

*Installation, Operation & Maintenance Manual*

# GPS-FC-3/3T-BAS™



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The GPS FC-3 is designed to be mounted inside of fan coils, heat pumps, ductless mini splits, and air handlers up to 3,200 CFM or 8 tons. There are Build Automation System (BAS) alarm contacts provided (orange wires) with the FC-3.

#### *Hardware Provided by GPS*

- FC-3 unit
- Fuse



Figure 1

#### *Additional Hardware Provided by GPS with FC-3T model*

- Power supply APV-12-24 (required for installations on voltages higher than 24VAC)



Figure 2

#### *Hardware Required by Installer*

- Mounting screws
- Electrical connectors - Twist-on wire connectors or comp connectors
- Double sided tape

#### *INSTALLATION LOCATION*

GPS recommends the FC-3 be installed downstream from the filter to prevent build-up of particulates on the ion emitters. Below is a list of locations to mount the GPS- FC-3 in the preferred order.

1. Downstream from the filter, and prior to the blower and cooling coil. This helps prevent particulate build up and provides maximum bacteria control.
2. Downstream from the filter and the blower, prior to the cooling coil
3. Downstream from the filter, blower and coil,
4. Prior to the filter. Particulate build up will be greater prior to the filter, cleaning will need to be done more frequently



**CAUTION: MAKE SURE POWER IS DISCONNECTED TO THE HVAC EQUIPMENT BEFORE INSTALLATION**



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## MECHANICAL INSTALLATION

1. Select a location for installation. **The FC-3 needs to be perpendicular to the air flow** (air should flow past ion emitters like a football through the goal posts). The FC-3 should be mounted so that the ion emitters are exposed to airstream.

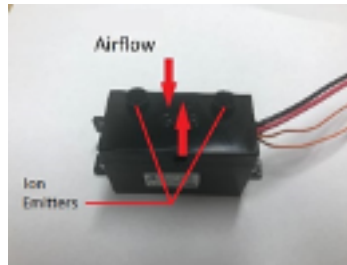


Figure 3

- The ideal location on typical split systems is on the blower housing, the side opposite the blower motor. The housing of the FC-3 should be so that the ion emitters extend slightly above the side of the blower housing.
  - The ideal location for ceiling cassette units is on the fan side of the protective screen/ grille
  - The ideal location for mini split systems is after the filter and behind the coil, typically mounted to the wall plate.
  - The ideal location for a ducted module is on the intake side after the filter between the blower housings.
2. Secure the FC-3, if attaching to sheet metal use self-taping screws if possible. **NOTE: Inspect the other side of sheet metal to make sure screws will not damage refrigerant lines, wires, or other components.** When attaching the FC-3 to a grille or screen nylon ties may be used.
  3. The FC-3 ion emitters should not be touching any metal surface or wires. Move and secure any wires that may come in contact with the ion emitters.



**NOTE: THE NEEDLES MUST BE 2 INCHES AWAY FROM METAL SURFACES TO PREVENT ARCING**

## Electrical Installation



**CAUTION: MAKE SURE POWER IS DISCONNECTED TO THE HVAC EQUIPMENT BEFORE INSTALLATION**

- Verify voltage of circuit the FC-3 is being connected to.
  - 24 VAC installation
1. Connect the red and black wires to a constant 24VAC source. NOTE: FC-3 units require 0.5 VAC to operate. Verify capacity of HVAC system transformer prior to powering unit. A stand-alone transformer may be used.
  2. Connect the orange wires to the Building Automation System wires or terminals (if present). If no BAS system is present, then insulate ends of wires and secure wires where they will not be damaged.

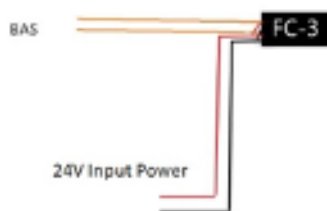


Figure 4: 24V Input Power Wiring Diagram



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**CAUTION: IF VOLTAGE OTHER THAN 24VAC IS BEING SUPPLIED, USE APV-12-24 POWER SUPPLY INCLUDED WITH FC-3T**

### 240VAC installation

1. Find a suitable location for the APV-12-24. Secure the APV-12-24 with self-tapping screws or double-sided tape.
2. Route the wires so that they will not short, abrade, or damage other components
3. Connect the FC-3 to the low voltage side of APV-12-24 (red and black wires) red to red and black to black.
  - a. Twist-on wire connectors (Figure 7) and crimp connectors (Figure 6) are both acceptable methods of connecting low voltage wires.
4. Connect the high voltage side of APV-12-24 (blue and brown wires) to the terminal block where the 240v wires enter HVAC unit.
5. Connect the orange wires to the Building Automation System wires or terminals (if present). If no BAS system is present, then insulate ends of wires and secure wires where they will not be damaged.

### 120 VAC installation

1. Find a suitable location for the APV-12-24. Secure the APV-12-24 with self-tapping screws or double-sided tape.
2. Route the wires so that they will not short, abrade, or damage other components
3. Connect the FC-3 to the low voltage side of APV-12-24 (red and black wires) red to red and black to black.
  - a. Twist-on wire connectors (Figure 7) and crimp connectors (Figure 6) are both acceptable methods of connecting low voltage wires. .
4. Connect the neutral leg of power to the blue wire. Connect the line or power leg to the brown wire
5. Connect the orange wires to the Building Automation System wires or terminals (if present). If no BAS system is present, then insulate ends of wires and secure wires where they will not be damaged.

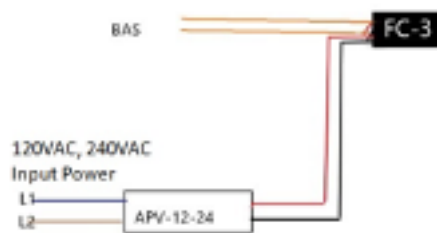


Figure 5: 120V/240V Input Power Wiring Diagram



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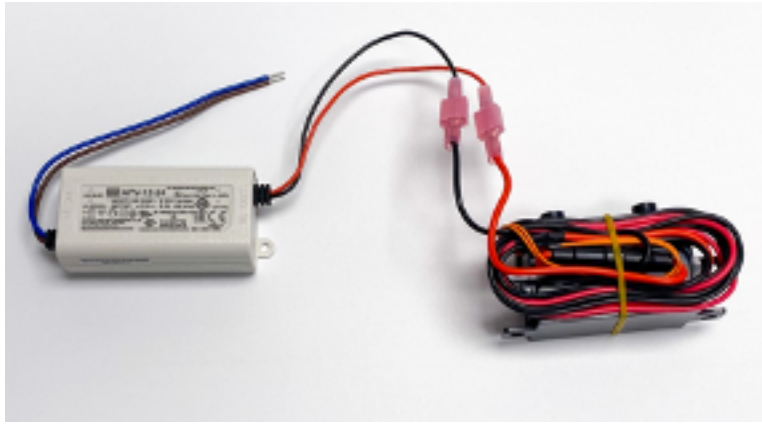


Figure 6: Example assembly with crimp connectors.

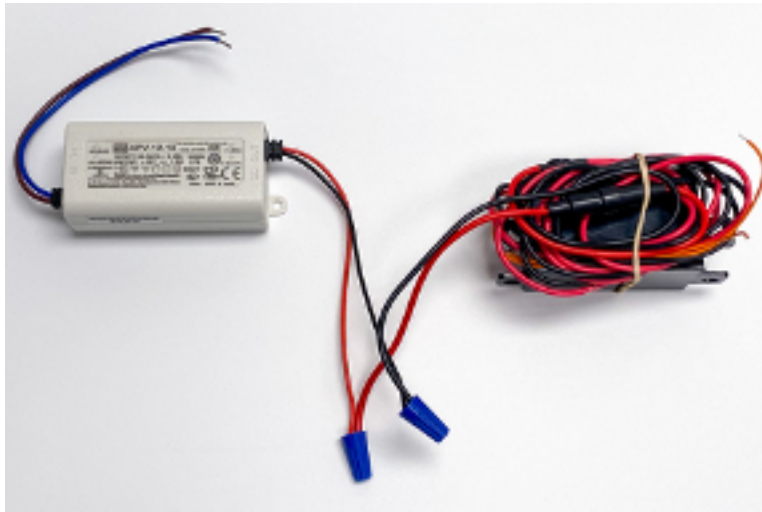


Figure 7: Example assembly with twist-on wire connectors.

### *Verification of Operation*

Verify the FC-3 and wiring are secure and wired for the correct voltage. Restore power to the HVAC equipment. The green indicator light on the FC-3 will illuminate. The BAS alarm contacts will close. To verify output, take a non-contact voltage reader and place it near the ion emitters it should indicate voltage.

### *Maintenance*

 **CAUTION: MAKE SURE POWER IS DISCONNECTED BEFORE SERVICING**

The FC-3 requires very little maintenance. Over time particles will accumulate on the ion emitters and they will need to be cleaned periodically. In most applications annual cleaning will suffice.

1. Turn power to the FC-3 off
2. Gently brush the ion emitters with a nylon brush (toothbrush will work)
3. Restore power to the FC-3



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