Model M250

MEGATRON
ULTRAVIOLET WATER DISINFECTION SYSTEM

ATLANTIC ULTRAVIOLET CORPORATION®

SINCE 1963
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.
**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**
- Installation and maintenance are less complicated than other methods

**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 (GPM)

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**PRINCIPLE OF OPERATION**

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 (not shown) 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.

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*[Image of the UV disinfection system]*

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Modular Design
Each MEGATRON® is a completely self-contained disinfection system. The electrical enclosure and disinfection chamber form an independent model simplifying installation; simply secure, plumb and supply suitable single-phase power. Multiple models 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.

Surelite™ Electronic Ballasts
State-of-the-art electronic ballast specifically developed for the operation of ultraviolet lamps. Versatile ballast provides high lamp output; is lightweight, efficient, and operates cool for longer 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.

CRYSTAL CLEAR™ Quartz Sleeve
Fused, high quality quartz, protects and insulates the ultraviolet lamps to ensure high output over a range of operating temperatures.

Remote Outputs
12v DC: Provides an output corresponding to the MEGATRON® STATUS 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 FAULT status of the monitor. Contacts are rated at 50v 100mA max.

Lamp Operation Indicators
Provide positive indication of each germicidal lamp's operation.

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

Promate™ Elapsed Time Indicator
Non-resettable display of accumulated operating hours.
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.

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.

STER-L-RAY® Instant Start Germicidal Ultraviolet Lamps
Specially designed lamps are instant starting and provide the utmost in quality, sustained output and longevity. (Not Shown – Inside Chamber.)

GUARDIAN™ ASSIST Ultraviolet Monitor Extension
Designed to remotely indicate the intensity level displayed on the GUARDIAN™ Ultraviolet Monitor.

Promate™ Safety Glasses
Safety eyewear should be used as general-purpose safety protection and for additional shielding from germicidal ultraviolet rays.

Promate™ Face Shield
Lightweight visor with adjustable headgear provides eye and face protection from germicidal ultraviolet rays.

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.

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

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

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

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 (µWSec/cm²).

* Nominal Ultraviolet dosage (µWSec/cm²) necessary to inactivate better than 99% of specific microorganism. Consult factory for more complete listing.

### OPERATING CHARACTERISTICS

**Relative Spectral Energy Distribution (Typical)**

**Germicidal Effectiveness As Related to Wavelength**

![Relative Spectral Energy Distribution](image1)

![Germicidal Effectiveness As Related to Wavelength](image2)
**STER-L-RAY®** Germicidal Ultraviolet Lamps are shortwave, low pressure tubes that produce ultraviolet wavelengths lethal to microorganisms.

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

**STER-L-RAY®** and the **STER-L-RAY®** 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.

Hg – LAMP CONTAINS MERCURY, manage in accord with disposal laws, see: LampRecycle.org.

**GERMICIDAL LAMP DATA**

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

① Wattage is lamp watts only and does not include ballast loss (approximate).
② Maximum rated output at 254 nanometers.

The lamp listed above has been specially developed and is the only lamp recommended for use with **MEGATRON®** Disinfection Systems.

All **STER-L-RAY®** lamps used in **MEGATRON®** Disinfection Systems 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

Information on the performance characteristics of the Megatron® Model M250 [June 2002] can be found at 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
- **Standard Inlet/Outlet**: 2” NPT
- **Clear Wastewater**: 70
- **Clear Fresh Water**: 90
- **High Purity Water**: 100
- **Number of Lamps**: 4
- **Power Requirements**: 120V: 4, 230V: 2.5
- **Dimensions**: Length: 100, Width: 16, Height: 14

#### Model M90
- **Standard Inlet/Outlet**: 3” 150# Socket Weld Flange
- **Clear Wastewater**: 115
- **Clear Fresh Water**: 150
- **High Purity Water**: 190
- **Number of Lamps**: 7
- **Power Requirements**: 120V: 5.5, 230V: 3
- **Dimensions**: Length: 100, Width: 16, Height: 16

#### Model M150
- **Standard Inlet/Outlet**: 4” 150# Socket Weld Flange
- **Clear Wastewater**: 200
- **Clear Fresh Water**: 270
- **High Purity Water**: 325
- **Number of Lamps**: 12
- **Power Requirements**: 120V: 8.5, 230V: 4.5
- **Dimensions**: Length: 100, Width: 18, Height: 18

#### Model M250
- **Standard Inlet/Outlet**: 6” 150# Socket Weld Flange
- **Clear Wastewater**: 335
- **Clear Fresh Water**: 450
- **High Purity Water**: 560
- **Number of Lamps**: 19
- **Power Requirements**: 120V: 12, 230V: 6.5
- **Dimensions**: Length: 102, Width: 21, Height: 26

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* *Environmental Technology Verification Program® Verified.

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

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

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COMMERCIAL & INDUSTRIAL

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

APPLICATIONS FOR ULTRAVIOLET WATER PURIFIERS

**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

**Community systems**
- Apartment Complexes
- Condominium Complexes
- Trailer Parks
- Rural Water
- Villages, Towns, Cities
- Farms & Ranches

**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

### FEATURES

<table>
<thead>
<tr>
<th></th>
<th>Bio-Logic® Pure Water Pack™ 1.5 GPM</th>
<th>MINIPURE® 1 to 9 GPM</th>
<th>Ultimate® 4 to 9 GPM</th>
<th>MIGHTY•PURE® 3 to 20 GPM</th>
<th>SANITRON® 3 to 416 GPM</th>
<th>MEGATRON® 90 to 450 GPM</th>
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<tbody>
<tr>
<td>Chamber Material (Stainless Steel Type)</td>
<td>316</td>
<td>304</td>
<td>304</td>
<td>316</td>
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<tr>
<td>STER-L-RAY® Germicidal</td>
<td>S</td>
<td>S</td>
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<td>S</td>
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<td>S</td>
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<tr>
<td>Ultraviolet Lamp with 10,000 Hours Rated Effective Life</td>
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<td>S</td>
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<td>Quick Lamp Change with the EASY-OFF™ End Cap</td>
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<tr>
<td>CRYSTAL CLEAR™ Quartz Sleeve</td>
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<td>Lamp Out Indicator Light(s)</td>
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<td>Sight Port to View Lamp Operation</td>
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<td>Drain Fitting</td>
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<td>Dual Action Wiper Mechanism</td>
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<td>Manual</td>
<td>Manual or Automatic</td>
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<td>Suggested Mount Installation</td>
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<td>Removable or Rotatable Heads</td>
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<tr>
<td>Alternate Inlet/Outlet Fittings</td>
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<td>Sediment and Carbon Filter</td>
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<tr>
<td>Promate™ Mounting Kit / Bracket</td>
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<tr>
<td>GUARDIAN™ Ultraviolet Monitor</td>
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<tr>
<td>GUARDIAN™ ASSIST Monitor Ext.</td>
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<td>SENTRY™ Safety Sensor</td>
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<td>Promate™ Audio Alarm</td>
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<tr>
<td>Promate™ Solenoid Valve</td>
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<tr>
<td>SureFLO™ Flow Control Valve</td>
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<td>Promate™ Elapsed Time Indicator</td>
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<td>Promate™ Time Delay Mechanism</td>
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<td>Certified Models</td>
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<td>–</td>
<td>X ☞</td>
<td>X ☞</td>
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</tr>
</tbody>
</table>

1. SANITRON® Model S10,000C through S25,000C come equipped with mounting rack.
2. MIGHTY•PURE® MP36C and MP49C are available with NSF®/ANSI 55 for Disinfection Performance, Class B.
3. SANITRON® Models S37C, S50C, and S2400C are certified to NSF®/ANSI 61 & 372. Model S2400C is used in modular form to build larger models.

- When used as directed to disinfect clear water, Atlantic Ultraviolet Corporation® water purifiers provide an ultraviolet dosage in excess of 30,000 micro-watt seconds per square centimeter (µWSec/cm²).
- This list depicts options for 120v 50/60Hz operation. Consult factory for options with other power requirements.
The information and recommendations contained in this publication are based upon data collected by the Atlantic Ultraviolet Corporation® and are believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. Specifications and information are subject to change without notice.