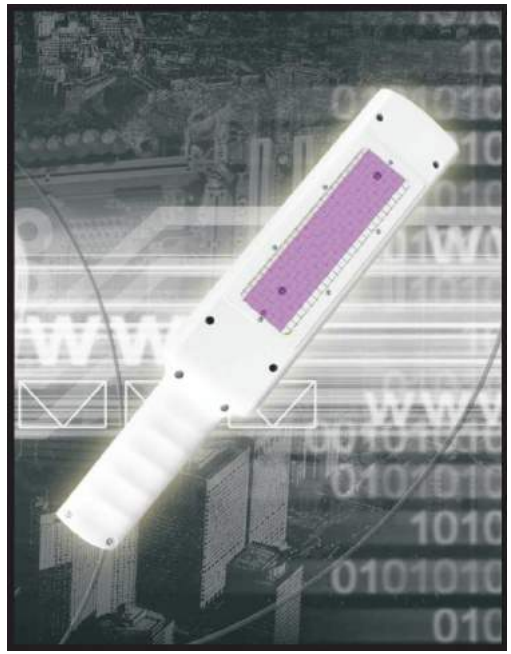
Crystal Technology & Industries, Inc

Clear-Raze™

UV-C Disinfectant Wand User Manual



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⚠ DANGER

This product generates ultraviolet radiation. Avoid exposure. Exposure of your skin to ultraviolet radiation may cause allergic reactions, premature aging of the skin and cancer. Always wear protective clothing and eyewear. Never look directly into the UV lamp. Failure to do so may result in severe burns or long term injury to the eyes. A protective shield must be used if no other protective means are implemented. Make sure all persons in the area are also properly protected. If you are under medication or have a history of skin problems please consult a physician before operating the unit.

⚠ WARNING

Please read the manual carefully before operating the product. Use the product according to the instructions otherwise the protection provided by the product may be impaired.

Attention:*Ultraviolet radiation is harmful to the human body!*

1. Unpacking Guide

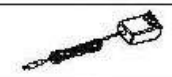
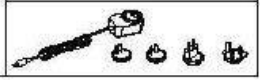
1-1:Function

Clear-Raze products provide ultraviolet lamps with ultraviolet radiation wavelength of 254nm. This ultraviolet frequency has the strongest sterilization capability. The absorption of ultraviolet light by bacteria causes DNA strand breaks, causing the crosslinking of nucleic acids and proteins to break. The range of UV disinfection and sterilization is very wide. Clear-Raze products are used in public spaces such as hospitals, schools, nurseries, movie theatres, offices and so on. In addition, it can also produce a certain amount of negative oxygen ions. In public spaces, UV disinfection can prevent germs from spreading through the air or on surfaces of objects.

1-2:Features and Specification

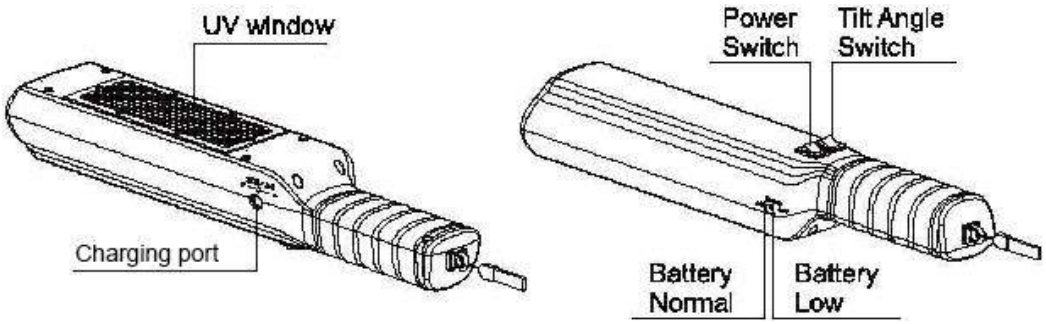
1. High UV intensity, reliable components.
2. Portable, light weight with artistic design.
3. With charging function.
4. Tilt Angle switch helps prevent UV radiation exposure when instrument is turned upside down.
5. **UV window size: 150 x 50mm.**
6. **Outside dimensions: 420 x 89 x 60mm.**
7. **The instrument uses 12.6V rechargeable batteries with a charger(100-240VAC, 50/60Hz). The battery has sufficient power when the indicator light is green. The battery needs to be recharged when the indicator light is yellow.**

◆ **Specification**

Model	Wave Length	Power Supply	Plug Type
CR-18-AA	UV-C (254nm)	**AC to DC adapter: 12.6 volts 0.3 amp**	
CR-18-AW			

CR-18-AA is US plug style, CR-18-AW is adaptable with included inserts

◆ **Structure**



2.Operating instructions

2-1 Turn On the Instrument

1.Press power siwtch to position "I" and the angle switch to position "O", the tilt angle mode is now activated. When the instrument is titled to 45° or above toward the left or right, the UV lamp will be off.

2. Pres the power switch and angle switch to the position "I" at the same time, and the tilt angle mode is turned off. The instrument will now tilt at any angle and UV lamp will stay on.

2-2 Turn Off

Press power switch to position "O".

2-3 Charging Battery for models Operated with 12.6V

Each 12.6VDC operated model contains a lithium battery pack. The battery needs to be charged when the yellow light is on. Please use the charger which comes with the product. plug one section of the battery charger into the AC100-240V, 50/60Hz socket and connect the other end of the charger to the product 12.6VDV output jack.

Note: Charge the UV lamp for 3 hours before first use and when the battery is fully drained.

3.Operator Servicing

The servicing instructions here are intended for limited maintenance. Do not perform any servicing other than that contained in the instructions. Return product to factory for maintenance not covered in this section.

Warning

Always unplug the product from its power source before cleaning or servicing.

3-1 Instrument Maintenance

In order to maximize the UV sterlization we use a layer of wire mesh to protect the UV window and the UV bulb in the housing. Do not allow liquids to enter into the electrical compenents. Do not submerge the unit in liquids. Do not spray liquids into the electrical components.

3-2 Bulb and Reflector Maintenance

Refer to the folowing instructions in the "Bulb replacement" section and remove the bulb before cleaning. Glass cleaner may be used for cleaning the reflector when the unit is unpluged. A mild detergent may be used for cleaning the bulb and the reflector area. Dry with a soft cloth. Allow to dry completely before using.

3-3 Bulb Replacement

If the product fails to operate corectly, check with the above operating instructions first.
If the problem persists and a bulb replacement is deemed necessary, proceed as folows:

1. Make sure the instrument is not in the charging state, and the power switch is turned to the "O' position.
2. Place the UV bulb housing on a flat table
3. Remove the 4 screws and 4 hexagonal bolts conecting the lower cover and the upper cover, and remove the upper cover.
4. Hold the lamp holder with one hand and pull out the UV bulb with the other hand. When the electrode is exposed from the groove, push the UV lamp out of the buckle.

5. Take a new lamp, hold the metal part of the lamp, insert the electrode of the metal part of the lamp into the lamp holder, and then the other side Press on the buckle to confirm that the lamp tube is firmly installed.
6. Press the sheet metal fixing plate under the ultraviolet lamp component to the lithium battery pack, and the four holes on the corners are put on the upper cover, and the upper and lower covers are covered.
7. Fix the upper and lower covers together again with 4 screws and 4 hexagonal copper bolts.

Noted: When replacing the lamp, it is recommended to turn off the angle switch while turning off the power switch to prevent hitting during the replacement process Turn on the power switch to avoid the harm of ultraviolet rays to the human body.

3-4 Care and Maintenance for Battery

1. The battery charger adapter comes with the instrument. It works with AC100-240V, 50/60Hz
2. The battery charger and lithium battery system in these models have a built in self protection system to prevent fire and other hazards. Battery replacement has to be done by trained technician.
3. Improper use and treatment such as burning or heating over 100℃ (212℉) may cause fire by trained technician.
4. Handle a bandonde batteries properly. Do not disassemble. Keep them away from children and fire.

3-5 Environmental Conditions

The following conditions are safe for operating the CR series UV Lamp:
1. Indoor use.
2. Operating altitude not to exceed 2000 meters above sea level.
3. Temperature: 5℃ to 40℃
4. Maximum humidity: 80% at 30℃ or below, 40% at 40℃
5. The voltage fluctuation of power supply is less than ±10%

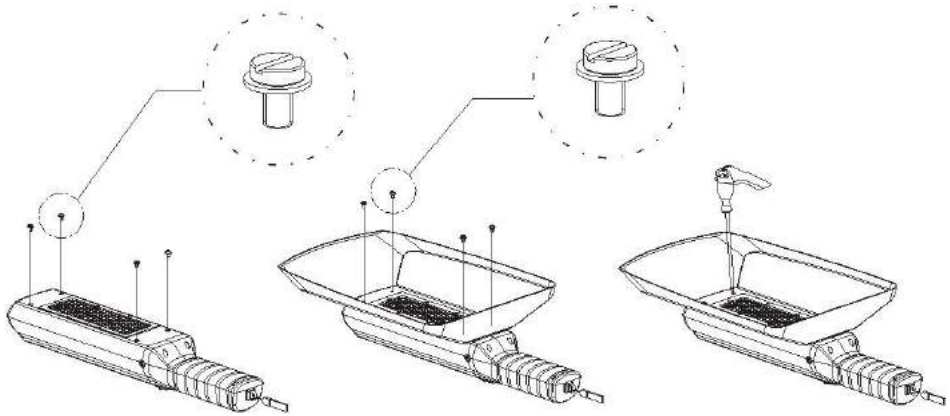
4. Packing List

Description	Quantity	Description	Quantity
Machine	1	UV Glasses	1
User's Manual	1	Charger	1

5. Optional Accessories

Name	Model	Dimensions	Function	Figure
Shield	CR-S-18	357.8×255×50mm	UV shield to protect operators from exposure of UV radiation	

Installation Diagram of the Shield:



b. Put in the shield, then install the screws and flat washer

c. Tighten the screws and the shield is installed

6. Safety Guidelines

The person or department who purchases this device must ensure that individuals who will be using UV sources under their supervision are adequately trained in the hazards releated to these sources, and in the safe methods of using the equipment. This is a UVC light source. You must provide protective equipment to all potentially exposed staff members.

Carefully study the manuals supplied by the manufacturer of the UV-generating equipment used, and do not deviate from the instructions concerning its safe operation without first contacting the manufacturer. These manuals provide specific safety-related information (such as the type of eye/skin protection needed, ventilation requirements, etc.) that must be completely understood prior to energizing the equipment. If there is any confusion at all regarding the safe use of UV-generating equipment, it is essential that Crystal be contacted to clarify any concerns that you might have. If you are still uncertain about these issues, contact Crystal at 972-934-2525.

Serious and painful eye and skin injuries can result if UV lamps are used improperly. Therefore, only authorized and trained personnel familiar with the potential hazards and control measures may use such units. UV lamps must be used in designated areas with limited access, which affords protection to passers-by. Operation from within a closed, well-ventilated room or a draped area reduces the risks of exposure.

Whenever possible, UV lamps should be used under totally enclosed, interlocked conditions. Interlocks must not be intentionally defeated unless the attendant hazards are otherwise well controlled! Needless exposures should be avoided, even in cases in which the eyes and skin are covered. The UV lamp should never be viewed directly. Take all necessary steps to reduce the exposure time to as short as is reasonably achievable, and use barriers/enclosures/shields to their maximum advantage.

Peligro --Radiación Ultravioleta). Ideally, all activated UV sources should either be attended by knowledgeable personnel at all times, or the lamps should be housed in foolproof, interlocked enclosures. However, warning signs are needed in both cases. Prominent activation warning lights are also helpful. Although the inverse square law applies to non-laser beam UV radiation, it is not advisable to look directly at any UV source (such as an arc or lamp) regardless of your distance from it. Since maintenance and janitorial personnel may be accidentally exposed to the radiation from UV lamps while in the course of their duties, it is essential that all UV sources and facilities be adequately labeled to instruct such personnel of the danger of exposure (in some cases, these warnings should be in both English and Spanish; Danger – Ultraviolet Radiation.

Protective Eyewear, Clothing and Skin-protective Agents

Operators of UV-generating equipment for which the radiation is not totally enclosed and exposures are possible must wear UV-filtering face shields, long-sleeved shirts, gloves, and sometimes long pants. Although these items may not completely eliminate the exposure to UV radiation, they reduce the risk of a severe burn substantially. UV-filtering glasses with side shields will occasionally suffice for very short-term exposures when the radiation is not considered to be of sufficient intensity to cause skin effects; this can be a risky venture, though. Most UV-filtering face shields and spectacles are made of polycarbonate plastic, which is capable of absorbing 99% of UV radiation up to 400 nm (violet light).

The skin can be protected either by wearing appropriate clothing (the preferred method!)

or by applying protective creams and ointments. Certain types of fabrics attenuate UV radiation well, while other types do not. Leather gloves, aprons and jackets have been successfully used for this purpose in welding, manufacturing and research applications involving UV exposure. Woven fabrics vary greatly in their attenuation properties. Obviously, loosely-woven fabrics through which one can readily see light when they are held up to a lamp will not be as effective as tightly-woven materials. Cotton fabrics generally have UV-B diffuse transmission values ranging from 5% to 30%, rayon and rayon blends transmit somewhat less (10% to 15%), and heavy wool and flannel materials may transmit 1% or less. Poplin has been reported to have very low UV transmittance. Nylon is very ineffective and may transmit up to 40% of the UV radiation. The attenuation can be greatly enhanced by the wearing of layered clothing.

A number of topical skin-protective agents have been developed which provide partial to total filtration of UV radiation. These agents include para-aminobenzoic acid (PABA) and its esters, salicylates and cyanamates. These preparations are generally placed into solution with substances that have good substantivity. Substantivity is a term used to indicate the affinity of a solution for absorption into and retention in the skin.

UV Exposure Standards

There are no Federal or State of California safety standards that specify permissible occupational exposure levels to UV radiation. For the most part, UV exposures are covered under the "General Duty Clause" that indicates that all workers must be protected from recognized hazards.

However, the American Conference of Governmental Industrial Hygienists has established UV exposure levels (called Threshold Limit Values) to which it is believed that nearly all healthy workers may be exposed repeatedly without suffering erythema (sunburn) or photoconjunctivitis.
The TLVs apply to exposures of the skin from arcs, gas and vapor discharges, fluorescent and incandescent light sources, and also solar radiation. {They do not apply to exposure to coherent UV radiation generated by lasers, nor do they apply to extremely photosensitive individuals.}The TLVs are intended to be used as guidelines for controlling exposures of personnel to continuous UV sources (exposure duration > 0.1 sec).
The TLVs are provided in units of millijoules of energy per square centimeter of surface area(mJ/cm2). They are presented as a function of wavelength from 180 nm up to 400 nm for wavelength-dependent exposure times that need to be calculated using a parameter termedthe relative spectral irradiance. The TLV values indicate the following:

The most hazardous UV radiation is that with wavelengths between 240 nm and 300nm. In this wavelength range, the TLV is less than 10 mJ/cm2, with the minimumTLV (the most hazardous radiation) being at 270 nm (TLV = 3 mJ/cm2).The least hazardous UV radiation is that with wavelengths exceeding about 315 nm(UV-A radiation). Above that wavelength, the TLV is always over 1000 mJ/cm2, and it steadily climbs above that wavelength indicating that the radiation is less hazardous with increasing wavelength. Between 180 nm and 240 nm, the radiation becomes increasingly more hazardous.

A few additional notes obtained from the 2003 TLV booklet:
1) The probability of developing skin cancer from UV exposure is related to a variety of factors such as skin pigmentation (persons with light skin are at the greatest risk), a history of blistering sunburns, and lifetime accumulated UV dose.
2) Some topical preparations and systemic chemicals can heighten the risk of exposure to UV radiation. Examples of these are some antibiotics (e.g., tetracycline and doxycycline), as well as some antidepressants, diuretics, cosmetics, antipsychotic drugs, dyes, etc. Always be cognizant of this possibility and read prescription/product labels or consult with your pharmacist regarding this matter.
3) Outdoor workers in latitudes within 40 degrees of the equator can be exposed to quantities of UV radiation which exceed the TLV in as little as 5 minutes around noon during the summer months!!

Warranty Card

The certificate is an important basis for product warranty, please take good care of it!

Warranty certificate

User name		Phone	
E-mail Address			
Zip code		E-mail	
Product Name		Product Model	
Production Number		The date of sale	

● Warranty

1 year warranty

● The following circumstances,Warranty is not implemented:

1. Over the warranty period; (warranty period starts from the date of purchase within one year)
2. Damage caused by use maintenance violate the instruction requirement of use, maintenance, custody
3. Damage caused by Non-professionals dismantlement
4. No valid invoice; (except the goods can prove the validity of the warranty)
5. Product model and serial number of products does not match the warranty certificate
6. The damage caused by force majeure;

Customer Service Phone：972-934-2525

Dear users, the above information is completed by the sellers and stamped effect.

Maintenance records

Completed by maintenance organizations, and they should help customers to paste maintenance records in the appropriate position!

The 1 time	Maintenance company's name		Maintenance Date	
	Address		Tel	
	Maintenance documents No.		Maintenance personnel to sign	
The 2 time	Maintenance company's name		Maintenance Date	
	Address		Tel	
	Maintenance documents No.		Maintenance personnel to sign	
The 3 time	Maintenance company's name		Maintenance Date	
	Address		Tel	
	Maintenance documents No.		Maintenance personnel to sign	