

# DISINFECTION PRODUCTS

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134 UV Sterilizers

144 UVT Meter

145 Ozone System & Generators

149 Ozone Accessories

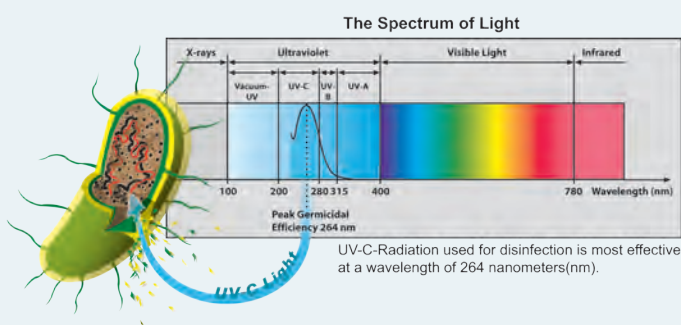


## TECH TALK 135

### How does UV Sterilize the Organisms in my water?

When you hear "UV", tanning on the beach may come to mind, but the UV light that water treatment systems emit is not the same UV that turns your skin to that golden brown, or red! Light is divided into wavelengths; for example red light and blue light are emitted at different wavelengths. Similarly there are 3 principal bands or wavelengths of UV that are of interest here. The three bands are called UV-A (long wavelength), UV-B, (mid wavelength) and UV-C (short wavelength). Sunlight that reaches the surface of the earth is comprised primarily of UV-A and has some UV-B. These wavelengths are what reach your skin when you go outside on a sunny day. UV-C is emitted by our sun, but is blocked by our atmosphere. UV-C is very natural!

UV-C is emitted at a wavelength range of 200nm (or nanometers) to 280nm.



Light emitted in the UV-C range is very effective at sterilizing very small organisms such as bacteria, fungi, algae, spores, viruses, etc. UV-B and UV-A do as well, just with much lower effectiveness. The peak effective wavelength for micro-organism sterilization is right near the middle of the UV-C wavelength band and found at 262nm. Keep that number in mind! That is where the biology and lamps meet; UV lamps primarily emit UV-C light at 254nm. This wavelength, which happens to be very close to the peak effective sterilization wavelength of 262nm!

It should be also noted that different organisms require different levels of exposure to UV-C in order to be sterilized; some organisms are tougher than others! This level of exposure is called 'UV dose'. In basic terms dose is the intensity of the emitted UV light multiplied by the exposure time. For example when using the same UV treatment system for an application, doubling the flow rate through the reactor would halve the dose value. A doubled flow rate means that the water was exposed to the light from the UV lamp for half the time it had been before.

### Harmful Pathogens associated with Aquaculture

ALGAE	UV DOSE
Chlorella Vulgaris	22 mJ/cm <sup>2</sup>
BACTERIA	
Aeromonas salmonicida	3.6 mJ/cm <sup>2</sup> (log-3)
Pseudomonas fluorescens (fin rot)	11 mJ/cm <sup>2</sup> (log-3)
PROTOZOA	
Myxobolus cerebralis (TAMs, Whirling Disease)	40 mJ/cm <sup>2</sup>
Ichthyophthirius multifiliis (freshwater white spot)	100 mJ/cm <sup>2</sup>
Cryptocaryon irritans (marine white spot)	280 mJ/cm <sup>2</sup>
VIRUS	
KHV (Koi herpesvirus)	4 mJ/cm <sup>2</sup>
IHNV (Infectious Hematopoietic Necrosis/RTTO)	30 mJ/cm <sup>2</sup>
VHS (Viral Hemorrhagic Septicemia)	32 mJ/cm <sup>2</sup>
IPNV (Infectious Pancreatic Necrosis Virus)	246 mJ/cm <sup>2</sup>

### So, How Does a UV System Work?

The lamps used for disinfection are very similar to the lamps used in the fluorescent fixtures in your home. The primary difference is that the lamps in your home convert ALL of the UV-C generated by the lamp into visible light. The UV lamps in your water treatment system have no visible light converting phosphor (that white stuff on the inside of the fluorescent lamps), and special quartz envelopes that allow the UV-C to transmit outside of the bulb. The lamps in your home use a special glass envelope that totally blocks UV at any wavelength be it UV-A, UV-B, or UV-C.

UV treatment systems are comprised of a highly efficient UV lamp that is situated within a high quality UV-C transmitting quartz sleeve, and in turn that lamp and sleeve are placed within a flow chamber or vessel. The quartz sleeve is the boundary between the water and the lamp; we don't want our lamps to get wet!

Water flows through the chamber, and around the lamp/sleeve assembly. The UV-C generated by the lamp emits through the water, hits the organisms we want sterilized, and does its job.

### So, What Do We Need to Know to Ensure Successful Installation of a UV Treatment System?

- Target organism – What dose do we need?
- Flow Rate – so we can get you the right dose at your flow rate
- UVT or Ultra Violet Water Transmittance –What is that???

### UVT or Ultra Violet Transmittance

Water as a fluid allows light to pass through it, we all know that. We also know that water 'attenuates' or absorbs light as you go deeper and deeper into it, i.e. a lake or an ocean. Many people that scuba dive know that water absorbs red light faster than blue light; when you dive down the reds disappear or get absorbed before the blue light does. What this demonstrates is that water absorbs light at different rates, dependent on the wavelengths.

UVT is not a common term. In fact, many do not even know that this parameter is one of the most important aspects with regards to ensuring that a UV treatment system works well. UVT is the amount of light, ONLY at 254nm (or the wavelength that the lamp emits), that can go through 1cm, or about 2/5's of an inch of water. For example, a UVT of say 90% means that 90% of the UV-C light will still be there, and not absorbed, after travelling through 1cm of water. The lower the UVT, the more the UV-C light is absorbed by the water, and generally that means that we have to pick a system with more lamp power. Ineffective UV treatment can be attributed to improper consideration of UVT when sizing a system.

Now UV-C light gets absorbed very quickly by water, even in very pure water. Even our atmosphere absorbs it. If you add things to the water, i.e. anything, the amount of UV-C that gets absorbed goes even higher and effectively the UVT value drops. At microscopic levels minerals, chemicals, tannins, biological debris, etc., can reduce the UVT value of your water. Some typical UVT values are:

- Pools: 85% to 95% UVT
- Aquaculture: 70% to 98%
- Public aquariums & zoo displays: 70% to 98%.

### As the water UVT drops, UV systems need more lamp power to reach the same target dose!

Did you know that a system for 90% UVT water can sometimes require as much as 20% to 30% more lamp power than that of a system for water with a 95% UVT, even though they have the same flow rates and dose level requirements? UVT is very important! If you were to use 95% UVT as your criteria when you purchased your system, and your water was actually 90% UVT, your system would not treat your water appropriately; it would be undersized, and perhaps drastically undersized! This is a reason many people have trouble getting UV to work for them. They don't take the actual UVT of their water into account. If you need assistance calculating your UVT please do not hesitate to contact a Pentair Aquatic Eco-Systems representative today!

## SAFEGUARD UV SYSTEMS® SLP SERIES

## Commercial L-Vessel Polymer

SLP Series SafeGUARD UV Systems feature a robust Schedule-80 Modified PVC plastic construction that is ideal for corrosive saltwater environments. SLP vessels are NSF-50 Certified for operating pressures up to 100 PSI, outperforming comparable polypropylene and HDPE models. The efficient operational design ensures proper hydraulic mixing takes place inside the UV vessel. This optimizes UV light intensity distribution throughout the lamp field for reliable fluence (UV does) delivery. All at a cost savings of up to 50% when compared to 316 stainless steel models. SLP Series SafeGUARD UV Systems feature single-end glassware assembly that allows for easy access to high-quality Amalgam UV lamps. The remote thermoplastic power supply enclosures are weather-tight, 508 UL listed, NEMA 12 or NEMA 4X to protect from water damage. A Basic Control package is standard, PLC packages are optional. Available in sizes to treat up to 2,544 GPM/9,630 LPM.

## System Features

- Reduces microorganisms through ultraviolet light.
- Basic Control Package included (optional PLC package shown). See pg. 139 for additional info.
- Control Package available with NEMA12 or NEMA4X enclosure.
- Enhanced, state-of-the-art electronic ballast ensures optimal UV-C output and maximum useful-lamp-life.
- Compact footprint: reduces required operating space.
- Schedule-80 Modified PVC\*<sup>1</sup> plastic construction is NSF-50 Certified for pressures higher than comparable polypropylene and HDPE models.
- Single-End UV lamp and quartz sleeve access for easy servicing.
- Watertight design protects all electrical hardware from water damage.
- Highest-Quality American-Made Low-Pressure Amalgam UV lamps\*<sup>2</sup> offer 12,000 hours of continuous operation (80% efficient after 12,000 hours).
- Saltwater compatible.
- Power Supply is 50/60 Hz capable.
- 20-foot lamp cables.

EPA Est. No.: 091668-FL-001



CALL FOR MORE INFORMATION AND PRICING.

MODEL	LAMPS/ WATTS	INPUT WATTS	UV-C OUTPUT WATTS	UV VESSEL DIMENSIONS* <sup>3</sup> (A X B X C)	POWER ENCLOSURE DIMENSIONS (H X W X D)	INLET/OUTLET PORTS (FLANGE)	AMPS MAX LOAD @ 120/230 VAC	MAX PSI/BAR	30 MJ/CM <sup>2</sup> * <sup>4</sup> GPM/LPM	180 MJ/CM <sup>2</sup> * <sup>4</sup> GPM/LPM
AVAILABLE IN 120 VAC OR 240 VAC										
SLP4010604B11	1/130	130	40	56" X 6" X 47"	16" X 14" X 8.4"	4"	2.1/1.0	100/6.8	66/249	11/42
SLP4020604B11	2/130	260	80	56" X 6" X 47"	16" X 14" X 8.4"	4"	3.9/2.0	100/6.8	112/424	18/68
SLP4030604B11	3/130	390	120	56" X 6" X 47"	16" X 14" X 8.4"	4"	5.8/289	100/6.8	161/609	27/102
SLP4030806B11	3/130	390	120	62" X 8" X 51"	16" X 14" X 8.4"	6"	5.8/289	100/6.8	228/863	38/144
SLP4040806B11	4/130	520	160	62" X 8" X 51"	20.2" X 16.3" X 8.4"	6"	7.5/3.7	100/6.8	296/1120	49/185
SLP4050806B11	5/130	650	200	62" X 8" X 51"	24.6" X 20.2" X 10.6"	6"	9.4/4.7	100/6.8	346/1309	58/219
SLP4061008B11	6/130	780	240	64" X 10" X 51"	24.6" X 20.2" X 10.6"	8"	11.2/5.6	100/6.8	480/1816	80/302
SLP4071008B11	7/130	910	280	64" X 10" X 51"	24.6" X 20.2" X 10.6"	8"	13.3/6.5	100/6.8	564/2134	94/355
SLP4071208B11	7/130	910	280	69" X 12" X 51"	24.6" X 20.2" X 10.6"	8"	13.3/6.5	75/5.1	648/2452	108/408
SLP4081208B11	8/130	1,040	320	69" X 12" X 51"	30.5" X 24.1" X 12.6"	8"	15.0/7.5	75/5.1	763/2888	127/480
ONLY AVAILABLE IN 240 VAC										
SLP6010604B21	1/320	320	98	85" X 6" X 76"	24.6" X 20.2" X 10.6"	4"	1.6	100/6.8	165/624	27/102
SLP6020604B21	2/320	640	196	85" X 6" X 76"	24.6" X 20.2" X 10.6"	4"	3	100/6.8	276/1044	46/174
SLP6030604B21	3/320	960	294	85" X 6" X 76"	24.6" X 20.2" X 10.6"	4"	4.5	100/6.8	392/1483	65/246
SLP6030806B21	3/320	960	294	86" X 8" X 76"	24.6" X 20.2" X 10.6"	6"	4.5	100/6.8	587/2222	98/370
SLP6040806B21	4/320	1,280	392	86" X 8" X 76"	24.6" X 20.2" X 10.6"	6"	6	100/6.8	744/2816	124/469
SLP6050806B21	5/320	1,600	490	86" X 8" X 76"	24.6" X 20.2" X 10.6"	6"	7.5	100/6.8	848/3210	141/533
SLP6061008B21	6/320	1,920	588	88" X 10" X 76"	30.5" X 24.1" X 12.6"	8"	9	100/6.8	1,198/4534	200/757
SLP6071008B21	7/320	2,240	686	88" X 10" X 76"	30.5" X 24.1" X 12.6"	8"	11	100/6.8	1,405/5318	234/885
SLP6071208B21	7/320	2,240	686	90" X 12" X 76"	30.5" X 24.1" X 12.6"	8"	11	75/5.1	1,611/6098	268/1014
SLP6081208B21	8/320	2,560	784	90" X 12" X 76"	30.5" X 24.1" X 12.6"	8"	13	75/5.1	1,839/6961	306/1158
SLP6091412B21	9/320	2,880	882	92" X 14" X 76"	30.5" X 24.1" X 12.6"	12"	14	50/3.4	2,183/8263	364/1377
SLP6101614B21	10/320	3,200	980	94" X 16" X 76"	30.5" X 24.1" X 12.6"	14"	16	50/3.4	2,544/9630	424/1605

\*<sup>1</sup>Limited 3 Year Warranty\*<sup>2</sup>90-day warranty on all lamps\*<sup>3</sup>UV Vessel Dimensions: A = Length of UV Vessel, B = Diameter of UV Vessel, C = Clearance needed for Quartz Sleeve Removal.\*<sup>4</sup>Calculated using UVT factors of 90% transmittance and UV lamps at the end of their useful lamp life.

Note: All models are weather-tight and 508A UL Listed.

Online Orders: PentairAES.com | Phone Orders and Tech Advice: 877.347.4788



CALL FOR MORE INFORMATION AND PRICING.

**NOT RECOMMENDED FOR USE  
WITH SALT WATER APPLICATIONS**

### ◀ SAFEGUARD UV SYSTEMS® SLS SERIES

#### Commercial L-Vessel Stainless Steel

SLS Series SafeGUARD UV Systems provide reliable protection against harmful waterborne pathogens. The vessels feature an electropolish finish for improved corrosion resistance ideal for freshwater applications. Each unit is equipped with sensor ports for system monitoring. SLS UV systems provide the benefit of a compact, space-saving design allowing for in-line horizontal or vertical mounting. SLS Series SafeGUARD UV Systems feature single-end glassware assembly that allows for easy access to high-quality Almalgam UV lamps. The remote thermoplastic power supply enclosures are weather-tight, 508 UL listed, NEMA 12 or NEMA 4X to protect from water damage. A Basic Control package is standard, PLC packages are optional. Available in sizes to treat up to 1,839 GPM/6,961 LPM.

#### System Features

- Reduces microorganisms through ultraviolet light.
- Basic Control Package included (optional PLC package shown). See pg. 139 for additional info.
- Control Package available with NEMA12 or NEMA4X enclosure.
- Enhanced, state-of-the-art electronic ballast ensures optimal UV-C output and maximum useful-lamp-life.
- Compact footprint: reduces required operating space.
- 316L Stainless Steel vessel\*<sup>1</sup> with an electropolish finish for improved corrosion resistance.
- Perform internal inspections and cleanings conveniently with access from a removable face-plate.
- Single-End UV lamp and quartz sleeve access for easy servicing.
- Watertight design protects all electrical hardware from water damage.
- Highest-Quality American-Made Low-Pressure Amalgam UV lamps\*<sup>2</sup> offer 12,000 hours of continuous operation (80% efficient after 12,000 hours).
- Power Supply is 50/60 Hz capable.
- 20-foot lamp cables.

EPA Est. No.: 091668-FL-001

MODEL	LAMPS/ WATTS	INPUT WATTS	UV-C OUTPUT WATTS	UV VESSEL DIMENSIONS**3 (A X B X C)	POWER ENCLOSURE DIMENSIONS (H X W X D)	INLET/OUTLET PORTS (FLANGE)	AMPS MAX LOAD @ 120/230 VAC	MAX PSI/BAR	30 MJ/CM²**4 GPM/LPM	180 MJ/CM²**4 GPM/LPM	
AVAILABLE IN 120 VAC OR 240 VAC											
SLS4010604B11	1/130	130	40	56" X 6" X 47"	16" X 14" X 8.4"	4"	2.1/1.0	100/6.8	66/249	11/42	
SLS4020604B11	2/130	260	80	56" X 6" X 47"	16" X 14" X 8.4"	4"	3.9/2.0	100/6.8	112/424	18/68	
SLS4030604B11	3/130	390	120	56" X 6" X 47"	16" X 14" X 8.4"	4"	5.8/289	100/6.8	161/609	27/102	
SLS4030806B11	3/130	390	120	62" X 8" X 51"	16" X 14" X 8.4"	6"	5.8/289	100/6.8	228/863	38/144	
SLS4040806B11	4/130	520	160	62" X 8" X 51"	20.2" X 16.3" X 8.4"	6"	7.5/3.7	100/6.8	296/1120	49/185	
SLS4050806B11	5/130	650	200	62" X 8" X 51"	24.6" X 20.2" X 10.6"	6"	9.4/4.7	100/6.8	346/1309	58/219	
SLS4061008B11	6/130	780	240	64" X 10" X 51"	24.6" X 20.2" X 10.6"	8"	11.2/5.6	100/6.8	480/1816	80/302	
SLS4071008B11	7/130	910	280	64" X 10" X 51"	24.6" X 20.2" X 10.6"	8"	13.3/6.5	100/6.8	564/2134	94/355	
SLS4071208B11	7/130	910	280	69" X 12" X 51"	24.6" X 20.2" X 10.6"	8"	13.3/6.5	75/5.1	648/2452	108/408	
SLS4081208B11	8/130	1,040	320	69" X 12" X 51"	30.5" X 24.1" X 12.6"	8"	15.0/7.5	75/5.1	763/2888	127/480	
ONLY AVAILABLE IN 240 VAC											
SLS6010604B21	1/320	320	98	85" X 6" X 76"	24.6" X 20.2" X 10.6"	4"	1.6	100/6.8	165/624	27/102	
SLS6020604B21	2/320	640	196	85" X 6" X 76"	24.6" X 20.2" X 10.6"	4"	3	100/6.8	276/1044	46/174	
SLS6030604B21	3/320	960	294	85" X 6" X 76"	24.6" X 20.2" X 10.6"	4"	4.5	100/6.8	392/1483	65/246	
SLS6030806B21	3/320	960	294	86" X 8" X 76"	24.6" X 20.2" X 10.6"	6"	4.5	100/6.8	587/2222	98/370	
SLS6040806B21	4/320	1,280	392	86" X 8" X 76"	24.6" X 20.2" X 10.6"	6"	6	100/6.8	744/2816	124/469	
SLS6050806B21	5/320	1,600	490	86" X 8" X 76"	24.6" X 20.2" X 10.6"	6"	7.5	100/6.8	848/3210	141/533	
SLS6061008B21	6/320	1,920	588	88" X 10" X 76"	30.5" X 24.1" X 12.6"	8"	9	100/6.8	1,198/4534	200/757	
SLS6071008B21	7/320	2,240	686	88" X 10" X 76"	30.5" X 24.1" X 12.6"	8"	11	100/6.8	1,405/5318	2	34/885
SLS6071208B21	7/320	2,240	686	90" X 12" X 76"	30.5" X 24.1" X 12.6"	8"	11	75/5.1	1,611/6098	268/1014	
SLS6081208B21	8/320	2,560	784	90" X 12" X 76"	30.5" X 24.1" X 12.6"	8"	13	75/5.1	1,839/6961	306/1158	

\*<sup>1</sup> Limited 3 Year Warranty

\*<sup>2</sup> 90-day warranty on all lamps

\*<sup>3</sup> UV Vessel Dimensions: A = Length of UV Vessel, B = Diameter of UV Vessel, C = Clearance needed for Quartz Sleeve Removal.

\*<sup>4</sup> Calculated using UVT factors of 90% transmittance and UV lamps at the end of their useful lamp life.

Note: All models are weather-tight and 508A UL Listed.



## SAFEGUARD UV SYSTEMS® SUP SERIES

## Commercial U-Shaped Polymer

SUP Series SafeGUARD UV Systems feature a compact "U" vessel port orientation for a reduced footprint. The robust Schedule-80 Modified PVC plastic construction is ideal for corrosive saltwater environments. SUP vessels are tested for an operating pressures up to 50 PSI, outperforming comparable polypropylene and HDPE models. The efficient operational design ensures proper hydraulic mixing takes place inside the UV vessel. This optimizes UV light intensity distribution throughout the lamp field for reliable fluence (UV does) delivery. All at a cost savings of up to 50% when compared to 316 stainless steel models. The remote thermoplastic power supply enclosures are weather-tight, 508 UL listed, NEMA 12 or NEMA 4X to protect from water damage. A Basic Control package is standard, PLC packages are optional. Available in sizes to treat up to 1,839 GPM/6,961 LPM.

## System Features

- Reduces microorganisms through ultraviolet light.
- Basic Control Package included (optional PLC package shown). See pg. 139 for additional info.
- Control Package available with NEMA12 or NEMA4X enclosure.
- Enhanced, state-of-the-art electronic ballast ensures optimal UV-C output and maximum useful-lamp-life.
- Compact footprint: reduces required operating space.
- Schedule-80 Modified PVC\*<sup>1</sup> plastic construction is for pressures higher than comparable polypropylene and HDPE models.
- Single-End UV lamp and quartz sleeve access for easy servicing.
- Watertight design protects all electrical hardware from water damage.
- Highest-Quality American-Made Low-Pressure Amalgam UV lamps\*<sup>2</sup> offer 12,000 hours of continuous operation (80% efficient after 12,000 hours).
- Saltwater compatible.
- Power Supply is 50/60 Hz capable.
- 20-foot lamp cables.

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AVAILABLE IN 120 VAC OR 240 VAC										
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SUP4020604B11	2/130	260	80	52" X 6" X 47"	16" X 14" X 8.4"	4"	3.9/2.0	50/3.4	112/424	18/68
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## ONLY AVAILABLE IN 240 VAC

SUP6010604B11	1/320	320	98	75" X 6" X 71"	24.6" X 20.2" X 10.6"	4"	—	50/3.4	165/624	27/102
SUP6020604B11	2/320	640	196	75" X 6" X 71"	24.6" X 20.2" X 10.6"	4"	—	50/3.4	276/1044	46/174
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\*<sup>1</sup> Limited 3 Year Warranty\*<sup>2</sup> 90-day warranty on all lamps\*<sup>3</sup> UV Vessel Dimensions: A = Length of UV Vessel, B = Diameter of UV Vessel, C = Clearance needed for Quartz Sleeve Removal\*<sup>4</sup> Calculated using UVT factors of 90% transmittance and UV lamps at the end of their useful lamp life.

Note: All models are weather-tight and 508A UL Listed.

Online Orders: [PentairAES.com](http://PentairAES.com) | Phone Orders and Tech Advice: 877.347.4788

CALL FOR MORE INFORMATION AND PRICING.



### SAFEGUARD UV SYSTEMS® SUS SERIES

#### Commercial U-Shaped Stainless Steel

SUS Series SafeGUARD UV Systems provide reliable protection against harmful waterborne pathogens. The vessels feature an electropolish finish for improved corrosion resistance ideal for freshwater applications. Each unit is equipped with sensor ports for system monitoring. The "U" style UV vessel allows for space-saving horizontal mounting. SUS Series SafeGUARD UV Systems feature single-end glassware assembly that allows for easy access to high-quality Amalgam UV lamps. The remote thermoplastic power supply enclosures are weather-tight, 508 UL listed, NEMA 12 or NEMA 4X to protect from water damage. A Basic Control package is standard, PLC packages are optional. Available in sizes to treat up to 1,839 GPM/6,961 LPM.

#### System Features

- Reduces microorganisms through ultraviolet light.
- Basic Control Package included (optional PLC package shown). See pg. 139 for additional info.
- Control Package available with NEMA12 or NEMA4X enclosure.
- Enhanced, state-of-the-art electronic ballast ensures optimal UV-C output and maximum useful-lamp-life.
- Compact footprint: reduces required operating space.
- 316L Stainless Steel vessel\*<sup>1</sup> with an electropolish finish for improved corrosion resistance.
- Perform internal inspections and cleanings conveniently with access from a removable face-plate.
- Single-End UV lamp and quartz sleeve access for easy servicing.
- Watertight design protects all electrical hardware from water damage.
- Highest-Quality American-Made Low-Pressure Amalgam UV lamps\*<sup>2</sup> offer 12,000 hours of continuous operation (80% efficient after 12,000 hours).
- Power Supply is 50/60 Hz capable.
- 20-foot lamp cables.

EPA Est. No.: 091668-FL-001



CALL FOR MORE INFORMATION AND PRICING.

**NOT RECOMMENDED FOR USE  
WITH SALT WATER APPLICATIONS**

MODEL	LAMPS/ WATTS	INPUT WATTS	UV-C OUTPUT WATTS	UV VESSEL DIMENSIONS* <sup>3</sup> (A X B X C)	POWER ENCLOSURE DIMENSIONS (H X W X D)	INLET/OUTLET PORTS (FLANGE)	AMPS MAX LOAD @ 120/230 VAC	MAX PSI/BAR	30 MJ/CM <sup>2</sup> * <sup>4</sup> GPM/LPM	180 MJ/CM <sup>2</sup> * <sup>4</sup> GPM/LPM
AVAILABLE IN 120 VAC OR 240 VAC										
SUS4010604B11	1/130	130	40	52" X 6" X 47"	16" X 14" X 8.4"	4"	2.1/1.0	100/6.8	66/249	11/42
SUS4020604B11	2/130	260	80	52" X 6" X 47"	16" X 14" X 8.4"	4"	3.9/2.0	100/6.8	112/424	18/68
SUS4030604B11	3/130	390	120	52" X 6" X 47"	16" X 14" X 8.4"	4"	5.8/289	100/6.8	161/609	27/102
SUS4030806B11	3/130	390	120	54" X 8" X 47"	16" X 14" X 8.4"	6"	5.8/289	100/6.8	228/863	38/144
SUS4040806B11	4/130	520	160	54" X 8" X 47"	20.2" X 16.3" X 8.4"	6"	7.5/3.7	100/6.8	296/1120	49/185
SUS4050806B11	5/130	650	200	54" X 8" X 47"	24.6" X 20.2" X 10.6"	6"	9.4/4.7	100/6.8	346/1309	58/219
SUS4061008B11	6/130	780	240	60" X 10" X 51"	24.6" X 20.2" X 10.6"	8"	11.2/5.6	100/6.8	480/1816	80/302
SUS4071008B11	7/130	910	280	60" X 10" X 51"	24.6" X 20.2" X 10.6"	8"	13.3/6.5	100/6.8	564/2134	94/355
SUS4071208B11	7/130	910	280	62" X 12" X 51"	24.6" X 20.2" X 10.6"	8"	13.3/6.5	75/5.1	648/2452	108/408
SUS4081208B11	8/130	1,040	320	62" X 12" X 51"	30.5" X 24.1" X 12.6"	8"	15.0/7.5	75/5.1	763/2888	127/480
ONLY AVAILABLE IN 240 VAC										
SUS6010604B21	1/320	320	98	75" X 6" X 71"	24.6" X 20.2" X 10.6"	4"	1.6	100/6.8	165/624	27/102
SUS6020604B21	2/320	640	196	75" X 6" X 71"	24.6" X 20.2" X 10.6"	4"	3	100/6.8	276/1044	46/174
SUS6030604B21	3/320	960	294	75" X 6" X 71"	24.6" X 20.2" X 10.6"	4"	4.5	100/6.8	392/1483	65/246
SUS6030806B21	3/320	960	294	77" X 8" X 71"	24.6" X 20.2" X 10.6"	6"	4.5	100/6.8	587/2222	98/370
SUS6040806B21	4/320	1,280	392	77" X 8" X 71"	24.6" X 20.2" X 10.6"	6"	6	100/6.8	744/2816	124/469
SUS6050806B21	5/320	1,600	490	77" X 8" X 71"	24.6" X 20.2" X 10.6"	6"	7.5	100/6.8	848/3210	141/533
SUS6061008B21	6/320	1,920	588	79" X 10" X 71"	30.5" X 24.1" X 12.6"	8"	9	100/6.8	1,198/4534	200/757
SUS6071008B21	7/320	2,240	686	79" X 10" X 71"	30.5" X 24.1" X 12.6"	8"	11	100/6.8	1,405/5318	234/885
SUS6071208B21	7/320	2,240	686	81" X 12" X 71"	30.5" X 24.1" X 12.6"	8"	11	75/5.1	1,611/6098	268/1014
SUS6081208B21	8/320	2,560	784	81" X 12" X 71"	30.5" X 24.1" X 12.6"	8"	13	75/5.1	1,839/6961	306/1158

\*<sup>1</sup> Limited 3 Year Warranty

\*<sup>2</sup> 90-day warranty on all lamps

\*<sup>3</sup> UV Vessel Dimensions: A = Length of UV Vessel, B = Diameter of UV Vessel, C = Clearance needed for Quartz Sleeve Removal

\*<sup>4</sup> Calculated using UVT factors of 90% transmittance and UV lamps at the end of their useful lamp life.

Note: All models are weather-tight and 508A UL Listed.

## SAFEGUARD UV SYSTEMS® SVP SERIES

## Commercial Vertical Polymer

When operating space is restricted, SVP Series SafeGUARD UV Systems provide the small footprint you need. A robust Schedule-80 Modified PVC plastic construction is ideal for corrosive saltwater environments. SVP vessels are NSF-50 Certified for operating pressures up to 50 PSI, outperforming comparable polypropylene and HDPE models. The efficient operational design ensures proper hydraulic mixing takes place inside the UV vessel. This optimizes UV light intensity distribution throughout the lamp field for reliable fluence (UV does) delivery. All at a cost savings of up to 50% when compared to 316 stainless steel models. SVP Series SafeGUARD UV Systems feature single-end glassware assembly that allows for easy access to high-quality Amalgam UV lamps. The remote thermoplastic power supply enclosures are weather-tight, 508 UL listed, NEMA 12 or NEMA 4X to protect from water damage. A Basic Control package is standard, PLC packages are optional. Available in sizes to treat up to 763 GPM/2,888 LPM.

## System Features

- Reduces microorganisms through ultraviolet light.
- Basic Control Package included (optional PLC package shown). See pg. 139 for additional info.
- Control Package available with NEMA12 or NEMA4X enclosure.
- Enhanced, state-of-the-art electronic ballast ensures optimal UV-C output and maximum useful-lamp-life.
- Compact footprint: reduces required operating space.
- Schedule-80 Modified PVC plastic construction\*1 is NSF-50 Certified for pressures higher than comparable polypropylene and HDPE models.
- Single-End UV lamp and quartz sleeve access for easy servicing.
- Watertight design protects all electrical hardware from water damage.
- Highest-Quality American-Made Low-Pressure Amalgam UV lamps\*2 offer 12,000 hours of continuous operation (80% efficient after 12,000 hours).
- Saltwater compatible.
- Power Supply is 50/60 Hz capable.
- 20-foot lamp cables.

EPA Est. No.: 091668-FL-001



CALL FOR MORE INFORMATION AND PRICING.

MODEL	LAMPS/ WATTS	INPUT WATTS	UV-C OUTPUT WATTS	UV VESSEL DIMENSIONS*3 (A X B X C)	POWER ENCLOSURE DIMENSIONS (H X W X D)	INLET/OUTLET PORTS (FLANGE)	AMPS MAX LOAD @ 120/230 VAC	MAX PSI/BAR	30 MJ/CM² *4 GPM/LPM	30 MJ/CM² *4 GPM/LPM
<b>SVP4010604B11</b>	1/130	130	40	57" X 6" X 47"	16" X 14" X 8.4"	4"	2.1/1.0	50/3.4	66/249	11/42
<b>SVP4020604B11</b>	2/130	260	80	57" X 6" X 45"	16" X 14" X 8.4"	4"	3.9/2.0	50/3.4	112/424	18/68
<b>SVP4030604B11</b>	3/130	390	120	57" X 6" X 47"	16" X 14" X 8.4"	4"	5.8/2.9	50/3.4	161/609	27/102
<b>SVP4030806B11</b>	3/130	390	120	63" X 8" X 47"	16" X 14" X 8.4"	6"	5.8/2.9	50/3.4	228/863	38/144
<b>SVP4040806B11</b>	4/130	520	160	63" X 8" X 47"	20.2" X 16.3" X 8.4"	6"	7.5/3.7	50/3.4	296/1120	49/185
<b>SVP4050806B11</b>	5/130	650	200	63" X 8" X 47"	24.6" X 20.2" X 10.6"	6"	9.4/4.7	50/3.4	346/1309	58/219
<b>SVP4061008B11</b>	6/130	780	240	68" X 10" X 51"	24.6" X 20.2" X 10.6"	8"	11.2/5.6	50/3.4	480/1816	80/302
<b>SVP4071008B11</b>	7/130	910	280	68" X 10" X 51"	24.6" X 20.2" X 10.6"	8"	13.3/6.5	50/3.4	564/2134	94/355
<b>SVP4071208B11</b>	7/130	910	280	75" X 12" X 51"	24.6" X 20.2" X 10.6"	8"	13.3/6.5	50/3.4	648/2452	108/408
<b>SVP4081208B11</b>	8/130	1,040	320	75" X 12" X 51"	30.5" X 24.1" X 12.6"	8"	15.0/7.5	50/3.4	763/2888	127/480

\*1 Limited 3 Year Warranty

\*2 90-day warranty on all lamps

\*3 UV Vessel Dimensions: A = Length of UV Vessel, B = Diameter of UV Vessel, C = Clearance needed for Quartz Sleeve Removal

\*4 Calculated using UVT factors of 90% transmittance and UV lamps at the end of their useful lamp life.

Note: All models are weather-tight and 508A UL Listed



SafeGUARD UV Systems Controller shown with Advanced PLC



Basic PLC



Advanced PLC

### SAFEGUARD UV SYSTEMS™ CONTROLLERS

Basic Enclosure is standard with all SafeGUARD UV Systems

The Basic Control Panel provides critical features without adding complexity, allowing the user to view the main power, alarm and lamp status in addition to the lamp hours of operation, as LED indication and digital hour meter. The Basic Control Panel allows an external source to control the ON/OFF operation and offers an alarm output along with LED alarm indication.

#### Features

- Main Power Indication
- Elapsed Run-Time Hour Meter
- UV Lamp Status Indicators
- Remote ON/OFF Operation
- Over-Temperature Shutdown
- Alarm Output and Status Indicator

#### Optional PLC or Advanced PLC upgrade available

The Improved PLC utilizes a touch screen interface with the latest in controls technology and is offered in 2 versions Basic PLC and Advanced PLC, which are listed in the matrix below. The UV Intensity Sensor is made of a rugged stainless steel body and can be set up to auto-calibrate after initiate lamp burn in to allow for a more accurate measurement.

CALL FOR MORE INFORMATION AND PRICING.

	BASIC PLC	ADVANCED PLC
<b>POWER INPUT</b>	120/240 VAC (50/60Hz)	240 VAC (50/60HZ)
<b>DISPLAY</b>		
Lamp Status	✓	✓
Lamp Hours	✓	✓
UV Intensity	✓	✓
UV Intensity Chart	✓	✓
Alarm Logging	✓	✓
Flow Rate	—	✓
Ballast Output	—	✓
<b>INPUTS</b>		
Max. Lamps	8	13
UV Intensity	✓	✓
Vessel Water Temperature	✓	✓
Safety Cap Input	✓	✓
Remote On/Off	✓	✓
Enclosure Temperature	✓	✓
Flow Sensor Input	—	✓ (PULSE)
<b>OUTPUTS</b>		
Alarm Output Relay	✓ (1 ALARM)	✓ (7 INDIVIDUAL ALARMS)
4-20 mA Output	—	✓ (UV INTENSITY)
Dimmable Ballasts	—	✓
<b>COMMUNICATION</b>		
Ethernet Port (Modbus)	—	✓



**SAFEGUARD UV SYSTEMS® HOSS SERIES****High-Output Stainless Steel**

Quality craftsmanship meets superior design to deliver years of dependable and trouble-free operation. HOSS Series SafeGUARD UV Systems combine the latest, most efficient Low-Pressure (LP) UV lamp technology with robust stainless steel UV vessel construction to create a versatile, high-quality UV system suited for freshwater Aquaculture and light industrial applications.

HOSS UV Systems feature a thermoplastic NEMA 4x enclosure mounted to the UV vessel brackets, allowing 4-way orientation for either horizontal or vertical system mounting.

HOSS controls consist of analog re-settable hour meter, lamp-status LEDs, input power LED, and an external on/off switch. Single-end UV-C lamps and quartz sleeve access allows for quick-easy servicing. Cable hardware protects lamp connections from water damage and is durable and inexpensive to replace if required.

HOSS UV systems are compact and designed to fit into tight spaces. All HOSS UV vessels feature stainless steel threaded ports and flanges. Power Supply Enclosures are UL 508a listed.

**System Features**

- Reduces microorganisms through ultraviolet light.
- Housing Material\*<sup>1</sup>: Stainless Steel 316L with Electropolished Finish
- UV Lamp\*<sup>2</sup>: Low-Pressure High-Output, T-6 style
- Control Enclosure: Type 12 or optional NEMA 4X

**Monitoring System:**

- Main Power Indicator Light
- Elapsed Run-Time Hour Meter
- UV Lamp Status Indicator

EPA Est. No.: 091668-FL-001



CALL FOR MORE INFORMATION AND PRICING.

**NOT RECOMMENDED FOR USE  
WITH SALT WATER APPLICATIONS**

MODEL	LAMPS/ WATTS	UV-C OUTPUT WATTS	UV VESSEL DIMENSIONS (H X D)	POWER ENCLOSURE DIMENSIONS (H X W X D)	AVAILABLE INLET/OUTLET PORTS (FLANGE)	AMPS MAX LOAD @ 115/230 VAC	MAX PSI/BAR	30 MJ/CM <sup>2</sup> * <sup>3</sup> GPM/LPM	180 MJ/CM <sup>2</sup> * <sup>4</sup> GPM/LPM	316L-EP EACH
<b>COM480HOSS</b>	1/80	27	42" X 11"	12.5" X 10.5" X 7.7"	2" MNPT	1.25/0.75	50/3.4	47/182	8/30	<b>\$4,311.00</b>
<b>COM4160HOSS</b>	2/80	54	42" X 11"	12.5" X 10.5" X 7.7"	2" MNPT	2.5/1.25	50/3.4	75/290	12/48	<b>4,811.00</b>
<b>COM4240HOSS</b>	3/80	81	42" X 11"	12.5" X 10.5" X 7.7"	2" MNPT	3.5/1.75	50/3.4	112/434	18/72	<b>3,524.00</b>
<b>COM4320HOSS</b>	4/80	108	42" X 11"	12.5" X 10.5" X 7.7"	2" MNPT	5.0/2.5	50/3.4	146/566	27/94	<b>5,868.00</b>

\*<sup>1</sup> Limited 3 Year Warranty

\*<sup>2</sup> 90-day warranty on all lamps

\*<sup>3</sup> Recommended dose for algae and bacteria.

\*<sup>4</sup> Typical maximum dose required in aquaculture applications.

Call to determine the dose required for your application

**WARNING**

Pentair Aquatic Eco-Systems does not recommend using 316L stainless steel in corrosive environments that include, but are not limited to, saltwater aquaculture (includes aquaria) and other corrosive applications. 316L stainless steel is subject to pitting and crevice corrosion in warm chloride (salts) environments, and to stress corrosion cracking with water temperatures above 60°C, approximately.



## SMART UV® HIGH-OUTPUT (HO) MULTI-LAMP UV STERILIZERS

Research facility staff and other aquatic husbandry personnel will find our SMART UV HO Multi-Lamp UV Systems are easy to install, operate and maintain. Single-end access allows for time saving serviceability of the lamp and quartz sleeve. Highest-Quality UV lamps offer 12,000 hours of continuous operation at or above the minimum required UV-C intensity levels required to meet your dose target. One-year warranty on ballasts.

### System Specifications:

- Reduces microorganisms through ultraviolet light.
- Housing Material\*<sup>1</sup>: Heavy-Wall UV Resistant High-Density Polymer
- Housing Size: Refer to Chart Below (UV Vessel Dimensions)
- UV Lamp(s)\*<sup>2</sup>: Low-Pressure High-Output, T6-style
- Each lamp will require its own outlet
- 115V/60 Hz and 240V 50/60 Hz versions available

EPA Est. No.: 091668-FL-001

MODEL	LAMPS/ WATTS	INLET/OUTLET PORT(S)	AMPS MAX LOAD @ 120/240 VAC	MAX PSI/BAR	UV VESSEL DIMENSIONS (L X D)	30 MJ/CM <sup>2</sup> * GPM/LPM	180 MJ/CM <sup>2</sup> * GPM/LPM	EACH
<b>0250100</b>	2/50	3" UNION	1.15/0.57	100/6.89	35" X 6"	43/162	7/26	<b>\$3,446.00</b>
<b>0250160</b>	2/80	3" UNION	1.15/0.57	100/6.89	50" X 6"	81/306	14/52	<b>3,608.00</b>
<b>0250240</b>	2/120	3" UNION	2.0/1.0	100/6.89	62" X 6"	110/416	18/68	<b>3,678.00</b>
<b>0250300</b>	2/150	3" UNION	2.6/1.3	100/6.89	76" X 6"	174/658	29/109	<b>4,077.00</b>

\*Calculated using UVT factors of 90% transmittance and UV lamps at the end of their useful lamp life.  
Note: Models using 150 Watt Lamps can be ordered in 120 or 240 VAC 50/60 Hz.

## SMART UV® HIGH-OUTPUT STERILIZERS

UV vessels are built of a UV-resistant, high density polymer with a removable end cap to provide easy access. Internal viewing ports allow visual indication of lamp status. Units have 2" slip unions and 6" diameter housings. 10' cable to ballast and 6' cord to plug. 115V/60 Hz and 240V 50/60 Hz options available.

Models include an in-line, sealed watertight power supply for wet applications. One-year warranty on ballasts, limited lifetime warranty on the housing and 90-day warranty on lamps.

### System Features

- Reduces microorganisms through ultraviolet light
- Housing Material: Heavy-Wall UV Resistant High-Density Polymer
- Housing Pressure (Max.): 20 psi / 1.378 bar
- Housing Inlet/Outlet Port Size: 2" Union
- UV Lamp(s): Low-Pressure High-Output, T6-style

EPA Est. No.: 091668-FL-001

LAMPS/ WATTS	INLET/OUTLET PORT(S)	AMPS MAX LOAD @ 120/240 VAC	MAX PSI/BAR	UV VESSEL DIMENSIONS (L X D)	30 MJ/CM <sup>2</sup> * GPM/LPM	180 MJ/CM <sup>2</sup> * GPM/LPM	WITHOUT WIPER		WITH WIPER	
							MODEL	EACH	MODEL	EACH
1/50	2" UNION	1.15/0.57	50/3.44	30" X 6"	25/94	4/15	<b>E50S</b>	<b>\$724.99</b>	<b>E50S-W</b>	<b>\$968.59</b>
1/80	2" UNION	1.15/0.57	50/3.44	45" X 6"	45/170	7/26	<b>E80S</b>	<b>766.99</b>	<b>E80S-W</b>	<b>1,012.00</b>
1/120	2" UNION	1.15/0.57	50/3.44	57" X 6"	64/242	10/38	<b>E120S</b>	<b>823.99</b>	<b>E120S-W</b>	<b>1,085.00</b>
1/150	2" UNION	1.85/0.85	50/3.44	71" X 6"	100/378	10/64	<b>E150S</b>	<b>999.99</b>	<b>E150S-W</b>	<b>1,201.00</b>

\*Calculated using UVT factors of 90% transmittance and UV lamps at the end of their useful lamp life.  
Note: Models using 150 Watt Lamps can be ordered in 120 or 240 VAC 50/60 Hz.





SMART UV® STERILIZERS

These high-quality ultraviolet sterilizers feature a watertight sealed design and can be used safely both indoors and outdoors. The SMART UV reduces microorganisms through ultraviolet light. The units have a 3" inside diameter and 1 1/2" slip union. They are an excellent choice for everything from small koi ponds to large recirculating systems. Units feature Low Pressure lamps with a 12,000 hour effective life. These SMART UV units feature remote-style ballasts with 16' power cords. Units are 115V/60 Hz and 230v 50/60Hz is optional.

One-year warranty on ballasts, limited lifetime warranty on the housing and 90-day warranty on lamps.

Wipers are available.

EPA Est. No.: 091668-FL-001

LAMPS/ WATTS	INLET/OUTLET PORT(S)	AMPS MAX LOAD @ 120/240 VAC	MAX PSI/BAR	UV VESSEL DIMENSIONS (L X D)	30 MJ/CM²** GPM/LPM	180 MJ/CM²** GPM/LPM	WITHOUT WIPER		WITH WIPER	
							MODEL	EACH	MODEL	EACH
1/18	1.5" UNION	0.34/0.17	50/3.44	23" X 4"	6/22	0.8/2.8	EU18-U	\$348.49	EU18P-W	\$425.59
1/25	1.5" UNION	0.40/0.20	50/3.44	29" X 4"	9.5/35	1.0/3.7	EU25-U	383.29	EU25P-W	461.99
1/40	1.5" UNION	0.44/0.22	50/3.44	44" X 4"	15.5/58	2.8/10	EU40	416.89	EU40P-W	483.09
1/65	1.5" UNION	0.46/0.23	50/3.44	71" X 4"	26/98	5.3/20	EU65P	535.49	EU65P-W	659.59

\*Calculated using UVT factors of 90% transmittance and UV lamps at the end of their useful lamp life.  
Note: Models using 150 Watt Lamps can be ordered in 120 or 240 VAC 50/60 Hz.

SIZED FOR YOUR APPLICATION

Did you know:  
The flow rate at which the water passes through a UV system, and the UV-C Intensity establishes the "UV Dose". All waterborne microorganisms require their own specific UV Dose for successful disinfection. For more information on the SMART UV Sterilizer and other UV-C water treatment products, please visit us online at PentairAES.com.

Thanks for helping me with my UV light problem. My pond has never been so beautiful, and I have shared my news with friends and relatives. You have one grateful and very satisfied customer.

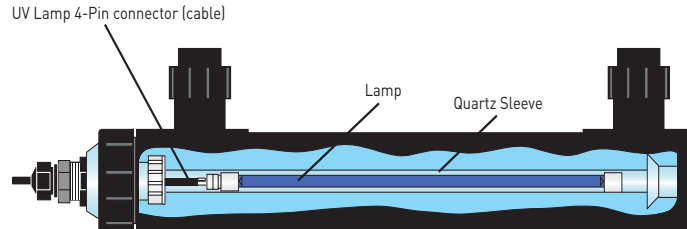
Vanna Wu  
Lihue, HI

TECH TALK 5

"Why Watts"

You know how you can tell what people know by the questions they ask? Well, we know that most people don't know about watts. They ask, "How many amps does this motor use?" instead of, "How many watts does this motor use?" Watts are what you pay for, not amps (amps are used to size breakers, etc.).  
  
The direct current formula we all learned (volts x amps = watts) is correct for incandescent light bulbs and electric heaters, but it is not correct for motors. When dealing with power loads that

involve inductance magnetic devices such as motor windings, solenoids, transformers, lamp ballasts, etc., the formula for single-phase loads is volts x amps x power factor = watts.  
  
In many cases, especially with linear air compressors and mag drive pumps, the actual watts used are significantly less than what is calculated by multiplying volts x amps. The only way to determine the watt consumption of a motor is to test it using a wattmeter.



SMART UV® HIGH-OUTPUT STERILIZER REPLACEMENT PARTS

WATTS	LAMP	EACH	4 +	QUARTZ SLEEVE	EACH	SEAL KITS	EACH	BALLAST (120-230V)	EACH	4-PIN LAMP CONNECTOR	EACH
50	FL-2538-IP	\$69.99	\$62.99	FL-QZ175-IP	\$39.99	20375-2	\$28.59	20105-MV	\$132.29	709-1S	\$7.39
80	FL-2997-IP	79.99	71.99	FL-QZ176-IP	44.99	20375-2	28.59	20105-MV	132.29	709-1S	7.39
120	FL-2998-IP	89.99	80.99	FL-QZ165	59.99	20375-2	28.59	20105-MV	132.29	709-1S	7.39
150	FL-2999	99.99	89.99	FL-QZ167	49.99	20375-2	28.59	202150-1*	259.99	709-1S	7.39

\*model is 120V

SMART UV STERILIZER REPLACEMENT PARTS

WATTS	SEAL KITS	EACH	BALLAST (120V)	EACH	4-PIN LAMP CONNECTOR	EACH
18, 25, 40, 65	20375	\$28.39	20100	\$100.79	709-1S	\$7.39
80, 130	20374-AQ	31.79	20100 x 2*	100.79	709-1S x 2*	7.39

WATTS	LAMP	EACH	4 +	QUARTZ SLEEVE	EACH	4+
18	FL-2536-IP	\$57.99	\$52.19	FL-QZ173-IP	\$29.99	\$26.99
25	FL-2542-IP	61.99	55.80	FL-QZ175-IP	39.99	35.99
40	FL-1957-IP	62.99	56.70	FL-QZ176-IP	39.99	35.99
65	FL-2529	74.99	67.49	FL-QZ167	49.99	44.99
80	FL-1957-IP x 2*	62.99	56.70	FL-QZ176-IP x 2*	39.99	35.99
130	FL-2529 x 2*	74.99	67.49	FL-QZ167 x 2*	49.99	44.99

\*Requires 2 EA

SMART UV LITE STERILIZER REPLACEMENT PARTS

WATTS	SEAL KITS	EACH	BALLAST (120V)	EACH	4-PIN LAMP CONNECTOR	EACH
18	20624-AQ	\$28.39	20100	\$100.79	20078	\$16.49
25	20624-AQ	28.39	20100	100.79	20078	16.49
40	20624-AQ	28.39	20100	100.79	709-1S	7.39
80	20625-AQ	28.39	20100 x 2*	100.79	709-1S x 2*	7.39

WATTS	LAMP	EACH	4 +	QUARTZ SLEEVE	EACH	4+
18	FL-2536-IP	\$57.99	\$52.19	FL-QZ173-IP	\$29.99	\$26.99
25	FL-2542-IP	61.99	55.80	FL-QZ175-IP	39.99	35.99
40	FL-1957-IP	62.99	56.70	FL-QZ176-IP	39.99	35.99
80	FL-1957-IP x 2*	62.99	56.70	FL-QZ176-IP x 2*	39.99	35.99

\*Requires 2 EA



## UVT FIELD METER

### With innovative Split-Sense technology

The RealTech UV254 P200 field meter with exclusive Split-Sense technology is the world's most advanced and affordable portable UV254 testing meter, guaranteed. The portable Real UVT meter can quickly and accurately test UV254 in the field within minutes. The Real UVT meter utilizes Real Tech Inc.'s patented Split-Sense technology to give it many advantages such as its fast 1 minute warm-up time and extreme accuracy.

Split-Sense technology works by using a single beam of UV light to take continuous readings before and after the insertion of the quartz cuvette allowing for compensation of the effects of UV lamp drift and fluctuations.

The Real UVT meter's new calibration memory feature allows testing to be performed without the need to zero the meter with 100% DI water even if the meter has been powered off.

### Measuring Organics

UV254 provides an indication of the amount of natural organic matter (NOM) in water and wastewater. More specifically, UV254 is the best detector of aromatic organics or reactive NOM.

Aromatic organics are problematic, having several negative effects. For example, when combined with chlorine, aromatic organics readily form disinfection by-products (DBPs).

The Real UVT field meter is the ideal solution for testing UV254 anywhere, anytime. The Real UVT can also be used as a practical alternative or supplement to measuring other more expensive and complicated organic test parameters such as TOC, DOC, BOD and COD.

### System Features

- Memory calibration—no field zeroing needed
- Performs both UV Transmittance and UV Absorbance measurements
- Portable and easy to use
- Battery powered option
- 1 minute warm-up time
- Extreme accuracy

MODEL		EACH
<b>P200UV254</b>	REAL TECH P200 UV254 METER	<b>\$1,937.00</b>
<b>1UVT060020</b>	REPLACEMENT LAMP, P SERIES	<b>141.49</b>
<b>1UVT045010</b>	REPLACEMENT CUVETTE, QUARTZ, 10 MM	<b>262.89</b>



**2-YEAR WARRANTY**

### REAL UVT TECHNICAL SPECIFICATIONS

UV WAVELENGTH	253.7 nm
SOURCE	Low pressure germicidal UV lamp
RANGE	5 - 100 % Transmittance, 0 - 1.3 Absorbance
ACCURACY	0.5% UV Transmittance
RESOLUTION	0.1% Transmittance, 0.001 Absorbance
UNITS OF MEASUREMENT	UV Percent Transmittance (%), UV Absorbance per cm (cm-1)
BUILT-IN FAULT DETECTION SYSTEM	Notification of a system failure
DISPLAY	32 character back-lit LCD digital display provides easy on screen instructions and system messages
CALIBRATION MEMORY	Calibration memory technology. Calibration with DI water required only periodically.
RESPONSE TIME	Warm-up Time ~ 1 minute, Calibration ~ 2 seconds, Computation ~ 2 seconds
OPERATING TEMPERATURES	0 - 45 °C (32 - 133 °F)
CASE	Rugged, Compact, Watertight, and Dustproof with convenient carrying handle
SAMPLE CELL	10 mm x 10 mm quartz cuvette
PATH LENGTH	1 cm
POWER SUPPLY	<ul style="list-style-type: none"> <li>• Wall Adapter - 110 VAC (UL approved) or 220 VAC,</li> <li>• Car Adapter - 12 VDC</li> <li>• Battery power pack option</li> </ul>
DIMENSIONS	8.7" L x 7.5" W x 3.9" H (254 cu in)
WEIGHT	4 lbs

### UV Light Transmittance

UV transmittance (UVT) is not turbidity! The water's clarity is not an effective indicator, because both solid and dissolved material can absorb UV light. For example: metals (iron) in water are not visible to the human eye but absorb UV light and have a negative impact on UVT.

UVT is the transmission of UV-C light (at 254 nm) through water. Regarding Aquaculture applications, flow-through fish-culture systems requiring influent disinfection typically test at 90-95% UVT. In contrast, RAS recirculating aquaculture systems typically test lower at 70-85%T. Application conditions vary and, therefore, must be evaluated individually.

UVT must be considered when sizing any UV system. Using a meter is the only method of determining an application's true %T.

### INTERNATIONAL OZONE SYSTEM

#### System Features

- Wall mounted, single point electrical.
- 120 VAC, 60 Hz, 1 phase, 20 amp service.
- Dimensions: 36" x 38", 139 pounds.
- One year warranty on parts only.

#### SYSTEM INCLUDES:

##### OZ8 Ozone Generator

Variable output, 0-8 grams per hour of ozone. Manual output control with reference meter. Air cooled.

##### 12 SCFH Oxygen Concentrator

Up to 12 SCFH oxygen flow at 10 PSIG.

##### Backflow Prevention Device

Power to open, spring to close actuator with drain and manual outlet valve. Interlocked to stop system if back flow event should occur.

##### Inline Oxygen Monitor

Measures gas flow, gas pressure and oxygen concentration. Interlocked to stop ozone production on alarm.

##### Ambient Ozone Monitor

0-2 parts per million, two alarm levels. Interlocked to stop ozone production on high ambient ozone alarm.

##### ORP Monitor and Sensor with 3 Meter Cable

Integrated to stop ozone production on high ORP alarm.

##### 10' of 1/4" PTFE Tubing to Process



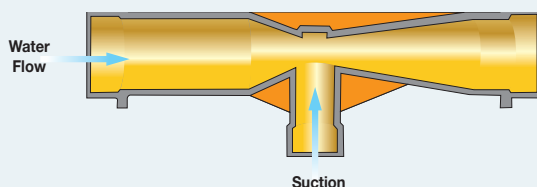
Please allow 4-5 weeks lead time.

MODEL		VOLTAGE	PHASE	AMPS	EACH
<b>IOSYS1</b>	OZONE SKID SYSTEM 8G/HR	120V/60HZ	1PHS	20A	<b>\$12,742.00</b>
<b>OWS-OM2</b>	AMBIENT OZONE MONITOR	2 SENSORS W/POWER SUPPLY & HORN			<b>2,970.00</b>

### TECH TALK 72

#### Ozone Sizing: Know Your Goal

In sizing an ozone system the most important design factor is getting the correct ozone dose for your specific application. Ozone is used mainly to achieve two different goals: sterilization/oxidation and microflocculation. Maximizing mass transfer (getting the ozone from the gas phase into the water) is of primary importance for both. The most efficient method of dissolving ozone (or any gas) is achieved by using a venturi educator, a device that passively pulls in ozone under a vacuum using the physical (motive) force of the water flowing in a pipe. The water enters the venturi where the velocity rapidly increases due to a cone-shaped restriction in the venturi throat. This increase in velocity causes a low pressure area to form at the point of maximum restriction (see diagram below), generating suction that pulls the ozone into the water stream. The venturi then rapidly expands in diameter, slowing the water down instantaneously, causing the water and gas to crash into each other at very high velocity and driving the gas into solution. The higher the pressure in the venturi and downstream piping, the more gas can be driven into solution.



Air diffusers and pressurized injectors are also sometimes used but have lower transfer efficiencies. The real advantage in using a venturi from a safety standpoint is that with positive pressure ozone delivery systems (where the ozone is pumped into the system under pressure) a leak in the delivery hoses or piping can let ozone leak into the environment. With a properly sized venturi, if a leak occurs under vacuum, surrounding (ambient) air will be drawn into the delivery tubing, so there's no chance of affecting nearby people with ozone.

Ozone has long been known to be a very efficient oxidant. In typical aquarium/aquaculture applications ozone can greatly reduce total organic carbon (TOC) levels by direct oxidation of the organics or indirect oxidation by other powerful oxidants that naturally occurs when ozone reacts with water (free radical oxidation). Applied ozone doses for oxidation and disinfection are similar and fall within .1 to 1.0 mg/L. Another rule of thumb for ozone sizing for oxidation is based on food loading. An ozone dose of 15-20 grams of ozone per kg of food fed is recommended by Doctors Timmons and Ebling for aquaculture systems.

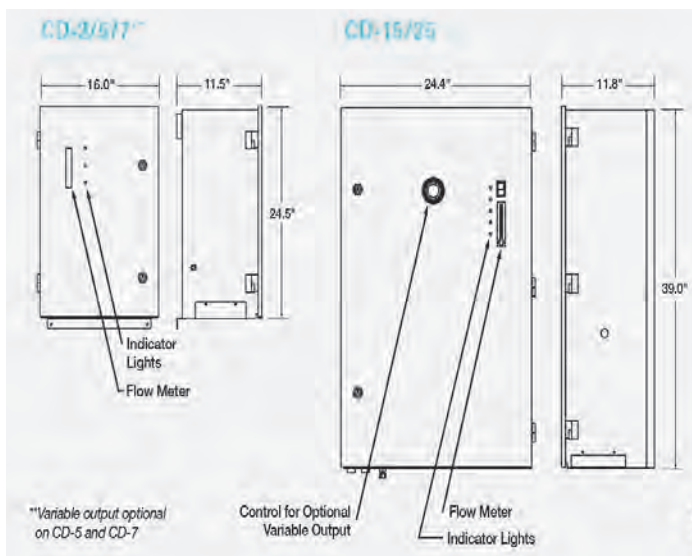
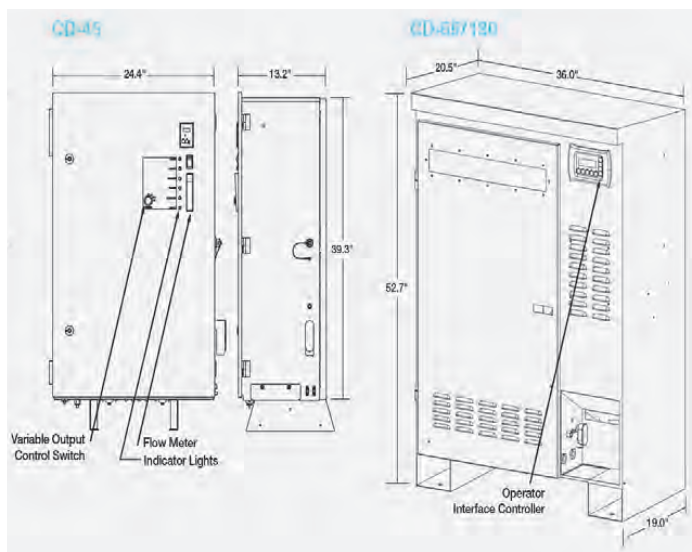
The other use of ozone not nearly as well known in aquatic systems is as a microflocculent. When dosed at rates roughly 1/10 of the oxidation dose (.01-.1 mg/L), ozone can act as a flocculent, causing very small particulates that normally pass through mechanical filters to clump into larger particles that mechanical filters can capture. The ozone does this by causing electrical charges on the surface of the particles so that they become attracted to each other like microscopic magnets. This type of ozone dose is typically used in foam fractionators (protein skimmers), so the flocculated particulates are carried out of the system water in the foam column.

**INTELLIZONE® SERIES GENESIS OZONE GENERATORS**

Fully integrated wall mount ozone systems designed for simple installation in small spaces

Pentair Aquatic Eco-Systems Genesis Ozone Generators are fully integrated wall mount ozone systems. They are designed for installation into new or pre-existing aquatic operations without equipment modification. Systems generate 2 to 45 grams of ozone per hour with on-board oxygen concentrators, and all operate under vacuum for safety and include integrated DEL Ozone Safety Management System. UL- and NSF-listed.

CALL FOR MORE INFORMATION AND PRICING.



Specifications	CD-2	CD-5	CD-7	CD-15	CD-25	CD-45	CD-65	CD-130
Ozone Output g/hr	2 g/hr	5 g/hr	7 g/hr	15 g/hr	25 g/hr	45 g/hr	65 g/hr	130 g/hr
Ozone Concentration	2.0% by weight	2.0% by weight	2.5-3.0% by weight	2.5-3.0% by weight	3.5-4.0% by weight	3.5-4.0% by weight	5.0-6.0% by weight	5.0-6.0% by weight
Voltage Requirement	115 V - 60 Hz or 230 V - 50 Hz						240 V - 50/60 Hz	
Required Current at 115 V	5.5 A	5.5 A	6.0 A	8.0 A	10.0 A	17.0 A	N/A	N/A
Required Current at 230 V	3.0 A	3.0 A	3.5 A	3.5 A	5.0 A	8.0 A	13.0 A	26.0 A
Ambient Operating Temperature	40 - 100° F (5 - 38° C)	40 - 100° F (5 - 38° C)	40 - 100° F (5 - 38° C)	40 - 100° F (5 - 38° C)	40 - 100° F (5 - 38° C)	40 - 100° F (5 - 38° C)	40 - 100° F (5 - 38° C)	40 - 100° F (5 - 38° C)
Oxygen Feed Flow	2.5 scfh	6 scfh	7 scfh	13 scfh	17 scfh	30 scfh	30 scfh	60 scfh
Cooling Water	N/A (Air Cooled)	N/A (Air Cooled)	N/A (Air Cooled)	0.10 gpm (.4 lpm)	0.10 gpm (.4 lpm)	0.20 gpm (.8 lpm)	1.0 gpm (4.0 lpm)	1.5 gpm (6.0 lpm)
Inlet Temperature**	N/A	N/A	N/A	50 - 90° F (10 - 32° C)	50 - 90° F (10 - 32° C)	50 - 90° F (10 - 32° C)	50 - 90° F (10 - 32° C)	50 - 90° F (10 - 32° C)
Inlet Pressure	N/A	N/A	N/A	15 - 40 psi (103 - 275 kPa)	15 - 40 psi (103 - 275 kPa)	15 - 40 psi (103 - 275 kPa)	15 - 40 psi (103 - 275 kPa)	15 - 40 psi (103 - 275 kPa)
System Control	N/A	N/A	N/A	N/A	N/A	N/A	PLC	PLC
Enclosure Material/Finish	Steel, 16 gauge / Grey (powder coat)						Steel, 14 gauge / White (powder coat)	

\*\*70° F (21° C) max recommended

### G SERIES OZONE GENERATORS

The reliable, versatile, and cost-effective Pacific Ozone™ G Series ozone generators are designed to satisfy a wide range of applications. The ultra-compact, fiberglass reinforced case is perfect for harsh and demanding environments such as aquaculture and agriculture installations, cooling tower and wastewater treatment skids, and other commercial and industrial ozone applications.

The G Series incorporates Pacific Ozone's exclusive Floating Plate Technology™ – an air-cooled titanium and ceramic reactor cell with high frequency, variable control power supply. This compact line of ozone generators offers a broad range of ozone output performance from 12 to 60 grams per hour. The power consumption of the highly efficient G Series is among the lowest in the industry. Yet, the high-concentration ozone output and broad range of features of this series provides greater flexibility of use. The G Series ozone generators can be controlled manually or remotely using a 0-10VDC or 4-20mA signal.

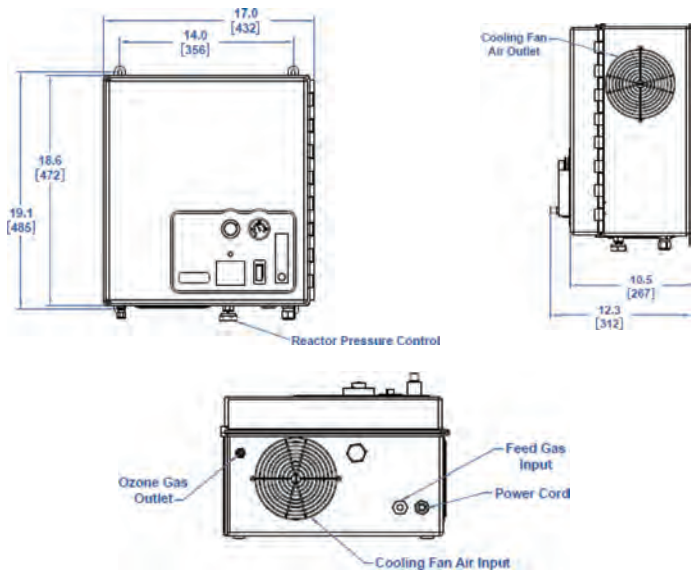
#### Features

- Air-Cooled Ceramic and Titanium Reactor Cell
- Feed Gas Pressure Regulator
- Door Safety Switch
- Over-Temperature Protection
- Feed Gas Flow Switch
- Stainless Steel Ozone Fittings

#### Controls

- 4-20 mA or 0-10 VDC Input
- Variable Output Control
- Power Feed Back Reference Meter
- Reactor Pressure Control
- Reactor Pressure Gauge
- Feed Gas Flow Control
- Remote On/Off Control
- LED Visual Ozone Indicator

CONTACT OUR TECH SUPPORT STAFF FOR ASSISTANCE AND PRICING INFORMATION



MODEL	VOLTS	HZ (1 PH)	WATTS (15A)	POWER CORD	MAX. OZONE PRODUCTION LBS/DAY GRAMS/HR	MAX. OZONE CONCENTRATION	MAX. REACTOR PRESSURE PSI BAR	FEED GAS FLOW RANGE SCFH LPM	AIR COOLING SCFH LPM	FEED GAS INLET FITTING* FNPT*	OZONE OUTLET FITTING*	DIMENSIONS L W H	SHIP WT (LBS)	EACH
<b>970004</b>	115	60	230	US	0.6 12	5%	12 0.8	7-10 3.3-4.7	240 6796	1/4"	1/4"	19" 17" 11"	42	<b>\$3,542.00</b>
<b>970005</b>	230	60	230	EURO	0.6 12	5%	12 0.8	7-10 3.3-4.7	240 6796	1/4"	1/4"	19" 17" 11"	42	<b>3,542.00</b>
<b>970006</b>	230	60	230	US	0.6 12	5%	12 0.8	7-10 3.3-4.7	240 6796	1/4"	1/4"	19" 17" 11"	42	<b>3,542.00</b>
<b>970007</b>	115	60	270	US	1.0 18	6%	12 0.8	7-10 3.3-4.7	240 6796	1/4"	1/4"	19" 17" 11"	42	<b>4,317.00</b>
<b>970008</b>	230	60	270	EURO	1.0 18	6%	12 0.8	7-10 3.3-4.7	240 6796	1/4"	1/4"	19" 17" 11"	42	<b>4,317.00</b>
<b>970009</b>	230	60	270	US	1.0 18	6%	12 0.8	7-10 3.3-4.7	240 6796	1/4"	1/4"	19" 17" 11"	42	<b>4,317.00</b>
<b>970010</b>	115	60	435	US	1.6 30	8%	12 0.8	7-20 3.3-9.4	240 6796	1/4"	1/4"	19" 17" 11"	44	<b>6,500.00</b>
<b>970018</b>	230	60	435	EURO	1.6 30	8%	12 0.8	7-20 3.3-9.4	240 6796	1/4"	1/4"	19" 17" 11"	44	<b>6,500.00</b>
<b>970012</b>	230	60	435	US	1.6 30	8%	12 0.8	7-20 3.3-9.4	240 6796	1/4"	1/4"	19" 17" 11"	44	<b>6,500.00</b>
<b>970013</b>	115	60	525	US	2.4 45	8%	12 0.8	7-30 3.3-14	240 6796	1/4"	1/4"	19" 17" 11"	51	<b>7,947.00</b>
<b>970014</b>	230	60	525	EURO	2.4 45	8%	12 0.8	7-30 3.3-14	240 6796	1/4"	1/4"	19" 17" 11"	51	<b>7,947.00</b>
<b>970015</b>	230	60	525	US	2.4 45	8%	12 0.8	7-30 3.3-14	240 6796	1/4"	1/4"	19" 17" 11"	51	<b>7,947.00</b>
<b>970016</b>	230	50/60	625	EURO	32.0 60	8%	12 0.8	7-40 3.3-19	240 6796	1/4"	1/4"	19" 17" 11"	54	<b>9,065.00</b>
<b>970017</b>	230	50/60	625	US	32.0 60	8%	12 0.8	7-40 3.3-19	240 6796	1/4"	1/4"	19" 17" 11"	54	<b>9,065.00</b>

\*Compression fitting.

Pacific Ozone™ and Floating Plate Technology™ are trademarks of Pacific Ozone Technology, Inc.

Online Orders: [PentairAES.com](http://PentairAES.com) | Phone Orders and Tech Advice: 877.347.4788



### M SERIES OZONE GENERATOR SYSTEMS

The advanced chassis-based design of the M Series ozone generators is the foundation for a potent ozone production system. It combines the power of Pacific Ozone's patented Floating Plate Technology™ ozone reactor cells with PID control in a 19-inch rack-mountable chassis. Three of the fully redundant, self-contained chassis' are housed in a stainless steel enclosure. The populated enclosure modules may be combined to form the most powerful air-cooled ozone generators available. Standard configurations of the M Series can produce from 7 pounds per day to more than 50 pounds per day ozone.

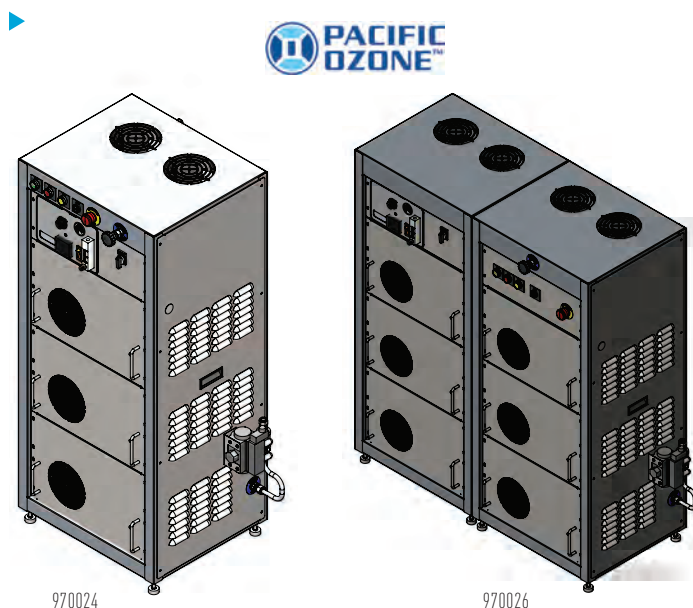
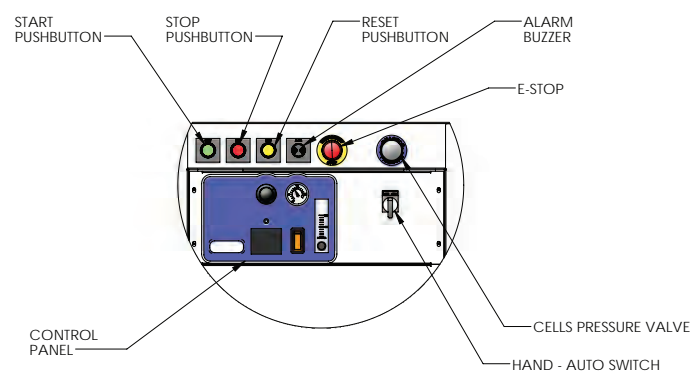
Modular redundancy is the key to the M Series' revolutionary chassis-based design, providing unsurpassed reliability. The M Series is engineered to meet demanding ozone process requirements with 4-20mA or 0-10VDC proportional ozone control interface. The standard PID controller is ready to receive feedback signal from your process and provide precise control of the ozone system. The PLUS options for M Series add one or two channels of dissolved ozone detection for input to the standard PID controller.

#### Features

- A Redundant Modular Ozone Chassis Design
- Stainless Steel Floor-Mount Enclosure
- Air-Cooled Ceramic and Titanium Reactor Cell
- Over-Temperature & Over Voltage Protection
- Outlet Isolation Valve & Inlet Isolation Valve Package
- Feed Gas Flow Switch
- CSA/UL Available

#### Controls

- 4-20 mA or 0-10 VDC Input
- Auto sequencing – SSR Control w/Gas prep and auto purge
- Variable Output Control
- Programmable PID Controller
- Reactor Pressure Control
- Reactor Pressure Gauge
- Feed Gas Flow Control
- Remote On/Off Control



CONTACT OUR TECH SUPPORT STAFF FOR ASSISTANCE AND PRICING INFORMATION

MODEL	VOLTS	HZ (1 PH)	WATTS (40A)	MAX. OZONE PRODUCTION LBS/DAY	MAX. OZONE GRAMS/HR	MAX. OZONE CONCENTRATION	MAX. REACTOR PRESSURE PSI	MAX. REACTOR PRESSURE BAR	FEED GAS FLOW RANGE SCFH	FEED GAS FLOW RANGE LPM	AIR COOLING SCFH	AIR COOLING LPM	COMPRESSED AIR INLET FITTING (MNPT)	OZONE OUTLET FITTING*	DIMENSIONS L W H	SHIP WT (LBS)	EACH
970024	230	50/60	1550	7.1	135	8%	12	0.8	10-90	4.7-42	720	20388	1/2"	1/2"	18 3/4" 23 1/4" 51 1/2"	340	\$20,599.00
970025	230	50/60	1700	9.5	180	8%	12	0.8	20-120	9.4-57	720	20388	1/2"	1/2"	18 3/4" 23 1/4" 51 1/2"	345	22,642.00
970026	230	50/60	2900	14.3	270	8%	12	0.8	20-180	9.4-84	1440	40776	1/2"	1/2"	18 3/4" 45 1/2" 51 1/2"	630	32,057.00
970027	230	50/60	3200	19.0	360	8%	12	0.8	50-240	24-114	1440	40776	1/2"	1/2"	18 3/4" 45 1/2" 51 1/2"	640	35,273.00
970028	230	50/60	4400	21.4	405	8%	12	0.8	50-270	24-127	2160	61164	1/2"	1/2"	18 3/4" 67 3/4" 51 1/2"	925	41,549.00
970029	230	50/60	4850	28.6	540	8%	12	0.8	50-360	24-170	2160	61164	1/2"	1/2"	18 3/4" 67 3/4" 51 1/2"	935	47,252.00

\*Compression fitting.

Online Orders: [PentairAES.com](http://PentairAES.com) | Phone Orders and Tech Advice: 877.347.4788

### DEL OZONE™ ECLIPSE SERIES



ECL10

ECL20

ECL40

#### OZONE GENERATORS

The DEL OZONE Next Generation Eclipse Ozone Systems are compact and provide dependable, low- maintenance operation. Cabinets are made of extruded aluminum with molded plastic end caps and are wall-mountable. Electrodes are rated for 15,000 hours of operation at over 80% capacity. Power supplies are rated to operate for the life of the generator under normal conditions. Generators may be operated in a vacuum or with positive pressure.

When using O<sub>2</sub> as feed gas, you can expect approximately twice the concentration than with air as feed gas. Air compressor not included. All models require .25 cfm feed gas (air or oxygen). 1/4" hose inlet and outlet. UL- and cUL-listed. 115V/60 Hz. One-year warranty.

- Improved water quality and clarity
- Kills up to 99.99% of harmful microorganisms
- Minimized operating and maintenance cost
- No unpleasant chemical odors
- High ozone output, low energy cost
- No Air Dryer required

MODEL	AVG O <sub>3</sub> CONC. (PPM)	GRAMS/HR	O <sub>3</sub> OUTPUT @ 115V	AMPS (W X H X D)	DIMENSIONS (LBS)	SHIP WT EACH
<b>ECL10</b>	450	.25	.06	7.8" X 8" X 2.5"	9	<b>\$408.49</b>
<b>ECL20</b>	700	.5	.12	7.8" X 14" X 2.5"	9	<b>628.99</b>
<b>ECL40</b>	1,350	1	.24	7.8" X 24" X 2.5"	14	<b>943.99</b>
<b>90150E</b>	ACCESSORY PACKAGE W/O MAZZEI® INJECTOR					<b>28.39</b>
<b>90210E</b>	ACCESSORY PACKAGE W/MAZZEI® INJECTOR					<b>144.89</b>

DEL Zone® and Eclipse™ are trademarks of Del Industries, Inc. Mazzei® is a registered trademark of Mazzei® Injector Corp.

#### PTFE TUBING

Ozone resistance is the reason most people select PTFE tubing. It is a flexible thermoplastic, highly resistant to oxidizing agents. A nearly complete resistance to alcohols, acids, bases and chlorinated solvents makes it excellent for the delivery of ozone. It remains flexible at extreme temperatures and is nontoxic. We recommend using brass or stainless steel fittings with this tubing.

INSIDE DIA.	OUTSIDE DIA.	SOLD PER FOOT		SOLD PER 50' ROLL		
		MODEL	EACH	MODEL	LENGTH	EACH
1/4"	5/16"	<b>8069</b>	<b>\$3.89</b>	<b>8069R</b>	50'	<b>\$144.09</b>
1/2"	5/8"	<b>8135</b>	<b>20.39</b>	<b>8135R</b>	50'	<b>854.59</b>



8069

#### OZONE TUBING

This ozone-resistant plastic tubing will not crack or harden and is much more flexible than PVDF tubing and PTFE.

MODEL	INSIDE DIA.	OUTSIDE DIA.	ROLL LENGTH	SOLD PER ROLL EACH
<b>TN8</b>	3/16"	3/8"	8'	<b>\$16.99</b>
<b>TN25</b>	3/16"	3/8"	25'	<b>44.79</b>
<b>TN50</b>	3/16"	3/8"	50'	<b>71.19</b>



MAZZEI® VENTURI INJECTORS

Widely used for the injection of air, oxygen, and ozone. Also compatible with liquids. Tests have shown that when installed properly, injectors can transfer ozone into water with efficiencies as high as 99%. These are constructed of PVDF Kynar® and are ozone compatible. Mazzei® venturis have no moving parts and provide trouble-free operation. All except V514 include a ¼" barbed ozone-safe check valve. Maximum operating pressure at 100°F [38°C] is 400 psi.

MODEL	INLET/OUTLET MNPT	FLOW THRU INJECTOR @15 PSI IN/5 PSI OUT	AIR SUCTION @15 PSI IN/5 PSI OUT	EACH
V384	½" MNPT	1 GPM	1 CFH	\$70.39
V584	¾" BARB	4 GPM	5 CFH	56.69
V978	1" MNPT	7 GPM	9 CFH	135.49
V1584	1½" MNPT	31 GPM	72 CFH	185.89
V514	2" MNPT	57 GPM	394 CFH	388.49

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Venturis offer an efficient and reliable way to inject virtually any gas or liquid into water.



OZONE-SAFE CHECK VALVES

These clear, duckbill check valves work great for preventing water from back siphoning into ozone generators. Cracking pressure is 2½" H<sub>2</sub>O. Inlet/outlet accepts ⅛" and ¾" I.D. tubing.

MODEL		EACH
CKV55	¾" TUBING	\$11.29
CKV60	⅛" TUBING	12.59

DESICCANT

When stored, desiccant media should be placed in an airtight container. It changes color from blue to pink when regeneration is due. To recharge, simply place desiccant on a baking sheet and heat at 350°F (176° C) for approximately 20 minutes. Replace after 25 rechargings.

MODEL	LBS	EACH
DR2	1¼	\$15.69
DR3	5½	52.49

