Installation & Operations Manual for Energenics
UV-MAX Mobile Disinfection System

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FOLLOW PROCEDURE BELOW FOR SAFE OPERATION

1. Always wear personal protective equipment when operating UV-MAX to limit exposure to light.

2. Place UV-MAX in area to be treated.

3. Connect UV-MAX into 120 VAC Receptacle.

4. Press start on UV-MAX control screen, you have 1 minute to evacuate and close door for the intended treatment area.

5. Failure to follow these instructions will likely cause injury or blindness.
WARNINGS AND CAUTION

This manual will serve as your reference guide for installation, operation, and service of your system. This manual will provide reference to all parts, warranty, and support.

This manual covers the System/Equipment/Product(s) listed below:

Energenics UV-MAX

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

USE OF LISTED SYSTEM / EQUIPMENT MUST COMPLY WITH INSTRUCTIONS AND SAFETY REQUIREMENTS.
Purpose: The Energenics UV-MAX system has been designed to offer direct disinfection exposure to surface areas. The system design allows for microbial disinfection control. The Energenics UV-MAX system was developed as a cleaning device utilizing Ultraviolet Light for direct exposure disinfection. The system has the ability to disinfect 360 degrees from the system center.

Safety:
The Energenics UV-MAX is designed for zero user exposure to Ultraviolet light, however we will review the safety factors for Ultraviolet Light below for knowledge and understanding.

Protective Clothing and Eyewear
It is not recommended that any personnel be subject to direct UV exposure, but in the event such exposure is likely, personnel should wear protective clothing, including full coverage of exposed skin if possible and protection of eyes with eyewear. Gloves should be used to protect the hands. Most UV protective eyewear at 99.9% will work however it is preferable to use UV Safety glasses designed to filter UVC. Not all glasses offer complete coverage or UVC filtering. Protective goggles of the wrap-around type are to be preferred since UV may enter partly opened goggles through oblique angles.

OSHA Guidelines for Ultraviolet Exposure:
OSHA does provide technical guidance regarding protecting employees from ultraviolet light with respect to laser hazards. You can find this guidance in the (OSHA Technical Manual (TED 1-0.15A, Section III - Chapter 6)). The relevant chapter includes information on control measures and safety programs for laser hazards associated with exposure to ultraviolet light. This is the best documented guideline available.

Safety Issues
UV Light is dangerous and the effects of UV exposure are similar to that of a welding ARC, we are concerned with the direct and reflective effects.

ACGIH Limits
Exposure to UV can produce eye injuries and skin erythema. These effects are considered transient. UV may also be carcinogenic but since it has very limited penetrating ability it is unlikely to cause damage to anything besides outer layers of skin or other exposed surfaces.

NIOSH Limits
The National Institute of Occupational Safety and Health (NIOSH) provide a recommended exposure level (REL) for UVGI at 6 mJ/cm² (or 0.006 J/cm²). Both the ACGIH and NIOSH limits are effectively identical and can be represented graphically below
System Description:

The Energenics UV-MAX is designed for maximum disinfection through the shortest exposure time.

The system design provides the optimum in:
- UV Dosage power, max performance to the footprint served
- Rugged design for dock work
- Ease of use controls
- User safety protection

| HEAVY DUTY INDUSTRIAL STRENGTH FRAME AND STRUCTURE |
| MOTION/HEAT DETECTION SAFETY SHUT OFF |
| EMERGENCY STOP BUTTON |
| CORROSION PROOF CONSTRUCTION |

| 8” INDUSTRIAL CASTERS |
| BUILT TO IP58 WATER AND DUST STANDARDS |
| INDIVIDUAL LAMP FAILURE INDICATORS |
| HIGH OUTPUT PRE-HEAT LAMPS FOR LONG RUNNING TIME LENGTH |
System Delivery:

When you get your system, you will need to unpack and inspect the system:

1. Unpack your new system and inspect inside and outside for damage.
   
   🚚 If damage is present, contact Energenics prior to use 239-643-1711

2. Stand the unit upright
3. Verify lamp installation
4. Using the power cord, plug the system in
5. Power the unit on
6. Your Energenics UV-MAX system is now ready for operation in the following steps
Operation Overview:

The Energenics UV-MAX is designed to operate in the following manner:

1. Locate unit in an unoccupied space positioned for operation
2. Plug the power into the system
3. Review display for ready state
4. Turn system on
5. Evacuate space
6. Audio alarm
   a. Once unit is on: Short beeps to exit the room, Warning, get out
   b. During Process: Long stroke beeps
   c. Process complete: three short beeps, no beep thereafter
7. Visual Indicator
   a. Red light – Warning, get out process running
   b. Green light – Safe, process complete
8. Display of system
   a. Operations
   b. Controls
   c. Indication of system functions

SAFETY: We cannot speak too much in regard to safety

1. SAFETY: You should never look directly at a UV lamp
2. SAFETY: The room should be vacant and closed prior to Exposure, “UV - MAX” the room
   NEVER Command the system on when anyone is present in the room
Operation Settings / Progress:
In this page, we will go through the operations of the system for normal operation

A. Review system for condition.
   a. There should be no physical damage to the system
   b. Lamps shall be clean
   c. System Frame shall be in good condition
   d. Display of system shall be clean

B. Plug in system power cord

C. Safety – insure all personnel are out of space

D. Operate system
   1. Press the START CYCLE button
   2. The system will go into countdown
   3. Once the process is complete, the controller will display cycle status
   4. Press the restart button to go back to the home screen

E. Press the Control Menu to review operation options
Operation Settings / Menu Screen:
In this page, we will go through the operations of the system for normal operation

From the Start Cycle Screen
Press the Setup Menu button

This screen is used to set the system variables to include:

Countdown – time delay from when the start cycle is pressed to when the lamps come on

Cycle Time – adjustment for the time of cycle operation

Fault Delay – Reading frequency of a system fault

Override lamp fault –
On – allows the system to run with a fault
Off – this will stop the system from running in the event of a fault

This screen is used to see each lamp operation status in hours of operation
Operations setup / Status screens
The system display will indicate all operations, on page 7 we see normal operations. Below is additional information.

In this screen we see the Emergency Stop pressed. Once the Emergency stop button is released the system will allow the operations to start over.
System Care:

The Energenics UV-MAX system is designed for repeat performance and constant interaction. Based on the system design there is little care needed. If you follow the following steps your system will last for years of disinfection.

Each Duty Cycle
   1. Inspect the system interior and exterior lamp for clean conditions
   2. Clean as needed

Monthly
   1. Inspect the system interior and exterior lamp for clean conditions
   2. Clean as needed
   3. It is recommended to test the system performance using an 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 the system performance using ATP meter
   4. Check lamp hours and replace if necessary

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.
Troubleshooting:

The below statements are listed as a troubleshooting guideline. Further information is provided through Energenics support.

Q: What should I do if the system will not turn on?
A: Verify the power to the system is correct
A: Verify the display is reading correctly
A: Verify the Emergency stop is not engaged

Q: Why does the unit turn off when I enter the room?
A: The system is set to turn off the exterior lamps based on motion
A: Leave the room and watch the controller for the countdown to finish prior to entering the room

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 Radiant Support for further information

Q: My system is running fine, how do I verify the lamp output is correct?
A: The system has a status screen at the end of the cycle
A: Faults will indicate if the system is not performing correctly