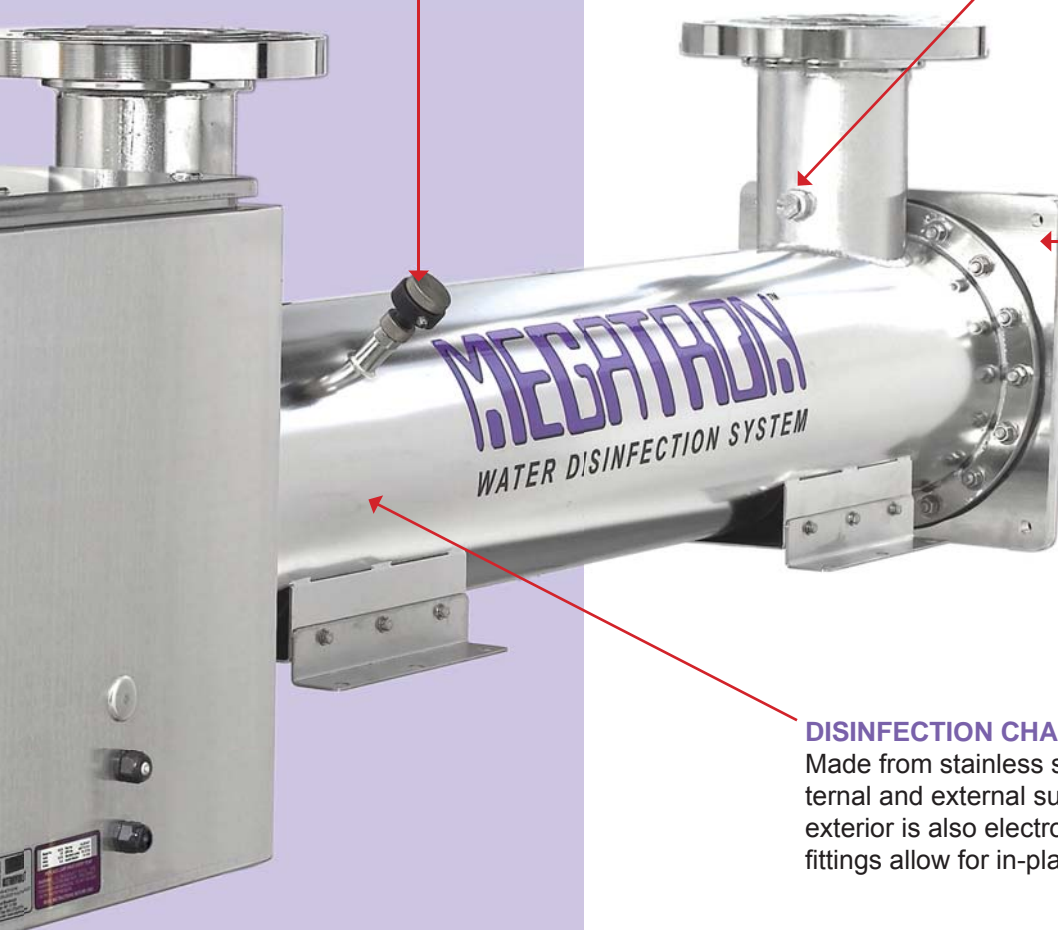
Made from stainless steel type 316, passivated and electropolished, and are removable allowing access into the chamber.

**DISINFECTION CHAMBER**

Made from stainless steel type 316, all internal and external surfaces are passivated, exterior is also electropolished. Integral drain fittings allow for in-place drainage.

**ELECTRICAL ENCLOSURE**

A NEMA style enclosure, fabricated from stainless steel type 304. All electronics are accessible through either of the access doors. System status is viewed through the status display window of the front access door.



# ULTRAVIOLET DOSAGE

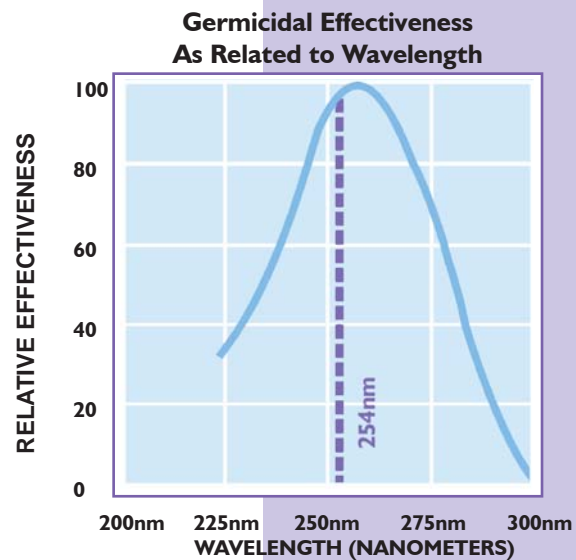
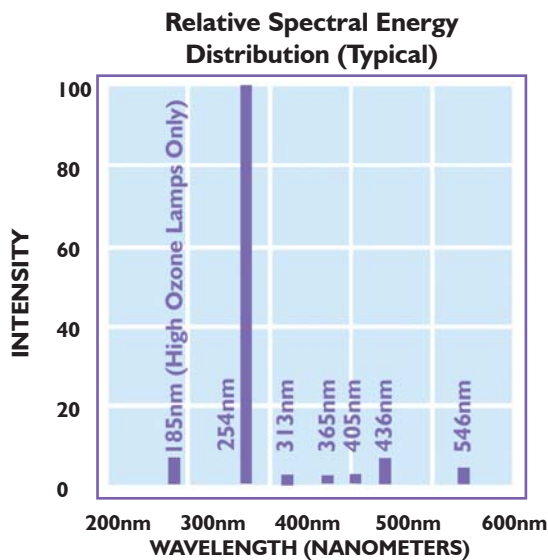
Germicidal lamps provide effective protection against microorganisms. A small cross-section is shown below.

ORGANISM	ALTERNATE NAME	TYPE	DISEASE	DOSE*
<i>Bacillus subtilis</i> spores	<i>B. subtilis</i>	Bacteria	_____	22,000
Bacteriophage	Phage	Virus	_____	6,600
Coxsackie virus	_____	Virus	Intestinal infection	6,300
<i>Shigella</i> spores	_____	Bacteria	Bacterial Dysentery	4,200
<i>Escherichia coli</i>	<i>E. coli</i>	Bacteria	Food poisoning	6,600
Fecal coliform	_____	Bacteria	Intestinal infection	6,600
Hepatitis A virus	Infectious Hepatitis virus	Virus	Hepatitis of the liver	8,000
Influenza virus	Flu virus	Virus	Influenza	6,600
<i>Legionella pneumophila</i>	_____	Bacteria	Legionnaires' Disease	12,300
<i>Salmonella typhi</i>	_____	Bacteria	Typhoid Fever	7,000
<i>Staphylococcus aureus</i>	Staph	Bacteria	Food poisoning, Toxic Shock Syndrome, etc.	6,600
<i>Streptococcus</i> spores	Strep	Bacteria	Strep throat	3,800

When used as directed to disinfect clear water, **MEGATRON®** Water Purifiers provide an ultraviolet dosage in excess of 30,000 microwatt seconds per square centimeter ( $\mu\text{WSec/cm}^2$ ).

\* Nominal Ultraviolet dosage ( $\mu\text{WSec/cm}^2$ ) necessary to inactivate better than 99% of specific microorganism. Consult factory for more complete listing.

## OPERATING CHARACTERISTICS



Approximately 95% of the ultraviolet energy emitted from **STER-L-RAY®** germicidal lamps is at the mercury resonance line of 254 nanometers, the region of germicidal effectiveness most destructive to bacteria, mold and virus.

# GENUINE **STER-L-RAY**<sup>®</sup> GERMICIDAL LAMPS

**STER-L-RAY**<sup>®</sup> Germicidal Lamps are shortwave, low pressure mercury vapor discharge tubes that produce ultraviolet wavelengths lethal to microorganisms.

Approximately 95% of the ultraviolet energy emitted from **STER-L-RAY**<sup>®</sup> Germicidal Lamps is at the mercury resonance line of 254 nanometers, the region of germicidal effectiveness most destructive to bacteria, mold and virus.



**STER-L-RAY**<sup>®</sup>  
Germicidal UV Lamp  
Number 05-1313A-R

**STER-L-RAY**<sup>®</sup> and the **STER-L-RAY**<sup>®</sup> logo are trademarks of Atlantic Ultraviolet Corporation.

CAUTION: Exposure to direct or reflected germicidal ultraviolet rays will cause painful eye irritation and reddening of the skin. Personnel subject to such exposure must wear suitable faceshield, gloves and protective clothing.

## GERMICIDAL LAMP DATA

Lamp Number	Purifier Model No.	Nominal Lamp Length	Power Consumption <sup>①</sup>	Ultraviolet Output <sup>②</sup>	Rated Effective Life
05-1313A-R	M50, M90, M150, M250	1554mm	75 Watts	33 Watts	10,000 Hrs.

① Wattage is lamp watts only and does not include ballast loss (approximate).

② Maximum rated output at 254 nanometers.

The lamps listed above have been especially developed and are recommended for use with **MEGATRON**<sup>®</sup> Water Purifiers.

All **STER-L-RAY**<sup>®</sup> lamps used in **MEGATRON**<sup>®</sup> units are low pressure type which afford the maximum efficiency in producing the required germicidal rays. In addition has advantage of high efficiency and low power requirements.

# WATER QUALITY RECOMMENDATIONS

## FOR CLEAR, FRESH WATER APPLICATIONS

**Turbidity:**

5 Nephelometric turbidity units (N.T.U.)

**Total Suspended Solids:**

10 milligrams per liter (mg/L) - maximum

**pH:** 6.5 - 9.5

**Color:** None

**Hardness:**

6 grains per gallon (g.p.g.) or 102 parts per million (p.p.m.)

**Iron:**

0.3 milligrams per liter (mg/L) - maximum

**Manganese:**

0.05 milligrams per liter (mg/L) - maximum

**Ultraviolet Transmission:**

80% through one centimeter - minimum

## FOR WASTEWATER APPLICATIONS

**Biological Oxygen Demand:**

30 milligrams per liter (mg/L) - maximum

**Total Suspended Solids:**

30 milligrams per liter (mg/L) - maximum

**Ultraviolet Transmission** at 254 nanometers: 65% through one centimeter - minimum

\* Other water quality applications may be treated by ultraviolet. Contact one of our ultraviolet specialists with your requirements.



The MEGATRON® Model M250 has been verified by The Environmental Technology Verification Program®. To learn more about the Environmental Technology Verification Program® visit: [www.epa.gov/etv](http://www.epa.gov/etv)

Information on the performance characteristics of the Megatron® Model M250 [June 2002] can be found at [www.epa.gov/etv](http://www.epa.gov/etv), or call Atlantic Ultraviolet Corp. at 631-273-0500 for a copy of the verification report. Use of the ETV Name or Logo does not imply approval or certification of this product nor does it make any explicit or implied warranties or guarantees as to product performance.



## SPECIFICATIONS FOR STANDARD MODELS



**Model M50**



**Model M90**



**Model M150**



**Model M250\***



\*Environmental Technology Verification Program® Verified.

MODEL	STANDARD INLET / OUTLET*	NOMINAL CAPACITIES/Gallons Per Minute			Number of Lamps	Power Requirements** VOLTS AC and AMPS		UNIT DIMENSIONS/Inches		
		Clear Wastewater	Clear Fresh Water	High Purity Water		120V	230V	Length	Width	Height
M50	2" NPT	70	90	100	4	4	2.5	100	16	14
M90	3" 150# Socket Weld Flange	115	150	190	7	5.5	3	100	16	16
M150	4" 150# Socket Weld Flange	200	270	325	12	8.5	4.5	100	18	18
M250	6" 150# Socket Weld Flange	335	450	560	19	12	6.5	102	21	26

\* Larger size inlets and outlets are available for these units. Consult factory with specific power requirements.

\*\* MEGATRON® is available for operation on public power supplied throughout the world.



**Model M250 Parallel Arrangement**  
 (1005 GPM Clear Wastewater,  
 1350 GPM Clear Fresh Water,  
 1680 GPM High Purity Water)

## APPLICATIONS FOR ULTRAVIOLET WATER PURIFICATION

### Institution systems...

- laboratories
- hospital
- clinics
- maternity areas
- labor & delivery areas
- pathology labs
- kidney dialysis labs
- nursing homes
- universities
- schools
- veterinary clinics

### Transient systems...

- resorts, hotels, & motels
- ships, yachts, boats
- campgrounds

- restaurants
- water parks
- amusement parks
- golf course water holes
- lakes and ponds
- fountain water features
- ornamental ponds
- fish ponds
- swimming pool

### Community systems...

- apartment complexes
- condominium complexes
- trailer parks
- rural water
- villages, towns, cities
- farms & ranches

- animal husbandry
- aquariums
- fish farms
- mollusk hatcheries
- water preserves
- well water

### Industry systems...

- pharmaceutical mfg.
- electronic production
- cosmetic production
- cooling tower
- power generation
- food industry
- ice makers
- pulp & paper production
- water vending machines

- laundry water
- pure wash water
- bottled water
- beer, wine
- soft drinks
- fruit juices
- bottling facilities
- edible oils
- liquid sugar
- sweeteners
- water based lubricants
- dairy processing
- cistern applications
- 
- TOC Reduction
- Ozone Reduction

## COMPARISON OF ATLANTIC ULTRAVIOLET WATER PURIFIERS

<b>FEATURES</b> [S] - Standard [O] - Optional [X] - Yes	<b>Bio-Logic®</b> Pure Water Pack™ 1.5 GPM	<b>MINIPURE®</b> 1 to 9 GPM	<b>MightyPure®</b> 3 to 20 GPM	<b>SANITRON®</b> 3 to 20 GPM	<b>SANITRON®</b> 40 to 416 GPM	<b>MEGATRON®</b> 90 to 450 GPM
Stainless Steel Construction	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
Germicidal Ultraviolet Lamp with 10,000 Hours Rated Effective Life	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
Quick Lamp Change with the Easy Off™ Retainer Cap	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
Fused Quartz Sleeve	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
Lamp Out Indicator Light(s)	<b>S</b>	<b>S</b>	-	-	-	<b>S</b>
Sight Port to View Lamp Operation	-	-	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
Drain Fitting	-	-	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
Patented Dual Action Wiper Mechanism - Manual	-	-	-	<b>S</b>	<b>S</b>	<b>O</b>
Patented Dual Action Wiper Mechanism - Automatic	-	-	-	-	-	<b>O</b>
Head(s) that can be removed or rotated	<b>S</b>	-	-	<b>S</b>	<b>S</b>	<b>S</b>
Sediment and Carbon Filter	<b>S</b>	-	-	-	-	-
Mounting Kit / Bracket	<b>S</b>	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b> ①	-
Guardian™ Ultraviolet Monitor	-	-	<b>O</b>	<b>O</b>	<b>O</b>	<b>S</b>
Sentry™ Safety Sensor	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	-
Audio Alarm	<b>O</b>	<b>O/S</b> ③	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>
Solenoid Valves	-	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	-
Flow Control Valves	-	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	-
Elapsed Time Indicator	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	<b>S</b>
Time Delay Mechanism	-	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	-
Residential Use	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	-
Commercial Use	-	-	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
CE Certified ②	-	-	<b>X</b>	<b>X</b>	<b>X</b>	-

**NOTE:** This list depicts options for 120v 50/60Hz operation. Consult factory for options with other power requirements.

① Model S10,000C & larger come equipped with mounting rack.

② MightyPure® MP36C and SANITRON® S37C, S2400C, S5000C, S10,000C, S15,000C and S20,000C are available CE Certified.

③ Standard feature in some MINIPURE® units

THE STANDARD OF EXCELLENCE IN ULTRAVIOLET



Manufacturers / Engineers / Sales / Service



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