

UV-MAX ECO SURFACE DISINFECTION UNIT

USER GUIDE



Models:
UV-MAX ECO

ENERGENICS, CORP.

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INDEX

Advisories (Purpose/Contents)	Page 4
Safe Operation Procedure	Page 5
Safety Guidelines	Page 5
System Description	Page 6
System Delivery	Page 7
Operation Overview	Page 7
Operation Settings (Default)	Page 8
Operation Settings (Customizable)	Page 8
Cycle Stop Status Screens	Page 9
System Care	Page 10
FAQ	Pages 11-12
Appendix A - Dosage Guidelines	Page 14

ADVISORIES

Purpose

The Energenics UV-MAX ECO system has been designed to offer direct disinfection exposure to surface areas. The system design allows for microbial disinfection control.

The Energenics UV-MAX ECO system was developed as a cleaning device utilizing Ultraviolet Light (UV) for direct exposure disinfection. The system can disinfect 360 degrees from the system center.

Contents

This manual will serve as your reference guide for installation, operation, and service of your UV-MAX ECO. Reference to all parts, warranty, and support are included.

This manual covers the system/equipment/products listed below:

- Energenics Part #: UV-MAX ECO

Safety Observation:

It is required for the person(s) responsible for the installation of this equipment, operators of this equipment, and operation personnel managers to review and understand this manual.

USE OF LISTED SYSTEM / EQUIPMENT MUST COMPLY WITH INSTRUCTIONS AND SAFETY REQUIREMENTS.



SAFE OPERATION

Safety

1. You should never look directly at a UV lamp in operation without wearing approved safety glasses. Safety glasses should be made of any material other than Quartz or Teflon.
2. The space should be vacant and closed prior to device operation
3. **Never command the system on when the treatment space is occupied**

Disposal of Mercury Added Lamps

Germicidal ultraviolet lamps, like standard fluorescent lamps contain small amounts of mercury. Mercury added lamps should not be placed in the trash. Dispose of properly. For further information regarding the disposal and recycling of lamps containing mercury, along with Federal and State requirements visit LampRecycle.org.

Safety Guidelines

Exposure to UV-C light is dangerous. The adverse health effects that may occur are erythema (sunburn) and photokeratitis (a feeling of sand in the eyes). These effects are considered transient. UV-C may also be carcinogenic but since it has very limited penetrating ability, it is unlikely to cause damage to anything beyond the outer layer of skin or other exposed surfaces. Unfortunately, there are no immediate warning symptoms to indicate overexposure to UV radiation and adverse effects typically appear hours after exposure has occurred.

The Energenics UV-ECO is designed for zero user exposure to UV-C; however, we will review safety factors regarding UV-C for better knowledge and understanding.

Protective Clothing and Eyewear

It is not recommended that any personnel be subject to direct UV-C exposure. Personnel that may be exposed to harmful amounts and wavelengths of UV must take adequate steps to shield themselves and in some cases limit the duration of exposure.

If there is any potential for the eyes and face to be exposed to UV radiation, a polycarbonate face shield stamped with the ANSI Z87.1-1989 UV certification must be worn to protect the eyes and face. Ordinary prescription eyeglasses may not block UV radiation. UV certified goggles and safety glasses will protect the eyes, but workers may suffer facial burns in the areas not covered by the goggles or glasses.

OSHA Guidelines for Ultraviolet Exposure

There is no Occupational Safety and Health Administration (OSHA) standard regarding exposure to ultraviolet light, but the OSHA general duty clause states the employer must provide a workplace free of recognized hazards that may cause death or serious physical harm.

SYSTEM DESCRIPTION

The Energenics UV-MAX ECO is designed for maximum disinfection through the shortest exposure time. More UV-C wattage allows shorter exposure times to surfaces. Exposure times vary based on furthest distance from the UV-C source. The system design provides the optimum in:

- UV dosage output to footprint served
- Rugged design build
- Ease of use controls
- User safety protection

- INDUSTRIAL STRENGTH FRAME AND STRUCTURE
- CORROSION PROOF CONSTRUCTION
- 6" INDUSTRIAL CASTERS
- HIGH OUTPUT PRE-HEAT LAMPS FOR LONG RUN TIME LENGTH
- PIR SENSOR DETECTION SAFETY SHUTOFF
- INDIVIDUAL LAMP FAILURE INDICATOR LED'S
- EMERGENCY STOP BUTTON
- BUILT TO IP56 WATER AND DUST STANDARDS



SYSTEM DELIVERY / OPERATION OVERVIEW

When you receive your UV-MAX ECO you will need to unpack and inspect the system. Please perform the following procedure:

1. **Unpack your new system and stand upright**
2. **Inspect fully for damage**
(If damage present, contact Energenics prior to use at (239) 643-1711)
3. **Verify secure lamp installation**
4. **Plug in system power cord**
5. **Do not activate unit without reading and adhering to instructions below.**

The UV-MAX ECO is designed to operate in the following

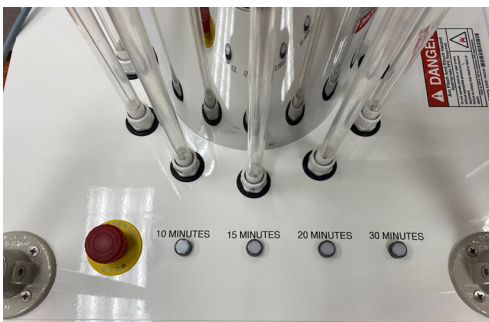
manner: **Start Sequence**

1. **Review system for condition.**
 - a. There should be no physical damage to the system
 - b. Lamps should be clean
 - c. System frame should be in good condition
2. **Plug in system power cord**
3. **Ensure all personnel are out of treatment area**
4. **Ensure you are wearing recommended safety equipment.**
5. **Operate system**
 - a. Position PIR sensor toward entryway
 - b. Select desired cycle time (10,15, 20, or 30 min.*)
 - c. The system will enter Countdown mode (30 sec.)
 - d. Once process is complete, device will revert to ready mode

Audio and Visual Indicators

1. **Audio Alarm not present on UV-MAX ECO**
2. **Visual Indicators**
 - a. **Selected Cycle Time button will be illuminated when device is on**
 - b. **Button light illumination will cease at end of cycle**
 - c. **Emergency Stop Button will illuminate if pressed or activated by PIR sensor**
3. **Display of System**
 - a. **Four Cycle Time buttons**
 - b. **One Emergency Stop button**

SEE APPENDIX "A" FOR DOSE GUIDELINES



Time Settings Can Be Customized on Units Prior to Shipment. Consult factory for custom settings prior to unit shipped.

CUSTOMIZABLE OPERATION SETTINGS

1. Cycle times are customizable, upon request, at factory prior to shipment
2. Standard factory setting cycle time options are: 10 minutes, 15 minutes, 20 minutes, and 30 minutes
3. Cycle times will not be adjustable after device has shipped

CYCLE STOP NOTIFICATIONS

Cycle stop displays for normal system operation are covered on this page.

Emergency Stop

Should cycle deactivation occur by engagement of the Emergency Stop button, the following method will be required to reset the system:

1. Observe lighted Emergency Stop button
2. If emergency stop button is depressed, pull up on button to reset
3. Select desired treatment time to restart system cycle
4. Exit treatment space

SYSTEM CARE

The Energenics UV-MAX ECO system is designed for repeat performance with consistent results. Based on system designs, minimal maintenance is required. Adherence to the following regular service of your system should provide years of disinfection.

Each Duty Cycle

1. Inspect the system interior, exterior, and lamps for clean conditions
2. Clean as needed

Monthly

1. Inspect the system interior, exterior, and lamps for clean conditions
2. Clean as needed
3. It is recommended to test system performance with Dosimeter Cards or ATP Meter.

Bi-Annual

1. Inspect the system interior and exterior lamp for clean conditions
2. Clean as needed
3. It is recommended to test system performance with Dosimeter Cards or ATP Meter.

“Service Machine” Message

1. Every 8 run-hours it is recommended that lamps be wiped clean with isopropyl or rubbing alcohol. This will remove any debris that may have accumulated on the lamp.

Note: The above steps are listed as the basic level of care, should the system be utilized in a heavy work environment, further care may be required.

**CAUTION TO REDUCED RISK OF FIRE OR ELECTRIC SHOCK,
REPLACE FUSE WITH THE SAME SIZE AND RATING**

**ATTENTION : POUR REDUIRE LE RISQUE D'INCENDIE OU UN CHOC
ÉLECTRIQUE, REMPLACER LE FUSIBLE PAR UN FUSIBLE DU MÊME
TYPE ET DU MÊME COURANT NOMINAL**

FREQUENTLY ASKED QUESTIONS

Q: What should I do if the unit will not turn on?

A: Verify there is power to the system by observing that all time sequence buttons are illuminated.

A: Verify the Emergency Stop is not engaged

Q: Why does the unit turn off when I enter the room?

A: Safety features turn off lamps based on detection by the PIR sensor.

Q: My system will turn on, but the lamps will not come on.

A: Verify the start cycle button is pressed

A: Inspect the lamp for age or physical failure

A: Contact Energenics Support for further information

Q: My system is running fine, how do I verify the lamp output is correct?

A: Use Dosimeter Cards or trained ATP meter specialist.

Q: What is a PIR (Passive Infrared) Sensor?

A: PIR stands for Passive Infrared. These sensors are used extensively in occupancy sensors for lighting control and security products. The PIR sensor detects human heat and movement. In the case of the UV-MAX ECO, when it detects both human heat and movement it will turn off the UVC Unit.

TROUBLESHOOTING & FAQ

The below statements are listed as troubleshooting guidelines. Further information is available through Energenics support.

Q: Is UV-C disinfection strictly line of sight?

A: Yes, it needs to shine on the surface to disinfect. It will not go around objects or disinfect shadowed areas.

Q: Does UV-C light reflect off surfaces?

A: Yes, it reflects off many surfaces, but loses intensity if the surface is not highly polished like the Stainless-Steel center installed on our unit.

Q: Is the UV-C light I can see under the door dangerous?

A: Zero exposure to people is imperative so block it or protect your eyes and skin (please note: 254nm UV-C wavelength is invisible, what is seen is visible light)

Q: Does UV-C light go through glass or windows?

A: Standard window glass or poly carbonate provides sufficient protection from UVC rays.

Q: Can I use an ATP Meter with the UV-MAX ECO?

A: Yes. When used by properly trained personnel, it can be used to measure how clean a surface is.

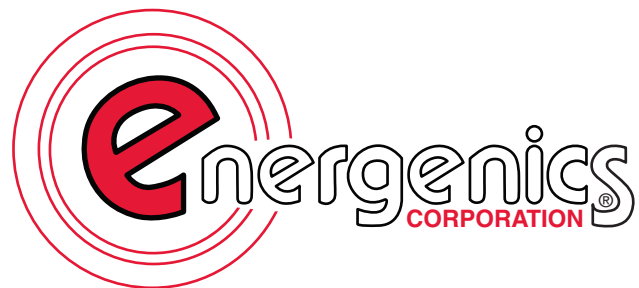
Q: Can I use a response card with the UV-MAX ECO?

A: Yes, it can be used to indicate the correct dose has been applied to a surface

APPENDIX A: DOSE GUIDELINES

Model:			ULTRA & MAX		MAX LP		ECO	
UVC Wattage:			320		240		175	
Time:			Time in Minutes		Time in Minutes		Time in Minutes	
Feet From Target	Room Dims	Room Square Footage (unit center of room)	*Time in Minutes to Kill Bacteria /Virus	Time in Minutes to Kill Spores	*Time in Minutes to Kill Bacteria /Virus	Time in Minutes to Kill Spores	*Time in Minutes to Kill Bacteria /Virus	Time in Minutes to Kill Spores
1			1	2	1	3	2	4
2			1	2	1	3	2	4
3			2	3	3	5	4	7
4	8 x 8	64	2	3	3	5	4	7
5	10 x 10	100	2	4	3	5	4	7
6	12 x 12	144	3	6	4	8	5	11
7	14 x 14	196	3	6	4	8	5	11
8	16 x 16	256	4	8	5	11	7	15
9	18 x 18	324	4	8	5	11	7	15
10	20 x 20	400	5	10	7	13	9	18
11	22 x 22	484	6	12	8	12	11	22
12	24 x 24	576	6	12	8	16	11	22

The above listed treatment times are based on widely acceptable inactivation dose levels of 50,000 $\mu\text{Ws}/\text{cm}^2$ (bactericidal) or 100,000 $\mu\text{Ws}/\text{cm}^2$ (sporicidal). It is offered as a reference point, in an empty space, using fresh lamps and does not account for objects physically blocking UV-C ray transmission.



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