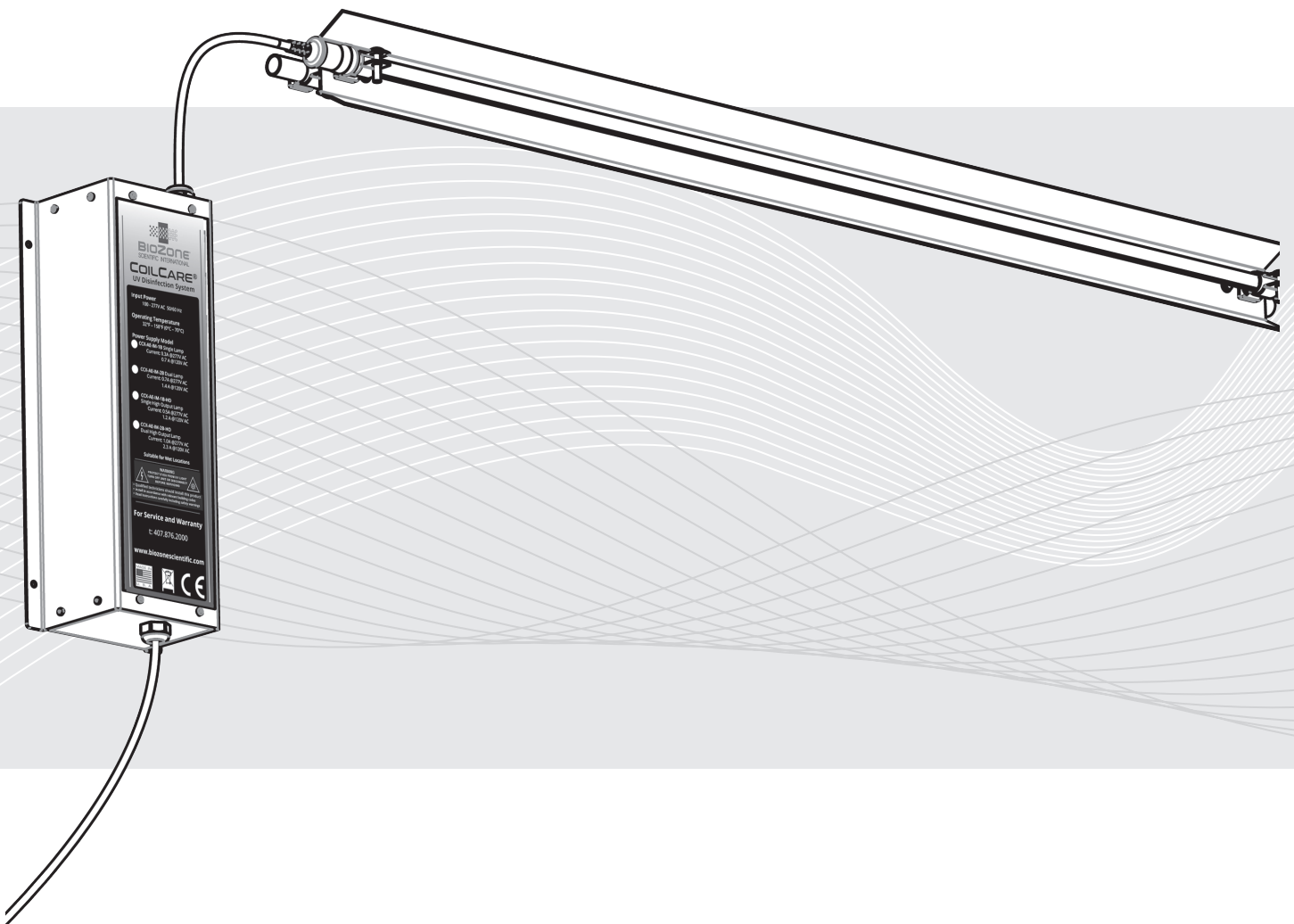


COILCARE[®] X

Installation Instructions and Operating Manual



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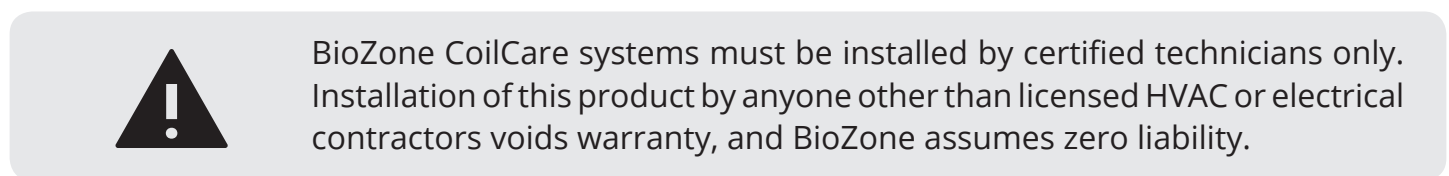
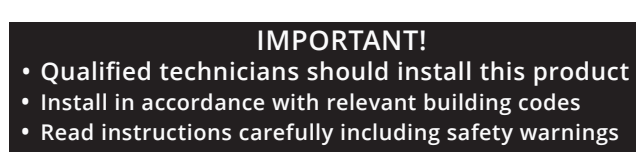
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CoilCare Series

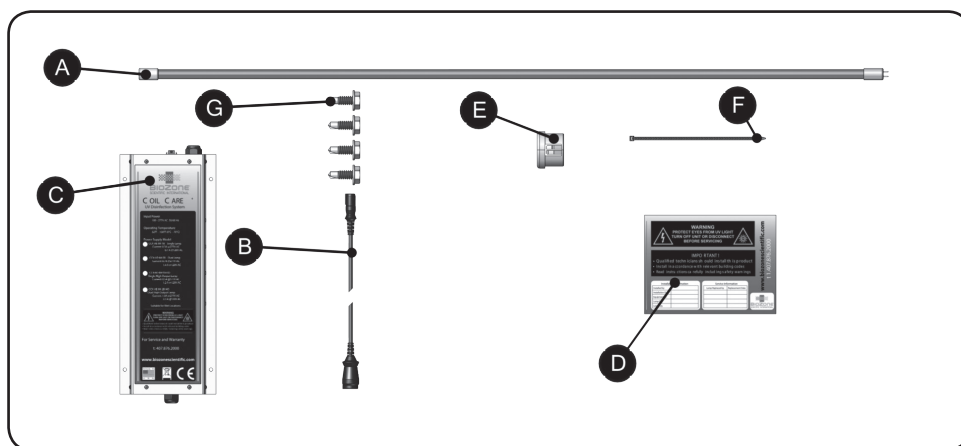
Thank you for purchasing BioZone Scientific's **CoilCare**® ultraviolet light germicidal irradiation disinfection system for commercial HVAC applications. CoilCare can keep HVAC evaporator coils clear of contamination and biofilm, allowing significant savings in maintenance and energy costs, while improving indoor air quality. CoilCare works by irradiating coil surfaces in germicidal ultraviolet light. The UV light inactivates microorganisms and breaks down organic residue, preventing growth and keeping coils clean and operating efficiently. The system is equipped with a UV lamp and a reflector to direct and focus UV light on the coil surface. The water-resistant power supply is easy to mount and can withstand the humid environments of HVAC enclosures.

The quantity and positioning of UV lamp modules is determined by several factors, including the coil dimensions and other HVAC system design specifications. Your BioZone Scientific commercial UV specialist can help configure the best system for your application.



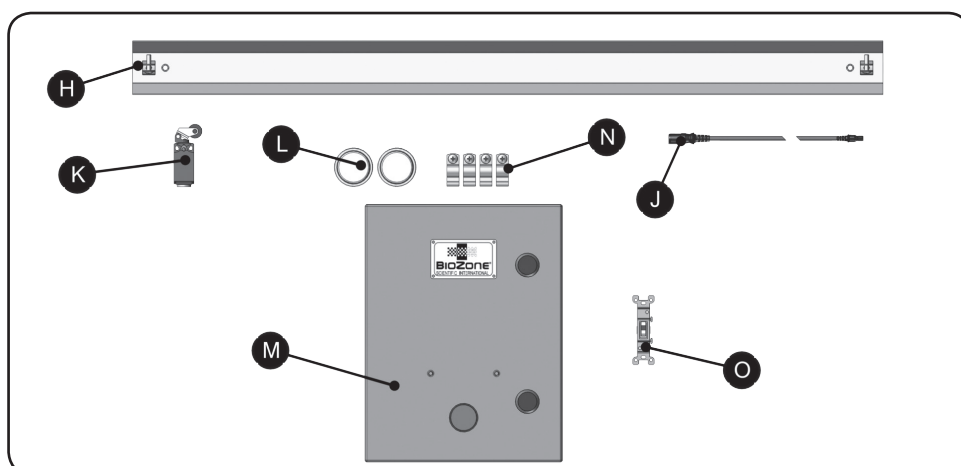
CCX Parts

- A UV Lamp
- B Lamp Connector
- C Power Supply
- D UV Warning Label
- E Sight Glass
- F Black Nylon Zip Ties
- G Mounting Screws



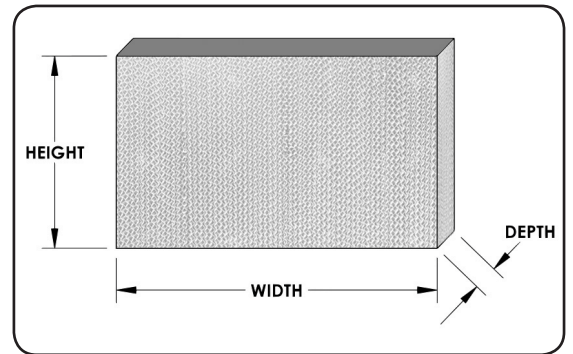
Optional Parts

- G UV Reflector
- J Lamp Cable Extension 10ft
- K Door Interlock Switch
- L Contact Plates
- M Control Box, Configurable
- N Lamp Clip Pack
- O Light Switch



SYSTEM CONFIGURATION GUIDELINES

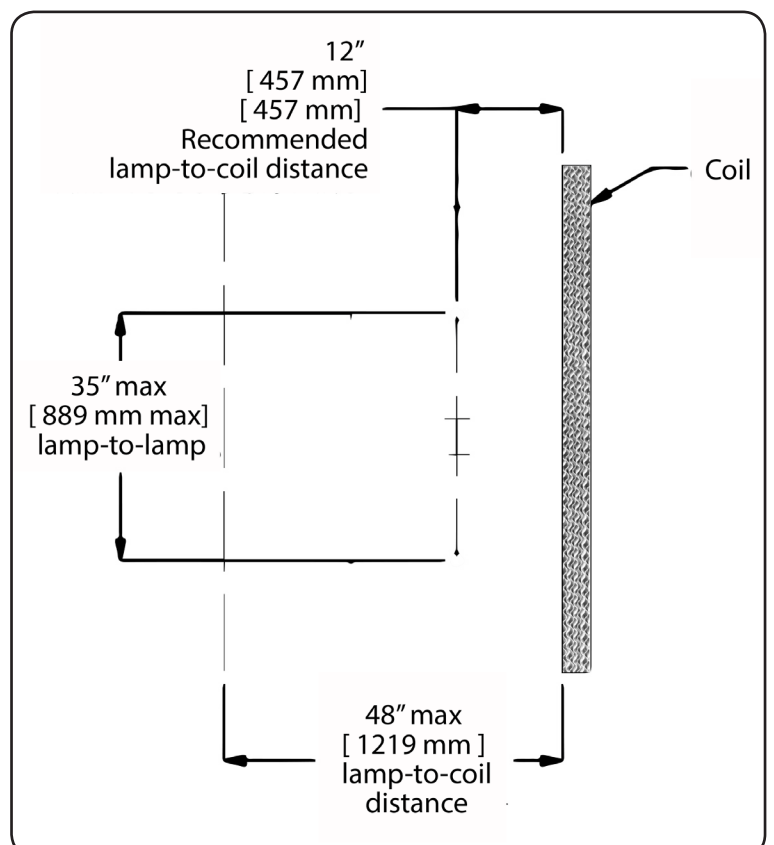
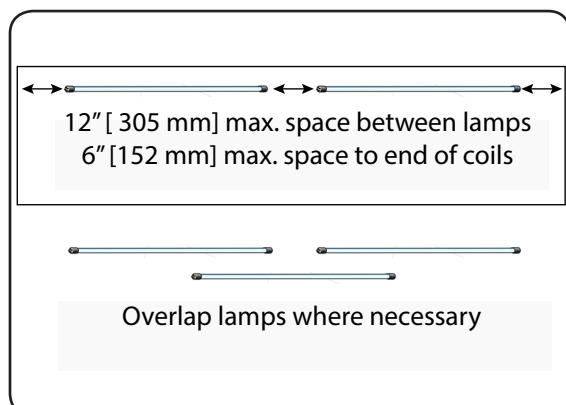
1. Determine the dimensions of the evaporator coils or area to be treated.
2. Use the guidelines below to select the proper configuration and number of lamps needed to treat the required dimensions.



CoilCare Configuration Guidelines

- Maximum germicidal effectiveness is within an 18in [457mm] radius from lamp center axis
- The optimal distance between lamp(s) and the irradiated surface is 12in [305mm]
- The distance between stacked lamps should not exceed 35in [889mm]
- The distance between end to end lamps should not exceed 12in [305mm]
- The distance of lamp ends to the edge of irradiated surface should not exceed 6in [152mm]
- Minimal germicidal effectiveness expected at/beyond 48in [1219mm] radius from lamp center axis
- When coil depth is more than 12in [305mm], treating both sides of the coil may be indicated

BioZone Scientific offers free of charge UVCalc™ to assist with system configuration and selection. Contact your BioZone commercial UV specialist for more information.



Recommendations for Effective CoilCare Installations

- **Air Velocity:** 400-500 fpm [2-2.5m/s] maximum
- **Air Temperature:** 40°F – 110°F maximum [4°C – 43°C]
- **Lamp Distance from Coil:** 6in – 48in [152mm – 1219mm]
- **Electrical Wiring:** compliant with local and national code, UL/ETL standards
- **Safety Measures:** alarms and disconnects, warning signage, employee training
- **Lamp Disposal:** in accordance with local and national regulations (see lamprecycle.org for more information)
- **Insulation Guidelines for Safety:** the use of UV resistant materials such as aluminum reflectors, shielding, jacketing, and tape, may be indicated to protect non-UV-compatible materials in the treatment area. Contact BioZone Scientific if specific questions arise concerning material compatibility.

INSTALLATION INSTRUCTIONS

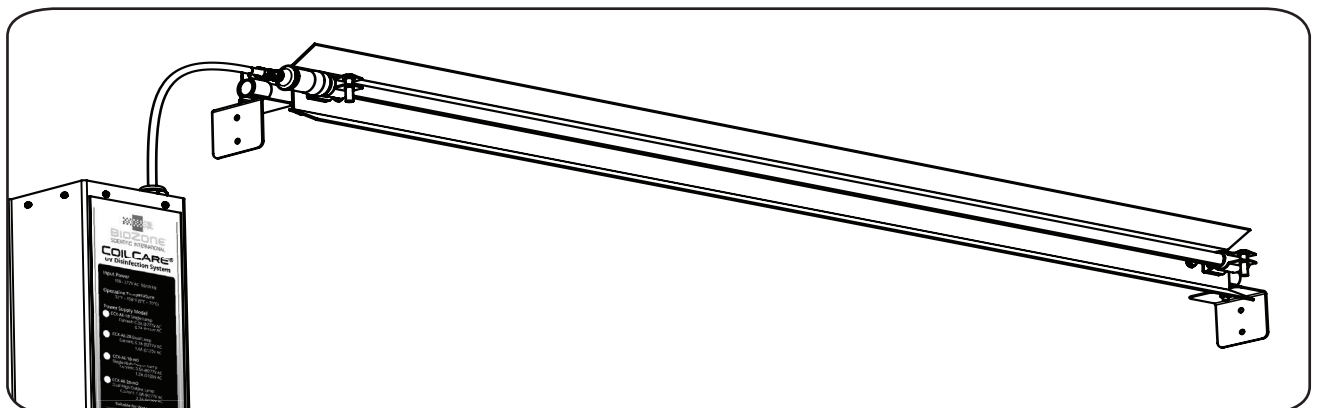
First, determine the ideal mounting location within the HVAC system, and then configure the CoilCare system accordingly. CoilCare can be mounted to the air handler wall or similar support several ways depending on the size, orientation, and distance between the mounting surfaces and surfaces to be irradiated.

Contact your BioZone commercial UV specialist with any questions or concerns prior to installation.

Install Framing

- 1. EMT/Conduit**
In most situations, when the system is mounted to surfaces perpendicular to the surface to be irradiated, L-brackets are attached to the wall or support with self-tapping screws.

Measure the distance between the L-brackets and cut tubing 1" less than the distance between L-brackets. Extend the tubing between the L-brackets and fasten at each end.



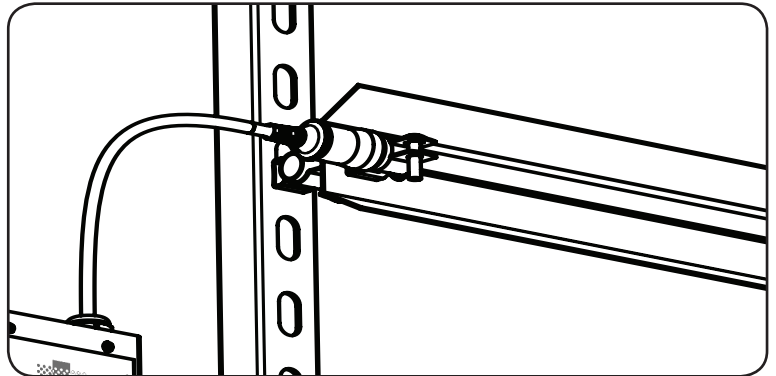
INSTALLATION INSTRUCTIONS

Optional vertical support adds strength to the tube framing and prevents sagging on installations with two or more lamps per tubing length.

2. Measure the distance from floor to ceiling and cut tubing $7/8$ " less than floor to ceiling height. Use pipe coupling to extend the vertical support between the floor and ceiling for a snug fit.

Channel Strut

In situations where larger coil surfaces require CoilCare systems comprising several UV lamps, the use of channel strut may be indicated. The system is mounted to surfaces perpendicular to the surface to be irradiated, and L-brackets are attached to the wall or support with self-tapping screws.



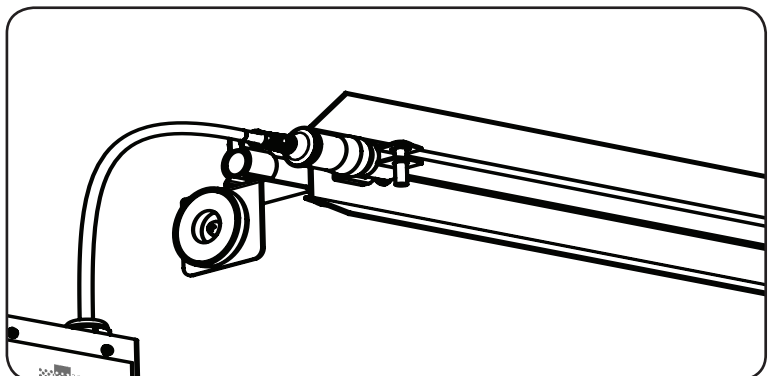
1. Measure the distance between the L-brackets and cut channel strut $1/2$ " less than distance between L-brackets. Extend the channel strut between the L-brackets and fasten at each end.

Optional vertical support adds strength to the strut framing and prevents sagging on installations with two or more lamps per strut length.

2. Measure the distance from floor to ceiling and cut channel strut $1/2$ " less than floor to ceiling height. Attach L-brackets at desired mounting points on floor and ceiling with self-tapping screws. Extend the vertical support strut between the floor and ceiling and fasten to L-brackets for a snug fit.

Magnetic Mounting

In situations where small coil surfaces require CoilCare® systems comprising single UV lamps, the use of magnets fitted on L-brackets combined with EMT/conduit may be indicated. The system is mounted to surfaces perpendicular to the surface to be irradiated, and L-brackets are attached to the wall or support with provided 30lb magnets for a quick and easy installation.



1. Measure the distance between the L-brackets and cut tubing 1" less than distance between L-brackets. Extend the tubing between the L-brackets and fasten at each end.

INSTALLATION INSTRUCTIONS

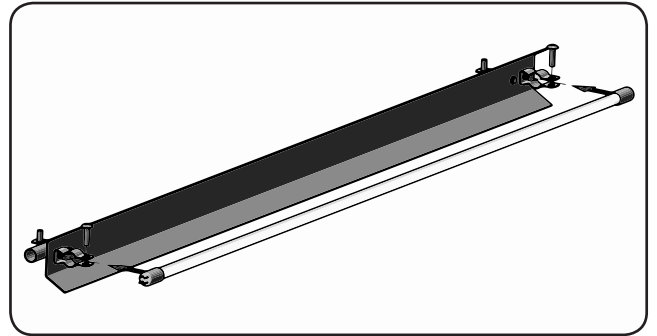
Install the UV Lamps

Do not touch the glass portions of UV lamps with bare hands. The use of gloves is recommended when handling UV lamps. Wipe UV lamp with isopropyl alcohol as needed to clean glass.

1. Place UV lamps into the lamp clips. Be sure to clamp only on the ceramic lamp bases at each end. Use black nylon zip-ties to secure lamp cables to supports as needed.



DO NOT clamp onto the lamp glass.

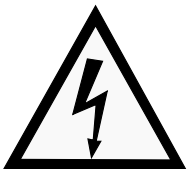
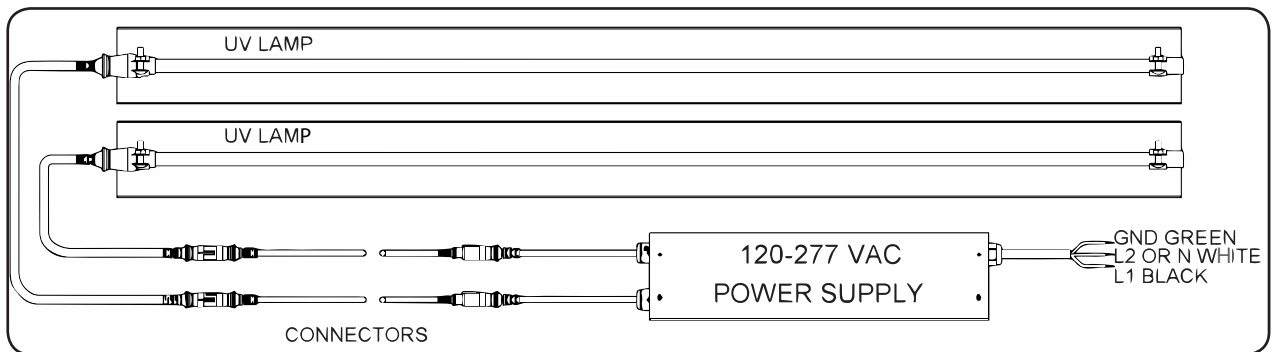


Mount Power Supply

Mount the power supply in a location (interior or exterior of the HVAC system) that is convenient for access to the electrical supply and for connection to the UV lamps.

The power supply is weather resistant and is suitable for mounting to the interior or exterior of the air handler. Note that the power supply is not waterproof and should not be mounted outdoors without protection from a secondary enclosure.

1. Turn off main electrical supply before making electrical connections.
Refer to the Electrical Diagram for proper connection of the power supply to the main power.



IMPORTANT! Connect in accordance with all state and local electrical and building codes. Proper voltage is automatically selected by the unit between 120–277 VAC Single Phase 50/60hz.

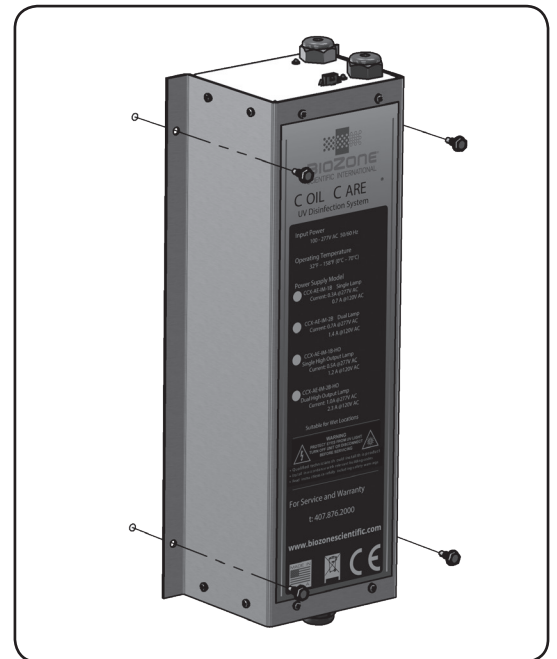
IMPORTANT! If power surges occur often, it is suggested that you use an external power suppressor.

INSTALLATION INSTRUCTIONS

Mount Power Supply (continued)

2. Use the supplied self-tapping sheet metal screws to mount the power supply in place through the mounting holes on the sides of the base.

It is recommended to use junction boxes, our optional 3/4" or 1" cable strain relief, or other sealing methods in order to pass the power cord and lamp cables between the interior of the air handler and exterior for connections, as needed.

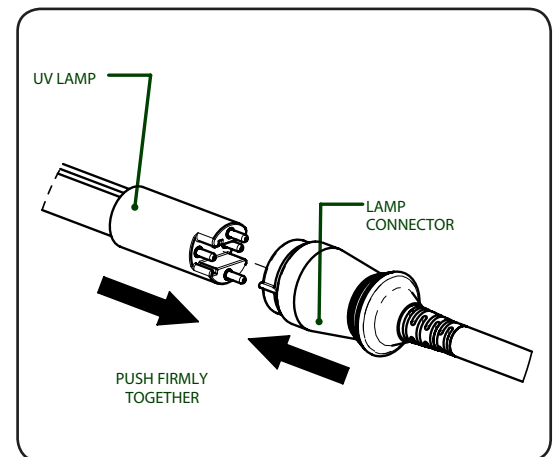


Connect Lamps and Cables

1. Arrange cables as needed for installation. If necessary use the Optional 3/4" or 1" cable strain relief to pass cables through cabinets, air system walls, etc.

Optional 10' cable extensions are available for longer runs.

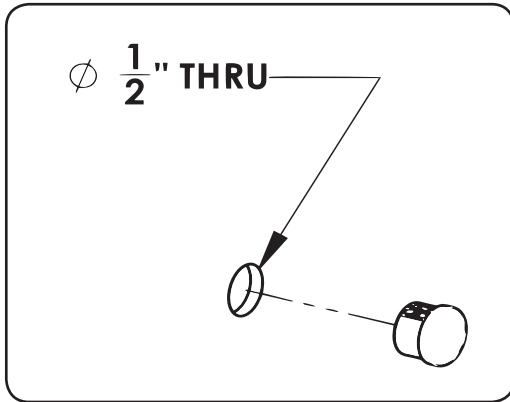
2. When UV lamps, power supplies, and cables are in place, join the UV lamp and lamp connectors by aligning the electrical pins and corresponding slots on the lamp connectors and pushing them firmly together. Note that lamp connector may need to be rotated to matchup with the lamp pins.



INSTALLATION INSTRUCTIONS

Safety Components

Install Sight Glass



1. The sight glass allows safe viewing of the UV light system when in operation to verify system operational status. Find a suitable location such as a door or access panel to the HVAC system for the sight glass.
2. Drill a 1/2" hole and press the base of the sight glass through it.

Install an Optional Light Switch

1. To help prevent accidental exposure to UV light, Biozone can provide an optional on/off switch, to be installed by a licensed contractor on the circuit between the main power supply and the CoilCare power supply. Electrical wire for the switch not provided.

Contact BioZone for additional information.

Install a UV Warning Label



Caution: UV light that can cause serious eye burns and temporary blindness. Ensure all access panels have been replaced and doors closed before activating the system.

1. Affix the UV Warning Label, shown here, to the door or access panel used to service the unit.
2. Record the installation information on the UV Warning Label. The UV Warning Label contains fields convenient to record installation and service information. It is recommended to record installation and service details on the UV Warning Label as those functions are performed.

		WARNING PROTECT EYES FROM UV LIGHT TURN OFF UNIT OR DISCONNECT BEFORE SERVICING			
IMPORTANT!					
• Qualified technicians should install this product					
• Install in accordance with relevant building codes					
• Read instructions carefully including safety warnings					
Installation Information			Service Information		
Installed by			Lamp Replaced by	Replacement Date	
Installation Date					
Equipment ID					
Lamp PN					
Lamp Qty					
					

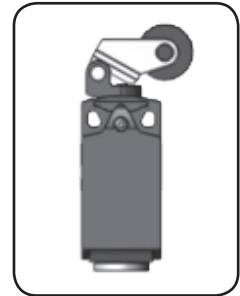
www.biozonescientific.com
t 1.407.876.2000

OPERATION AND MAINTENANCE

Install an Interlock Switch

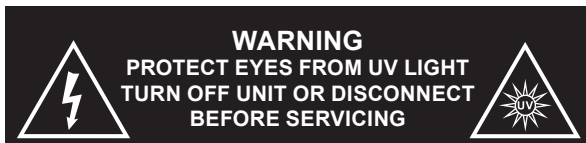
1. Per ASHRAE, the use of **Optional Door Interlock Switch(es)** is highly recommended to prevent accidental exposure to UV Light. The door interlock switch is installed in the electrical circuit between the main supply and the CoilCare power supply.

Interlock switches are mounted on the access panels and doors so the CoilCare system is de-energized and the UV lights turn off when the panel/door is opened.



See the Door Interlock Switch Kit for specific wiring instructions and diagram for the door interlock switch (BioZone Part Number CCX-KT-DS).

Before Powering Up the System



Caution: UV light that can cause serious eye burns and temporary blindness. Ensure all access panels have been replaced and doors closed before activating the system.

Turn on the electrical supply and switch on the UV light power supply. Use the sight glass to confirm that the UV lamp is operating.

Maintenance

As needed, periodically wipe the UV lamps with a clean cloth or alcohol swab to remove any accumulated dust or dirt. This process should be performed at least every six months or during routine maintenance intervals.

Lamp fouling could occur if lamps are installed under chilled water lines. Wipe clean or install an optional shield.

Use of replacement lamps from other manufacturers **will cause system failure** and will immediately void the system warranty.

Lamp Replacement

BioZone Scientific lamps are rated for up to two years of germicidal effectiveness on CoilCare systems. The lamps will continue to illuminate with a blue glow after they have exceeded their rated lifespan, however their germ-killing effectiveness diminishes with time, so they must be replaced on schedule for the system to function properly.

Contact your local dealer for replacement lamps.



Important! Use only authentic BioZone replacement lamps. Use of replacement lamps from other manufacturers will immediately void the system warranty and affect performance of the system.

Part Number	Part Details
CCX-10-H64000-1	1554mm lamp High Output, 1 Year
CCX-10-H48000-1	1148mm lamp High Output, 1 Year
CCX-10-H36000-1	842mm lamp High Output, 1 Year
CCX-10-H24000-1	610mm lamp High Output, 1 Year
CCX-10-H64000-2	1554mm lamp High Output, 2 Year
CCX-10-H48000-2	1148mm lamp High Output, 2 Year
CCX-10-H36000-2	842mm lamp High Output, 2 Year
CCX-10-H24000-2	610mm lamp High Output, 2 Year
CCX-10-64000-1	1554mm lamp, 1 Year
CCX-10-48000-1	1148mm lamp, 1 Year
CCX-10-36000-1	842mm lamp, 1 Year
CCX-10-24000-1	610mm lamp, 1 Year
CCX-10-64000-2	1554mm lamp, 2 Year
CCX-10-48000-2	1148mm lamp, 2 Year
CCX-10-36000-2	842mm lamp, 2 Year
CCX-10-24000-2	610mm lamp, 2 Year

Troubleshooting

Issue	Solution
UV lamp(s) not lighting	<ol style="list-style-type: none"> 1. Check all electrical connections. 2. Check that power is applied to power supply. 3. Check that the unit is turned ON. 4. Ensure the lamp cables are properly connected. 5. Install new UV lamp(s). 6. Consult BioZone.
UV lamp(s) flickering	<ol style="list-style-type: none"> 1. UV lamp(s) have reached end of effective service life. Install new lamp(s) of same type. 2. If unit is new, lamp connectors at both ends to ensure proper connection. 3. If new lamps still flicker, consult BioZone.
UV lamps have burned out prematurely	<ol style="list-style-type: none"> 1. Consult factory.
Power supply will not light UV lamp(s) even after new lamps are installed	<ol style="list-style-type: none"> 1. Consult factory. 2. If power surges occur, an external power suppressor may be needed.

WARRANTY

Lifetime Warranty

The manufacturer's lifetime warranty covers parts replacement for the CCX system as long as the BioZone (OEM) 1-year Lamps are replaced annually and/or the BioZone 2-year Lamps are replaced every 2 years.

Standard Warranty

The manufacturer's standard warranty covers replacement parts for a period of one (1) year from the date of installation as noted below.

This warranty supersedes and replaces any warranty statements orally made by the Sales Person, Distributor or Dealer or contained in the written instructions or other Brochures or informational documents in relation to this product. This warranty gives you special legal rights, and you may also have other rights which vary from State to State.

What Does This Warranty Cover? This lifetime limited manufacturer warranty covers any defects or malfunctions in material and workmanship under the normal use and service when operated and maintained in strict accordance with manufacturer's instructions for the Lifetime of the equipment.

How Long Does The Coverage Last? 1) BioZone Scientific CoilCare® Power Supply: For as long as you own the real property where the product is installed. 2) The Ultraviolet Lamp is warranted for germicidal output for two-years from the date of installation. This warranty is not transferable.

What Will BioZone Scientific International, Inc. do? BioZone Scientific will replace any defective or malfunctioning part at no charge. You must pay any labor charges and shipping charges of defective product to our warranty department. You are also responsible for any shipping charges to return the warranty

What Does This Warranty Not Cover? THIS PRODUCT IS NOT INTENDED TO BE PURCHASED AND INSTALLED BY UNLICENSED HVAC OR ELECTRICAL CONTRACTORS. This warranty does not cover products or parts purchased from any source other than licensed HVAC or electrical contractors. This warranty does not cover parts installed by unlicensed HVAC or electrical contractors. This warranty does not cover parts damaged as a result of misuse, abuse, or any use other than its intended use, accident, acts of God, neglect, or from improper operation, maintenance, installation, modification or adjustments. BioZone Scientific International, Inc. shall have no responsibility for charges incurred by the customer for installation or removal of warranted items.

This warranty does not cover parts or equipment used with the BioZone system that are not manufactured by BioZone Scientific International, Inc. **This warranty shall be void if UV lamps from manufacturer's other than BioZone Scientific International, Inc. are used with this equipment. Consequential and incidental damages are not recoverable under this warranty. Manufacturer assumes no liability for any harm, which may occur as a result of the use of the equipment herein and shall not be liable for consequential or any other damages whether or not caused by manufacturer's negligence or resulting from any express or implied warranty or breach thereof. Consequential damages for the purpose of this warranty shall include, but not be limited to, loss of use, income or profit, or loss of or damages to property or injury or death to persons or animals occasioned by or arising out of operation, use, the operation, installation, repair or replacement of the equipment or otherwise. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. There are no Warranties which extend beyond the description of the face hereof.

How Do You Get Service? In order to be eligible for service under this warranty you MUST return the warranty registration card or register online at www.biozonescientific.com. If something is wrong with your product, call your installing contractor to receive a Return Merchandise Authorization (RMA) and instructions for returning the product to a licensed distributor in your area or the manufacturer.

Once the product is returned, we will inspect your product and contact you within 10 business days of our receipt of the product to give the results of our inspection. If we determine that the product is covered under this warranty, we will ship to you at no additional cost a replacement part. Replacement parts may be refurbished. If we determine that the product is not covered under this warranty, or that this warranty is void, the product will be returned to you COD. There is no charge for inspection.

How Does State Law Apply? This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Glossary of Terms

- ASHRAE** The American Society of Heating, Refrigerating and Air-Conditioning Engineers. It focuses on building systems, energy efficiency, indoor air quality, refrigeration and sustainability technologies. ASHRAE publishes guidelines for Ultraviolet lamp systems for treatment of both air and surfaces.
- Irradiance (UV)** The power per unit area received from a UV source in the form of electromagnetic radiation at a wavelength or in a wavelength range. For evaporator coil surface disinfection, ASHRAE recommends a minimum of 50-100 $\mu\text{W}/\text{cm}^2$ as measured on the coil surface at 254nm.
- Cooling Effects** Lamp UV output is critically dependent on mercury vapor pressure, which in turn is dependent on temperature. Below 80°F [27°C] UV output can decrease by as much as 50%. Cooling effects are noted and are factored into CoilCare® system design.
- Reflectance** Ultraviolet light can be reflected off of surfaces, the degree of which depends on the specific material. CoilCare®'s reflectors can re-direct and focus up to 1.75 times more irradiance onto the coil surface than the same system without reflectors.
- Ultraviolet** Ultraviolet (UV) light is an electromagnetic radiation with a wavelength from 400 nm to 10 nm, shorter than that of visible light but longer than X-rays. UV radiation constitutes about 10% of the total light output of the Sun. UV light can also be produced by specialized lights, and UV systems have been used for over a century to disinfect water, surfaces, and air.
- UVGI** Ultraviolet germicidal irradiation (UVGI) is a disinfection method that uses short-wavelength ultraviolet (UV-C) light to kill or inactivate microorganisms by destroying nucleic acids and disrupting their DNA, leaving them unable to perform vital cellular functions. UVGI is used in a variety of applications, such as food, air, and water purification.



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