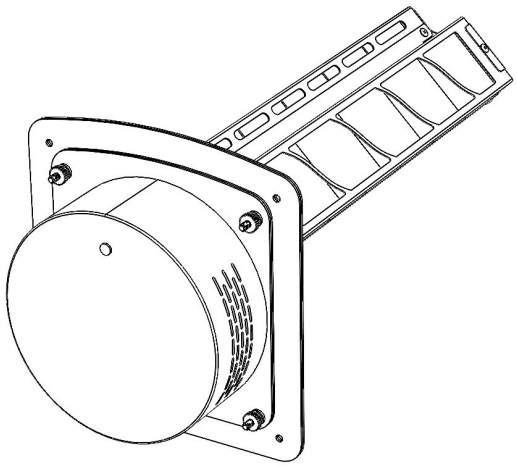
UVCAPXXC2015
Carbon Air Purifier with UV

Installation & Operation Manual

NOTE: Read the entire instruction manual before starting the installation.



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ZERO OZONE EMISSIONS – MEASURED OZONE EMISSIONS FROM CARBON AIR PURIFIER WITH UV DURING USE PHASE DOES NOT EXCEED 0.005 PPM AS TESTED BY UL 867. UL.COM/ECV

A221114UVCAP

Table of Contents

Safety Considerations

⚠ WARNING

SHOCK HAZARD

Failure to follow this Warning could cause injury or death.

Electrical wiring of the unit to the HVAC system should be done by a licensed HVAC technician or electrical installer.

⚠ WARNING

EYE AND SKIN BURN HAZARD

Failure to follow this Warning could cause personal injury.

This unit contains high energy ultraviolet C-band (UVC) lamps which can cause serious eye and skin irritation. Never expose unprotected eyes or skin to the UVC light.

⚠ WARNING

UV LIGHT HAZARD

Failure to follow this Warning could cause personal injury.

UV light is harmful to skin and eyes, and can cause temporary or permanent loss of vision. Never look at the lamps while illuminated. To prevent exposure to ultraviolet light, be sure the ultraviolet system power is disconnected before servicing any part of the HVAC system or removing any access panel or the equivalent.

Untrained personnel can perform basic maintenance functions such as changing lamps. All other operations should be performed by trained service personnel.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings and cautions included in literature and attached to the unit. Consult local building codes and the current edition of the National Electrical Code (NEC) NFPA 70.

In Canada, refer to the current editions of the Canadian Electrical Code CSA C22.1.

Recognize safety information. When you see this symbol ⚠ on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards, which will result in severe personal injury or death. WARNING signifies hazards, which could result in personal injury or death. CAUTION is used to identify unsafe practices, which may result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which will result in enhanced installation, reliability, or operation.

Before proceeding with installation, inspect thoroughly for shipping damage. Notify shipper immediately if any damage is found. Check for proper clearances of moving parts.

The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Table 1 – Unit Data

Description	UVCAPXXC2015 Specification
Electrical	Input: 24 VAC or DC (min 19.2V; max 32V) 50/60 Hz, 1.4A, 3000V surge protection
Transformer Required	40VA (Note: use 75VA transformer – purchased separately – when installing accessory lamp)
UV Lamp	10W (UVC), 254 nm wavelength
Lamp Length	14.0"
Power Consumption / Power Factor	20W / 0.995
Expected Lamp Life	18,000 hours

Introduction

The Carbon Air Purifier with UV is quick and easy to install on a new or existing system. And even easier to maintain, requiring replacement of the carbon **core each year** and UV **bulb every 2 years**.

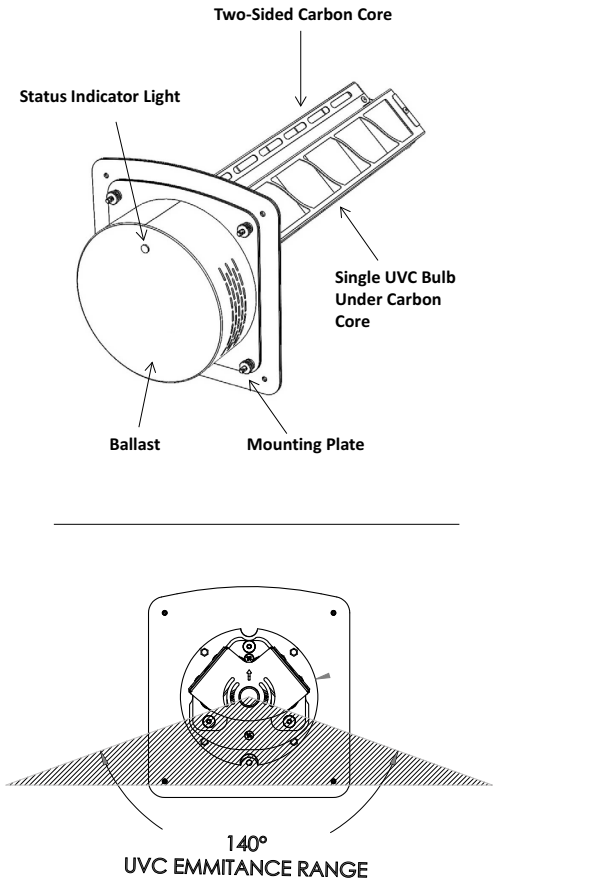

Fig. 1 – UV-C Lamp and Core

An accessory UV light add-on kit is available (Table 2), providing additional treatment. See (Installation of Remote Accessory Lamp with UVCAP on p5) for more information.

Carrier's Carbon Air Purifier with UV meets UL 2998 — meaning it has been tested and independently validated by UL, a neutral third-party for Zero Ozone Emissions. Measured Ozone Emissions from the Carbon Air Purifier with UV during use phase do not exceed 0.005 ppm as tested by UL 867. This validation program for Zero Ozone Emissions from Air Cleaners represents one of the most stringent criteria available today.

NOTE: This product is designed for indoor in-duct use only.

NOTE: This device complies with part 18 of the FCC Rules.

Included in the Box

- Carbon Air Purifier with UV System
- 24VAC power supply
- Carbon Assembly
- UV-C lamp
- 40VA transformer
- Mounting plate
- Mounting hardware
- Installation instructions

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in damage to the product.

Do not touch glass section of UV Lamp without clean gloves. Damage to lamp will result. Oil from fingers will permanently etch glass of lamp and weaken structure. Clean lamp with rubbing alcohol and clean cloth if necessary.

⚠ WARNING

MERCURY EXPOSURE HAZARD

Failure to follow this caution may result in minor personal injury.

Lamp contains a small quantity of mercury. Handle with care. If a lamp breaks, clean and dispose per local regulations.

NOTE: This product has not been tested or certified to UL (Underwriters' Laboratories) standards for UV Radiation Devices.

⚠ WARNING

FIRE AND PROPERTY DAMAGE HAZARD

Failure to follow this Warning could result in personal injury or property damage.

When installing the Carbon Air Purifier with UV, ensure the application considerations outlined in the instructions are followed. Installations outside the scope of allowed applications could result in product failure, smoke, or fire when used in conjunction with high energy heat sources such as furnaces and electric heaters.

- Product should not be installed within a direct line of sight to any plastics or polymers not previously evaluated suitable for UV exposure.
- Product should not be installed with a direct line of sight to any opening that may expose the user or service technician to UV exposure.
- Any service panel or opening in the air handling circuit that would expose the user to direct UV contact should provide an interlock.
- Do not open modular units; no serviceable components inside.

Application Considerations

- This device is meant only to be installed in the duct portion of the HVAC system (Fig. 2). It can be used with all types of coils, including the new V-coil.
- The unit should be mounted directly to a metal surface.
- The duct work around the installation area should be clean and dry to insure proper adhesion of the gasket materials and any tape used.
- An approximately 5" opening will need to be cut into the existing duct work to install the device properly.

Installation Configurations for Consideration

1. Maximum benefit is achieved when installing the Carbon Air Purifier with UV above an evaporative coil so that the light shines on the coil and the unit is placed 12" above the coil cabinet exit in the return duct as in Fig. 2.
2. If installing in a furnace-only system without an evaporative coil or a fan coil with or without electric heat strip, the Carbon Air Purifier with UV should be installed sufficiently away, 2 feet minimum, from the supply side of the furnace or air handler to prevent exposure to higher temperatures and/or radiant heat.
3. If installing on the return side in the ductwork, care must be taken to prevent the light from shining on any filters, other devices already installed, and any materials such as plastics or polymers that are susceptible to UV-C exposure. Install 6 feet minimum upstream of any devices/sensitive materials with the light on the upstream side and carbon core on the downstream side.

IMPORTANT: Select a mounting location that prevents direct exposure to media filters. A minimum distance of 6 feet is recommended (filter media will break down from UV exposure).

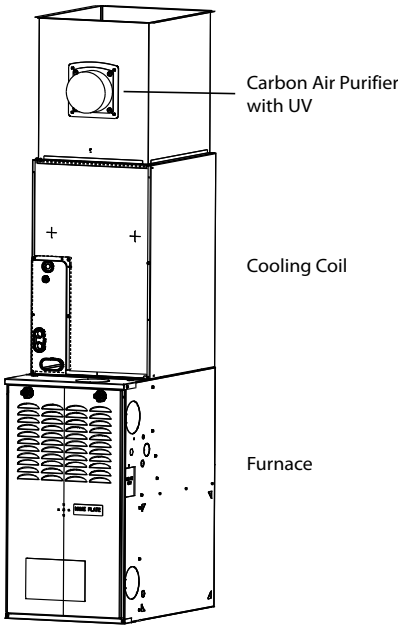

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Fig. 2 – Typical Installation Setup

Installation

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in electrical shock and cause injury or death.

Before installing accessory or performing maintenance or service on this or any other accessory, turn off main power to unit and install lockout tag. There may be more than one disconnect switch.

⚠ WARNING

PERSONAL INJURY HAZARD.

Failure to follow this warning could result in electrical shock and cause injury or death.

Power supply can cause electrical shock. Disconnect power supply before beginning installation.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD.

Failure to follow this caution could result in equipment or property damage.

Ultraviolet light can cause color shift or surface degradation and sometimes structural degradation of non-metallic components. Select mounting location that prevents exposure to plastic flexible duct components, polyurethane foam insulation material, rubber hoses, wire insulation, etc. If mounting options are limited, items above should be protected with ultraviolet resistant material such as aluminum foil, aluminum duct tape, metallic shields or the equivalent.

- Product should not be installed within a direct line of sight to any plastics or polymers not previously evaluated suitable for UV exposure.
- Product should not be installed with a direct line of sight to any opening that may expose the user or service technician to UV exposure.
- Any service panel or opening in the air handling circuit that would expose the user to direct UV contact should provide an interlock.
- Do not open modular units; there are no serviceable components inside.

Airflow Orientation

The device can be oriented in any direction to airflow. It is recommended to orient the UV lamp to shine toward the desired area of maximum UV coverage. The unit can be rotated for vertical or horizontal flow (see Fig. 3 and Fig. 6).

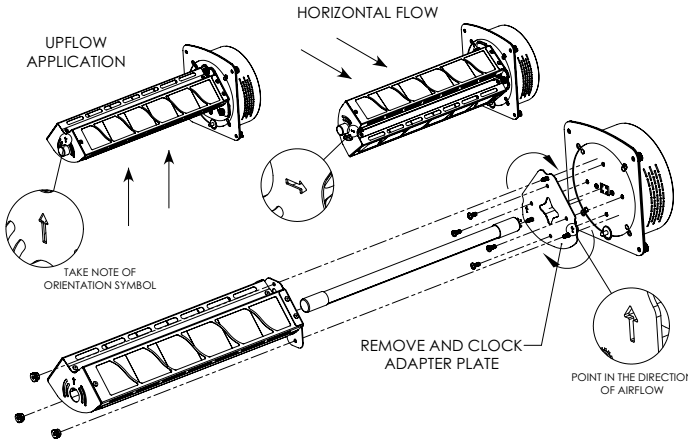

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Fig. 3 – Rotating Core

The operation indicator on the face of the device is for UV Lamp operation only (Fig. 4). If the unit has power and the indicator does not glow, the UV lamp should be replaced.

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Fig. 4 – UV Lamp Indicator

24VAC Electrical Requirements

Connect black and white wires to a dedicated 40VA transformer (Fig. 5).

NOTE: This device must be installed in compliance with all national and local electrical and mechanical codes. Failure to do so will void the warranty.

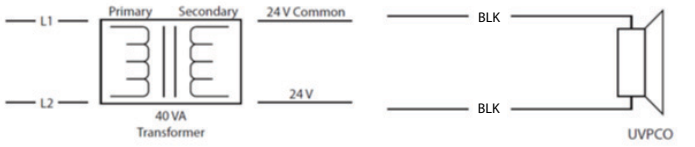

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Fig. 5 – Wiring to Transformer

Installation

1. Locate a suitable area of the duct for installation. Minimum 8" area.
2. If needed, cut away insulation to expose metal duct.
3. Mark location for 5" opening using the included mounting plate as a template (Fig. 6).

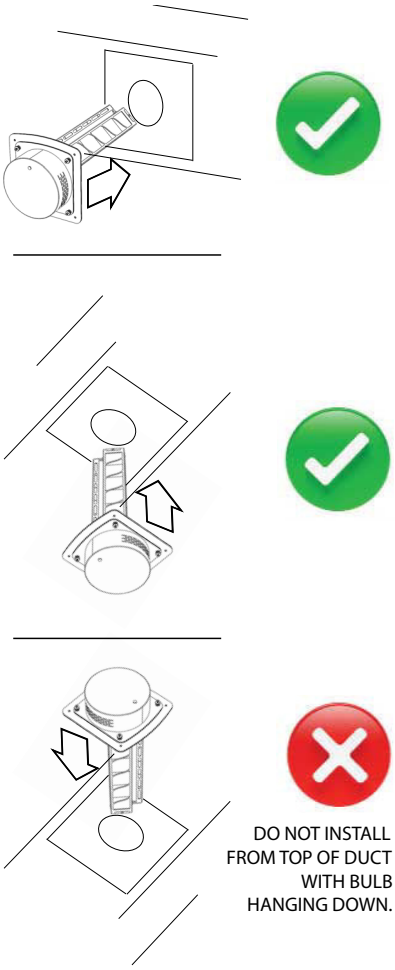

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Fig. 6 – Duct Opening with Plate

4. Cut opening for the device.
5. Remove the backing from the mounting plate gasket, center mounting plate over opening, and press onto the duct. The adhesive gasket will hold the mounting plate in place.
6. Secure the mounting plate using self- tapping screws.

NOTE: For fiberglass ductwork installations, drill 1/2" clearance holes to use the included 3" toggle bolts to attach the mounting plate.

7. Insert device into opening and secure with knurled nuts.
8. Connect to proper power and test operation. The operation indicator light on the face of the device should be on.

Care and Maintenance

Carbon Core Replacement

⚠ WARNING

PERSONAL INJURY HAZARD.

Failure to follow this warning could result in personal injury.

Use care. Wear gloves when handling the core that may have sharp edges.

NOTE: The core may have surface dust or powder present. This is a normal result of operation.

1. When replacement of the carbon core is needed, order the proper carbon core assembly (Table 2).
2. Disconnect the device from power.
3. Removed the knurled nuts securing the device and remove the device from the core.
4. Remove the screws securing the core.
5. Remove the core from the device and dispose of properly.
6. Secure the new core to the device.
7. Reverse the previous steps to return the device to operation.

Lamp Replacement

NOTE: The expected life of the lamp assembly in this UV lamp product is 2 years of constant operation or a maximum of 18,000 hours of unit runtime.

Maintenance / UV Lamp Indicator

For optimal performance:

- Replace the device carbon core each year
- Replace the UV-C lamp every 2 years, even if the lamp appears to be operating normally.

⚠ WARNING

BURN HAZARD

Failure to follow this caution may result in minor personal injury.

Allow lamp to cool for at least one minute before opening UV lamp casing or HVAC unit cabinet.

1. When replacement of lamp is needed, order proper lamp assembly (Table 2) from your dealer / distributor.
2. Disconnect the device from power and remove device from mounting bracket and ductwork.
3. Carefully detach the lamp from the device by gently pulling the lamp from the base assembly.

TIP FROM CONTRACTORS: You may want to remove the carbon core for easier access.

4. Place used lamp in a safe area before proceeding.
5. Do not touch new lamp glass area without clean gloves. Secure the new UV lamp to the device.
6. Clean any smudges from lamp using a clean dry cloth.
7. Reverse the previous steps to return the device to operation.
8. Dispose of used lamp per local regulations.

NOTE: Dispose of lamp per local regulations (in a manner consistent with CFL and fluorescent lamps).

9. Power surge greater than 3kV may require unit reset by unplugging the power cord to the unit and plugging it back in to turn back on after a power surge has occurred.

Replacement Parts / Accessories

⚠ CAUTION

PARTS AND ACCESSORIES USE

To ensure product reliability and warranty, use only Carrier specified replacement parts and accessories.

Table 2 – Replacement Parts / Accessories

Part Number	Description
Carbon Air Purifier Parts	
P201-3401	40VA Transformer
UVCAPXXC2015C	Carbon Core Replacement
UVCAPXXC2015L	Lamp Replacement
Accessory Lamp Parts	
UVCAPXXC2015A	Accessory Lamp Add-On Unit*
UVCAPXXC2015AL	Accessory Lamp Add-On Unit Replacement
HT01BD118	75VA Transformer

*. Requires 75VA Transformer

Warranty Statement

The Carbon Air Purifier with UV is covered by a limited warranty. Please see the included warranty card for clarification.

Installation of Remote Accessory Lamp with UVCAP

IMPORTANT: When installing the UVCAP with remote accessory lamp do not use 40VA transformer provided with the UVCAP unit. You must use the 75VA transformer referenced in Table 2.

NOTE: This accessory lamp complies with part 18 of the FCC Rules.

⚠ WARNING

PERSONAL INJURY OR UNIT DAMAGE HAZARD

Failure to follow this caution could result in damage to unit or personal injury.

Perform visual inspection of potential mounting location by removing unit/cabinet door prior to cutting or drilling. Be careful not to cut, drill or drive screws into coil, refrigerant lines or other objects inside the HVAC unit.

Remote Accessory Lamp Installation (with Main Unit)

1. Light stick connection will receive power from WAGO connection located on the UVCAP unit (Fig. 7).
2. Push two wires from light stick power supply into WAGO connection.
3. Insure tight connection in WAGO terminal and test operation.

IMPORTANT: When installing UV light stick in combination with UVCAP unit do not use the 40VA transformer included with the UVCAP unit. A 75VA transformer must be field supplied and installed (Table 2).

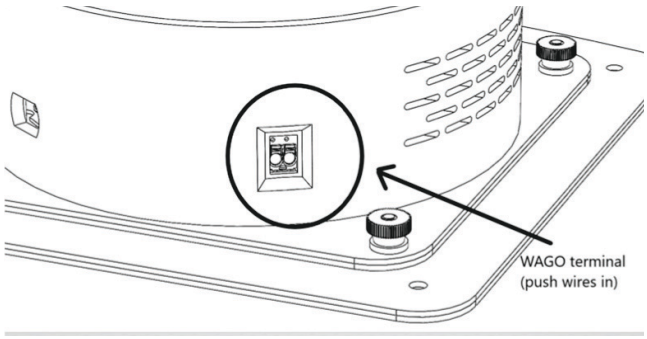

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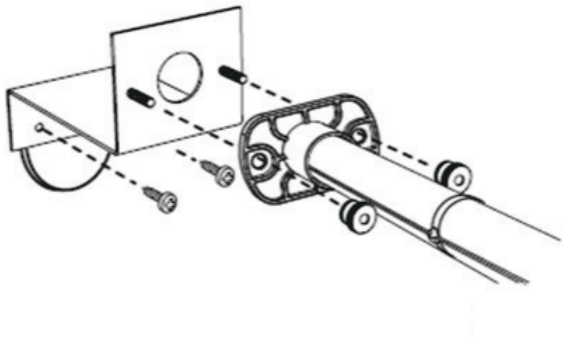
Fig. 7 – WAGO Terminals

W-coil / Above A-coil (Remote Lamp)

1. (Fig. 8) Disconnect power to the air handler and open access panels.
2. **Standard Bracket Installation** – Install the lamp bracket at the desired location with two self-drilling screws (included).
3. Secure the lamp to the lamp bracket with the provided knurled nuts.
4. Connect remote mount lamp power cord.



Attach lamp to lamp bracket and install in desired location.

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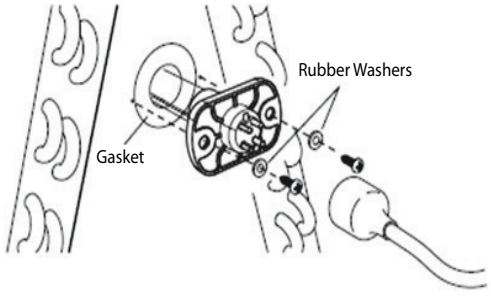
Fig. 8 – W-coil / Above A-coil Install (Remote Lamp)

A-coil Delta Plate (Remote Lamp)

1. (Fig. 9) Drill a 7/8" hole into the delta plate and place gasket (included) around hole.
2. Insert lamp directly into hole and secure the lamp to the delta plate with two self-drilling screws (screws and rubber washers included).
3. Connect remote mount lamp power cord.

NOTE: A-coil delta plate installation does not use lamp bracket.



Insert lamp into delta plate hole and secure with screws and washers. Connect remote lamp power cord.

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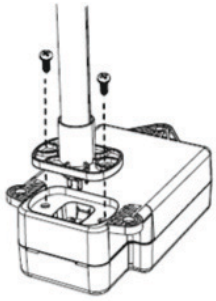
Fig. 9 – A-coil Delta Plate Install (Remote Lamp)

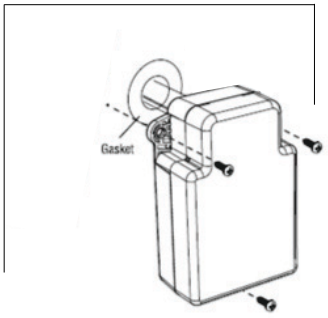
Through Door or Sidewall

1. (Fig. 10) Drill a 7/8" hole in the outer sheet metal where the lamp will be centered on the return side of the coil.
2. Place gasket (included) around hole.
3. Insert lamp into power module and secure with self-drilling screws (included).
4. Insert lamp/power module assembly directly into hole and secure with self-drilling screws (included).

NOTE: A-coil delta plate installation does not use lamp bracket.



Insert lamp into power module and secure with screws.



Insert assembly into delta plate hole and secure with screws.

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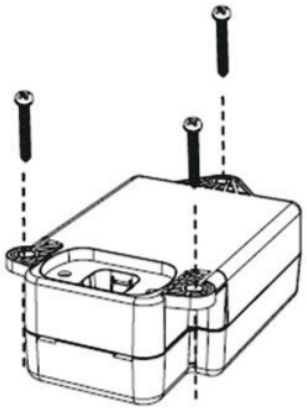
Fig. 10 – Through Door or Sidewall Install

Power Module (Remote Lamp)

NOTE: Do **not** over-tighten screws.

1. (Fig. 11) With the lamp cordage facing away from the mounting surface, use the long mounting screws and install the power module in a suitable location inside the control panel of the air handler using two self-drilling screws (included).
2. Connect the power module to constant 24VAC power.
3. Connect input 24VAC power cord. Align markers on power module with power cord connector.



Flip power module over and secure with long screws. Do not overtighten.

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Fig. 11 – Power Module Install (Remote Lamp)

Power Module

1. (Fig. 11) With the lamp directly connected to the power module, connect the power module to the mounting surface using the short, self-drilling screws (included).
2. Connect the power module to constant 24VAC power.
3. Connect input 24VAC power cord. Align markers on power module with power cord connector.

NOTE: The device must be installed in compliance with all national and local electrical and mechanical codes. Failure to do so will void the warranty.