Installation Guide and Owner's Manual



PuriFi™ Air and Surface Purification System

Version: 1.3.2
REVISED 05/18/2021

Please read this manual carefully before using the PuriFi Purification System.

Serial Number: _____

Installation Date: _____

Licensed Installer: _____

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INTRODUCTION

Specifically designed for use in residential, commercial, and industrial applications, the PuriFi™ Generator is an electronic air purification unit that generates a blend of both negative and positive high-energy ions. Compact and lightweight, the unit is intended to be installed in duct systems, air handling units, or furnace plenums – ensuring that the entire occupant space receives beneficial ionization.

The PuriFi Generator introduces an overabundance of natural ions into your system's airflow. This patented blend of powerful ions breaks down air and surface contaminants, oxidizing viruses and bacteria, neutralizing odors and VOCs while driving particulates out of the air.

The proprietary PuriFi O2 Catalyst converts ozone to oxygen, providing the powerful effect of air purification without the negative byproduct.

This revolutionary air purification technology is a part of PuriFi's intelligent, responsive air quality management system. When a change in your indoor air quality is detected, the PuriFi Air Quality Sensor notifies the PuriFi Smart Hub, and the PuriFi Generator is signaled to respond—all in real-time.
The Smart Hub is compatible with popular digital assistants, including Amazon Alexa and Google Assistant, as well as standard smart home protocols, including Zigbee, Z-Wave, Lutron®, LAN, and cloud-connected home automation devices.

Sized for residential homes, a single PuriFi Generator will maintain 2000-2500 square feet of living space. Your application may require additional units; please consult with your licensed PuriFi contractor to determine how many units are necessary and which installation method best fits your needs.

Thank you for your investment in the latest air purification technology from PuriFi Labs.
Respectfully,

The PuriFi Labs Team

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PRODUCT SPECIFICATIONS

Physical Dimensions (Maximum) – H x W x D (Body only)	12 x 8.5 x 14 inches (305 x 216 x 356 mm) – with Antenna 7.3 x 7.5 x 3.8 inches (185 x 191 x 97 mm)
Weight including Mounting Bracket	5.0 pounds (2.3 kg)
Housing Material	Aluminum 5052
Mounting Bracket Material	Aluminum 5052
Maximum Ambient Temperature	200° F (93° C)
Maximum Internal Operating Temperature	150° F (66° C) Safety Shutoff; UL Certified to 180°F (82.2°C)
Input Voltage	100VAC – 240VAC; 50 or 60 Hz; NEMA 15 Receptacle
Input Current Protection	2A @ 120VAC, 1A @ 220VAC
Current Draw	0.10-0.25 Amps @ 120 VAC
Power Consumption (Ionizing Mode)	14-20 Watts
Power Consumption (Ozone Depletion Mode)	3-5 Watts
Effective Area (Volume)	1,000 - 3500 square feet (~20,000 cubic feet with an 8-foot ceiling)
Air Flow Volume (Min–Max)	(100CFM – 3000CFM)
Ionization Plasma Tube	Proprietary (Borosilicate Glass, Stainless Steel, Aluminum)
High Voltage (HV) Transformer Output	5-7kVAC
Safety Features (Access)	Door Interlock Switch, Special Access Key
Safety Features (Operation)	Fan Monitoring (RPM), Current Monitoring of HV Transformer
Safety Features (Temperature)	Unit will turn off if internal temperature exceeds 150° F (66° C)
Wireless Capability	2.4GHz ZigBee 802.15.4 Standard

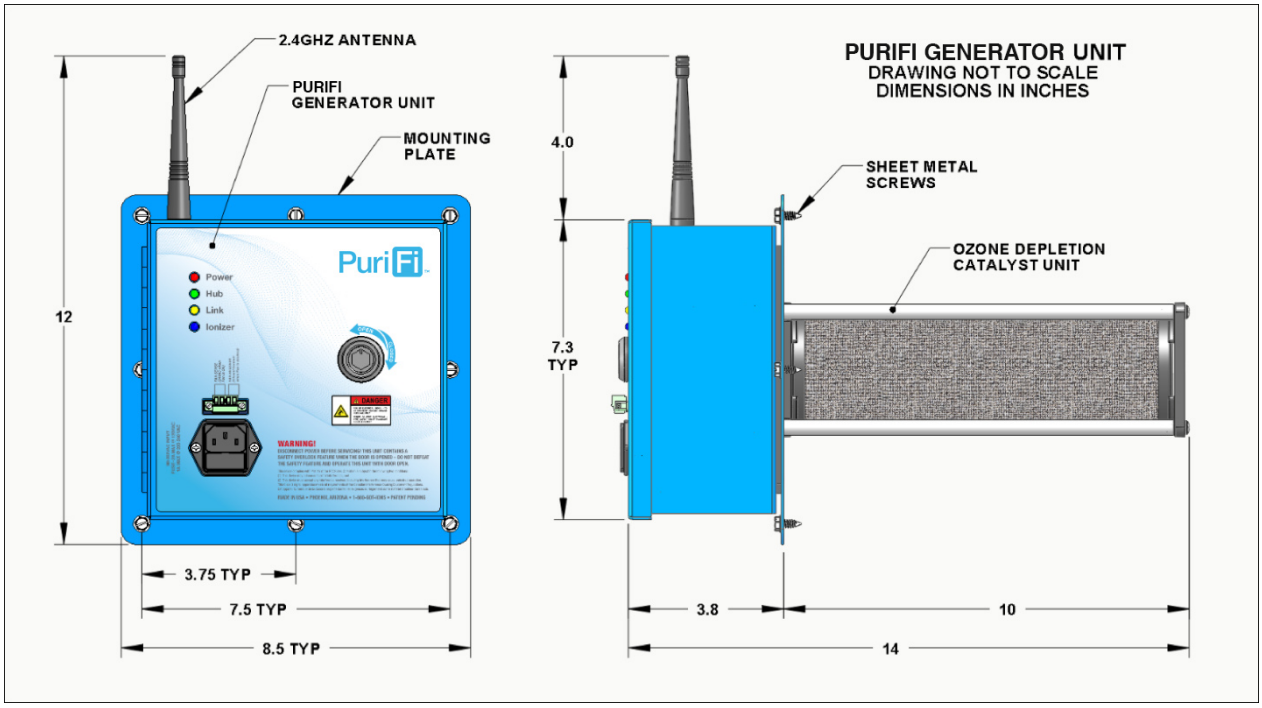


Figure 1 – PuriFi™ Generator Unit Dimensions

APPLICATIONS

- Residential Settings (Homes, Condos, Hotels, Motels)
- Commercial Environments (Small Businesses, Restaurants, Beauty Salons)
- Industrial Locations (Factories, Large Scale Processing Operations)
- Health & Well-Being (Hospitals, Doctor Offices, Therapy Establishments)
- Education & Childcare (Nurseries, Pre-Schools, Schools & Universities)
- Public Health (Bathrooms)
- Public Transportation (Aircraft, Buses, Trains, Taxis, et cetera)
- Agricultural, Farms (Odor Mitigation)

APPROVALS & CERTIFICATIONS

1. UL STANDARD 1995
2. UL STANDARD 867
3. CSA STANDARD C22.2 NO. 236
4. CSA STANDARD C22.2 NO. 187
5. FCC COMPLIANCE TO CFR PART 15 SUBPART B FOR CLASS B DIGITAL DEVICE
6. CE RED EN 301 489-1: 2017 (V2.2.0), RED EN 301 489-17: 2017 (V3.2.0)
7. CE EN55032 Class B, EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11

INSTALLATION – SET UP GUIDE (SOFTWARE & HARDWARE INSTRUCTIONS)

WARNING: This product must be installed by a licensed HVAC contractor. Failure to do so will void the warranty of the PuriFi™ System.

WARNING: The electrical service to this unit must conform to local, national, and international safety codes where applicable, and must be carried out by qualified individuals. Make sure that 100-240VAC 50/60Hz is available at the site of installation.

1. Unpackage the PuriFi Generator and verify that all items are present.



Figure 2 - PuriFi Base System

1. PuriFi Generator Unit
2. Power Cord (110V / 240V as required)
3. Antenna – 2.4GHz (Install finger tight)
4. Mounting Plate (attach to duct)
5. Installation Guide (not pictured)
6. Hex Nuts (4)
7. PM Particulate Matter Sensor
8. Home Automation "HUB"

NOTE: For best results, pair the RF Radios in the HUB & PM Sensor that will be associated with their specific Generator before installing the Generator into the HVAC duct.

2. Make sure all necessary tools are available for installation (see page 22 below in this document).

3. Select a location in the duct downstream of the Air Handler that provides adequate air flow.
    a. NEVER install unit downstream of anything that produces moisture (e.g. evaporative cooler).
    b. Ensure that duct size is at least 12 x 12 inches where the PuriFi™ Generator is to be mounted.
    c. **CAUTION:** This product shall not be installed behind a suspended floor/ceiling or a structural wall, ceiling, or floor.
    d. **CAUTION:** This product is suitable for mounting to duct of metallic construction only. Installation must be such that the structural integrity of the ducting is not compromised.
4. Make sure that 100-240VAC 50/60Hz is available to the unit (qualified electrician or contractor).
5. Prepare ducting for the Generator unit.
    a. Trace cutout and mark screw locations.
    b. Cut out traced portion using tin snips or other means.
    c. Screw the Mounting Plate to duct using No. 10 sheet metal screws.
6. Run control wires from 4-Position removable connector (front door of Generator) to HVAC fan unit
    a. Option A – the HVAC unit relay output controls PuriFi Generator operation
    b. Option B – PuriFi Generator can control HVAC unit fan.
7. Apply power and verify System operation.
    a. Generator in radio communication and ionizing.
    b. PM Sensor positioned correctly and showing PM Particulate Matter on LCD Display.
    c. HUB unit linking PM Sensor & Generator working properly.
        i. For localized close-loop control
        ii. For transmitting IAQ data to the AWS Cloud Repository (Recommended but Optional)
8. Register the systems online at **app.purifilabs.com**.

- PLEASE REVIEW THIS GUIDE BEFORE INSTALLATION -

Overview:

This guide will lead through the following steps:

1. Planning your installation – Site Survey (Site Survey Document- see partner portal)
2. Required software and network connections
3. Connecting to and communicating with the HUB
4. Installing the hardware
5. Confirm proper install using the Hubitat**.**
6. **Renaming** the PM Sensors and Generators based on the locations
7. **Tuning the system**
8. **Registering** the System

Appendices:

1. HUB Placement Tips
2. How to Build a Solid Zigbee Mesh
3. Setting up a wired-to-wireless bridge utilizing a GL-iNet mini router

1. Planning your installation – Site Survey

1a: HUB Location: Depending upon how many heating/cooling zones there are, the approach used for planning where the HUB is located might change.

- If there is a single zone used in the residence or office, the HUB should be located within 20-40 feet of the Generator and/or PM Sensor.
- For best results, it is recommended that you locate the HUB in a central location.

The mesh network formed by the PuriFi system can "hop" through Generator or PM Sensor devices to communicate with other devices on the network. This means that devices normally just need to be within 20-40 feet of another Zigbee RF radio device, not the main HUB.

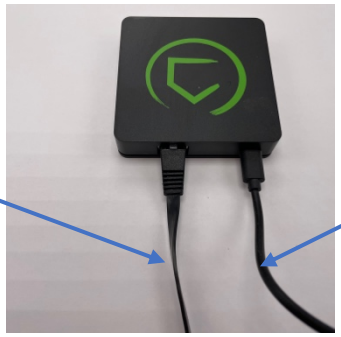
1b: Sensor Location: PM Sensors are normally placed at a level of 3 feet (1 meter) above ground or higher on a shelf or wall outlet within the zone of the associated (paired) Generator. For best results, it is recommended that you:

- Avoid areas that would have excessive smoke or grease such as close to a kitchen stove or oven.
- Avoid bathrooms (specifically tubs/showers) where steam is likely to be present.
- Avoid positioning too low to the ground where dust particle measurements are not truly in the desired "breathing zone."

2. Connecting to and Communicating with the HUB

Use the provided network cables to connect the HUB.

To Internet: MUST be plugged directly into an open LAN port* on customer's modem, router, or switch.



To Power: The HUB can be connected to any USB-compatible power source, including the supplied plug.

***Note**: If a hardwired local area network (LAN) connection is difficult to access or forces the HUB to be in a non-optimum location, consider using a wired-to-wireless bridge as described in Appendix 3. Please consult with your Licensed Installer.

Wait until the LED on the front of the HUB turns GREEN. This indicates it is in the final stages of powering up or fully powered up and should be "discoverable."

3. Required software and network connections

Software - There are two options for software, and both provide similar user interfaces:

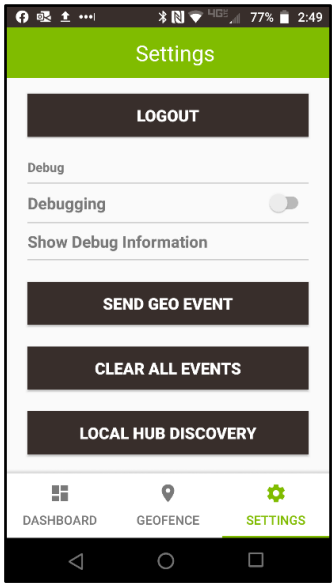
- **Option A -** You can visit the Apple App Store or Google Play Store and download the **Hubitat Elevation** app for your mobile device.
- **Option B -** you can use any laptop, PC, or tablet with a modern browser (Firefox or Chrome recommended) to access the online portal.

Network - The HUB requires a hardwired connection to the LAN to function properly. This hardwired setup expects to receive an IP address from a dynamic host configuration protocol (DHCP) Server. For initial setup, it will need to be able to access the internet for configuration data (pre-configured setups for PM Sensors, Generators, and Dashboards). In addition, if the mobile app or geofencing is used, internet service is required to function properly.

The HUB also creates a local radio mesh network (via Zigbee protocol) to communicate between the PuriFi devices. This is different from the LAN used in the residence or office. In the average residence or small office, the HUB should maintain connection with equipment regardless of location. If equipment will be installed more than 50 feet from the HUB, ZigBee routers / repeaters or an additional HUB may be required.

NOTE: Do not attempt to continue the installation until the local HUB has been discovered as described below.

Mobile App – First make sure that your mobile device is on the same LAN subnet as the HUB. This means you should be connected to the same Wi-Fi within the residence or office that is also part of the LAN physically connected to the HUB.



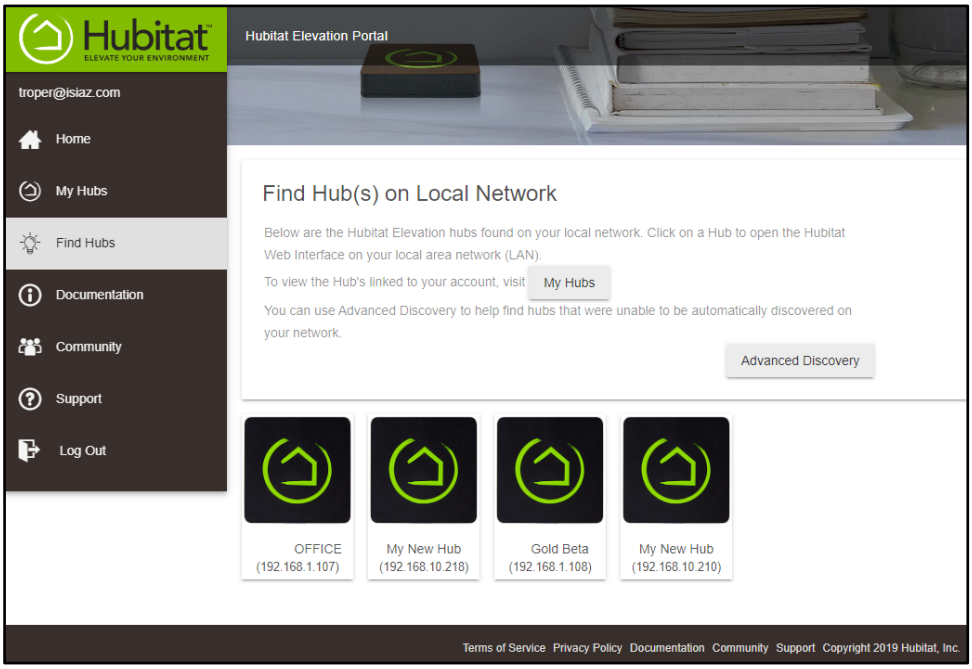
1. Open the App and go to "Settings" in the lower right corner of the main (default) screen.

2. From the Settings menu, scroll down to "Local HUB Discovery" and press that button.

3. A new screen will appear and then select "Search" – After clicking this button, the HUB that is physically located on your network should appear.

Web Browser – First make sure that your computer is on the same LAN subnet as the HUB. This means you should be connected to the same LAN that is **physically** connected to the HUB.

1. Open a web browser and navigate to **portal.HUBitat.com/findmyHUB**
2. Upon navigating to this web page, the browser should begin searching for HUBs located on the local LAN and should look similar to the following image (it will find as many HUBs as it can on the LAN – four are showing below, but typically it would be a single HUB)



STOP:

If the device you are installing came **PRE-PAIRED** for residential use from the factory, refer to the Quick Start Guide in the box and continue on **PAGE 13**.
If you will be pairing systems on-site for a **commercial/custom installation**, please turn to **PAGE 14.**

RESIDENTIAL INSTALLATION INSTRUCTIONS (CONTINUED)

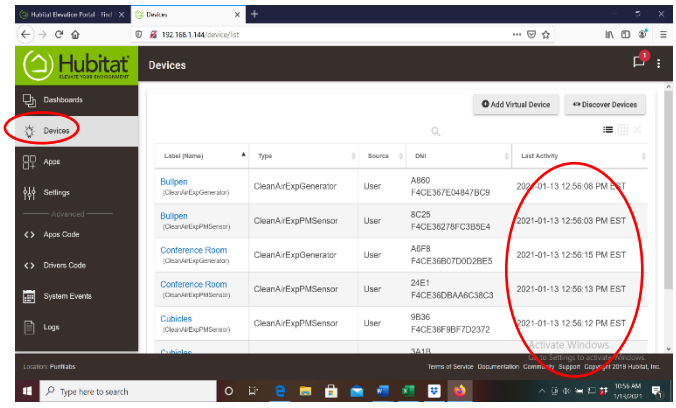
4. Installing the Hardware (Skip to page 19)

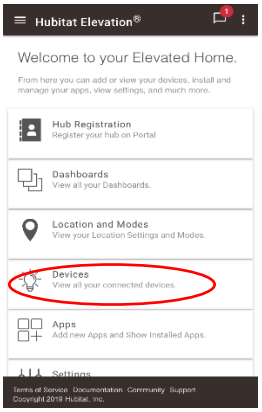
Use the **INSTALLATION - MECHANICAL** instructions located on page 19 to install the Generator and PM Sensor. Generators must be mounted on the supply side of the HVAC in the plenum. PM Sensors should be placed in a central area within each zone. Simply plug the sensor into the wall using the supplied parts or power the PM Sensor with either of two (2) standard USB cables if not using a wall outlet.

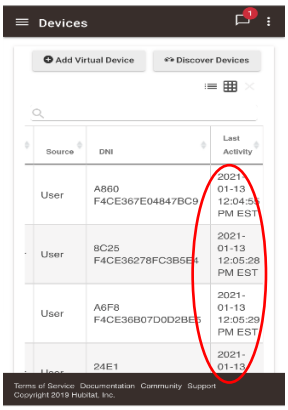
For best results, we recommend placing PM Sensors away from kitchens and bathrooms where high particulate counts are common.

5. Confirm proper install using the Hubitat. (for trouble shooting see page 32)

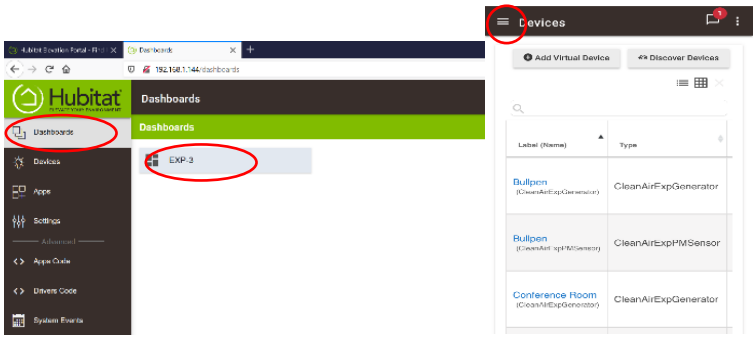
1. On the Hubitat App, click on the device tab on the left hand side of your screen. Then check the "LAST ACTIVITY" section on the right for current dates and times. If using your phone, click devices and scroll to the right to find "LAST ACTIVITY." If both devices are showing current dates and times then you have established a proper radio connection.

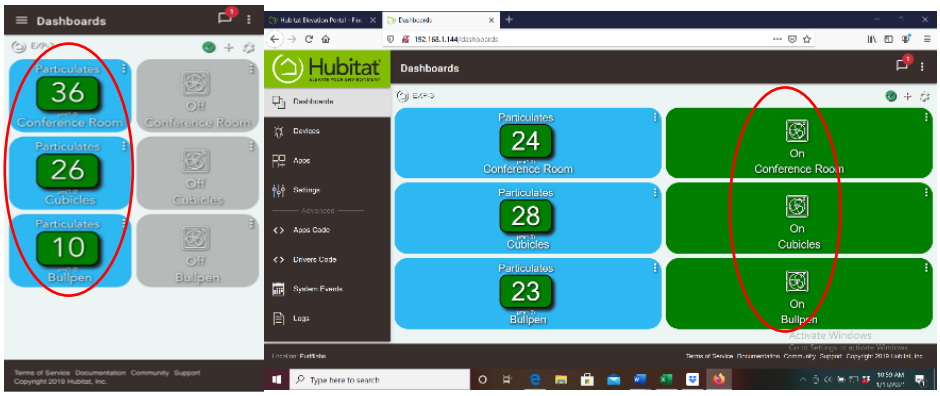






2. On your laptop click on Dashboards on the left side of the screen and select EXP-1. On your phone click on the three horizontal lines on the top left of your screen to locate the dropdown menu. Click Dashboards and select EXP-1. The tiles on the left should update every 90 seconds. Click on the tiles on the right to turn on the fans.



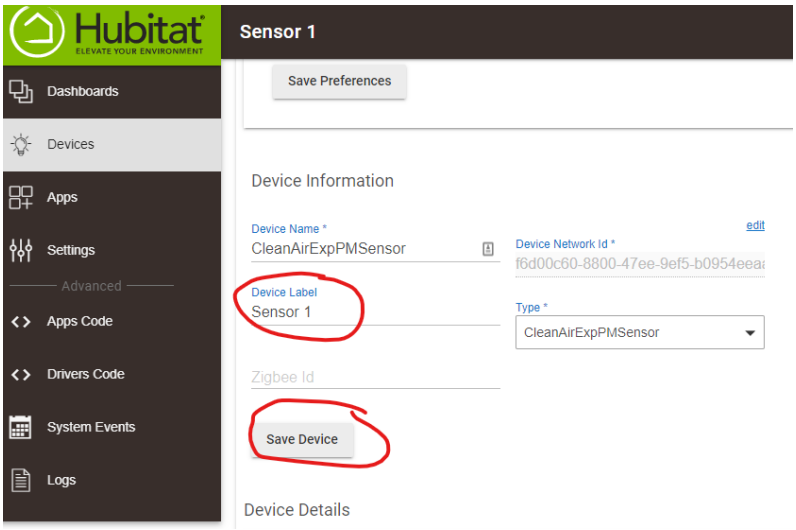


6. Renaming the PM Sensors and Generators based on the locations

Once the configuration has been loaded, it may be desirable to rename the Zone X / Sensor X names into something that represents the area served. For example, “Kitchen” or “Office” may be more appropriate names for the Devices.

This is accomplished by:

1. Clicking on the Devices menu
2. Selecting the Device to rename
3. Scrolling down to Device Information and changing the **Device Label**
4. Clicking on the Save Device button when done.



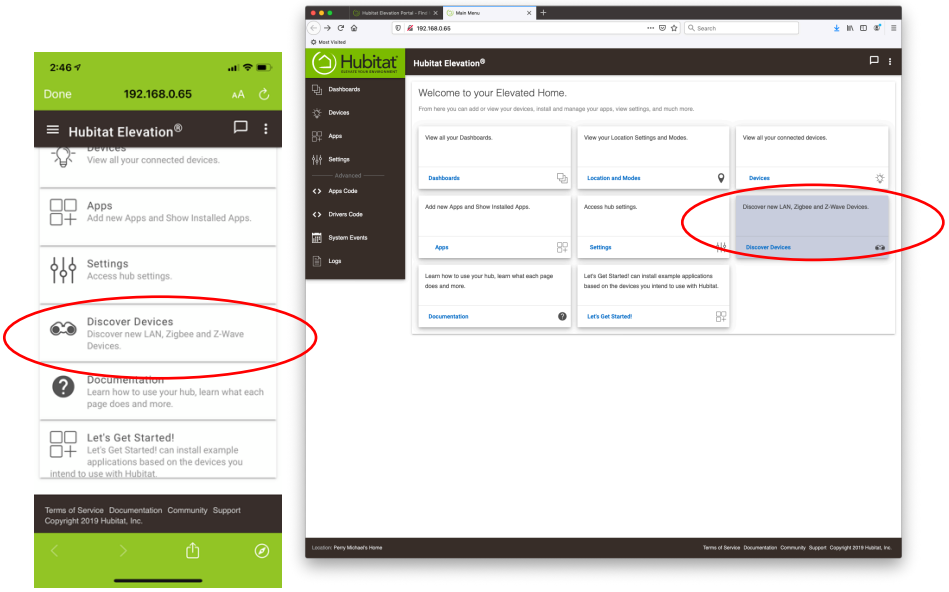
PLEASE TURN TO PAGE 18, STEP 7 TO CONTINUE.

COMMERCIAL / CUSTOM INSTALLATION INSTRUCTIONS (CONTINUED)

4. Add PuriFi Equipment to the Network

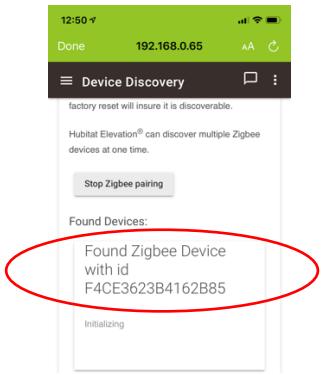
For best results, we recommend adding the PuriFi devices to the Hub **before** installation into the ductwork. Additionally, we recommend adding devices in pairs (one sensor, one generator at a time). **If installing multiple systems at once, adding devices in pairs will provides the opportunity to label the air purifiers and sensors individually by location. This will make the pairing process (STEP 6) much easier**.

To begin adding equipment to the Zigbee network, power up the PuriFi devices you want to pair within a few feet of the Hub and wait for them to power up completely. From the Hubitat Elevation Main Menu, select **Devices: Discover new LAN, Zigbee and Z-Wave Devices.**



On the following screen, select "Zigbee." After making this selection, a new set of instructions will appear. Select "Start Zigbee Pairing." Your Hub will go into pairing mode for 60 seconds.

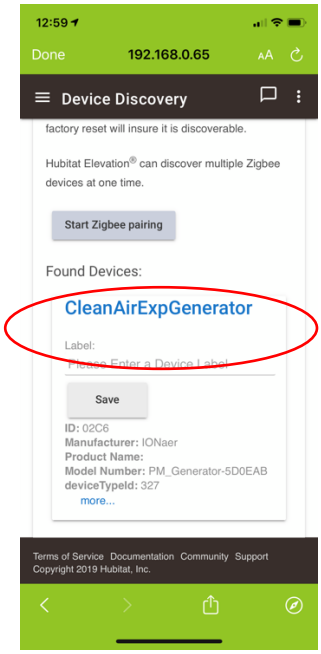
Once a connection is made, you will momentarily see a message with the device's radio ID.



When the connection is established, all of the device details will be added to the screen. Air purification devices will be labeled as **CleanAirExpGenerator** and sensors appear as **CleanAirExpSensor**. You will also see that you have an option to add a label to each device. **You MUST label each device by a ZONE NUMBER. You MUST use the following names to add devices:**

- **PuriFi Generators: Zone 1 (that is, Zone [space] assigned zone number)**
- **PuriFi Sensors: Sensor 1 (that is, Sensor [space] assigned zone number)**

Once this is done, press “Save” and wait for the confirmation that the device has been added to your network. **We recommend using a piece of masking tape to physically label each piece of equipment with its installation location and ZONE NUMBER after it has been added to the network.**



After your equipment has been added to the network and labeled, it is safe to power it down and set it aside. Repeat this step as many times as needed to add all equipment to the network.

5. Installing the Hardware (Skip to page 19)

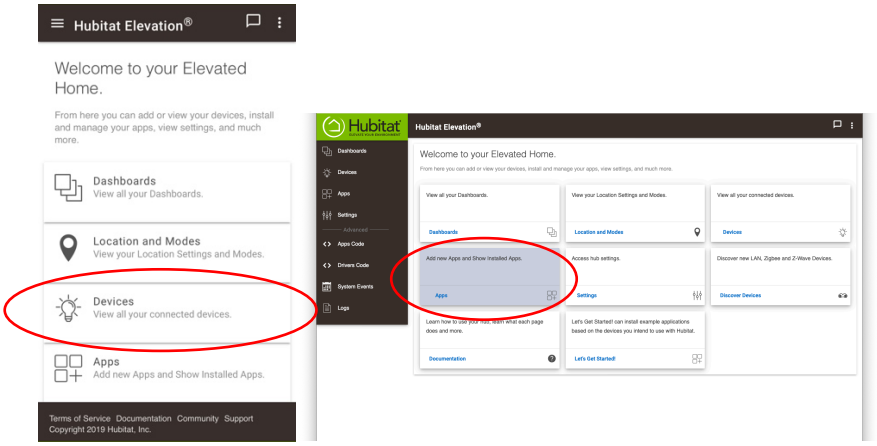
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For best results, we recommend placing PM Sensors away from kitchens and bathrooms where high particulate counts are common.

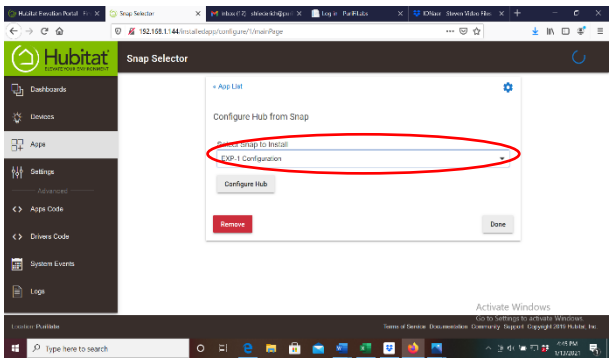
6. Configure the System Settings and Pair Devices

With all the devices **installed** in their correct position and **powered on**, it is time to pair devices and configure the system. **Please note: It can take up to five minutes to establish the Zigbee network after installing the final device.**

Open the Hubitat App and select “Apps” then look for “Snap Selector.”

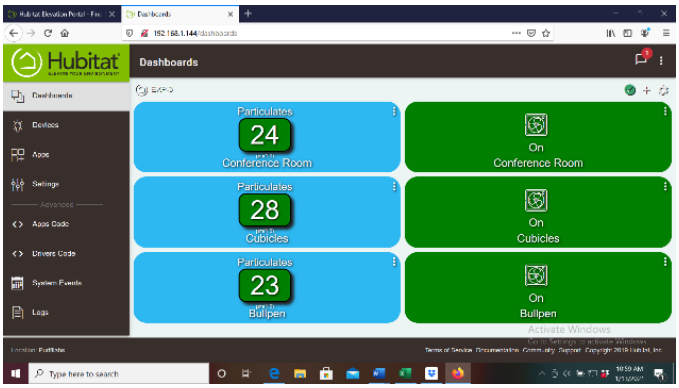


The Snap Selector App will load with a pull-down menu of pre-configured Dashboard options. **Select the Dashboard configuration that corresponds to the total number of ZONES you added in Step 4** (for example, two PuriFi Generators paired to two PuriFi sensors needs the EXP-2 Configuration).



After making your selection, select “Configure Hub” then select “Done.”

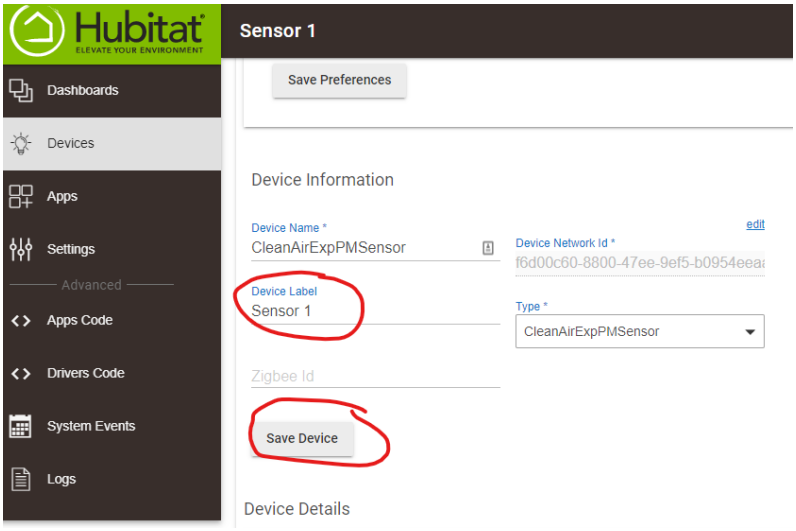
When you return to the Apps menu, you will notice that the App “Clean Air EXP Stat” has been added along with a EXP Dashboard. The EXP Dashboard (pictured below) allows you to view system status within the Hubitat App. **You will need the Clean Air EXP Stat app in Step 7.**



Once the configuration has been loaded, it may be desirable to rename the Zone X / Sensor X names into something that represents the area served. For example, “Kitchen” or “Office” may be more appropriate names for the Devices.

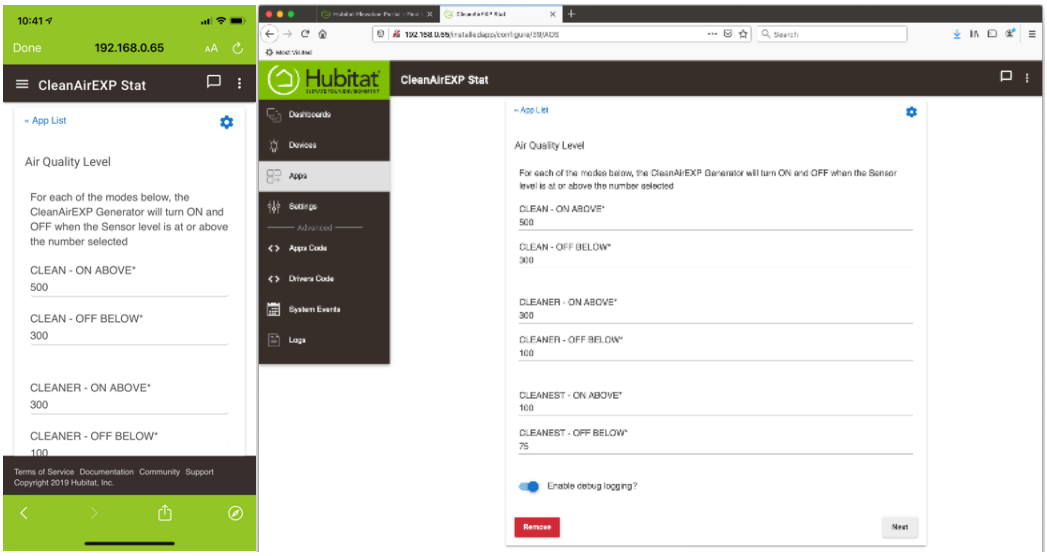
This is accomplished by:

5. Clicking on the Devices menu
6. Selecting the Device to rename
7. Scrolling down to Device Information and changing the **Device Label**
8. Clicking on the Save Device button when done.



7. Tuning the system (ALL INSTALLATION TYPES CONTINUE HERE)

Go to the Hubitat App and select Apps, then open the CleanAir EXP Stat app. The first screen of the CleanAir EXP Stat includes the default system run settings. **We do not recommend changing these settings**. Scroll to the bottom and hit next.

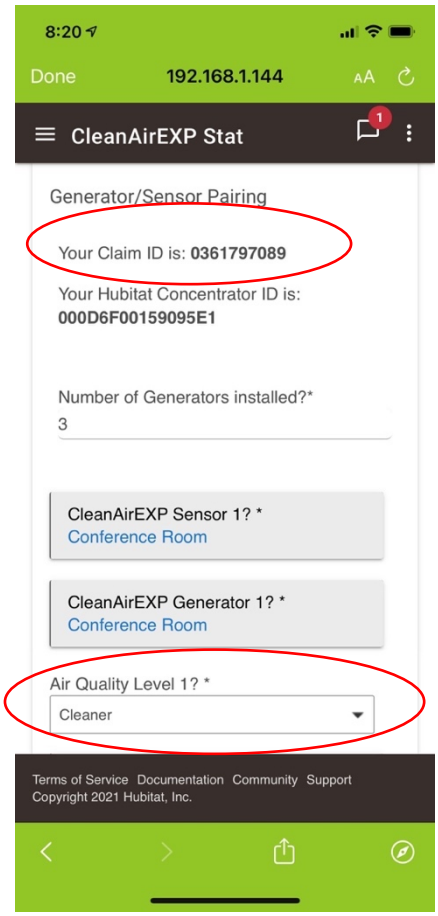


The CleanAir EXP Stat App will show the paired PM Sensors and Generators.

Select whether that zone is set to:

- “Clean” (airborne particulates between 300-500 parts per cm^3),
- “Cleaner” (airborne particulates between 100-300 parts per cm^3), or
- “Cleanest” (airborne particulates between 75-100 parts per cm^3).

NOTE: Changing the setting from “Clean” to “Cleanest” will cause the Generator to run more often.

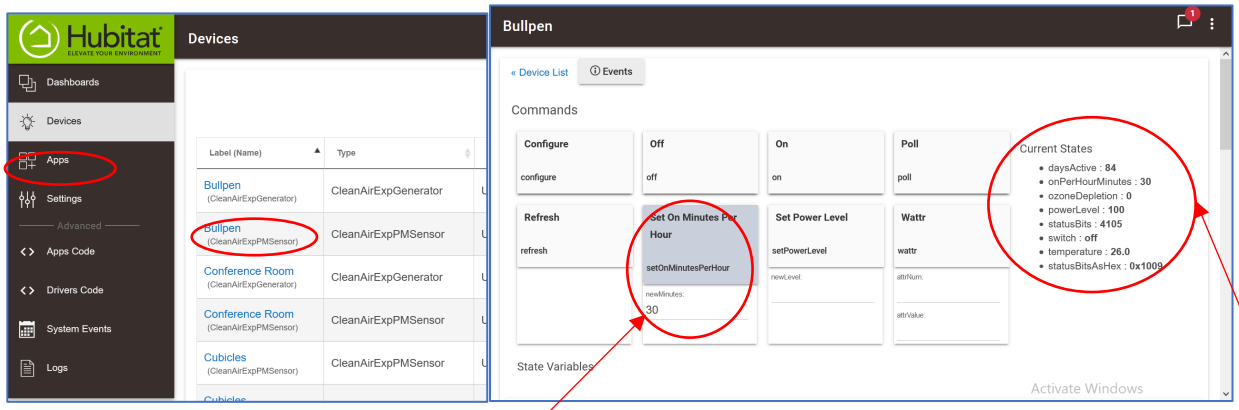


Once completed, take note of the “**Claim ID**” number at the top of the page. You will use this in the final step of registering the system.

NOTE: To activate your “Claim ID” number, scroll down to the bottom of the page and click “Done.” You MUST click “DONE” to generate the Claim ID.

Setting Run Time on Generators (Optional)

The PuriFi System can be programmed with a minimum running time setting to ensure that it will activate each hour even when normal HVAC cycles or the PuriFi sensor are not activating the system. This setting guarantees that the system will be operational for a minimum number of minutes each hour.



1. Select “Devices” from the Navigation Menu and then select the Generator to program.	2. Under “Set on Minutes Per Hour,” enter the minimum hourly run time under “newMinutes.” If you’re on a phone, hit “Done.” 3. Click/Tap “Set on Minutes Per Hour.” You should see the “Current States” update to reflect the change.

8. Registering the System

Go to **app.purifilabs.com** and register for an account linked to the customer or end user's email. When you select "Register as a new user" you will need the **Claim ID** from the previous step to complete this registration. This online portal will allow the customer or end user to see their device history, track their air quality over time, and view the amount of time the system runs throughout the day.

Navigating app.purifilabs.com

From the moment your is installed it begins collecting data on your indoor air quality. This section provides an overview of the basic features on app.purifilabs.com.



Air quality events that increase particulates (opening windows, cooking, cleaning, etc.) will appear as spikes with orange (intermediate air quality) and red (poor air quality) dots. Vertical blue lines demonstrate when PuriFi activates the HVAC fan to clean the air.

Green dots indicate that air quality is within the desired range

Managing your Account

On the top of the page from left to right: Time Span, Combined Chart, Claim, Account User, Log Off.

- Time Span: You can choose from 1 hour up to 1 week of data shown on the graphs below (Fig. 1)
- Combined Chart: You have a chart for each generator/sensor paired system. If you have more than one paired system you can combine and overlap the data onto one graph.
- Claim: The Claim tab offers an area to add additional systems to your PuriFi account (Fig. 2).
- Account User: Click on your name to view/edit your account information.

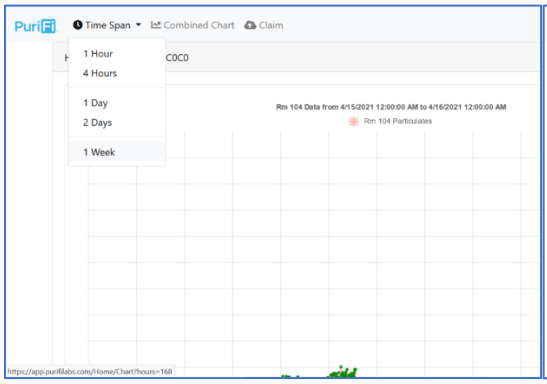


Fig. 1. Adjust the time span.

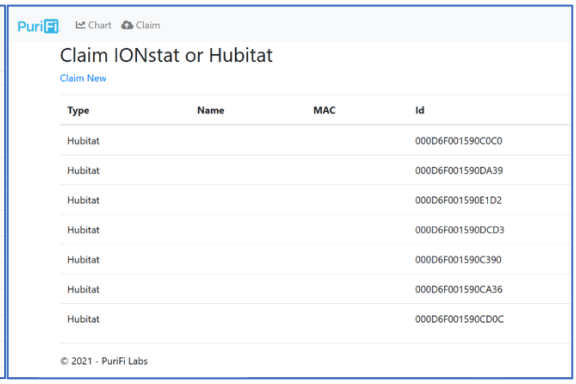


Fig. 2. You can add multiple hubs to each account.

Appendix 1 – From HUB documents:

https://docs.hubitat.com/index.php?title=Hub_Placement_Tips#:~:text=Maintain%20a%20minimum%20of%201,TOP%20OF%20YOUR%20WiFi%20ROUTER!

Hub Placement Tips

Proper planning of the placement for your hub will greatly improve the Zigbee and Z-Wave™ radio performance. Here are some tips one where to place your shiny new Hubitat Elevation® hub. Setting up your mesh network properly is as important as your hub placement. Repeaters (non-battery powered devices) are necessary for most homes work effectively. For more information on setting up Zigbee and Z-Wave mesh devices, see How to Build a Solid Zigbee Mesh and How to Build a Solid Z-Wave Mesh.

Tip for Success

- Hubitat Elevation® requires a constant wired connection to your network. While this may limit your available location choices, it may be worth relocating your router or switch to a more ideal location whenever possible. If it isn't possible to relocate your ISP router, consider using adding a mesh router or Powerline adapters. Many mesh routers will allow a device like a hub to receive IP packets via the Ethernet port on one of the remote wireless node. Alternately, Powerline adapters allow you to extend Ethernet connections by using a set of special modules to send data by converting Ethernet to transmit over your home power mains.
- Try to place your hub in a central location of your home whenever possible. While Zigbee and Z-Wave both claim to have enough range to cover most houses, the reality is that every wall, floor, piece of furniture, as well as other electronic interference **will** reduce their effective range. The more central you locate your hub, the more you can help reduce your need for Zigbee and Z-Wave repeaters. This range extends vertically, too, so if you place your hub in the basement you may have a harder time reaching the upper floors. Radio signals can also have trouble passing through cement and stucco so you may need to rethink your hub placement or have strategically located repeaters to get past cement floors and walls.
- Maintain a minimum of 1 foot (0.3 meters) of separation between your router and hub to prevent potential interference to the Zigbee radio which also operates the 2.4 GHz radio spectrum.
    - **DO NOT LOCATE YOUR HUB DIRECTLY ON TOP OF YOUR WiFi ROUTER!**
- Metal is not a friend of radio transmission. Zigbee and Z-Wave™ use radio frequencies that cannot pass through metal. Metal surfaces, structures and objects will reflect all radio signals and reduce their ability to travel long distances. Avoid metal shelves, large metal appliances such as refrigerators, vehicles, etc.

Appendix 2 – From HUB documents:

https://docs.HUBitat.com/index.php?title=How_to_Build_a_Solid_Zigbee_Mesh

Appendix 3

https://docs.gl-inet.com/en/3/setup/mini_router/first-time_setup/

INSTALLATION – MECHANICAL

WARNING: This product should be installed in a dry airstream. If very high humidity is likely in the airstream, installing a plenum shield is recommended.

WARNING: This product should be installed as far from heating elements or furnace burners as possible. The PuriFi air purification device has a maximum internal operating temperature of 150°F.

WARNING: DO NOT mount before the Return Air duct (system) filter.

FOR BEST RESULTS: We recommend installing on the SUPPLY side (downstream of cooling coil / furnace) to maximize performance. Installing on the return side (post-filter) is possible, but performance will vary.

CAUTION: This product must be mounted into ducting that is structurally suitable to support it. The strength and integrity of the ducting must not be compromised. Verify that there is at least 12 inches of depth inside the duct to allow clearance for the Inner Replaceable Core Module Assembly.

SUGGESTIONS:

- Mount the unit in a location that will allow the replaceable Inner "Replaceable Core Module" Assembly to be removed. This requires service or replacement on a two-year basis.

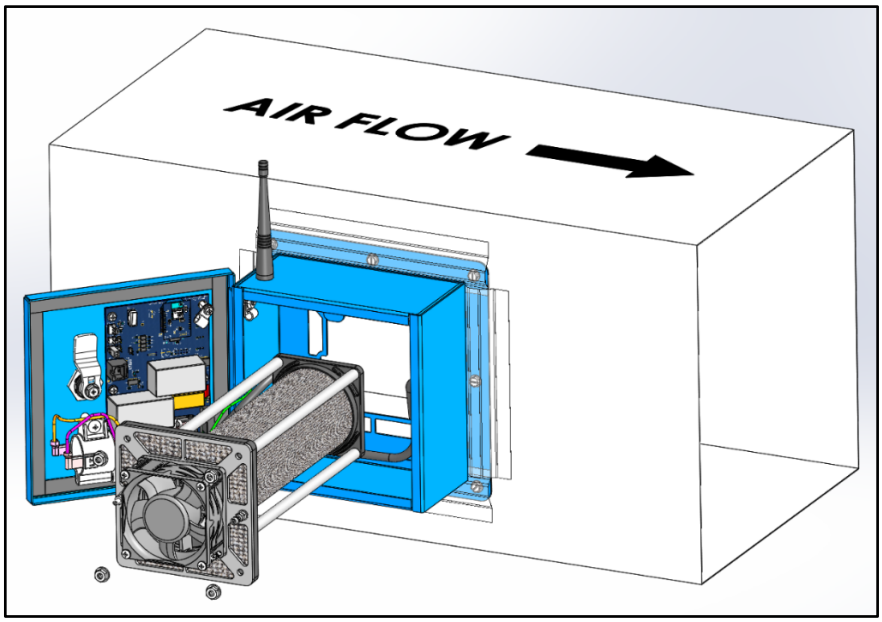


Figure 3 - Inner "Replaceable Core Module" Assembly Removal

- The preferred location for mounting the unit is in the supply air duct leaving the Air Handler Unit and before any branch duct take-offs.
- The PuriFi™ Generator should not be installed behind a structural wall, ceiling, or floor, or underneath a suspended floor.
- The PuriFi™ Generator should be installed in a position where it will receive adequate airflow. The Generator can be installed vertically (top/bottom of a duct) or horizontally (side of the duct).

- If the unit will be mounted directly either ON or INSIDE of an Air Handler Unit (AHU) or Furnace, be sure that this will not affect any Warranty associated with the AHU or Furnace.
- Use Temperature - Maximum Ambient temperature in which unit shall be used: 180°F (82.2°C). A safety feature will shut the unit off if the Operating Temperature exceeds 150°F (66° C).
- This product may send and receive instructions via radio frequency (RF). The installer should, wherever possible, position the antenna to maximize RF data transmissions.

RECOMMENDED INSTALLATION TOOLS

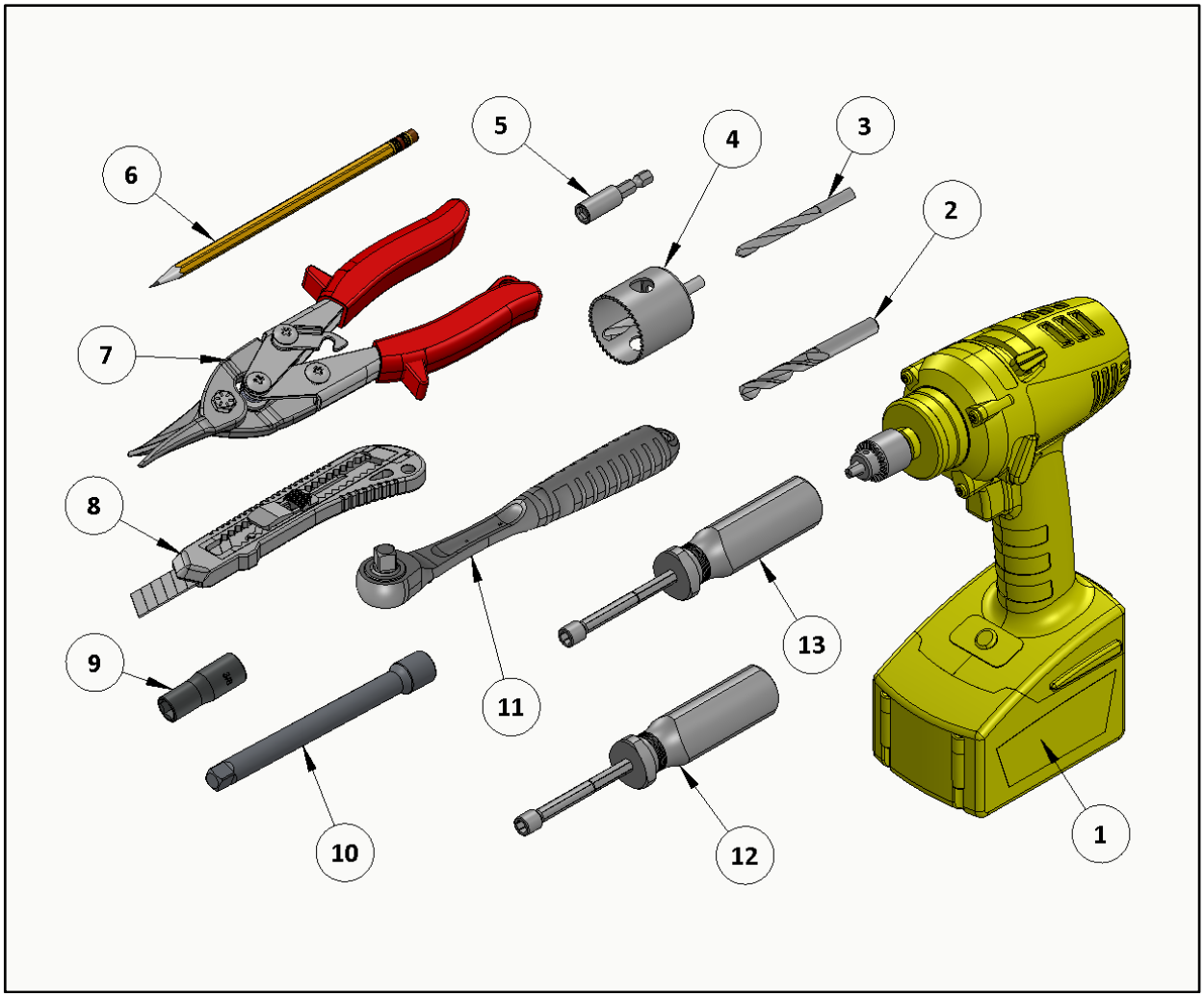
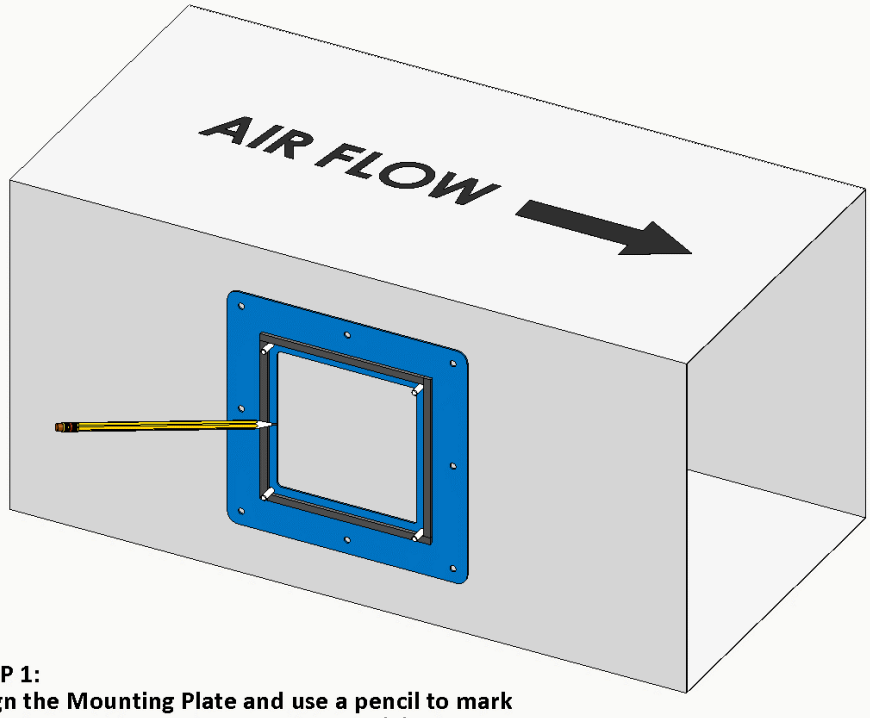


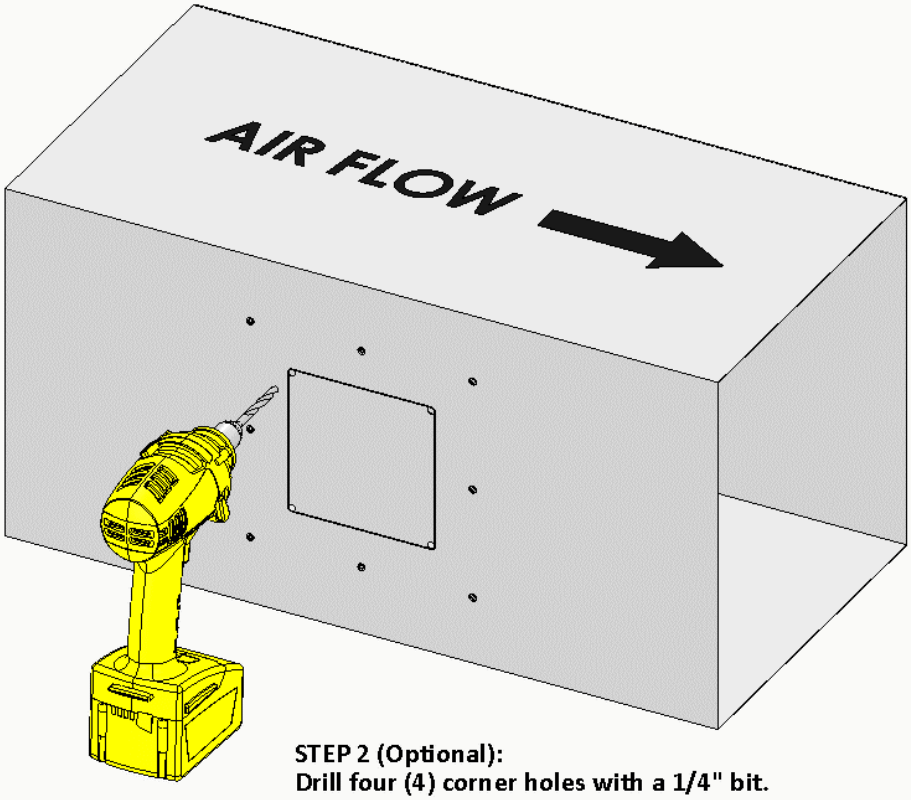
Figure 4 – Installation Tools

1. Drill (Electric or Battery Powered)
2. Drill Bit – 1/4” [.25”] Dia. (Corner Holes)
3. Drill Bit – 1/8” [.125”] (Pilot Holes – Opt)
4. Hole Saw – 1-1/2” Recommended
5. Nut Driver Bit – 1/4” w/ Magnet
6. Pencil (Marking Cutout and Holes)
7. Tin Snips (Cutting Plenum)
8. Utility Knife (Removing Insulation)
9. Socket – 3/8” Hex
10. Socket Extension – 6”
11. Ratchet
12. Nut Driver – 1/4”
13. Nut Driver – 9/32”
14. Dust Mask (not shown)

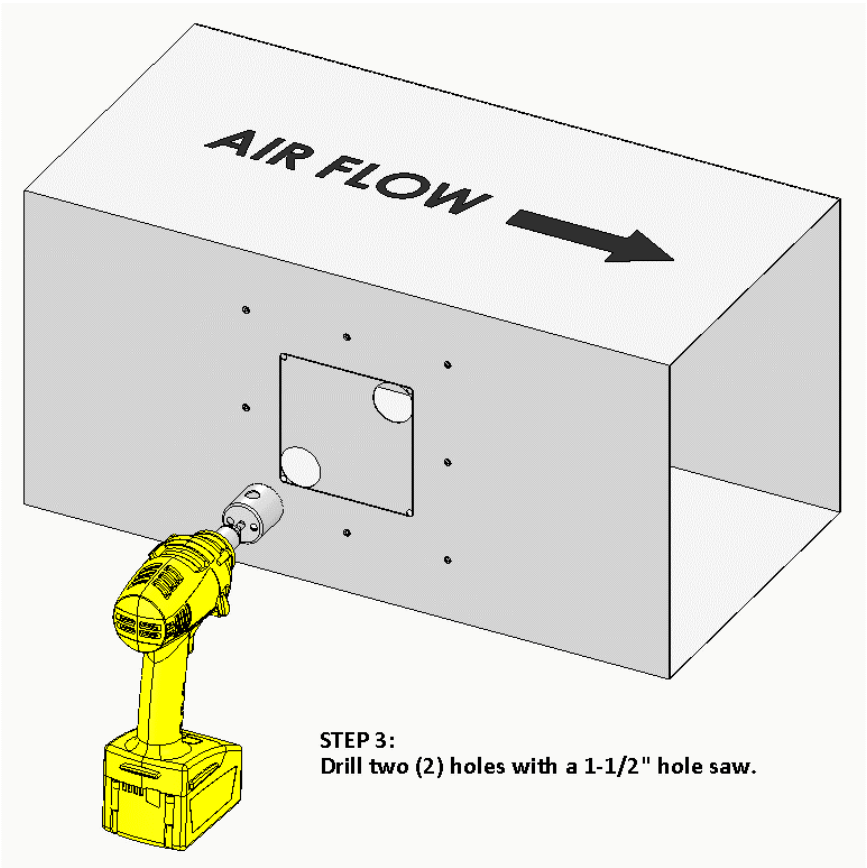
INSTALLATION SEQUENCE



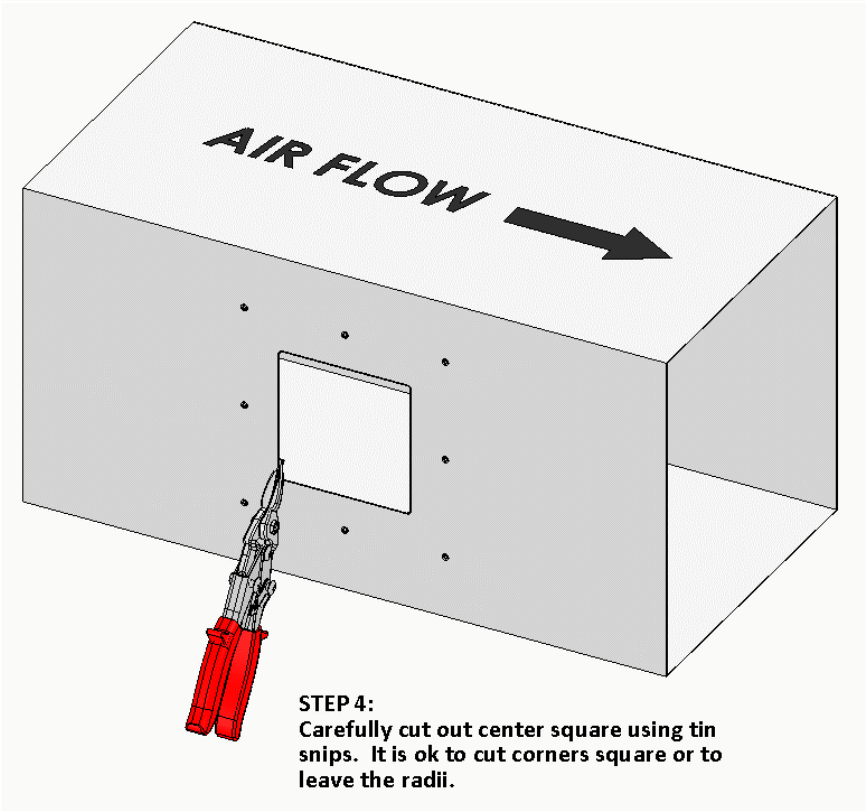
STEP 1:
Align the Mounting Plate and use a pencil to mark the inner square cutout and the eight (8) holes.



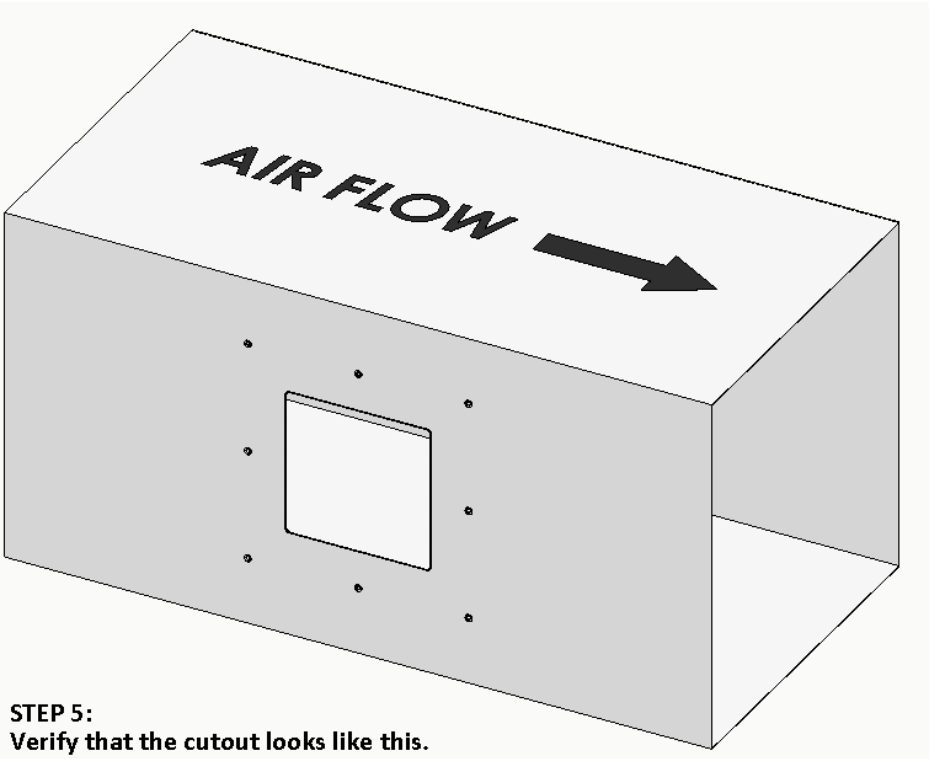
STEP 2 (Optional):
Drill four (4) corner holes with a 1/4" bit.



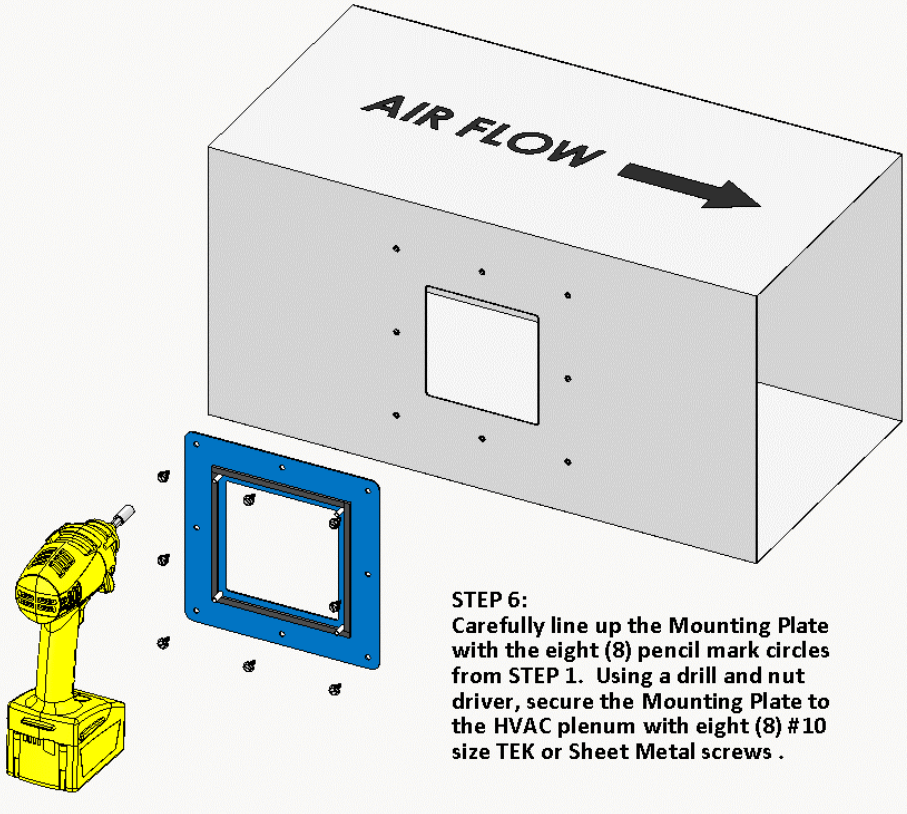
STEP 3:
Drill two (2) holes with a 1-1/2" hole saw.



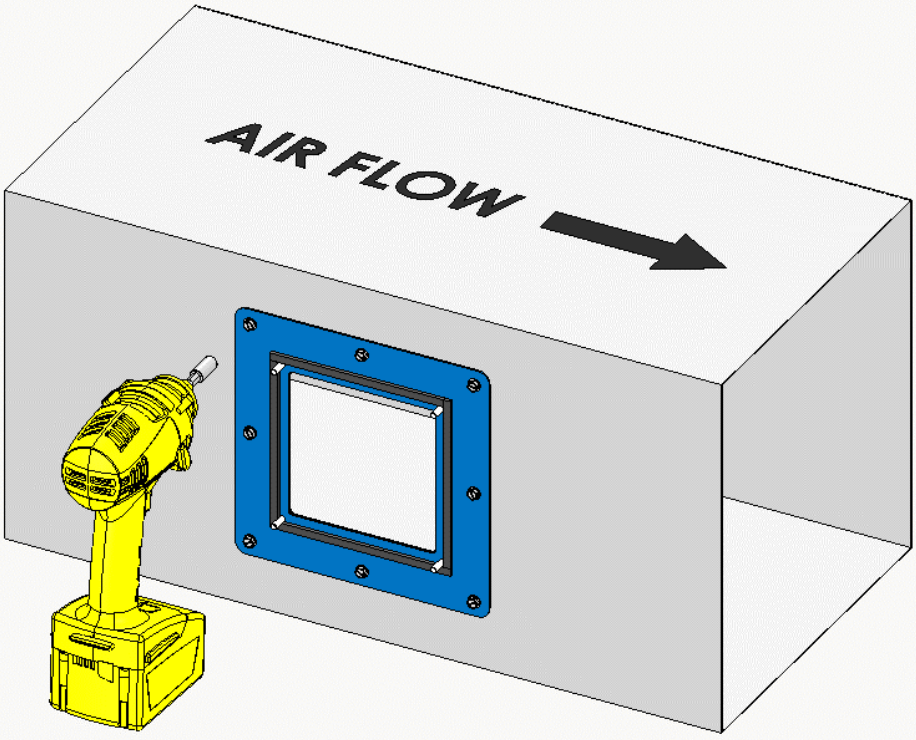
STEP 4:
Carefully cut out center square using tin snips. It is ok to cut corners square or to leave the radii.



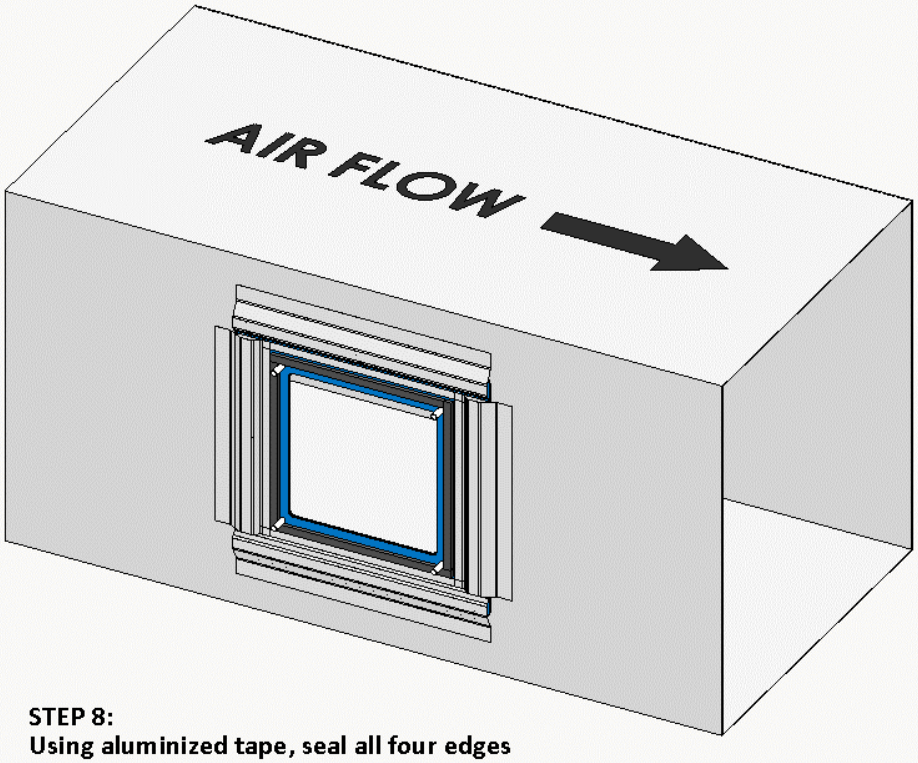
STEP 5:
Verify that the cutout looks like this.



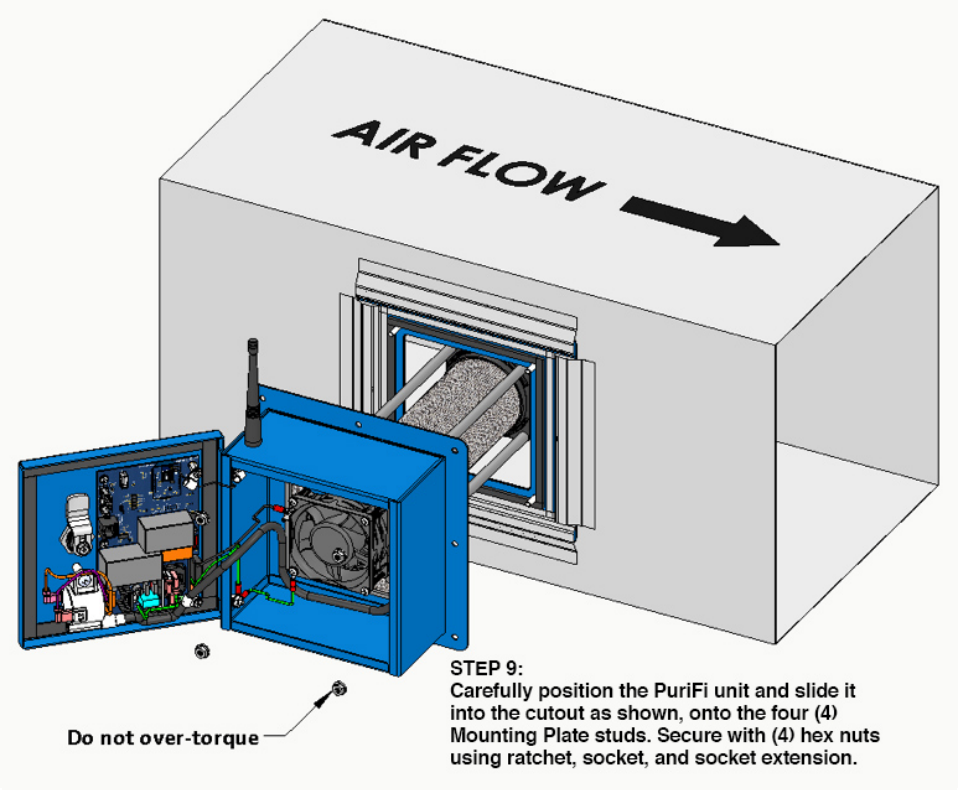
STEP 6:
Carefully line up the Mounting Plate with the eight (8) pencil mark circles from STEP 1. Using a drill and nut driver, secure the Mounting Plate to the HVAC plenum with eight (8) #10 size TEK or Sheet Metal screws .



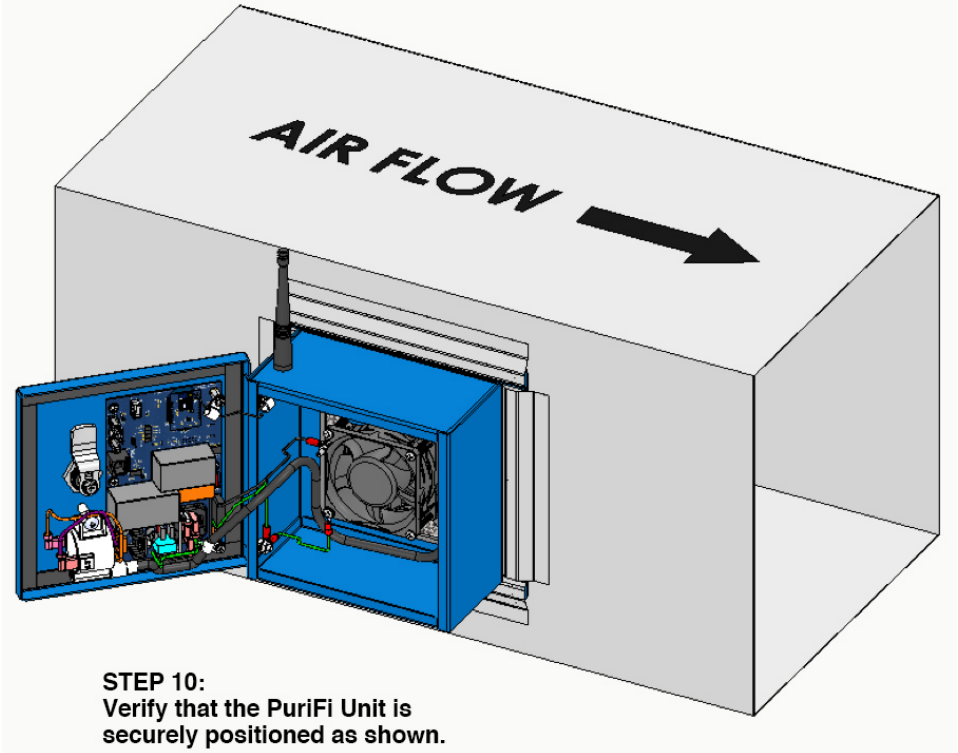
STEP 7:
The Mounting Plate should look like this.



STEP 8:
Using aluminized tape, seal all four edges of the Mounting Plate as shown.



STEP 9:
Carefully position the PuriFi unit and slide it into the cutout as shown, onto the four (4) Mounting Plate studs. Secure with (4) hex nuts using ratchet, socket, and socket extension.



STEP 10:
Verify that the PuriFi Unit is securely positioned as shown.

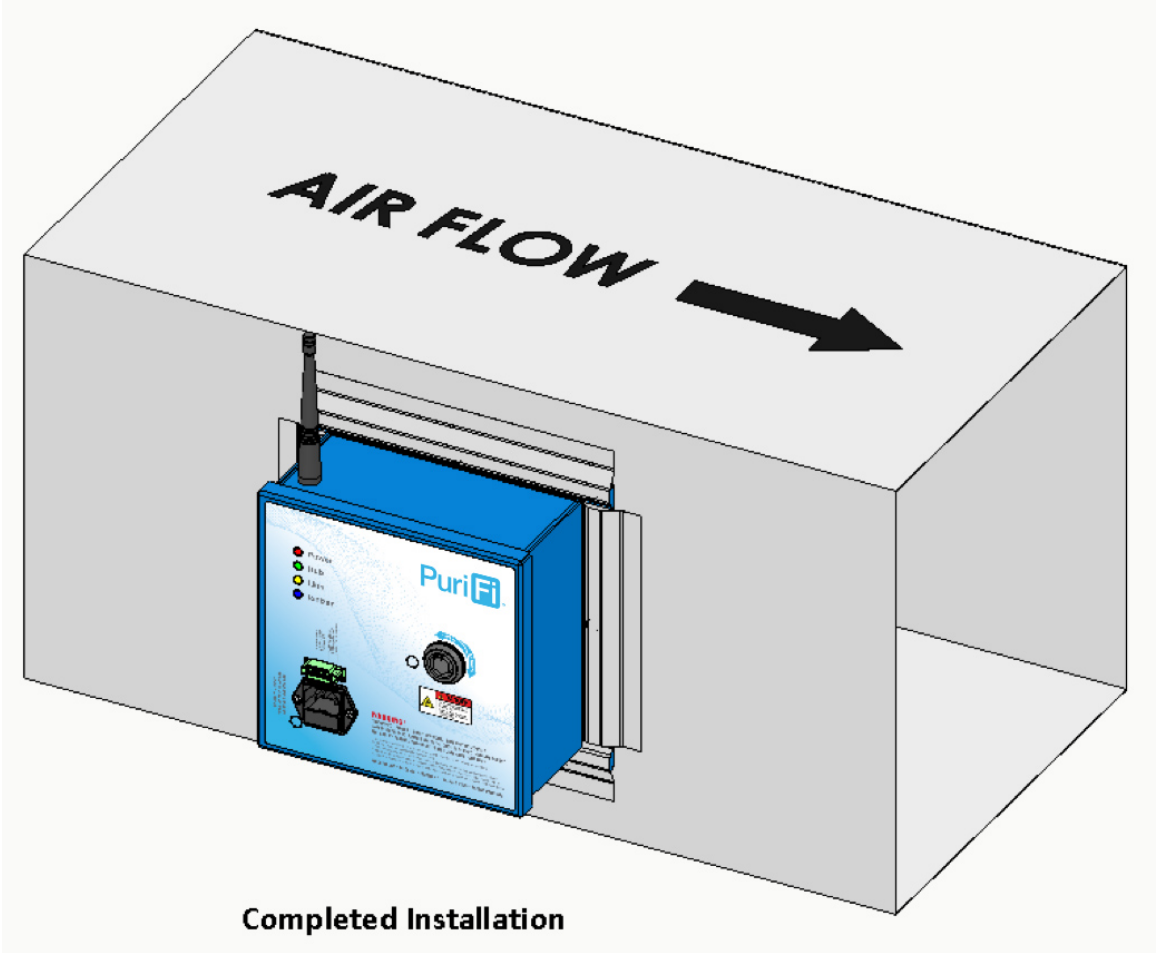


Figure 5 – Installed PuriFi™ Generator Unit

INSTALLATION – ELECTRICAL

WARNING: **This product should only be installed by a trained and certified electrician or HVAC contractor.** This unit generates nearly **5000** VAC at the ionization tube. **DO NOT** connect supply power until installation is complete. ALWAYS disconnect power before handling any of the unit components. There is a door safety interlock switch that prevents the PuriFi™ unit from operating if the enclosure door is open. **DO NOT** attempt to defeat this safety switch and **DO NOT** ever attempt to operate the unit while the door is opened.

NOTE: the PuriFi™ high voltage components and control circuitry are protected inside of a metal enclosure, and should only be accessed by a licensed professional. There are no user serviceable replacement parts inside the unit. A special key is required to open the enclosure door.

CAUTION: This unit has a grounding type 3-prong plug to reduce the risk of electrical shock. Contact a qualified, certified electrician to ensure that the outlet is grounded. NEVER remove the third prong or alter the plug in any way.

The PuriFi Generator has been designed to operate with a wide range of input voltages, and is shipped from the factory with a 1 Amp slow-blow fuse inside of the IEC-60320 C14 standard power entry module.

A C13 to 5-15P (standard USA 3-Prong Style) power cord is provided with the unit from the factory. If your particular installation requires a different plug than what is provided as standard, PuriFi Labs suggests contacting Interpower Corporation (www.interpower.com) for obtaining the proper cord, which will be a C13 (Purifi end) to the wall socket you are providing power with.



Figure 6 - Power Entry Module

POWER CONNECTION REQUIREMENTS

The PuriFi unit requires a primary power source between 100-240VAC, at either 50 or 60Hz. The electrical service to this unit must conform to local, national, and international safety codes where applicable, and must be carried out by qualified individuals.

It is imperative that the unit be properly grounded to local codes. The standard PuriFi unit draws approximately 15 Watts of power, and its power source should be protected by either a 15 or 20A breaker (maximum).

NOTE: The unit is designed to operate with a continuous power supply voltage. Do not install this unit where it can be turned on or off remotely, or where the supply voltage can be cycled.

HVAC CONNECTION REQUIREMENTS

The PuriFi™ Generator can interface with the HVAC system in two specific ways, and has an additional 'Ozone Depletion Mode' that it can operate in without interfacing with the HVAC system:

1) (**Mode 1**) the unit will ionize air when it senses that the HVAC fan unit has turned on. When the HVAC fan turns off, the PuriFi Generator will stop ionizing. **This is basic operation and does not include smart/adaptive air quality monitoring.**

2) (**Mode 2**) The PuriFi Generator can take control of the HVAC unit's fan, turning the system fan on whenever the PuriFi Sensor detects an air quality issue and alerts the Generator. NOTE: make sure that any warranties that you have with the HVAC unit are not affected should you choose to run the PuriFi unit in this mode. **Mode 1 will still be functional and the Generator will continue to run when the HVAC fan is manually activated or during HVAC heating and cooling cycles.**

3) **Ozone Depletion Mode** – the PuriFi unit will turn on its own internal fan and turn off ion generation for some percentage of time. This will draw system air from the plenum thru the proprietary catalyst and introduce it back into the plenum – thereby 'scrubbing' ozone from the air.

Decide which mode (either Mode 1 or Mode 2 above) that you want the PuriFi Generator to operate in. Once decided, make the proper relay control connections as follows. The major benefit of an ionization system is best realized when the HVAC supply fan is running. To maximize your air quality and the negative ion count in your environment, run the HVAC fan continuously or use an Indoor Air Quality (IAQ) type thermostat that will cycle the fan several times an hour or at specified times during the day.

MODE 1 – the PuriFi unit will operate whenever the source HVAC unit fan is powered on and distributing air through the duct system into the living space.

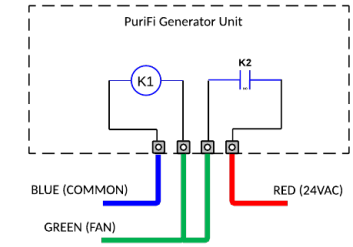
- Wire the HVAC fan connections to the ***left two connection points*** on the 4-position terminal block (front of PuriFi unit) titled FAN SENSE (24VAC when Fan is ON). **(See standard wiring diagram below)**

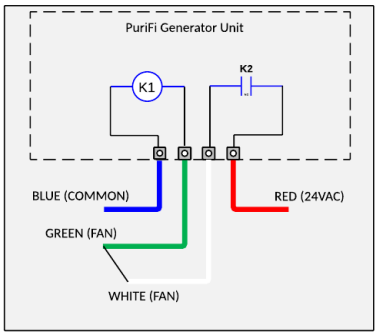


Figure 7 - HVAC Connections

MODE 2 – the PuriFi unit can operate the HVAC fan remotely, thus controlling the distributed air through the duct system into the living space.

- Wire the HVAC fan connections to the ***right two connection points*** on the 4-position terminal block titled FAN REQUEST (Closed Contact when Fan is desired). **(See standard wiring diagram below)**





OPERATION

The PuriFi Generator is designed to provide negative ionization into your living space in a smooth manner by coordinating its operation with your HVAC unit's fan or blower motor, and in conjunction with the PM Particulate Matter Sensor and Home Automation "HUB" provided with the system. In the two modes available, your HVAC unit can 'turn on' the PuriFi unit, thereby generating ions, or the PuriFi unit can 'turn on' the blower motor. In either case, the air movement across the Purifi Generator will be distributed throughout your home or establishment.

NOTE: Please discuss with your licensed HVAC contractor which mode will be best for your installation requirements.

Once the PuriFi™ Generator is correctly installed, you will enjoy the benefits of electronically purified air. There are no end-user serviceable components in the PuriFi unit, and the STATUS LED information is included here as reference only – please contact your licensed HVAC contractor for any service issues related to the unit. The removable core unit has a service life of two (2) years before requiring replacement.

MAINTENANCE & SERVICE

The PuriFi Generator has been designed to provide years of trouble-free service. To ensure the highest quality air filtration, the unit monitors its run-time hours and requires that the Inner Module Assembly be replaced on an annual basis. This replacement may be scheduled with your PuriFi Service Provider. Diagnostic data is available wirelessly from the PuriFi unit to your home automation system (future) or applications using internet and smart device technology. This data may be used for troubleshooting your unit.

There are no user serviceable components inside the PuriFi unit. If the unit does not seem to be operating, first check that the breaker has not tripped in your electrical panel. Second, disconnect power from the unit and make sure that the fuse in the power entry module (front door of PuriFi unit) has not blown.

For any other service to the PuriFi Generator, please contact your Service Provider or Contractor.

FRONT PANEL STATUS LEDs

[RED] **Power Status: Solid RED = Normal Power; Blinking RED = Service Life Expired**

[GREEN] **Solid Green = Radio Connected to another device, else not connected**

[YELLOW] **Blinking Yellow = Radio Transmission occurring**

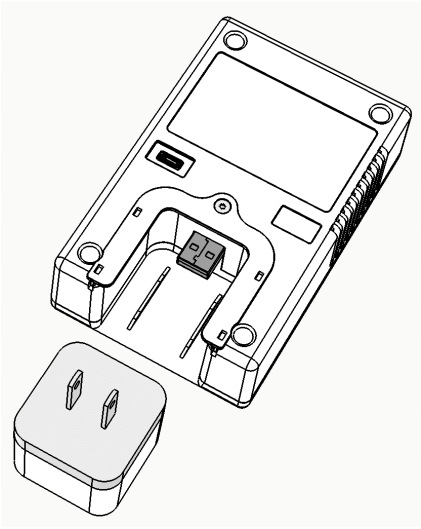
[BLUE] **ION Generator Status (Detail Below)**

1	**Startup :**	**10 fast Blinks**
2	**Normal Operation :**	**Solid Blue**
3	**Normal Standby :**	**Blink Count = 1 (No External Fan is sensed, unit is waiting)**
4	**Normal Hold :**	**Blink Count = 2 (Unit is temporarily in hold mode, see note below*)**
5	**Interlocked :**	**Blink Count = 3 (Door is Open or other Interlock)**
6	**Internal Fan Failure :**	**Blink Count = 4 (Internal Fan is not spinning)**
7	**Low Current :**	**Blink Count = 5 (Core High Voltage path interrupted)**
8	**Excessive Current :**	**Blink Count = 6 (Core High Voltage path potential leak)**
9	**Excessive Current :**	**Blink Count = 7 (Unit is inoperable, possible short circuit)**

*** NOTE: There are a number of different reasons the unit might be on hold. These include the *off cycle of Ozone Depletion Mode*, the *unit receiving radio commands to go on hold as ions are high enough*, *excess temperature* or even *core service life expiration*. Most of these are temporary and will clear by themselves (except for the *core service life expiration* case, which is uniquely identified by the red LED blinking).**

INSTALLATION – PM PARTICULATE MATTER SENSOR

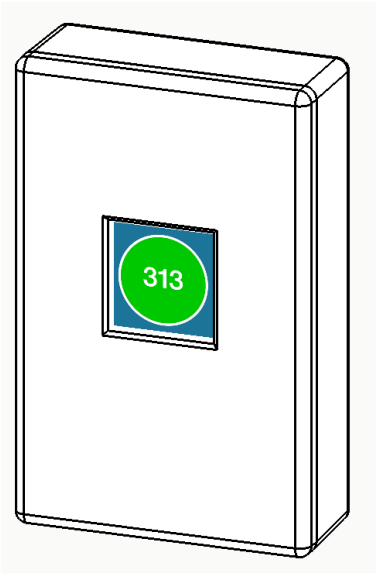
The PuriFi™ PM Sensor has been designed to plug directly into a wall outlet, for convenience, or to be positioned wherever the end user would like to sample the air. In the instance where it is not suitable to plug in to an outlet, the 110-240VAC transformer may be removed from the bottom of the sensor by grasping it firmly and sliding it downward.



Once the transformer is removed, it will expose a standard USB 2.0 Type A plug. (See Figure at right)

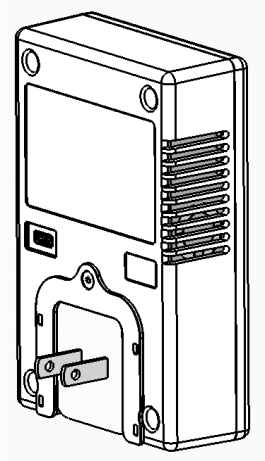
The PM Sensor may be powered and is operational by three methods:

1. Using the 100-240VAC transformer and plugging into a wall outlet or suitable extension cord.
2. Removing the transformer and plugging a standard USB Micro cable into the backside connector (rear of Sensor)
3. Removing the transformer and plugging a standard USB 2.0 Type A cable into the appropriate connector (bottom of Sensor as seen at right).



A colored LCD Display on the front of the PM Sensor will show the particulate counts and will change color according to the settings of “Clean”, “Cleaner” or “Cleanest as described elsewhere in this manual. These PM settings can be user defined but PuriFi Labs does not suggest changing the default settings, however.

Most importantly, locate the sensor at least 3 feet off of the ground, and most preferably in the “breathing zone”. We suggest not locating near bathrooms or kitchen areas because of the typically high particulate count.



The PM Sensor particulate measurements are sent via Zigbee RF radio module to the Generator, which will enable and control the ionization and purification based upon the User Settings or Factory Defaults.

TROUBLESHOOTING & FAQ

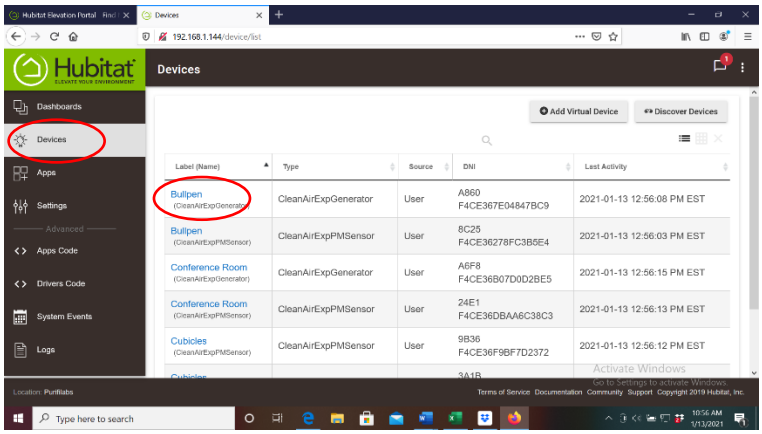
Wired internet connection is not available for the Hub / Internet connection is weak.
If a customer's internet connection is weak and/or you need to provide a hardwired port for internet connectivity, we recommend the **GL.iNET GL-MT300N-V2 Wireless Mini Portable Travel Router** WiFi device available from Amazon ($32)

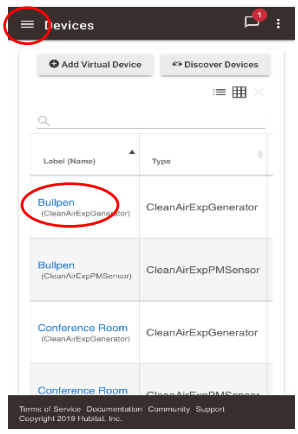
The Hub recognizes that it is "plugged in" to the network but cannot connect to the internet.
This is most likely a problem tied to network configuration. In the majority of cases, customers' routers are too old to support the Hubitat and they might need a new router (routers that are older than about 10 years old generally have difficulty supporting smart home devices). The other possibility is that customer's network has static IP addresses and/or they have intentionally limited internet access to certain devices (MAC control). For the Hub to work properly, DHCP (dynamic routing) should be turned ON at the network level and MAC access control should be turned OFF (or the Hub's MAC address must be added to the network as an approved device).

Devices have lost communication with the Hubitat app.

If dates and times are not showing current then proceed to the following:
(You will have to repeat each of these steps for every device that is not showing a current date and time.)

Step 1: Click on Devices on the left hand side of the screen and select the device that we want to reestablish communication with.



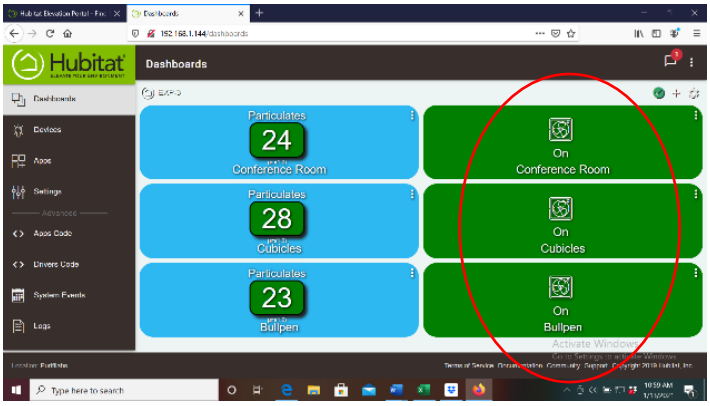


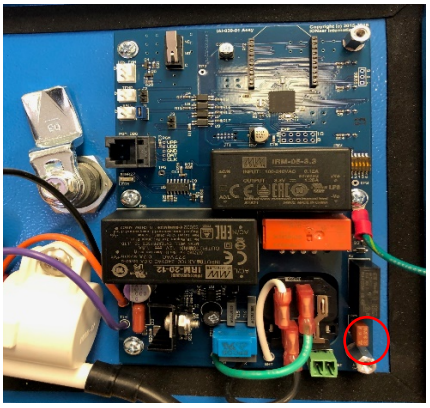
Step 2: Click the "POLL" tab to reestablish communication. Then scroll down to the Bottom of the page to check current activity. If it changed to a current date and Time then you are finished. (If the date and time did not change see how to Perform a factory reset on page 34.)

In dashboard, if you click on the tiles on the right and the corresponding fan does not turn on then perform the following:

Step 1: First check the wiring diagram on page 28 to make sure the low voltage to the generator is correct.

Step 2: Open the door on the generator check the fuse on the circuit board shown below. (If Steps 1 & 2 do not turn the fan on then perform a factory reset on page 37.)

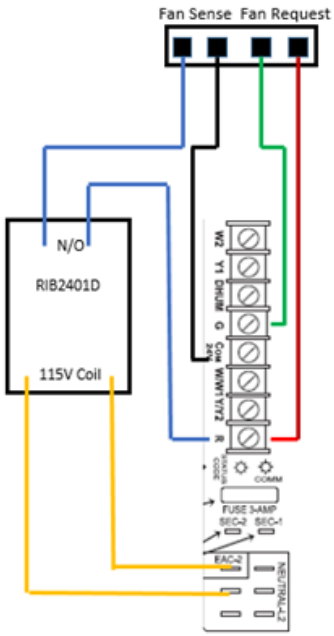




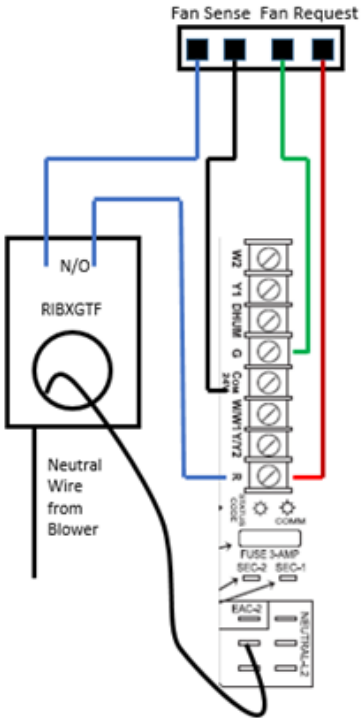
Air quality issues can trigger a heating or cooling request *rather than* a fan request as intended.
This issue is most likely related to the power configuration in the thermostat. Thermostats that include a jumper that bridges RH/RC can create a feedback loop that activates the cooling/heating cycle. Remove any jumpers (if possible) or upgrade the thermostat.

If the thermostat needs to be replaced, we recommend upgrading to a modern/smart thermostat.

Using a relay to take control of the fan wire is another way to bypass the thermostat:



No fan wire is available for installation and/or the HVAC system is a "communicating" system.
Many higher-end HVAC systems do not include the conventional thermostat wiring because the system communicates directly with the thermostat wirelessly. If you encounter a communicating system, you will need to install a current sensing relay to activate the PuriFi system.



How do I change my settings (clean, cleaner, cleanest)?
You cannot change settings from the PuriFi™ Dashboard or on the PuriFi App, but they are customizable in the Hubitat App (see p. 12 in the Setup and Installation Guide). Go to Settings > Local Hub Discovery > [tap the name of the hub to be configured] > PuriFi Stat. You can adjust the ON ABOVE and OFF BELOW settings for all three modes within this menu. You DO NOT have to adjust the values. When values have been set to the desired level, hit NEXT at the bottom. The second screen allows you to specify air quality levels of Clean, Cleaner, or Cleanest by zone.

If the dashboard does not reflect clean, cleaner, or cleanest setting, then the sensors themselves might need to be reset due to connectivity. If connectivity is the issue, then the dashboard will not show that the settings have been adjusted on the PuriFi Stat.

Factory Reset Generator or Sensor

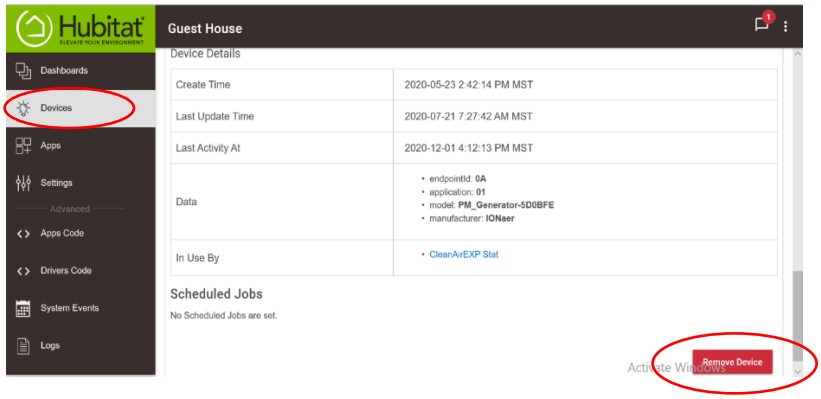
(Only perform this on devices not reporting to the Hubitat App as expected)

Step 1: **Remove devices from the hubitat.**

Step 1a: **Click on “Devices” on the left hand side of the screen**

Step 1b: **Click on the device you would like to remove**

Step 1c: **Scroll to the bottom and click “Remove Device”**



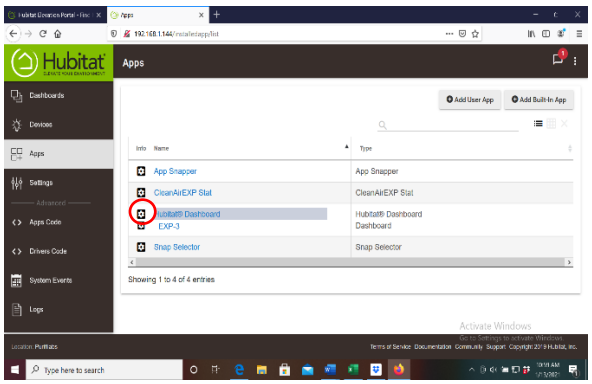
Step 2: **Cycle power 5 times on either generator or sensor**

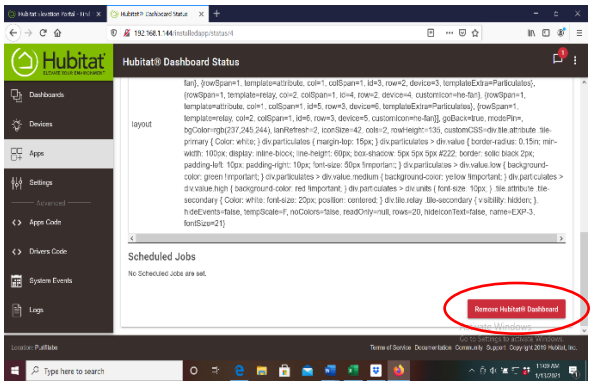
Step 2a: **On the generator- after you cycle power the green hub light will be removed.**

Step 2b: **On the sensor- after you cycle power the blue light in the top left corner should begin to blink.**

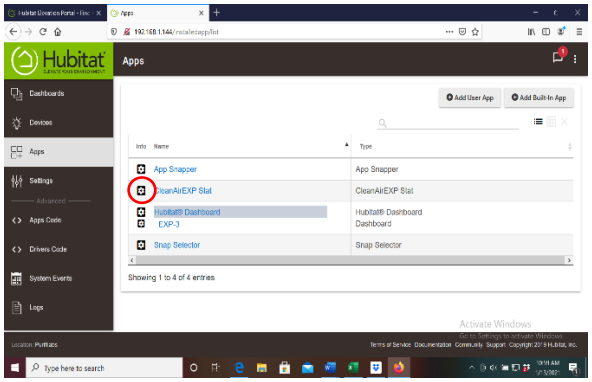
Step 3: **Remove Hubitat Dashboard and CleanAirEXP Stat from Apps**

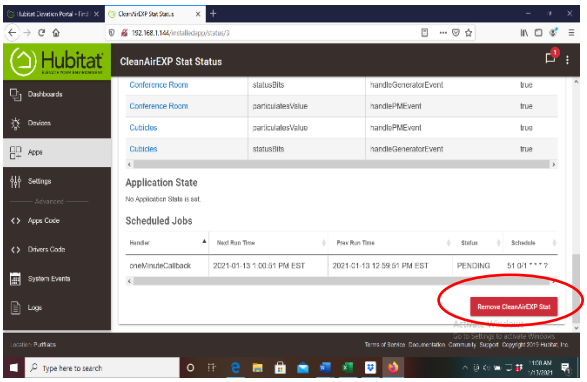
Step 3a: **Click on “Apps” on the left hand side of screen then click on the “gear” next to the Hubitat Dashboard. Scroll down and click “Remove Hubitat Dashboard.”**





Step 3b: **Click on the "gear" next to the CleanAirEXP Stat. Scroll down and click "Remove CleanAirEXP Stat."**





TURN TO PAGE 14 AND COMPLETE STEPS 4-7 UNDER "COMMERCIAL/CUSTOM INSTALLATION" TO RECONNECT THE PURIFI HARDWARE TO THE HUB.

SAFETY INSTRUCTIONS

Directions for Use

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

- This product is intended for use in central HVAC systems ("duct-mounted" installation) only. Consistent airflow of 100 – 3000 CFM is required while the unit is in operation. **This product has not been tested for use in any other settings.**
- Only a Certified Professional Installer should perform the installation of the PuriFi ionization system.
- This product must be installed in accordance with all applicable building codes.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
NOTE: This equipment has been tested and found to comply with the limits of Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increate the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The PuriFi Generator's main controller board has two (2) female headers that accept different plug-in radio modules. These radio modules are pre-certified, and the FCC certification may be found at https://www.fcc.gov/oet/ea/fccid for the source of the PDF files noted in this manual.

There are presently four (4) RF radio module variations already available or in development.

1. U-BLOX BMD-34X BLE 5.0 ZIGBEE MODULE 2.4GHZ
   a. FCC ID: XPYBMD341
2. DIGI XBEE AND XBEE-PRO MODULES 2.4GHZ
   a. FCC ID: MCQ-XBSX or MCQ-XBPSX or CE/RED
3. ESPRESSIF SYSTEMS ESP32-WROOM-32XX WIFI PLYS BLE IOT MODULE 2.4GHZ
   a. FCC ID: 24AC7Z-ESPWROOM32UE or 2AC7Z-ESPWROOM32E
4. MURATA CMWX1ZZABZ-078 LORA MODULE SMD 868/915 MHZ
   a. FCC ID: VPYCMABZ

Caution: This product shall not be installed behind a suspended floor/ceiling or a structural wall, ceiling, or floor.
Caution: This product is suitable for mounting to duct of metallic construction only. Installation must be such that the structural integrity of the ducting is not compromised.

Use temperature – Maximum Ambient temperature in which unit shall be used: 180 degree F / 82.2° C.

CAUTION – HIGH VOLTAGE.
WARNING: RISK OF ELECTRICAL SHOCK. Can Cause Injury or Death: Disconnect All Remote Electric Power Supplies Before Servicing.
CE Listed: You may request a copy of the CE Declaration of Conformity at any time by contacting brand@purifilabs.com

Generator has been
UL safety tested.

WARRANTY INFORMATION

LIMITED FIVE (5) YEAR WARRANTY
Customer should not repackage and ship the **PuriFi™** system due to possibility of irreparable damage. For warranty service, please contact your independent HVAC contractor for the address of the nearest service center or call PuriFi Labs Customer Service at 1-602-253-2624.

WHAT IS COVERED BY THIS WARRANTY
We warrant the **PuriFi air purification device** (p/n: IAI-100) to the Customer, subject to the conditions below, against defects in workmanship or material, provided that the products are returned to a service location within five (5) years of date of purchase. **PuriFi Sensors** (p/n: IAI-400) and **Hubs** (p/n: IAI-HUB7) are warranted for 24 months from date of installation or 34 months from the date of shipping from the manufacturer, whichever comes first.

INSTALLATION AND MAINTENANCE REQUIREMENTS
This warranty is expressly conditioned upon proper installation, operation, cleaning and maintenance according to this Owner's Manual. Failure to meet any of these requirements will void this warranty. Servicing of the **PuriFi** system by parties other than our authorized representatives and/or using parts other than genuine parts will also void this warranty.

HOW TO OBTAIN WARRANTY SERVICE
Customer must contact their independent HVAC Contractor and provide proof of purchase within the above time periods. PuriFi Labs will repair or replace and return the product, without charge and within a reasonable period of time, subject to the conditions herein, if its examination shall disclose any part to be defective in workmanship or material. If we, in our discretion, are unable to repair the product after a reasonable number of attempts, we will provide either a refund of the purchase price or a replacement unit, at the company's option. We reserve the right to inspect and /or require confirmation of installation method.

WHAT IS NOT COVERED BY THIS WARRANTY
Ordinary wear and tear shall not be considered a defect in workmanship or material. These warranties do not apply for loss or damage caused by accident, fire, abuse, misuse, improper installation, leaking, modification, misapplication, or by any repairs other than those provided by our authorized Service Center. This Warranty is non-transferrable.

MISSING SERIAL NUMBERS AND UNAUTHORIZED CHANNELS
If a valid serial number is missing from the product, the Warranty will be voided. PuriFi Labs products are for sale through authorized Independent HVAC Contractors only. Warranties are voided if a product is purchased through unauthorized channels; this includes company sponsored or independent websites that are not authorized to use PuriFi Labs' trademarked names, images and logos as well as Internet auction sites (e.g. EBAY and Craigslist). The only approved company sponsored or independent Internet sites for PuriFi Labs products is www.purifilabs.com. To confirm warranty coverage prior to purchasing a product or requesting service on a product, first contact your Licensed Installer, or contact PuriFi Labs at 1-602-253-2624 (1-602-CLEAN-AIR) with the serial number located on the unit.

EXCLUSION OF OTHER WARRANTIES AND CONDITIONS
EXCEPT AS PROVIDED HEREIN, PURIFI LABS MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND. ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, ARE HEREBY EXPRESSLY DISCLAIMED, INCLUDING ANY IMPLIED WARRANT OF MERCHANTIBILITY OR FITNESS FOR A PARTUICULAR PURPOSE.

LIMITATION OF LIABILITY FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES
PURIFI LABS SHALL NOT IN ANY CASE BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM BREACH OF EXPRESSED OR IMPLIED WARRANTIES, CONDITIONS, GUARANTEES OR REPRESENTATIONS, BREACH OF CONTRACT, NEGLIGENCE OR ANY OTHER LEGAL THEORY.

FOR U.S. APPLICATION ONLY
This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitations on warranties, or on remedies for breach. In such states, the above limitations may not apply to you.

SERVICE
Every effort is made to ensure customers receive an up-to-date Owner's Manual on the use of PuriFi Labs products; however, from time to time, modifications to PuriFi Labs products may without notice make the information contained herein subject to change. For the latest information on PuriFi Labs products, please visit our website.