

Sani-Ray®

GERMICIDAL ULTRAVIOLET RECESSED FIXTURES



Model RRD-24-1S



Model RRD-24-2S



Model RRD-24-4S

SINCE 1963
ATLANTIC **A** **U** **ULTRAVIOLET**
CORPORATION®

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.

The UV Application Specialists at Atlantic Ultraviolet Corporation® 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 Corporation® to fulfill its commitment to provide fast deliveries and responsive customer service.

GERMICIDAL ULTRAVIOLET

Ultraviolet is a unique and rapid method of disinfection utilizing germicidal ultraviolet lamps that produce short-wave radiation at 254 nanometers (nm) that is lethal to bacteria, virus and other microorganisms.

An ever growing range of industries and consumer applications have found ultraviolet to be the ideal solution for their air and surface treatment needs.

Atlantic Ultraviolet Corporation® equipment and systems are manufactured in the USA.



Model RRD-24-1S



Model RRD-24-2S



Model RRD-24-4S



ADVANTAGES

Effective

Virtually all microorganisms are susceptible to **Sani-Ray®** ultraviolet disinfection.

Economical

Fixtures require very little power to operate.

Fast

Disinfects both air and exposed surfaces in seconds.

Easy

Simple installation and maintenance.

Automatic

Continuous disinfection without special attention.

Durable

Polished Stainless Steel Type 304.

Versatile

Numerous models available to handle various applications.

Low Maintenance

Routine cleaning and annual lamp replacement is required.

PRINCIPLE OF OPERATION

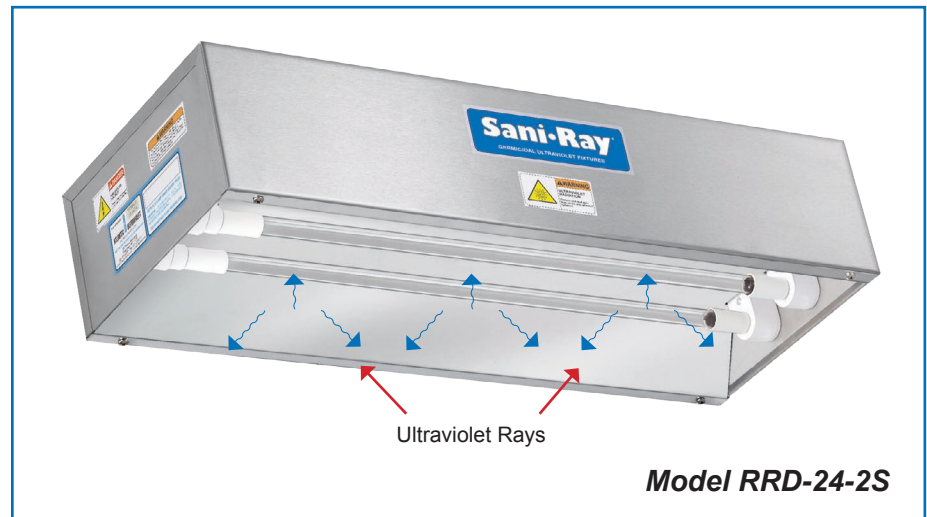


Figure 1 – Circulated room air and any exposed surfaces are irradiated with direct germicidal ultraviolet rays. Shown with Standard Instant Start germicidal lamps. Also available with High Output Instant Start germicidal ultraviolet lamps.

The **Sani-Ray®** Germicidal Ultraviolet Fixture design has been carefully conceived to provide direct germicidal ultraviolet exposure for air or surface disinfection. The stainless steel fixture should be used in open, **unoccupied** space to disinfect and prevent areas and surfaces from microorganisms such as bacteria, mold, and virus. The treatment is very effective due to the long unobstructed path of the germicidal ultraviolet rays. The dosage, as it applies to ultraviolet disinfection, is a function of time, and the intensity, of ultraviolet radiation, to which the air and surface is exposed.

Our UV Application Specialists would be happy to perform the necessary calculations to ensure the fixture selected is appropriate for your particular application.

Sani-Ray® Germicidal Ultraviolet Fixtures should be utilized during periods when the room is **unoccupied** or when occupants take appropriate protective measures.



Model RRDHO24-2S with Lamp Guard

Shown with high output germicidal lamps. Also available with standard Instant Start lamps.

All **Sani-Ray®** Models are available with optional Lamp Guard. This wire form lamp guard helps protect lamp(s) from accidental breakage. (See page 8 for Optional Accessories; page 11 for sample of applications)



Sani-Ray® Germicidal Ultraviolet Fixture

Utilize the **Sani-Ray® Germicidal Ultraviolet Fixtures** for direct germicidal ultraviolet exposure for air and/or surface disinfection. Our UV Application Specialists would be happy to perform the necessary calculations to ensure the fixture selected is appropriate for your particular application. (See page 11 for list of sample applications)

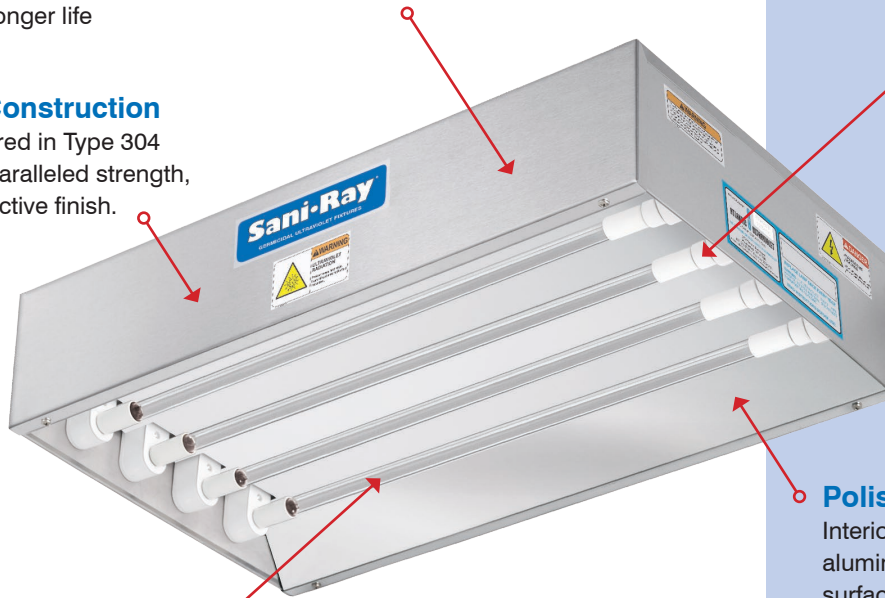
Surelite™ Electronic Ballasts

State-of-the-art electronic ballasts are specifically designed to operate ultraviolet lamps. They offer these advantages over conventional ballasts:

- deliver higher UV lamp output
- instant starting
- eliminate “stroboscopic effect”
- small and lightweight
- operate cooler for longer life
- versatile...each operates a wide range of lamps
- save energy through higher efficiency
- provide silent operation

Stainless Steel Construction

The unit is manufactured in Type 304 stainless steel for unparalleled strength, durability and an attractive finish.



Model RRD24-4S

(See page 8 for Optional Accessories)

STER-L-RAY® Germicidal Lamp

Lamp is instant starting and provides the utmost in quality, sustained output and longevity. (See page 9 for more information)

Steadfast™ Lampholder

Set includes a stationary and a spring-loaded, telescopic holder that holds a single pin lamp securely. The spring-loaded feature on one end facilitates convenient, quick and easy lamp changes.

Polished Reflector

Interior surface is polished specular aluminum providing a highly reflective surface to maximize ultraviolet intensity.



Wire Form Lamp Guard (optional)

Wire form lamp guard helps protect lamp(s) from accidental breakage.

Proper placement of the **Sani-Ray® Germicidal Ultraviolet Fixture** is essential to ensure safe and effective operation. The location should have an appropriate power source, not be mounted under any source of moisture or condensation, and be easily accessible and allow enough clearance for routine cleaning or maintenance.



Figure 2 – Sani-Ray® Germicidal Ultraviolet Fixture RRD24-1S is shown above

SPECIFICATIONS – Sani-Ray® Germicidal Ultraviolet Fixtures

| Model | Lamp (Quantity) | Power ① Consumption | Total ② Ultraviolet Output | Dimensions | | | Rated Lamp Life (Hours) |
|----------|-----------------|---------------------|----------------------------|------------|-------|--------|-------------------------|
| | | | | Length | Width | Height | |
| RRD12-1S | 05-1500-R (1) | 12.0 Watts | 3.1 Watts | 12" | 9" | 5" | 10,000 |
| RRD18-1S | 05-1340-R (1) | 22.0 Watts | 5.8 Watts | 18" | 9" | 5" | 10,000 |
| RRD24-1S | 05-1348-R (1) | 30.7 Watts | 8.5 Watts | 24" | 9" | 5" | 10,000 |
| RRD30-1S | 05-1352-R (1) | 38.4 Watts | 11.0 Watts | 30" | 9" | 5" | 10,000 |
| RRD36-1S | 05-1343-R (1) | 42.9 Watts | 15.0 Watts | 36" | 9" | 5" | 10,000 |
| RRD48-1S | 05-1334-R (1) | 66.0 Watts | 21.0 Watts | 48" | 9" | 5" | 10,000 |
| RRD64-1S | 05-1338A-R (1) | 94.0 Watts | 33.0 Watts | 64" | 9" | 5" | 10,000 |
| RRD12-2S | 05-1500-R (2) | 24.0 Watts | 6.2 Watts | 12" | 9" | 5" | 10,000 |
| RRD18-2S | 05-1340-R (2) | 44.0 Watts | 11.6 Watts | 18" | 9" | 5" | 10,000 |
| RRD24-2S | 05-1348-R (2) | 61.4 Watts | 17.0 Watts | 24" | 9" | 5" | 10,000 |
| RRD30-2S | 05-1352-R (2) | 76.8 Watts | 22.0 Watts | 30" | 9" | 5" | 10,000 |
| RRD36-2S | 05-1343-R (2) | 85.8 Watts | 30.0 Watts | 36" | 9" | 5" | 10,000 |
| RRD48-2S | 05-1334-R (2) | 132.0 Watts | 42.0 Watts | 48" | 9" | 5" | 10,000 |
| RRD64-2S | 05-1338A-R (2) | 188.0 Watts | 66.0 Watts | 64" | 9" | 5" | 10,000 |
| RRD12-4S | 05-1500-R (4) | 48.0 Watts | 12.4 Watts | 12" | 14" | 5" | 10,000 |
| RRD18-4S | 05-1340-R (4) | 88.0 Watts | 23.2 Watts | 18" | 14" | 5" | 10,000 |
| RRD24-4S | 05-1348-R (4) | 122.8 Watts | 34.0 Watts | 24" | 14" | 5" | 10,000 |
| RRD30-4S | 05-1352-R (4) | 153.6 Watts | 44.0 Watts | 30" | 14" | 5" | 10,000 |
| RRD36-4S | 05-1343-R (4) | 171.6 Watts | 60.0 Watts | 36" | 14" | 5" | 10,000 |
| RRD48-4S | 05-1334-R (4) | 264.0 Watts | 84.0 Watts | 48" | 14" | 5" | 10,000 |
| RRD64-4S | 05-1338A-R (4) | 376.0 Watts | 132 Watts | 64" | 14" | 5" | 10,000 |

① Total power consumption including ballast loss.

② Ultraviolet Output at 254 nanometers at 100 hours and 80 degrees F (approximate).

- 120 Volts 50/60 Hz and 230 Volts 50/60 Hz units are standard - specify when ordering.
- Units are available in various voltages - Consult factory with specific power requirements.
- Models with other lamp quantities and configurations available - Consult factory with specific requirements.

Sani-Ray® High Output Germicidal Ultraviolet Fixture

Utilize the **Sani-Ray® High Output Germicidal Ultraviolet Fixtures** for direct germicidal ultraviolet exposure for air or surface disinfection. Our UV Application Specialist would be happy to perform the necessary calculation to ensure the fixture selected is appropriate for your particular application.

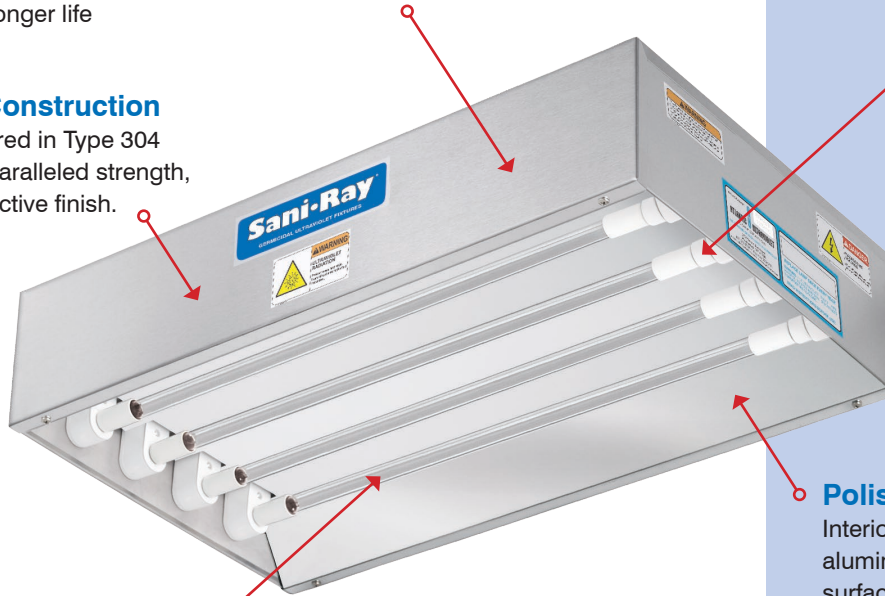
Surelite™ Electronic Ballasts

State-of-the-art electronic ballasts are specifically designed to operate ultraviolet lamps. They offer these advantages over conventional ballasts:

- deliver higher UV lamp output
- instant starting
- eliminate “stroboscopic effect”
- small and lightweight
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- versatile...each operates a wide range of lamps
- save energy through higher efficiency
- provide silent operation

Stainless Steel Construction

The unit is manufactured in Type 304 stainless steel for unparalleled strength, durability and an attractive finish.



Model RRDHO24-4S

(See page 8 for Optional Accessories)

STER-L-RAY® High Output Germicidal Lamp

Lamp is instant starting and provides the utmost in quality, sustained output and longevity. (See page 9 for more information)

Steadfast™ Lampholder

Set includes a stationary and a spring-loaded, telescopic holder that holds a single pin lamp securely. The spring-loaded feature on one end facilitates convenient, quick and easy lamp changes.

Polished Reflector

Interior surface is polished specular aluminum providing a highly reflective surface to maximize ultraviolet intensity.



Wire Form Lamp Guard (optional)

Wire form lamp guard helps protect lamp(s) from accidental breakage.

Proper placement of the **Sani-Ray® High Output Germicidal Ultraviolet Fixture** is essential to ensure safe and effective operation. The location should have an appropriate power source, not be mounted under any source of moisture or condensation, and be easily accessible and allow enough clearance for routine cleaning or maintenance.



Figure 3 - Sani-Ray® High Output Germicidal Ultraviolet Fixture RRDHO24-1S is shown above

SPECIFICATIONS – Sani-Ray® High Output Germicidal Ultraviolet Fixtures

| Model | Lamp (Quantity) | Power ^① Consumption | Total Ultraviolet Output ^② | Dimensions | | | Rated Lamp Life (Hours) |
|------------|-----------------|--------------------------------|---------------------------------------|------------|-------|--------|-------------------------|
| | | | | Length | Width | Height | |
| RRDHO18-1S | 05-0687 (1) | 58.0 Watts | 11.5 Watts | 18" | 9" | 5" | 13,000 |
| RRDHO24-1S | 05-0686 (1) | 73.7 Watts | 17.0 Watts | 24" | 9" | 5" | 13,000 |
| RRDHO30-1S | 05-0685 (1) | 92.2 Watts | 23.0 Watts | 30" | 9" | 5" | 13,000 |
| RRDHO36-1S | 05-1060-R (1) | 108.0 Watts | 28.0 Watts | 36" | 9" | 5" | 13,000 |
| RRDHO48-1S | 05-0576 (1) | 158.4 Watts | 40.0 Watts | 48" | 9" | 5" | 13,000 |
| RRDHO64-1S | 05-0690 (1) | 193.0 Watts | 54.0 Watts | 64" | 9" | 5" | 13,000 |
| RRDHO18-2S | 05-0687 (2) | 116.0 Watts | 23.0 Watts | 18" | 9" | 5" | 13,000 |
| RRDHO24-2S | 05-0686 (2) | 147.4 Watts | 34.0 Watts | 24" | 9" | 5" | 13,000 |
| RRDHO30-2S | 05-0685 (2) | 184.3 Watts | 46.0 Watts | 30" | 9" | 5" | 13,000 |
| RRDHO36-2S | 05-1060-R (2) | 216.0 Watts | 56.0 Watts | 36" | 9" | 5" | 13,000 |
| RRDHO48-2S | 05-0576 (2) | 316.8 Watts | 80.0 Watts | 48" | 9" | 5" | 13,000 |
| RRDHO64-2S | 05-0690 (2) | 386.0 Watts | 108.0 Watts | 64" | 9" | 5" | 13,000 |
| RRDHO18-4S | 05-0687 (4) | 232.0 Watts | 46.0 Watts | 18" | 14" | 5" | 13,000 |
| RRDHO24-4S | 05-0686 (4) | 294.8 Watts | 68.0 Watts | 24" | 14" | 5" | 13,000 |
| RRDHO30-4S | 05-0685 (4) | 366.6 Watts | 92.0 Watts | 30" | 14" | 5" | 13,000 |
| RRDHO36-4S | 05-1060-R (4) | 432.0 Watts | 112.0 Watts | 36" | 14" | 5" | 13,000 |
| RRDHO48-4S | 05-0576 (4) | 633.6 Watts | 160.0 Watts | 48" | 14" | 5" | 13,000 |
| RRDHO64-4S | 05-0690 (4) | 772.0 Watts | 216.0 Watts | 64" | 14" | 5" | 13,000 |

① Total power consumption including ballast loss.

② Ultraviolet Output at 254 nanometers at 100 hours and 80 degrees F (approximate).

- 120 Volts 50/60 Hz and 230 Volts 50/60 Hz units are standard - specify when ordering.
- Units are available in various voltages - Consult factory with specific power requirements.
- Models with other lamp quantities and configurations available - Consult factory with specific requirements.

OPTIONAL ACCESSORIES



SENTINEL™ Remote Lamp Indicator *

The **SENTINEL™** Remote Lamp Indicator monitors lamp operation of one, two, or four lamp ultraviolet fixtures and is available with a 25, 50, or 100 foot cable.

(*Available for All **Sani-Ray®** fixtures at the time of purchase, **SENTINEL™** output connector needs to be installed for easy plug-in and operation.)



Zenith™ Ultraviolet Meter

A sensitive, hand-held, ultraviolet meter that can be used to:

- Survey installations to ensure that the germicidal ultraviolet radiant exposure, of occupants within the treated area, is within acceptable limits. The **Zenith™** Ultraviolet Meter provides accurate and easy-to-read levels of intensity that may be interpreted by anyone—not just engineers.
- Check the intensity of aging ultraviolet lamps



Promate™ Integral Elapsed Time Indicator *

The Integral Elapsed Time Indicator is a real-time, non-resettable display of accumulated operating time. Useful for scheduling and recording maintenance and lamp replacement.

(*Available for All **Sani-Ray®** fixtures at the time of purchase. Indicator needs to be installed for easy plug-in and operation.)



ArmorLite™ Safety Shield

Protective coating applied to **STER-L-RAY®** Germicidal Lamps ensures protection for employees, products and work environments by eliminating the dangers associated with fragments of broken lamps and mercury contamination.

(Lamp on right has **ArmorLite™** coating, available for All **Sani-Ray®** fixtures at the time of purchase, coating is installed on lamp in factory.)



Promate™ Face Shield

Adjustable headgear and lightweight visor offers eye and face protection from UV Rays.



Wire Form Lamp Guard *

Wire form lamp guard helps protect lamp(s) from accidental breakage.

(*Available for All **Sani-Ray®** fixtures at the time of purchase, **Wire Form Lamp Guard** needs to be installed in factory.)



MORE OPTIONAL ACCESSORIES

Power Line Cord, Handles, On/Off Switch, Mounting Legs, and Mounting Brackets for Ceiling Mounting. Our UV Application Specialists would be happy to ensure the optional accessories purchased are appropriate for your particular application.

GENUINE **STER-L-RAY**[®] GERMICIDAL LAMPS

STER-L-RAY[®] 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**[®] 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[®] Instant Start Germicidal Lamps utilize tungsten filaments. Lamp life is governed by the life of the filaments and is affected by the frequency of starting. **STER-L-RAY**[®] lamps are well suited for a variety of air and surface applications, which require ultraviolet intensity.

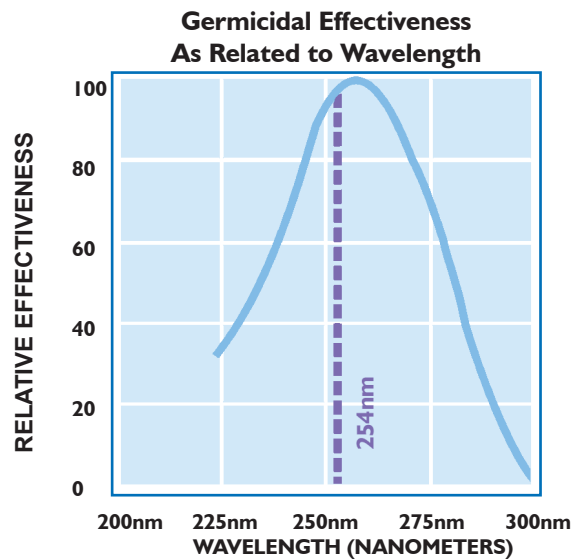
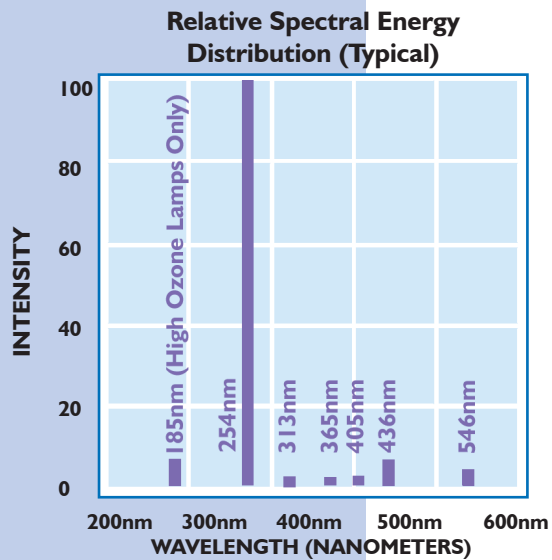
STER-L-RAY[®] High Output (HO) Instant Start Germicidal Lamps are similar in size and shape to conventional germicidal lamps but are capable of operating at higher input power and current. The HO lamps provide approximately twice as much UV output as the regular instant start germicidal lamp. Lamp life is governed by the life of the filaments and is affected by the frequency of starting. **STER-L-RAY**[®] High Output Lamps are well suited for a variety of air and surface applications which require high output ultraviolet intensity.

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 face shield, gloves, and protective clothing.



OPERATING CHARACTERISTICS



ULTRAVIOLET DOSAGE

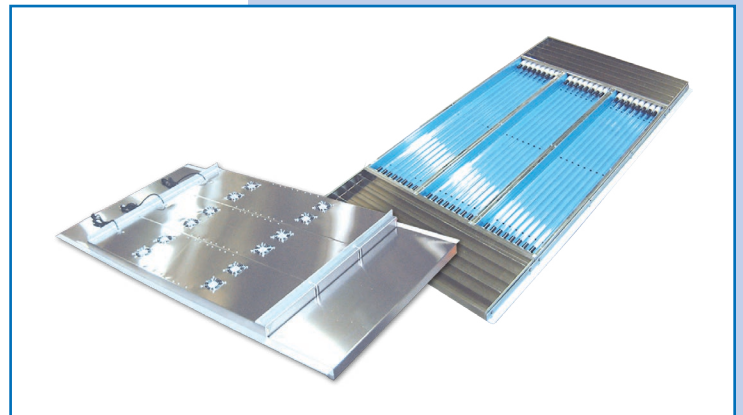
Germicidal lamps provide effective protection against microorganisms. A small cross-section is shown below.

| ORGANISM | ALTERNATE NAME | TYPE | DISEASE | DOSE* |
|------------------------------------|------------------------|----------|-----------------------|--------|
| <i>Corynebacterium diphtheriae</i> | <i>C. diphtheriae</i> | Bacteria | Diphtheria | 6,500 |
| <i>Legionella pneumophila</i> | <i>L. pneumophila</i> | Bacteria | Legionnaire's Disease | 2,700 |
| <i>Mycobacterium tuberculosis</i> | <i>M. tuberculosis</i> | Bacteria | Tuberculosis (TB) | 10,000 |
| <i>Pseudomonas aeruginosa</i> | <i>P. aeruginosa</i> | Bacteria | | 3,900 |
| <i>Serratia Marcescens</i> | <i>S. marcescens</i> | Bacteria | | 6,160 |
| <i>Staphylococcus aureus</i> | <i>S. aureus</i> | Bacteria | | 6,600 |
| <i>Staphylococcus epidermidis</i> | <i>S. epidermidis</i> | Bacteria | | 5,800 |
| Adeno Virus Type III | | Virus | | 4,500 |
| Coxsackie A2 | | Virus | | 6,300 |
| Influenza | | Virus | Flu | 3,400 |

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

CUSTOM Sani-Ray® Germicidal Ultraviolet Fixtures

Our UV Application Specialists would be happy to perform the necessary calculations to ensure the fixture selected is appropriate for your particular application. If a special fixture is recommended, the factory will manufacture and deliver exactly what is needed. For example the photo (right) is a customized system for conveyor belt disinfection with built-in cooling fans.



APPLICATIONS*

- laboratories
- hospitals
- clinics
- maternity areas
- labor & delivery areas
- pathology labs
- kidney dialysis labs
- operating rooms
- universities
- veterinary clinics
- animal husbandry
- food industry
- food processing
- dairy processing
- bakeries
- clean rooms
- pharmaceutical mfg.
- electronic production
- cosmetic production
- conveyor belt systems



Model RRD-24-1S



Model RRD-24-2S



Model RRD-24-4S

* Other Applications Possible. Contact our Ultraviolet Application Specialists

THE STANDARD OF EXCELLENCE IN ULTRAVIOLET



Manufacturers / Engineers / Sales / Service



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