



rzero
SYSTEMS

Beam User Manual

These instructions generally describe the operation and maintenance of the R-Zero UR-UVGI fixture. For installation instructions, please see the guides included with the bracket. Questions that are not specifically answered by these guides should be directed to R-Zero. R-Zero takes all possible precautions when packaging equipment to prevent damage. Carefully inspect and report all damages. Do not install any damaged equipment. Follow all instructions on any labels. Carefully inspect all packing materials before discarding to prevent the loss of accessories, mounting hardware, spare parts or instructions.

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Safety Information

IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:

READ AND FOLLOW ALL SAFETY INSTRUCTIONS. SAVE THESE INSTRUCTIONS.

a) This equipment is designed for use with germicidal UV radiation sources and must be installed in compliance with competent technical directions to prevent risk of personal injury from UV radiation.

b) UV radiation can pose a risk of personal injury. Overexposure can result in damage to eyes and bare skin. To reduce the risk of overexposure this equipment must be installed in accordance with the manufacturer's site planning recommendations. This may include instructions on the relative location of each germicidal system component, the minimum distances between UV-generating devices and other objects or surfaces, and protection from line-of-sight exposure to UV radiation in occupied spaces located above the equipment mounting area (e. g. upper floor balconies, open staircases, etc.)

c) UV and optical radiation can be reflected by surrounding surfaces such as ceilings and walls. Since the reflective properties of surfaces can vary widely, it should be considered as part of site planning. Follow the manufacturer's recommendations for selecting appropriate ceiling and wall finishes.

d) IT IS THE RESPONSIBILITY OF THE INSTALLER TO ENSURE THAT PERSONS WILL NOT BE EXPOSED TO EXCESSIVE UV OR OPTICAL RADIATION DURING EQUIPMENT OPERATION. THIS WILL REQUIRE THE INSTALLER TO CONDUCT AN ASSESSMENT OF IRRADIANCE OR ILLUMINANCE LEVELS IN THE SURROUNDING OCCUPIED SPACES PRIOR TO OCCUPANCY.

e) Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.

f) Maintenance and servicing of this UV generating equipment shall be performed by authorized personnel. Service personnel must wear appropriate Personal Protective Equipment (PPE) if the equipment will be in operation during the maintenance or servicing work. Contact the equipment manufacturer for PPE recommendations and guidance.

g) When replacing lamps, replace them only with the lamps for which the equipment is marked and intended. See LED Bar Replacement/Installation.

h) The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.

i) Do not use this equipment for other than intended use.

READ AND FOLLOW ALL SAFETY INSTRUCTIONS. SAVE THESE INSTRUCTIONS.

▲WARNING

Do not enter the irradiance zone. Light can be harmful to bare skin and eyes. Can cause burns. Can cause temporary loss of vision. Do not look directly at the lights while illuminated without a protective barrier (such as glass).

▲WARNING

Risk of electric shock. Operating instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions. Always disconnect device power before any servicing or maintenance.

▲WARNING

To reduce the risk of electrical shock, the device has a grounding-type plug that has a third (grounding) pin. This plug will only fit into a grounding type power outlet. If the plug does not fit into the outlet, contact qualified personnel to install the proper outlet. Do not alter the plug in any way. Do not operate the device if the power cord and/or plug are damaged. Ensure Utility power supplied to the device matches power requirements listed on the label.

▲WARNING

Power supplied to the unit must match power requirements listed on the unit label.

▲CAUTION

Do not mount under any source of moisture or condensation, such as humidifiers, cooling coils, etc.

▲CAUTION

Dispose of LEDs in accordance with state and local laws.

▲CAUTION

Device must be installed by qualified professionals.

▲CAUTION

Germicidal ultraviolet rays may break down plants, plastic, rubber or other non-metallic materials with inadequate resistance to ultraviolet. Shield all such materials that may be exposed to direct or reflected germicidal ultraviolet rays.

▲CAUTION

It is the user's responsibility to determine the suitability of the device for use in the user's applications. R-Zero Systems does not guarantee performance or results from the device's use. The user should clean and inspect the device as required to maintain it in working order and confirm all labels are present. Contact the manufacturer as needed.

Do not remove any labels. Do not discard these instructions.

READ AND FOLLOW ALL SAFETY INSTRUCTIONS. SAVE THESE INSTRUCTIONS.

Product Overview

The R-Zero™ Beam is designed to treat air that may be contaminated with pathogens. Typical applications include hospitals, restaurants, food preparation areas, staff break rooms, locker rooms, hotels, gyms, schools, event venues, and other commercial spaces.

The device emits short-wavelength ultraviolet radiation (UV-C) projected across the upper area of the room. Airborne pathogens are destroyed when carried into the disinfection zone by convection currents or air circulation. Ultraviolet light inactivates the DNA of microorganisms, rendering them unable to reproduce or function, which destroys the microorganisms. The device produces UV-C at a wavelength of approximately 265-275 nm. The dosage delivered is a function of the exposure time, which is related to airflow.

Direct UV-C exposure can be harmful to people and animals, so the disinfection zone must be unoccupied during the cycle. R-Zero Beam requires planning for location, installation, and supervision to prevent exposure exceeding the Threshold Limit Value as established by the American Conference of Government Industrial Hygienists and CDC NIOSH. These limits currently require that incident exposure not to exceed 3.6 mJ/cm² at 265-275 nm for a period of 8 hours measured at eye height.

The R-Zero Beam requires professional installation and commissioning to ensure exposure is maintained below these levels and that wiring complies with local codes. Installation is permanent. All work performed in the disinfection zone must be monitored to ensure it does not adversely impact safety of the installation.

The R-Zero Beam requires knowledgeable planning for location, installation, and continued supervision to prevent exceeding UV exposure limits. It is best installed in well ventilated areas at a minimum height of 7 ft with 2 ft clearance above. Plans for installation should consider the reflectance of the ceiling. UV-C can cause fading in some colors and/or alter the surface properties of some materials directly irradiated by the light. UV-C can be harmful to plants directly irradiated by the light.

The R-Zero Beam is a disinfection supplement – not a replacement – to standard air ventilation. Follow your facility's manual room cleaning and disinfection protocols before using a UV device, and consult CDC, SHEA, and ASHRAE guidelines for additional steps to take as a part of a bundled approach.

ATTENTION: PROPER INSTALLATION OF THIS DEVICE IS CRITICAL TO YIELD DESIRED TREATMENT RESULTS. FOLLOW INSTALLATION INSTRUCTIONS PROVIDED WITH THE MOUNT. THE UV-C TREATMENT RESULTS ACHIEVED ARE SUBJECT TO VARIATION IN APPLICATION CONDITIONS.

Technical Specs

Germicidal Light Engine	
UV Source	4 Proprietary LED bars, 12 LEDs per bar
Rated LED Life	6,800 hrs, up to 3 years under normal operating conditions
Wavelength	Nominal 265 nm (range 260-270 nm)
Disinfection Power	99.99% reduction in SARS-CoV-2 in 27 min at 500 ft ²
Added Equivalent Air Exchanges	12 eACH at 500 ft ²
Controls	
On Unit	LED Status Indicator, on/off switch
Remote Operation and Reporting	Web interface (R-Zero Connect)
Auto Operation	Touchless power-on when room is occupied to immediately reduce risk
Connectivity	WiFi (2.4 GHz)
Electrical	
Input Voltage	120 VAC
Current	1.6A
Typical Power Consumption	160W
Max Power Consumption	200W
Power Connection	IEC C13 Socket, 120 VAC(Cable Included)
Physical	
Length x Width x Height	77 x 16 x 4"
Weight	25 lbs.
Mounting	Wall or Ceiling
Minimum Mounting Height	7' from bottom of device
Environmental	
Indoor/Outdoor	Indoor Only
Altitude	0-3000m
Temperature	10-40C
Relative Humidity	10-90%

Unpacking (If Applicable)

NOTE: UNPACKING THE BEAM IS MOST EASILY COMPLETED WITH 2 PEOPLE.

1. Remove the R-Zero Beam from its shipping carton.
 - R-Zero Systems takes all possible precautions when packaging this fixture to prevent damage. Carefully inspect the unit, power cord, and plug for damage. Report all damage immediately. Do not assemble or operate if there is any damage, visible or suspected.

CAUTION: LED BARS ARE FRAGILE. HANDLE WITH CARE.

2. Carefully inspect all packing materials to prevent the loss of accessories, spare parts, or instructions.

Do not discard packing materials until the R-Zero Beam is assembled, checked, and confirmed.

The R-Zero Beam includes:

- 1 – Beam Fixture
- 1- Wall Mount with screws
- 1 - User's Manual
- 1- Power cord

Placement Guidance

The R-Zero Beam is best operated in rooms between 400-600 sqft for a single device. Larger areas can be covered with multiple units as long as the units are a minimum of 10 ft apart. R-Zero’s team of experts will work with you to plan the best solution suite for your needs. Follow the below guidance when selecting the installation location:

Model	Installation Considerations						
	Min. Room Size / Device	Min. Distance Device to Opposite Wall	Min. Device Left/Right Clearance	Min. Ceiling Height	Min. Device Clearance to Ceiling (No Obstructions In Irradiance Zone)	Min. Device Mounting Height (from bottom of device)	Max. Device Mounting Height
Beam UR-UVGI	400 sq. ft.	20 ft.	10 ft./3m	9 ft./2.7m	2 ft./0.6m w/ no obstructions	7 ft./2.1m	NA

Operation

If you are subscribed to the dashboard and maintenance plan, your R-Zero Beam operates fully autonomously. The LED bars will automatically power on when occupancy is detected as long as the power button is switched on. The LED Indicator light at the bottom of the device will alert you to the current state. There are two PIR sensors in the disinfection zone which trigger the LED bars to power off for 2 minutes if motion is detected in the hazardous zone. The LED indicator light will pulse red in this case.

State	On-Device Single LED Indicator
Non-Powered	Off
Powered / Standby / Not Connected to Internet	Pulsing - Yellow
Powered / Standby / Connected to Internet	Solid - White
Powered / Wake-Up / Connected / Occupancy Detected	Flashing On/Off - Blue
Powered / Active / Connected	Solid - Blue
Powered / Standby / Requires Service or Fault Alert	Solid - Red
Powered / Standby / Safety Sensor Activated	Pulsing - Red

LED Bar Replacement/Installation

ALWAYS DISCONNECT POWER TO THE DEVICE BEFORE PERFORMING ANY SERVICE OR MAINTENANCE.

LED BARS ARE EASILY DAMAGED. EXERCISE CARE WHEN HANDLING LEDs.

There are 4 LED bars in the device. Usable life of the LED bars may vary, with the average life being 6800 hours. If you are subscribed to the dashboard and maintenance plans, you will be alerted when it is time to change the bars through the dashboard.

1. Turn off power to the device by pressing the button on the bottom. Unplug the device. Allow the device to cool for a minimum of (10) minutes.
2. Flip open the front of the frame by pulling firmly on the baffle. The fixture does not need to be removed from the wall.
3. If replacing- ensure the LED is cool.
 - a. Disconnect LED Bar connector from board. Hold down the tab on one side to pull the connector (similar to an ethernet cable)
 - b. Unscrew the screw at each corner of the LED bar holder with a T8 Torx screwdriver. There are 4 screws per bar.
 - c. Remove the LED Bar. Return bars to R-Zero for recycling.
4. Slide the new LED bar into the empty spot.
5. Screw each of the four corners to attach the bar to the holder.
6. Connect the electrical connector to the board.
7. Close the bracket. Screw the two locking screws into place using a torx 15 screwdriver or bit to attach the front of the bracket to the back.
8. Plug the device in and press the power button to turn the device back on.
9. Move into the center of the room and confirm the LED indicator switches to blue. This indicates the LEDs are operating correctly

Routine Maintenance

1. LED lenses should be cleaned periodically. Wipe down the outer surfaces of the lenses of each bar every 3 months with cloth lightly dampened with alcohol.