

**FILTERSCAN<sup>®</sup> WiFi**  
**Air Filter Monitor**  
**Models FS-245-B & FS-245-C**  
**Reference Guide**  
**Version 4.03**



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Pat. www.cleanalert.com/legal/patents

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# Introduction

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Congratulations on your purchase of the CleanAlert **FILTERSCAN® WiFi Air Filter Monitor**. The CleanAlert **FILTERSCAN WiFi Air Filter Monitor** continuously and automatically monitors the clogging\* of an air filter installed into a household or commercial forced air heating, air conditioning, or heat pump system and provides alerts when the filter clogs and needs to be replaced.

The CleanAlert **AirFilterSentry™ Notification Service** will send you a text message alert and or email alert notifying you of the clogging\* of an air filter installed into your household or commercial forced air heating, air conditioning, or heat pump system. The system monitoring service is located at [www.cleanalertwifi.com](http://www.cleanalertwifi.com) where you may register your **FILTERSCAN WiFi Air Filter Monitor** and sign up for the CleanAlert **AirFilterSentry** Notification Service. In addition to receiving text and or email notifications, you can check on the status of your air filter as it becomes more and more dirty over time before reaching clogged\* status.

**\*NOTE:** "Clogging" is defined as when the differential air pressure in the HVAC system doubles from its calibrated clean or new air filter value.

## IMPORTANT!

Please read all instructions carefully to insure years of trouble-free operation.

## In The Box

1. **FILTERSCAN WiFi Air Filter Monitor**, Model FS-245-B or FS-245-C
2. 4 Energizer Ultimate Lithium "AA" Batteries (FS-245-B model only)
3. **Read This First** document - Critical
4. Quick Start Guide
5. Drill Template to locate mounting holes in a return air plenum
6. Mounting Screws
7. Packaging / box
- *Optional:* CA-360 external AC/DC wall adapter power supply. (If ordered for the Model FS-245-B only, it is useful when there is a wall outlet available within 6' of the **FILTERSCAN** mounting location, and it eliminates the need for batteries.)
- *Optional:* CA-4DP Tubing Kit. (If ordered with either FS-245-B or FS-245-C, this 6' long Tubing Kit is used to have the **FILTERSCAN** monitor differential pressure across the air filter. It is especially useful when the **FILTERSCAN** is mounted in an attic or crawl space, or when the air handler is located outside the building (since the **FILTERSCAN** must be mounted indoors). Call or email to order longer length tubing.

## Tools Required

1. Power Drill
2. 7/64" Drill bit
3. 3/8" Drill bit or Step Drill
4. #2 Phillips Screwdriver
5. Center Punch recommended
6. 1/2" Drill Bit (for Model CA-4DP Tubing Kit only)
7. Eye and Ear Protection
8. Dust Mask

## SAFETY

### **WARNING! READ AND UNDERSTAND ALL INSTRUCTIONS.**

Failure to follow all instructions may result in electrical shock or serious personal injury.

## Application

**FILTERSCAN WiFi Air Filter Monitor** is an air filter clogging detection system. It has been designed to monitor the change in differential pressure as a result of dirt build up on an air filter and alert the user when the amount of clogging reaches a pre-determined threshold.

The **FILTERSCAN WiFi Air Filter Monitor** is compatible with most air filters ranging in differential pressure drop from 0.10"wg to 4.0"wg and with single and multi-speed blower HVAC systems, and most VAV (Variable Air Volume) systems. Note: The Monitor must be mounted downstream if the VAV system is set to the constant torque mode.

The **FILTERSCAN WiFi Air Filter Monitor** will transmit status conditions through your wireless Internet router to a cloud-based server database, which in turn sends text and or email alerts to any smartphone (Android or iOS) or other Internet-connected device, such as a laptop, tablet, or desktop computer (PC or Mac). In order to utilize this feature you will need: (1) a wireless router with an operational *WiFi Protected Setup (WPS)* button, or a wireless router without a WPS button, plus a separate *WiFi* enabled device such as a smartphone, tablet, or laptop, and (2) a subscription to the **AirFilterSentry (AFS) Notification Service**. You can check the status of your air filter at any time by logging into your AFS account and requesting a Filter Status report.

## FCC Compliance

*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 for a Class B digital device, pursuant to 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 be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the 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.

*Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

Contains FCC ID Number: **T9J-RN171**

## IC Compliance

*This Class B digital apparatus complies with Canadian ICES-003.*

*Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.*

*This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.*

*Cet appareil est conforme à Industrie Canada exempts de licence RSS norme. Opération est soumis aux deux conditions suivantes: (1) cet appareil ne peut pas causer de brouillage et (2) cet appareil doit accepter toute interférence, y compris les interférences pouvant causer un fonctionnement intempestif du dispositif.*

Model: FS-245-B

Modèle: FS-245-B

Model: FS-245-C

Modèle: FS-245-C

Contains IC Certification/Registration Number: #6514A-RN171

Numéro de Certification / d'enregistrement les IC: #6514A-RN171

# Sign Up & Configure AirFilterSentry Notification Service

Enter the Serial Number(s) and MAC Address(es) of your **FILTERSCAN WiFi** unit(s), which is(are) located on the back of the Monitor Housing(s) and on the product box.

S/N \_\_\_\_\_ MAC \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_

S/N \_\_\_\_\_ MAC \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_

S/N \_\_\_\_\_ MAC \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_

Please **Register** your **FILTERSCAN WiFi Air Filter Monitor** on the CleanAlert **AirFilterSentry Notification (AFS) Service** website [www.cleanalertwifi.com](http://www.cleanalertwifi.com), Sign Up for the AFS service, and configure your notification preferences and messages.

1. Select "All Warranty Registration" and enter the requested information (This information is appreciated but not required).
2. Then, select "Sign Up For AirFilterSentry" or if you are a contractor wishing to link you're your customers, select "Sign Up For Pro/Pro+."

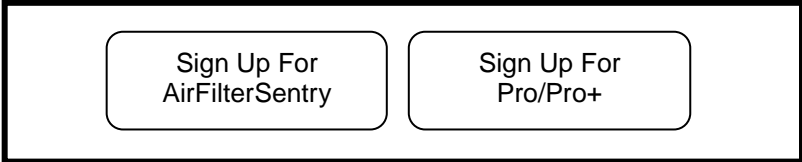


Figure 1: Home Page - Welcome Screen (Partial)

3. Enter your profile information on the Sign Up page.

SIGN UP BELOW \*required field

\*First Name

\*Last Name

\*Email (account name)

\*Password

Note; Password must be a minimum of 8 characters. For security, use a mixture of upper- and lowercase letters, numerals, and punctuation.

\*Re-enter Password

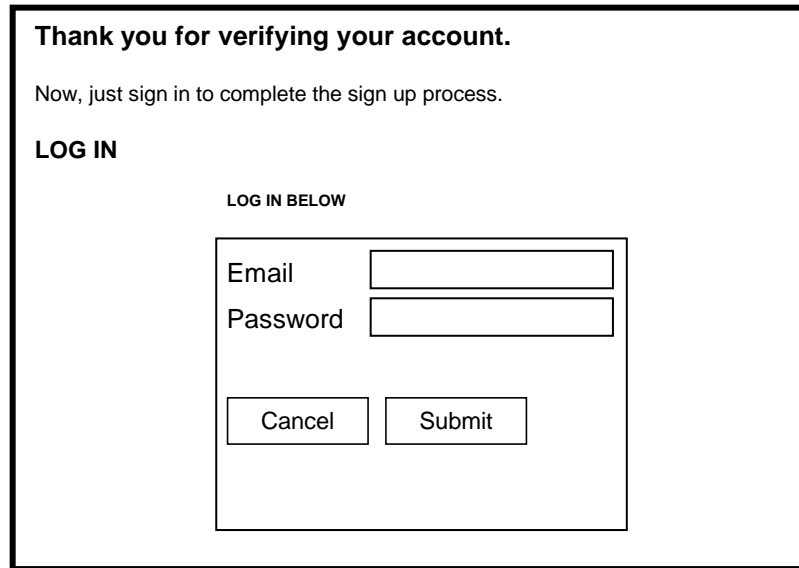
\*I have read, understood, and agree to the terms of using this website.

[Read the Privacy Policy](#)

[Read the Terms and Conditions](#)

## Figure 2: Sign Up Page - Create Login and Password

4. After submitting your profile information on the Sign Up page, you will receive an email with an activation link. Upon clicking on that link your browser will open as seen below. Note: The email entered upon Sign Up must be correct, otherwise you will not receive this confirmation email and will have to start the Sign Up process again.



**Thank you for verifying your account.**

Now, just sign in to complete the sign up process.

**LOG IN**

LOG IN BELOW

Email	<input type="text"/>
Password	<input type="password"/>
<input type="button" value="Cancel"/>	<input type="button" value="Submit"/>

**Figure 3: From Confirmation Link to Login**

5. Log In to your account.
6. On the Home page, select Monitors. Then, select Add Monitor. Enter the requested information.

\*required field

**ADD MONITOR**

\*Location

\*Device Name

\*Serial #

\*MAC Address

\*Device Time Zone

Format for Notifications

**Cell Phone Numbers for Text Notifications**

Phone Help appears here

Phone 1

Phone 2

Phone 3

**Email Addresses for Email Notifications**

Email Help appears here

Email 1

Email 2

Email 3

**Text/Email Messages**

Text/Email Message Help appears here

**Clog Notification Text**

Location  Device Name %SerialNumber%

Preview:

**Battery Low Notification Text**

Location  Device Name %SerialNumber%

Preview:

**Malfunction Notification Text**

Location  Device Name %SerialNumber%

Preview:

Allow automatic updates to your FILTERSCAN software [What is this?](#)

**Figure 4: Enter Monitor Information**

- a. You must name the Location – use a name or phrase that helps you identify where the **FILTERSCAN WiFi Air Filter Monitor** is located (attic, basement, crawl space, etc.).
- b. You must also name the Device – a name or phrase that whatever helps you identify the **FILTERSCAN WiFi Air Filter Monitor** (home, beach house, Apt #37, etc.).
- c. Enter the Monitor’s Serial Number and MAC address, including the “:” between character pairs. Both the S/N and MAC were recorded previously in this manual, are located on the back of the monitor, and are located on the side of the Monitor box.
- d. Select the Time Zone where the Monitor is located.
- e. Select how you want to be notified: Email, Text, or Both.
- f. Enter the smartphone number (up to 3) where you wish to receive text messages.
- g. Enter the email address (up to 3) where you wish to receive email messages.
- h. Enter the text and email messages you wish to receive.

- i. Check the Location and or the Device Name check boxes to automatically add those to the alert messages you select. The “Preview” shows you how the text and or email will appear.
  - j. Check the “Allow automatic updates to your FILTERSCAN software” box if you want to receive automatic software updates. This remote update feature is transparent to you and no action is required after updates are installed.
  - k. Click on Submit. This will send you to the Contact page.
7. Enter Contact Information.

We require your contact information for billing purposes, identification, site personalization, and the AFS Pro Network, if applicable. Read the [Privacy Policy](#) for information about how we handle your personal information.

**ENTER CONTACT INFORMATION** \*required field

**George Smith**

\*First Name

\*Last Name

Company

\*Email 1 (account name)

Email 2

Email 3

\*Address 1

Address 2

\*City

Country  ▼

State  ▼

Province

\*Zip Code

\*Time Zone  ▼

\*Phone #1

Phone #2

Phone #3

**Figure 5: Contact Information**



8. Enter Billing information – [NOTE: This will appear differently depending on account types].

**ENTER BILLING INFORMATION** \*required field

Same as Contact

\*First Name

\*Last Name

Company

\*Email

\*Address 1

Address 2

\*City

\*Country ▼

\*State ▼

\*Province ▼

\*Zip Code

\*Phone #

**Figure 6: Billing Information**

9. Click on Submit.
10. Enter credit card information on the payment page.  
NOTE: This will appear differently depending on payment types.
11. After payment is accepted, you will be directed back to the Home page.  
NOTE: Credit card acceptance and AFS database update may take a few minutes to complete. Please wait a few minutes before taking further action with your AFS account.

Monitors	Contractor Connections	Filter Status
Send SMS/ Email Test	Account Information	Register a Product
Go To CleanAlert.com		

**Figure 7: AirFilterSentry User Home Page**

12. If you have another Monitor to sign up (Home+ and Manager accounts only), Log out and Log in. Select "Monitors" from the Home Page, then select "Add Monitor".
13. Go to Step 6 to sign up additional monitors.
14. If you need to change any information you've entered for any monitor, click on "Edit Monitor" on the Home page.
15. Make the necessary changes and click on Submit.
16. Once all of your Monitors have been signed up, proceed to installation and connecting to your WiFi router, after which you may begin viewing the online status reports available at [www.cleanalertwifi.com](http://www.cleanalertwifi.com).

**NOTE:** *If you will be using a corporate network to connect the monitor to the Internet, contact your network administrator prior to enabling the web server of CleanAlert. Company policy may prohibit the use of web servers for security reasons. CleanAlert is not responsible for the use of, nor makes any claims as to the security of the web server interface over your network. The use of the web server is the responsibility of the end user.*

## **FILTERSCAN WiFi Air Filter Monitor Installation**

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The CleanAlert **FILTERSCAN WiFi Air Filter Monitor**, Model FS-245, **MUST** be installed on the RETURN side plenum, or duct if your HVAC system has no plenum, NOT the SUPPLY side (see the Appendix) either upstream of, downstream of, or differentially across the air filter (using the optional tubing kit Model CA-4DP). The Monitor must be mounted downstream if the VAV system is set to the constant torque mode.

To help determine which installation position is possible with your HVAC system, refer to Figures 16 through 20, which illustrate various installation configurations, as well as the proper setting of the Upstream/Downstream switch.

**WARNING!** **Ensure that the HVAC system blower motor/fan is OFF until told otherwise!**

**WARNING!** **Do NOT insert anything into the Sensor Tube! Doing so will result in sensor damage and malfunction.**

1. Insure you have recorded the Serial Number(s) and MAC address(es) previously in this document.
2. The **FILTERSCAN WiFi Air Filter Monitor** should be attached to the external wall of the return air duct or plenum, either upstream or downstream from the air filter, and at least six inches from the filter or any other obstructions within the duct or plenum.
3. Locate an area on the return, preferably downstream from the air filter (that is, between the air filter and the HVAC system blower), large enough to place the Monitor template on a flat surface and where there are NO obstacles inside the duct or plenum. There should be sufficient clearance (6" minimum) from the surrounding walls and from any components within the HVAC system. If there is an obstruction such that the Monitor cannot be installed as described above, you may need to complete the installation using the optional CA-4DP Tubing Kit.
4. Tape the Monitor template at the location found in the previous step, such that "TOP" is facing upward. The **FILTERSCAN WiFi Air Filter Monitor** front panel must be clearly visible when installed.
5. Using the template, Drill one 3/8" hole for the sensor.
6. **For sheet metal plenum installation**, drill four small holes (7/64") for the mounting screws provided.
  - a. **Remove the Drill Template**

- b. Attach the **FILTERSCAN WiFi Air Filter Monitor** by aligning its sensor tube with the larger hole and secure the Housing using the mounting screws supplied. The sensor tube does not extend into the duct.
7. **For Duct Board plenum installation**, follow the directions below. Otherwise go to Step 8.
- a. Obtain Toggle Bolts (available at Home Depot)
    - (1) #1/8" x 2" SKU 261181 Package of 25 or
    - (2) #1/8" x 3" SKU 261203 Package of 25
  - b. Use toggle bolts that are one inch longer than the thickness of the duct board to allow the toggle to expand after inserting through mounting hole.
  - c. Drill 3/8" holes at the four **FILTERSCAN WiFi Air Filter Monitor** mounting hole locations (see Drill Template) as well as the Sensor Tube location.
  - d. Remove the Drill Template
  - e. Insert the bolt alone through the **FILTERSCAN** housing from the inside. Once through the housing, screw on the toggle a few threads such that the fins fold toward the housing. Do this for all four mounting holes.
  - f. Apply silicone sealant or air duct sealer to the inner sides of the toggle (see below) such that when the toggle expands inside the duct, the silicone will seal the hole and secure the toggle to the inside of the duct to help prevent the toggle from dropping into the duct if the screw is removed at a later date after the sealant has cured.



Figure 8: Toggle bolt for duct board installation

- g. Insert each toggle through the duct board holes, insuring the Sensor Tube aligns with the Sensor Tube hole.
- h. Once all four toggles are fully inserted through the duct board, lightly pull the housing away from the duct board while tightening each bolt, until all four are securely fastened, without crushing the duct board. Make sure the Sensor Tube seal has been squeezed between the housing and duct board to insure no air leakage.

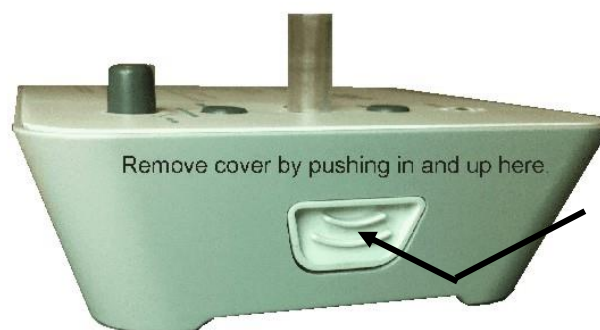


Figure 9: Side view of **FILTERSCAN WiFi** monitor

- IMPORTANT!** Set the Upstream/Downstream switch shown in Figure 10 so that it matches the **FILTERSCAN WiFi** Air Filter Monitor's position with respect to the air filter (that is, OFF for upstream mounting or ON for downstream or differential mounting). Please see the APPENDIX for 'Various HVAC Configurations for Monitor Installation' configurations.

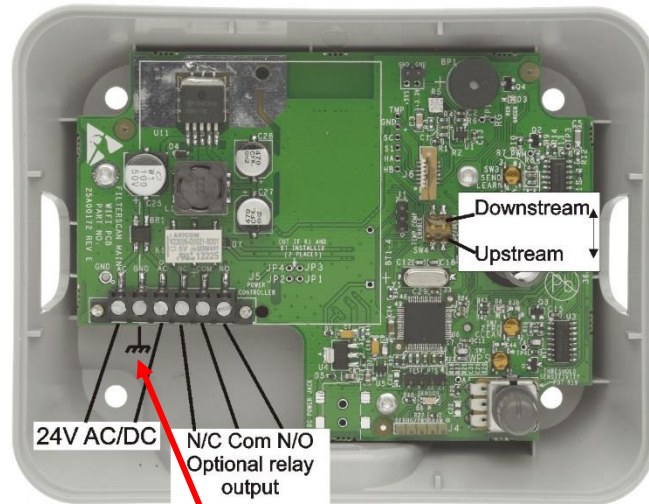
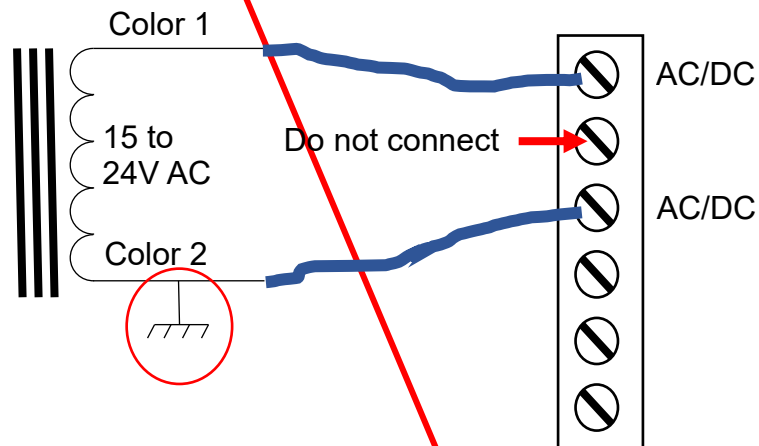


Figure 10: Inside of the FS-245-C FILTERSCAN WiFi monitor



## Applying Power – Model FS-245-C (15-24V AC/DC)

### SAFETY

**This model product should only be installed by a licensed electrician.**

- This model is powered from the HVAC system's auxiliary 15 to 24 VAC/DC power supply and should be installed by a qualified electrician. A typical installation will have that power run through an installer-provided conduit to the **FILTERSCAN WiFi** Air Filter Monitor.
- Locate the six terminals on the left-hand bottom corner of the printed circuit board illustrated in Figure 10. Connect 15 to 24V AC or DC to the 1<sup>st</sup> and 3<sup>rd</sup> leftmost terminals as shown. The 2<sup>nd</sup> leftmost terminal is for earth ground connection, if available. **DO NOT CONNECT IF THE HVAC SYSTEM'S AUX POWER HAS ANY LEG CONNECTED TO EARTH GROUND!**
- The three terminals on the rightmost terminals are for connecting the optional dry contact relay output. Reference Figure 21 in the APPENDIX.
- When power is applied, the beeper will sound momentarily and the **STATUS** LED will come on green momentarily, then turn on and remain red for approximately one minute. This indicates that the unit

has not yet been calibrated to the air filter and HVAC system upon which it is installed. Additionally, the *WiFi* Status LED will blink a series of Red and Green. Wait until all blinking has stopped.

5. Go to Section **Connect to a Wireless Router**.

## **Applying Power – Model FS-245-B (Battery/Adapter)**

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1. This model is powered from either four AA batteries or an optional wall mount power adapter. If the adapter is installed, the batteries may remain in place or be removed. Insert four (4) AA batteries in the battery holder, making sure the positive and negative directions are exactly as illustrated in Figure 11. CleanAlert recommends using **Energizer® ULTIMATE LITHIUM** batteries. See section “Operation - **FILTERSCAN WiFi** Air Filter Monitor” for battery replacement.
2. When power is applied, the beeper will sound momentarily and the **STATUS** LED will come on green momentarily, then turn on and remain red for approximately one minute. This indicates that the unit has not yet been calibrated to the air filter and HVAC system upon which it is installed. Additionally, the *WiFi* Status LED will blink a series of Red and Green. Wait until all blinking has stopped.
3. Battery life is approximately one year when utilizing the Energizer ULTIMATE LITHIUM batteries. The use of other batteries, such as Alkaline, will significantly decrease battery life.



Figure 11: Inside the FS-245-B Monitor

## **Connect to a Wireless Router**

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Determine whether your router has a WPS button and where it is located. See page 14 if your router does not have a WPS button.

You are now ready to initiate communications between your **FILTERSCAN WiFi** Air Filter Monitor through your LAN (Local Area Network) via your wireless router to the **AirFilterSentry Notification Service server**. You must Sign Up to create an account on the **AirFilterSentry Notification Service** server prior to performing the following. See page 4 for instructions on creating an account and signing up the monitor with the AirFilterSentry service.

# Connect to a Wireless Router with a WPS Button

1. Depress the WPS button on your router for two to ten seconds until its *WiFi* LED begins to blink. See your router user's manual if you do not know what that button looks like. Timing varies with router manufacturers.
2. Reference Figure 12 to locate the **FILTERSCAN *WiFi* Air Filter Monitor** WPS button.
3. Within several seconds (time depends on your specific wireless router), using a nonmetallic instrument such as a pencil eraser, toothpick, or other non-metallic object, depress the WPS button just once until you feel a click and **immediately** release. A series of red, green, and amber *WiFi* Status Indicator flashes will occur, and finally go out. (NOTE: During a software update, amber flashes will occur for about two minutes before going out. **DO NOT TAKE ANY ACTION DURING THIS TIME!**) If a series of RED *WiFi* Status LED flashes occur at the end of the flashes, this means the monitor was unable to connect with the AirFilterSentry Notification server. The number of flashes indicates the reason for the failure to connect. Refer to Table 1 ***WiFi* Trouble-shooting Guide** below for further steps.
4. Your **FILTERSCAN *WiFi* Air Filter Monitor** is now connected to your wireless router, and has initiated a connection process where the **FILTERSCAN *WiFi* Air Filter Monitor** and your wireless router communicate with each other and establish a connection with no further action needed.

**NOTE:** *If you will be using a corporate network to connect the monitor to the Internet, contact your network administrator prior to enabling the web server of CleanAlert. Company policy may prohibit the use of web servers for security reasons. CleanAlert is not responsible for the use of, nor makes any claims as to the security of the web server interface over your network. The use of the web server is the responsibility of the end user.*

5. Go to “**Connect to the AirFilterSentry Notification System Server**” on page 17.

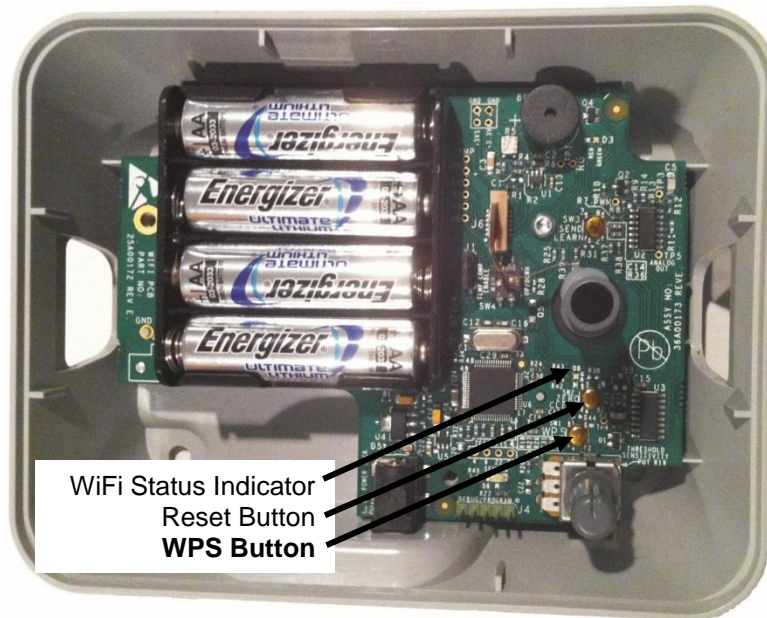


Figure 12: *WiFi* Status LED and WPS Button Locations

**Table 1 WiFi Troubleshooting Guide** Locate the internal **WiFi Status Indicator** above. (The Heartbeat and other normal, non-*WiFi* status indications which appear on the **STATUS** LED are shown elsewhere in this manual.)

LED Blink Indication	WiFi Status	Notes
None	Normal operation	
Flashes Red 1 time, pattern repeats 3 times.	Cannot find any WiFi device	Make sure wireless router is turned on
Flashes Red 2 times, pattern repeats 3 times.	Error Connecting to <i>WiFi</i> network after wireless router configuration	Check to insure other devices (laptop or mobile device) can connect to your wireless network
Flashes Red 3 times, pattern repeats 3 times.	Not paired with wireless router	See the “Connect to a Wireless Router” section and make sure wireless router is turned on
Flashes Red 4 times, pattern repeats 3 times.	Wireless router is off or not found	Make sure wireless router is turned on
Flashes Red 5 times, pattern repeats 3 times.	No Internet Connection	Check to insure the network cable to the router is connected, and there is Internet service
Flashes Red 6 times, pattern repeats 3 times.	Server registration failed. Serial number or MAC address does not exist in the AFS database.	Insure that the correct serial number and MAC address of the monitor appear in the “Edit Monitor” screen in your AFS account
Flashes Red 7 times, pattern repeats 3 times	Unacceptable character in SSID or Passphrase	See acceptable Special Character chart in the FAQ section
Slow Green flashing	Software is waking	No action required
Fast Green Flashing	Connecting to server	No action required
Fast Yellow Flashing	Sending Status data to server	No action required
Fast Red Flashing	In process of resetting <i>WiFi</i>	No action required
Slow Yellow flashing	Entered “Connect to a Wireless Router without a WPS Button” mode, or... (see below)	Complete the instructions in the “Connect to a Wireless Router without a WPS Button” section
Slow Yellow Flashing	Updating software	No action required

## Connect to a Wireless Router without a WPS Button

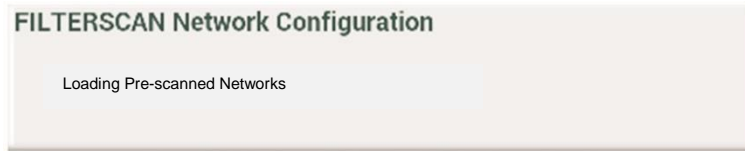
Follow these steps if your wireless router **DOES NOT** have a WPS button or the Connect to a Wireless Router with a WPS Button procedure was unsuccessful. This is referred to as **Manual pairing**. There are two sets of instructions, one for Apple devices (iPhones or iPads) and one for Android devices (smartphones or tablets running the Android OS 6.0 or later).

### Manual pairing using an Apple iPhone or iPad or PC Notebook:

1. Items needed:
  - a. An Apple iPhone or iPad.
  - b. The wireless password or passphrase for your router. **Password or passphrase must not contain unacceptable characters (see acceptable Special Character chart in FAQ section).**
  - c. The SSID of your wireless router (look on the side or bottom of the router or consult its manual)
  - d. A strong WiFi signal (at least two bars) from the router where you want to install the FILTERSCAN WiFi monitor.
2. See Figure 12 to locate the **FILTERSCAN WiFi Air Filter Monitor** WPS button.
3. Depress and hold the **WPS** button until the *WiFi* Status Indicator blinks green then fast red. This usually takes about 5 seconds, but may take up to 30 seconds. Release the button as soon as the fast RED is seen and wait until the WiFi Status Indicator blinks amber.

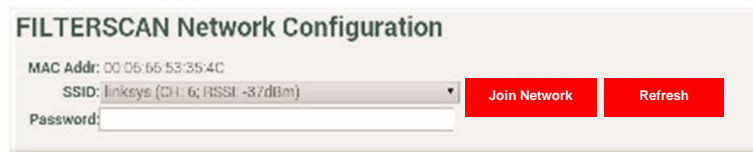


4. Using your iPhone or iPad, go to the Settings app and connect to the FILTERSCAN network. It may take a few minutes for the FILTERSCAN network to appear.
5. Once the iPhone or iPad is connected to the FILTERSCAN network, open a web browser.
6. Enter the IP address **192.168.1.1** in the URL box

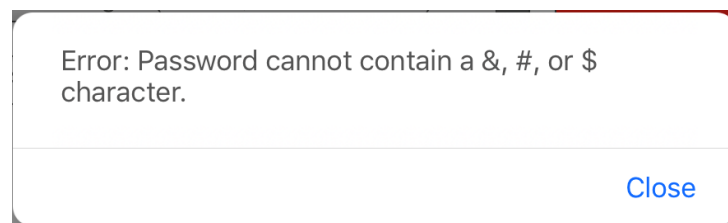
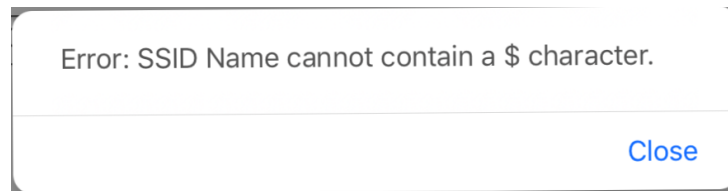


**Figure 13: FILTERSCAN WiFi Network Configuration Page**

7. Wait for the page to update and show the available networks. This may take several minutes. You are looking for the SSID of your router. If the expected network is not listed, press the Refresh button (you may need to do this several times). If it still does not appear, check that the router is on and has an Internet connection.



**Figure 14: FILTERSCAN WiFi Network Configuration Page**



8. Enter your router's password (**see acceptable Special Character chart in FAQ section**) and press the Join Network button. If the pairing was successful, the amber light on the FILTERSCAN unit will flash quickly for a few seconds and then go out. If it is still flashing slowly, then it did not pair with the router.
9. If the pairing fails, check that you are using the correct password: On your iPhone, open up Settings and Select WiFi. Connect the phone to the router. Then press the "information" icon to the right of the router's SSID (and "i" inside a circle). On the new page select "Forget this Network". This will sever your connection and send you back to the WiFi page. Now select the router SSID. You will be asked to type in the password. If it is correct, you will connect. Now go back to repeat the above instructions starting at Step 4. If this fails, call the CleanAlert helpline: 888-414-3569, extension "2".

**Supported network types** for Manual pairing:

- WEP128
- WPA-PSK (TKIP)
- WPA2-PSK (AES)
- WPA-PSK mixed mode (some access points, not all are supported)



*For WEP networks, the security key entered is the hexadecimal key, not the passphrase used to generate the key. WEP128 keys must be 26 digits long consisting of characters 0-9 and A-F.*

### **Manual pairing using an Android smartphone or tablet**

1. Items needed:
  - a. A smartphone or tablet with WiFi running Android 6.0 (“Marshmallow”) or later.
  - b. The wireless password or passphrase for your router. **Password or passphrase must not contain unacceptable characters (see acceptable Special Character chart in FAQ section).**
  - c. The SSID of your wireless router (which you can find on the side or bottom of the router or by consulting its manual)
  - d. A strong WiFi signal (at least two bars) from the router where you want to install the FILTERSCAN WiFi monitor.
2. See Figure 12 to locate the **FILTERSCAN WiFi Air Filter Monitor** WPS button.
3. Depress and hold the **WPS** button until the *WiFi* Status Indicator blinks green then fast red. This usually takes about 5 seconds, but may take up to 30 seconds. Release the button as soon as the fast RED is seen and wait until the WiFi Status Indicator blinks amber.
4. Using your smartphone or tablet, connect to the FILTERSCAN network. You do this by going to the Settings app. It may take a few minutes for the FILTERSCAN network to appear.
5. Select the FILTERSCAN network in the list of available WiFi networks by pressing on and holding until a new window opens.
6. Select Modify Network, which cause the Advanced Options window to open.
7. Touch IP settings and select STATIC. A new text box will open.
8. Enter the IP address **192.168.1.10** in the URL box.
10. Then select SAVE. You will then press FILTERSCAN again without holding and choose to connect to the FILTERSCAN network. A window will then open with the message “This network has no internet access. Stay connected?”
11. Quickly open the message and select YES. **Note:** The message may only appear for a few seconds. If you do not select before it disappears, you will need to go back to step 4.
12. Open a web browser on your *WiFi*-enabled device.
13. Enter the IP address **192.168.1.1** in the URL box. You will get the FILTERSCAN Network Configuration page, displayed in Figure 13 above.
14. Wait for the page to update and show the available networks. This may take several minutes. You are looking for the SSID of your router. If the expected network is not available, press the “Refresh” button (you may need to do this several times). See Figure 14 above.
15. Enter your router’s password (**see acceptable Special Character chart in FAQ section**) and press the Join Network button. If the pairing was successful, the amber light on the FILTERSCAN unit will flash quickly for a few seconds and then stop flashing. If it is still flashing slowly, then it did not pair with the router.
16. If the pairing fails, check that you are using the correct password: On your smartphone or tablet, open up Settings and Select WiFi. Connect the phone to the router if it is not already connected. If you are not asked for a password, press the router SSID and hold it until a window pops up. Choose “Forget Network.” You will then be presented again with the list of available WiFi networks and select the one for your router. You will now be asked to enter the password. Enter it in the text box provided and press “connect.” If the password you entered is wrong, this will fail. If you are able to connect, go back to step 4 and try to connect your phone with the FILTERSCAN again. If this fails, call the CleanAlert helpline: 888-414-3569 and select extension “2”

#### **Supported network types** for Manual pairing:

- WEP128
- WPA-PSK (TKIP)
- WPA2-PSK (AES)
- WPA-PSK mixed mode (some access points, not all are supported)

*For WEP networks, the security key entered is the hexadecimal key, not the passphrase used to generate the key. WEP128 keys must be 26 digits long consisting of characters 0-9 and A-F.*

The **FILTERSCAN WiFi Air Filter Monitor** does not support # \$ and & (See acceptable Special Character chart in FAQ section) in the SSID (NETWORK NAME) or in WPA or WPA2 passphrases.

17. Your **FILTERSCAN WiFi Air Filter Monitor** is now connected to your wireless router, and has initiated a connection process where the **FILTERSCAN WiFi Air Filter Monitor** and your wireless router communicate with each other and establish a connection with no further action needed.

**NOTE:** *If you will be using a corporate network to connect the monitor to the Internet, contact your network administrator prior to enabling the web server of CleanAlert. Company policy may prohibit the use of web servers for security reasons. CleanAlert is not responsible for the use of, nor makes any claims as to the security of the web server interface over your network. The use of the web server is the responsibility of the end user.*

## Connect to the AirFilterSentry Notification System Server

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1. Upon successful sign up, subscription, configuration, installation, power up, and Internet connection, the **FILTERSCAN WiFi Air Filter Monitor** will be connected to the **AirFilterSentry Notification System** server through your wireless router and should require no further attention. The Monitor will start sending status messages to the server on a periodic basis.
2. To test the Internet connection:
  - a. Although the wireless transmission range should cover your building, it is greatest with minimum obstructions between the **FILTERSCAN WiFi Air Filter Monitor** and the wireless router. Any obstructions, such as walls, floors, and ceilings can reduce the range of transmission, and relocation of the wireless router may be required. Retest with each location to ensure proper operation.
  - b. Depress the **SEND** button of the **FILTERSCAN WiFi Air Filter Monitor** once at any time to send its status to the **AirFilterSentry Notification Service** server database.
  - c. Then, login to your account\* at [www.cleanalertwifi.com](http://www.cleanalertwifi.com) to view your monitor's status.

**NOTE:**

Your **FILTERSCAN WiFi Air Filter Monitor** status display at the **AirFilterSentry Notification Service** is capable of displaying more than 100% clogged. This is possible since the "100% clogged" point is the recommended point when it is most efficient to service (replace or clean) the air filter. If you ignore the notification and continue to operate your HVAC system, the air filter will become dirtier and the status will rise above 100% clogged. To provide the most efficient air filtration and HVAC system operation, you should service the air filter as soon as possible after being notified of a clogged condition.

\*Subscription to the AirFilterSentry Notification service is required to enable this feature

# Calibrating the FILTERSCAN *WiFi* Air Filter Monitor



Figure 15: Front cover of the FILTERSCAN *WiFi* monitor

**Important:** If you are not going to calibrate your monitor immediately after installing your monitor, REMOVE one of the batteries. When ready to calibrate after initial installation, reinstall battery.

Install a clean, new air filter into your heating and cooling system.

Press and immediately release the SEND button to see if Calibration has already been started or done. A Red Status LED means Calibration has not yet been done. Continue.

1. After power is first applied, wait for approximately 15 seconds (warm up and stabilization time).
2. Turn the HVAC system OFF at the thermostat. Ensure the HVAC system blower is turned OFF and that no conditions exist during this part of the calibration that would cause air to be moving within the HVAC ducts, such as opening and closing of doors or windows.
3. Install a clean, new air filter into the HVAC system.
4. Depress the **RESET** button, holding for two seconds until the **STATUS** LED turns Green and a beep is heard.
  - a. After approximately ten seconds, the **STATUS** LED will blink yellow for approximately 20 seconds while the **FILTERSCAN WiFi Air Filter Monitor** records the HVAC system's FAN OFF condition. When the blinking amber stops, this indicates proper operation.
    - i. However, if the **STATUS** LED blinks red, which means the unit detects air flowing in the air duct, check to see that the system blower fan is fully OFF and that no condition described in #2 above exists. If no such condition exists, start again at #1. If the error condition persists, call 888-414-FLOW (3569) for instructions.
  - b. **IF YOU PRESS RESET BY MISTAKE**, press it again for 2 seconds until the Status LED blinks Amber and a beep is heard.
5. Wait at least one minute before turning your HVAC system ON – The **FILTERSCAN WiFi Air Filter Monitor** is starting the automatic calibration process during this time, calibrating itself to the air filter and HVAC system into which it is installed.
6. To verify communication with the AFS server, you may depress the SEND button momentarily at this point, then log into your AFS account, and select Filter Status, where you should see "OK" for Status or Device Health.

Your **FILTERSCAN WiFi** Air Filter Monitor is now completely operational, helping protect you from the consequences of running your HVAC system with a clogged air filter.

The **SERVICE FILTER** control is a fine tuning adjustment that has been calibrated during production to the mid-range, which is the Recommended Setting. This control allows the user to change the point at which the clog alarm will be triggered. Turning the **SERVICE FILTER** adjustment knob clockwise will cause the **FILTERSCAN WiFi Air Filter Monitor** to issue an alarm at a lower level of filter clogging (less energy consumption). Turning the **SERVICE FILTER** adjustment knob counter-clockwise will cause the **FILTERSCAN WiFi Air Filter Monitor** to issue an alarm at a higher level of filter clogging (more energy consumption). See the FAQ Section for further information.

## Operation - FILTERSCAN WiFi Air Filter Monitor

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### System Monitoring

The **STATUS** LED will blink green approximately once per minute (called a heartbeat) to indicate that the unit is functioning properly. Usually the **FILTERSCAN WiFi Air Filter Monitor** will be in the standby mode, conserving power. It wakes up periodically to monitor air filter condition, battery level, and system operation. If no alarm conditions are detected, the **FILTERSCAN WiFi Air Filter Monitor** goes back to sleep after several minutes of monitoring.

**NOTE:** Should there be a power failure the **FILTERSCAN WiFi Air Filter Monitor** will save all parameters such as the clean air filter calibration and the current state of the air filter. When power is restored, the **FILTERSCAN WiFi Air Filter Monitor** will continue operation with no user action required. The same applies when replacing depleted batteries.

### Alarm Modes

The **FILTERSCAN WiFi Air Filter Monitor** provides both audible and visual local alarms indicating a clogged air filter, a low battery, or a system malfunction. In addition, the **AirFilterSentry** Notification Service allows remote monitoring\* of system conditions. *\*Subscription to the AirFilterSentry Notification service is required to enable this feature.*

**NOTE:** The HVAC system blower fan must be running when the **FILTERSCAN WiFi Air Filter Monitor** attempts to check air filter condition. Since the **FILTERSCAN WiFi Air Filter Monitor** checks the air filter condition periodically, it may take several days to detect, trigger, and alert a clogged filter condition.

**NOTE:** The **FILTERSCAN WiFi Air Filter Monitor** has a light sensor which prevents audible alarms when there is no light present at the Monitor location. This prevents awaking occupants while sleeping and prevents needless beeping in a crawl space, attic, or other unoccupied location. The visual Status LED will still operate normally regardless of lighting conditions.

### Clogged Air Filter

When the **FILTERSCAN WiFi Air Filter Monitor** detects a clogged air filter, an alert condition is triggered. The red **STATUS** LED will illuminate, blinking five times approximately every ten minutes until the alert condition is reset. There will also be an audio alert which corresponds to the visual alert indication. **NOTE:** Allowing this alarm condition to go on indefinitely will drain the batteries (-B model only). The clogged filter alert is reset by following the instructions in the section "Calibrating When Installing a New Air Filter" below. In addition, a text and or email will be sent to a designated person if you have signed up for the **AirFilterSentry** Notification Service.

**NOTE:** A new or cleaned air filter should always be installed whenever the CALIBRATE operation is performed.

## Low Battery

When the **FILTERSCAN WiFi Air Filter Monitor** detects a low battery condition, an alert condition is triggered. The **STATUS** LED will blink yellow approximately once per minute to indicate a low battery in the Monitor. Replacing the Monitor batteries (see APPENDIX) will reset the alert condition. In addition, a text and or email will be sent to a designated person if you have signed up for the **AirFilterSentry** Notification Service.

## Battery Replacement

Access: Remove the front cover from the **FILTERSCAN WiFi Air Filter Monitor** housing. Remove the batteries.

Installation: Insert four (4) **Energizer® ULTIMATE LITHIUM** batteries in the battery holder of the **FILTERSCAN WiFi Air Filter Monitor**, observing polarity, and replace the front cover.

## Malfunction

When the **FILTERSCAN WiFi Air Filter Monitor** detects an internal malfunction, an alert condition is triggered. The red **STATUS** LED will illuminate continuously until the malfunction is corrected. In addition, a text and or email will be sent\* to a designated person if you have signed up for the **AirFilterSentry** Notification Service. In the unlikely event this should occur, remove power from the **FILTERSCAN WiFi Air Filter Monitor** by removing the batteries, unplugging the optional AC Adapter, or in the case of 15-24V AC/DC-powered models ("-C") contacting your HVAC system electrician to have the power to the Monitor turned off. Wait for a minute and restore power. If your **FILTERSCAN WiFi Air Filter Monitor** unit is operating with both AC Adapter and batteries installed, both will need to be removed in order to reset the malfunction. If this does not reset the malfunction alert, call 888-414-FLOW (3569) for instructions.

## Calibrating When Installing a New Air Filter

Whenever a new air filter is installed, the **FILTERSCAN WiFi Air Filter Monitor** must be calibrated. Calibration establishes the clogged air filter detection threshold based upon the condition recorded for a new air filter. When a new air filter is installed, its condition is recorded and saved in nonvolatile memory. Reference the instructions on the monitor cover.

Install a clean, new air filter into your heating and cooling system.

1. Turn the HVAC system OFF at the thermostat. Ensure the HVAC system blower is turned OFF and that no conditions exist during this part of the calibration that would cause air to be moving within the HVAC ducts, such as opening and closing of doors or windows.
2. Depress the **RESET** button, holding for two seconds until the **STATUS** LED turns Green and a beep is heard.
  - a. After approximately ten seconds, the **STATUS** LED will blink yellow for approximately 20 seconds while the **FILTERSCAN WiFi Air Filter Monitor** records the HVAC system's FAN OFF condition. When the blinking amber stops, this indicates proper operation.
    - i. However, if the **STATUS** LED blinks red, which means the unit detects air flowing in the air duct, check to see that the system blower fan is fully OFF and that no condition described in #2 above exists. If no such condition exists, start again at #1. If the error condition persists, call 888-414-FLOW (3569) for instructions.

- b. **IF YOU PRESS RESET BY MISTAKE**, press it again for 2 seconds until the Status LED blinks Amber and a beep is heard.
3. Wait at least one minute before turning your HVAC system ON – The **FILTERSCAN WiFi Air Filter Monitor** is starting the automatic calibration process during this time, calibrating itself to the air filter and HVAC system into which it is installed.
4. To verify communication with the AFS server, you may depress the SEND button momentarily at this point, then log into your AFS account, and select Filter Status, where you should see “OK” for Status or Device Health.

Your **FILTERSCAN WiFi Air Filter Monitor** is now calibrated to the type of air filter you have installed. Due to air filter types and manufacturing tolerances, you will need to calibrate the **FILTERSCAN WiFi Air Filter Monitor** each time a new air filter is installed.

## Automatic Adjustment

**ATTENTION - HVAC systems with two-speed blowers!** Typical HVAC systems will have different blower speeds for Heat and A/C. The **FILTERSCAN WiFi Air Filter Monitor** automatically adapts to the changes in HVAC blower speeds.

## Software Updates

The **FILTERSCAN WiFi Air Filter Monitor** has the capability of automatically updating its software through its Internet connection to the AirFilterSentry cloud server. If you checked the “Allow Automatic Updates to your **FILTERSCAN** Software?” box on the Edit Monitor screen and there is a later version of software available on the server, your **FILTERSCAN WiFi Air Filter Monitor** will automatically download the latest version of software and update itself without any action by you. The update will be transparent and all operating parameters will be intact after the update.

## Frequently Asked Questions

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### All Models

Can the **FILTERSCAN WiFi Air Filter Monitor** be mounted on the supply side of the HVAC blower?

*No, only on the return side duct, either upstream or downstream of the air filter or differentially across the air filter.*

Can I install the **FILTERSCAN WiFi Air Filter Monitor** on a multi-speed blower HVAC system?

Yes.

Can I install the **FILTERSCAN WiFi Air Filter Monitor** on a Variable Air Volume (VAV) HVAC system?

*As of the writing of this manual, the **FILTERSCAN WiFi Air Filter Monitor** will operate with most VAV systems in production. Note: The Monitor must be mounted downstream if the VAV system is set to the constant torque mode.*

What effect, if any, does opening or closing air vent registers have on the **FILTERSCAN WiFi Air Filter Monitor** performance after it has been calibrated to a new air filter?

*Any significant changes in HVAC system pressure caused by register changes or other factors will change the point at which the clog alert will occur. The greater the number of system registers, the less effect*

*on the system's pressure when one or two registers are changed and therefore the less effect on when the clog alert will occur. Regular changes to system registers could make the performance unpredictable.*

What if my **FILTERSCAN WiFi Air Filter Monitor** stops sending status data? What if the Status report at my AirFilterSentry Notification Service account does not display a recent update Date?

*There could be many causes for data to not reach the AFS server.*

- 1. First, depress the **SEND** button on the **FILTERSCAN WiFi Air Filter Monitor** front panel. Wait for one minute then recheck the AFS Status Display for a current update time and date.*
- 2. Next, check the **FILTERSCAN WiFi Air Filter Monitor** power. Insure batteries or power to the Monitor is good (Status LED blinks green approximately once per minute).*
- 3. Turn power off to the **FILTERSCAN WiFi Air Filter Monitor** power for one minute. Then turn power back on.*
- 4. Turn power off to your wireless router for one minute. Then turn power back on.*
- 5. View your **AirFilterSentry Notification Service** subscription as it may have expired.*

*If none of the above result in updated status data, please review **Table 1 WiFi Status indications** above for various WiFi Status LED conditions.*

Where should I set the Service Filter knob?

*At the recommended setting in the center of travel. This equates to the doubling of the initial differential pressure to cause a clog alert.*

*If you want to waste energy, or think your filter is not dirty enough when a clog alert occurs at the Recommended setting, you may turn the Service Filter knob CCW toward "Less Often". This increases the differential pressure needed to cause a clog alert. Results? A more dirty filter, more energy usage, and decreased IAQ.*

*If you want to save more energy at the expense of higher air filter costs, or think your filter is too dirty when a clog alert occurs at the Recommended setting, you may turn the Service Filter knob CW toward "More Often". This decreases the differential pressure needed to cause a clog alert. Results? A cleaner filter, higher air filter costs, less energy usage, and increased IAQ.*

*Overall, the Service Filter knob should be to set it at the Recommended setting for the best balance between wasted energy and higher air filter costs.*

Why am I not seeing the **FILTERSCAN** on the list of connected devices on my router?

*The **FILTERSCAN WiFi Air Filter Monitor** connects to your wireless router for about two seconds approximately every seven hours. The rest of the time, the **FILTERSCAN's** WiFi transmitter is turned off to conserve energy. So, you would have to be viewing your "connected devices" exactly during the two-second time period to "see" the **FILTERSCAN** on the list of connected devices. Nearly impossible.*

## **Model FS-245-C**

How is the conduit mechanically connected to the **FILTERSCAN WiFi Air Filter Monitor**?

There is a conduit connector knock-out located on the lower side of the monitor housing.

What voltage is acceptable to power the **FILTERSCAN WiFi Air Filter Monitor** via the conduit?

Typically 24V AC/DC, although an input voltage as low as 15V DC is acceptable.

### Model FS-245-B

Do I have to install batteries if I power the Monitor from the optional AC Adapter?

No.

Can I utilize both the AC Adapter and batteries for backup?

Yes, you can install batteries even though you also have an AC adapter installed. Such power backup is unnecessary however because the monitor's non-volatile memory stores all operating parameters in the event of a power failure.

### Wireless Router

What should I do if I am unable to connect my monitor to my wireless router?

1. If you are pairing your monitor with your router using WPS, make sure that WPS is enabled on the router by trying to connect another wireless device to the router using WPS (some routers have this function disabled), or contact your router supplier.
2. If you are using manual pairing, make sure that you have the correct password.
3. Make sure your monitor is within range of your wireless router. If not, you may have to relocate your router.
4. Determine your routers wireless security network type.

**Supported network types** are:

- WEP128
- WPA-PSK (TKIP)
- WPA2-PSK (AES)
- WPA-PSK mixed mode (some access points, not all are supported)

To do this, you will need to consult your routers manual. If your routers wireless security has been set to any other method, you will need to change it to one of the above, preferably WPA-PSK (TKIP) or WPA2-PSK (AES).

5. Make sure network SSID Name and password conform to this chart:

#### Special Character Permissions in Network Name (SSID) & Password

<u>Character</u>	<u>SSID / Network Name</u>	<u>Password</u>
space	Yes	Yes
!	Yes	Yes
"	Yes	Yes
#	Yes	No
\$	No	No
%	Yes	Yes
&	Yes	No
'	Yes	Yes
(	Yes	Yes



)	Yes	Yes
*	Yes	Yes
+	Yes	Yes
,	Yes	Yes
-	Yes	Yes
.	Yes	Yes
/	Yes	Yes
:	Yes	Yes
;	Yes	Yes
<	Yes	Yes
=	Yes	Yes
>	Yes	Yes
?	Yes	Yes
@	Yes	Yes
[	Yes	Yes
\	Yes	Yes
]	Yes	Yes
^	Yes	Yes
_	Yes	Yes
`	Yes	Yes
{	Yes	Yes
	Yes	Yes
}	Yes	Yes
~	Yes	Yes

How far can the **FILTERSCAN WiFi Air Filter Monitor** be mounted from the wireless router?

*The range of the WiFi signal is similar to the range of your wireless devices (laptop, smartphone, etc.). However, obstacles such as walls between the Router and Monitor could decrease the effective range of the device.*

## Multiple Monitors

What if my building has multiple HVAC systems, each with their own **FILTERSCAN WiFi Air Filter Monitor**. Will the **AirFilterSentry** Notification Service allow access of all Monitors within one account?

*Yes, you can sign-up multiple monitors in one AFS account.*

## Specifications

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Differential Pressure Range	Near zero to 4.0 in w.c.
Clog Filter Trigger Point	1.5 to 2 times initial differential pressure (at the recommended setting on the <b>SERVICE FILTER</b> control)
Temperature Range	32° to +122° F (0° to +50° C) Operating -40° to +185° F (-40° to + 85° C) Storage
Humidity	80% RH, non-condensing
Power Requirements (-B)	6.0 VDC at 90 mA Transmitting, <20 uA Standby
Batteries, Monitor (-B)	(4) AA 2400 mAh
Battery Life	Approximately 1 year
Power Requirements (-C)	15 to 24 VAC/DC at 11 mA Transmitting, <20 mA Standby
Insertion Depth into Duct	Does not extend into duct
Local Clogged Air Filter Alert	Red <b>STATUS</b> LED & 2 KHz Beeper alternating ON & OFF five times
Low Battery Alert	Yellow <b>STATUS</b> LED blinking approximately once per minute
Malfuction Alert	Red <b>STATUS</b> LED continuously illuminated
Wired Output	Pulsing 0 V to 5 VDC @ 18 mA max upon clog or low battery alert

Relay Output	Optional one form C dry contact @ 500 mA max – Model FS-245-C
Text & E-Mail Notification**:	User configurable SMS text messaging and e-mail
Indicators:	Green / Yellow / Red Status LED and audible beeper
Electrical Connections:	Power - 2.5mm barrel jack mates to wall adapter: Model FS-245-B, or Power - Conduit into terminal block, 14-30 AWG: Model FS-245-C Output - Conduit into terminal block, 14-30 AWG: Model FS-245-C
Mounting	5 holes, 4 @ 7/64" and 1 @ 3/8"
Monitor Dimensions	6" x 4.625" x 1.5"
<i>WiFi</i> Module	FCC/CE/IC certified 2.4-GHz IEEE 802.11b/g transceiver
<i>WiFi</i> Authentication	Secure using WPA-PSK (TKIP), and WPA2-PSK (AES)
Transmission Range	Within your building similar to other <i>WiFi</i> devices, depending upon line-of-sight and obstacles
FCC Identification #	Contains FCC ID Number: T9J-RN171
Industry Canada #	Contains IC Certification/Registration Number: #6514A-RN171

\*\* Requires subscription to AirFilterSentry Notification Service, Internet connection, and wireless router.  
Specifications are subject to change without notice.

## Warranty

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**Limited warranty** Please refer to [www.cleanalert.com/termsosfale.html](http://www.cleanalert.com/termsosfale.html) for full warranty text.

For a period of one (1) year following the date of purchase of the Product, if the Product ceases to function and/or functions improperly due to a defect in material or workmanship, CleanAlert, LLC will repair or replace the Product (at its sole discretion) free of charge to the customer. This warranty does not apply to:

1. Damage caused by accident, abuse or mishandling of the Product after it has left CleanAlert, LLC's facility;
2. Acts of God;
3. Units which have been subject to unauthorized repair and/or have been taken apart or otherwise modified;
4. Units damaged from installation or use not in accordance with these instructions;
5. Damages exceeding the cost of the Product; and
6. Damages that are considered normal wear and tear (in CleanAlert, LLC's sole discretion).

A Product requiring warranty service shall be sent by the customer to CleanAlert's facility in West Chester, PA. This warranty does **NOT** cover the costs of having the Product transported to CleanAlert, LLC for warranty service. The customer is responsible for safely sending the Product to CleanAlert, LLC.

## WiFi

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### Transmitter

The **FILTERSCAN WiFi Air Filter Monitor** contains a *WiFi* radio module operating at a frequency of 2.4GHz, which is activated periodically. Transmissions to the **AirFilterSentry Notification Service**, are very short in duration.

Each **FILTERSCAN WiFi Air Filter Monitor** has been assigned a unique MAC address at the time of manufacture.

### Remote Update

The **FILTERSCAN WiFi Air Filter Monitor** has the ability to allow the **AirFilterSentry Notification Service** to update the Monitor software. During user configuration on the **AirFilterSentry Notification Service** website, if you checked the “Allow Automatic Updates to your **FILTERSCAN** Software?” box on the Edit Monitor screen and there is a later version of software available on the server, your **FILTERSCAN WiFi Air Filter Monitor** will automatically download the latest version of software and update itself without any action by you. The update will be transparent and all operating parameters will be intact after the update.

1. Software updates will be made available by the **AirFilterSentry Notification Service**.
2. When an update is made available, the Notification Service will send an update command to the **FILTERSCAN WiFi Air Filter Monitor** in response to the Monitor’s periodic status message.
3. If you’ve elected to receive automatic updates, the Monitor then downloads and validates the new software.
4. No further action is required on your part.

## Revision History

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Rev. #	Effective	Summary:
3.00	12/19/14	Original Approved Release
3.03	1/23/15	Rearrange to best order of sign up and installation
3.04	2/5/15	Final Review for Publishing
3.05	11/13/15	Added Pat. url and updated specification and AFS images
3.06	12/30/15	Added “does not support spaces in SSID (network name)” in connect to router section and patent notice at end
4.00	7/21/16	Updated for Auto-Calibration and Android network connection operation
4.02	9/9/16	Updated alarm functions
4.03	1/12/17	Revised and added Special Character statements for SSID and passphrase

## Appendix

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### Glossary

HVAC .....	Heating, ventilating, and air conditioning
Dirty Air Filter .....	An air filter which has been in use and has collected some amount of dirt or dust particles that discolor the filter fibers or element but do not substantially affect the air flow through it.
Clogged Air Filter .....	An air filter which has collected a sufficient amount of dirt or dust particles to not only discolor the filter fibers or element but decrease the air flow through the filter as well. The <b>FILTERSCAN WiFi Air Filter Monitor</b> typically identifies a filter as clogged when the differential pressure within an HVAC system increases to 1.5 to 2 times the initial differential pressure identified when the unit was calibrated with a clean filter.
Monitor .....	The sensor voltage detection and signal processing portion of the system.
AirFilterSentry.....	The application software and database residing on the Cloud Server that provides all operational aspects of the <b>AirFilterSentry Notification Service</b> .

- Cloud Server..... The computer server on which the **AirFilterSentry Notification Service** resides and operates. The hosting service ensures database backups and redundancy to provide maximum up-time of their systems.
- MAC Address ..... Media Access Control unique identifier assigned to the *WiFi* radio within the **FILTERSCAN WiFi Air Filter Monitor**.

## Indicators

- Green **STATUS** LED..... The blinking Green **STATUS** LED at the **FILTERSCAN WiFi Air Filter Monitor** indicates normal operation.
- Yellow **STATUS** LED..... The blinking Yellow **STATUS** LED at the **FILTERSCAN WiFi Air Filter Monitor** indicates a process is occurring and can also indicate a low battery condition at the Monitor or Receiver.
- Red **STATUS** LED..... The Red **STATUS** LED at the **FILTERSCAN WiFi Air Filter Monitor** is an alarm indicator which blinks whenever an alarm condition occurs.
- Beeper..... The audible beeper at the **FILTERSCAN WiFi Air Filter Monitor** is an alarm indicator which beeps whenever certain alarm conditions occur.

## Local Alarm Indications

### Monitor/Transmitter Alarm Indications

Alarm Condition	Alarm Indication	Clear Alarm Procedure
Normal Operation	<b>STATUS</b> LED flashes green every minute.	None
Clogged Filter	<b>STATUS</b> LED flashes red five times every ten minutes. Beeper sounds with LED flash, if ambient light is present.	Replace Filter and Recalibrate
Low Battery	<b>STATUS</b> LED flashes yellow every minute.	Replace Batteries
Sensor Failure	<b>STATUS</b> LED continuously on red for 5 seconds, every 10 minutes. Beeper sounds with LED, if ambient light is present.	Contact CleanAlert Customer Service at 888-414-3569

# Various HVAC Configurations for Monitor Installation

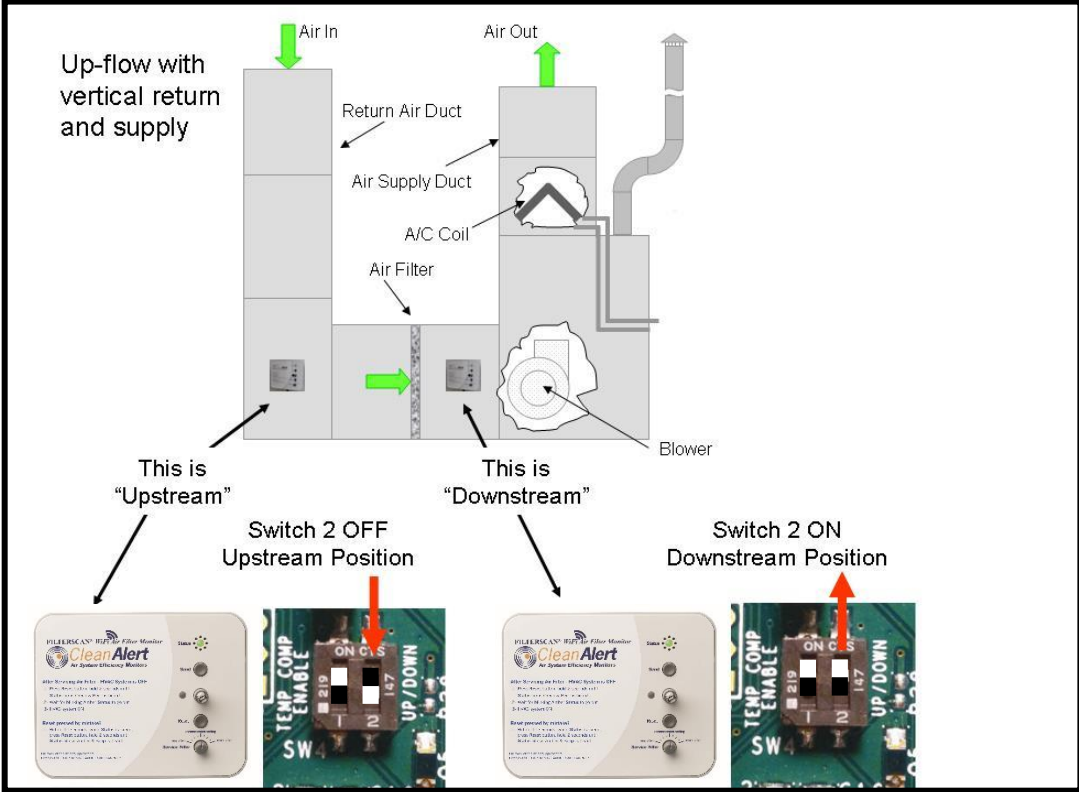


Figure 16: Installation on HVAC systems with vertical return and supply ducts

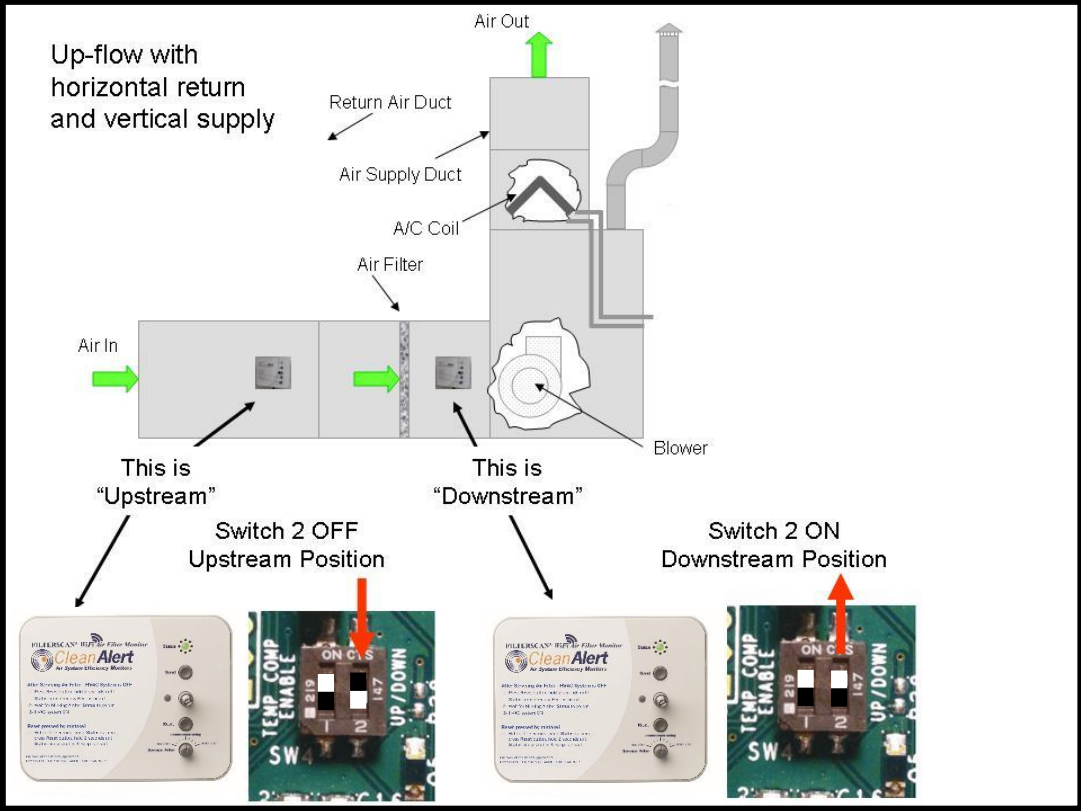


Figure 17: Installation on HVAC systems with horizontal return and vertical supply ducts

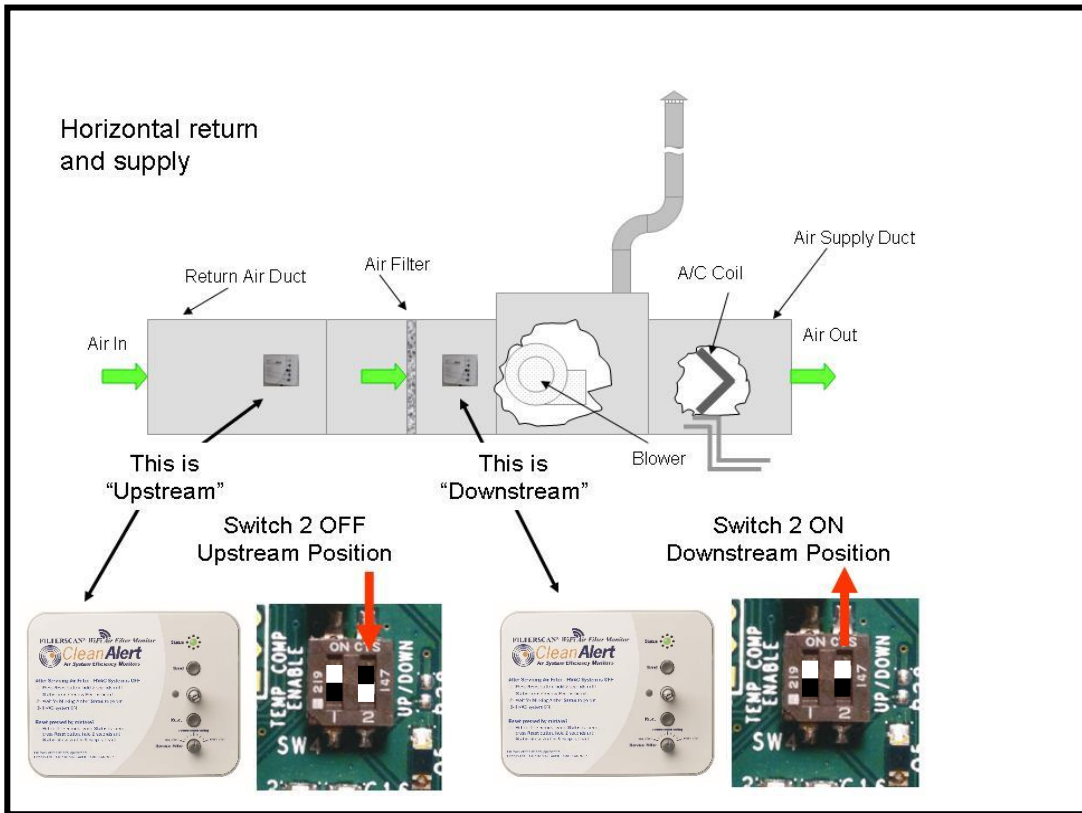


Figure 18: Installation on HVAC systems with horizontal return and supply ducts

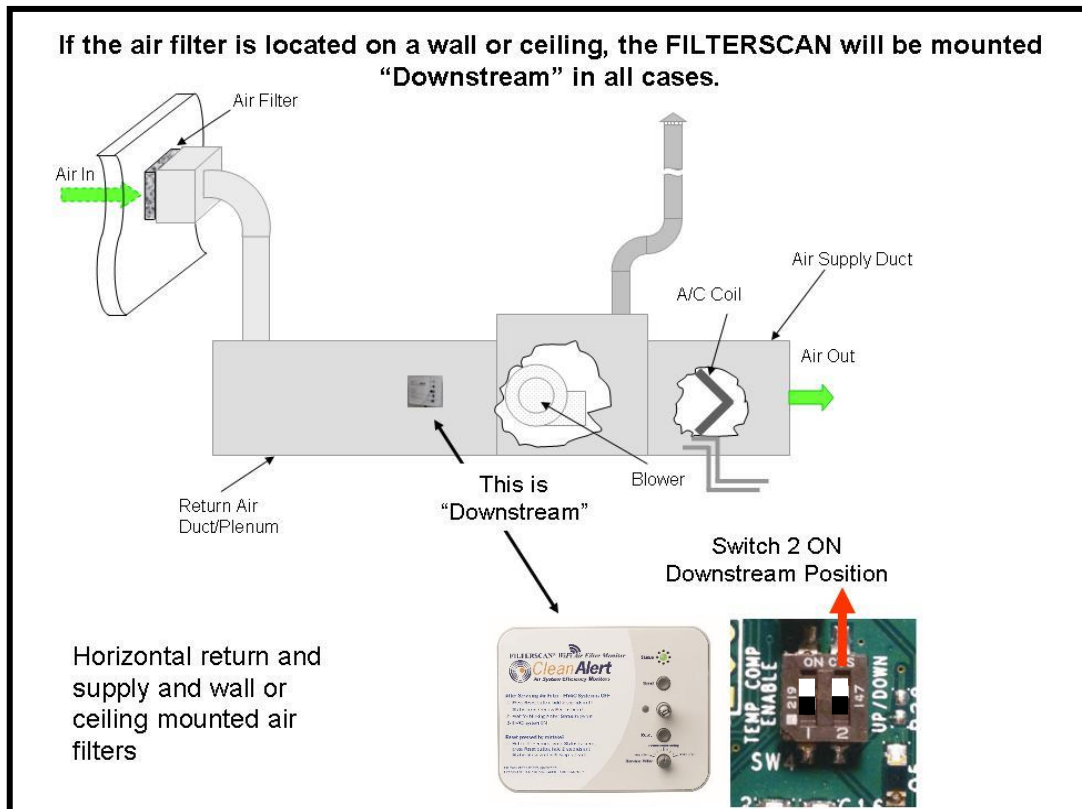


Figure 19: Installation on HVAC systems with wall or ceiling-mounted air filters

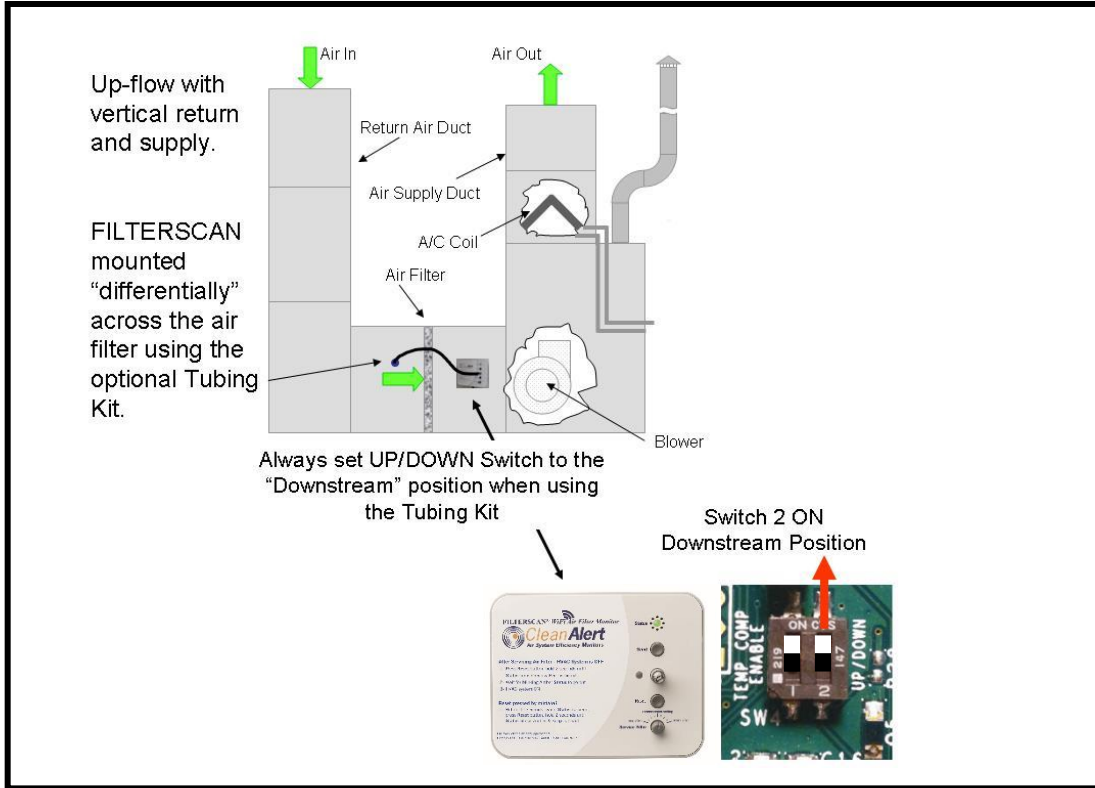


Figure 20: Installation of the optional CA-4DP Tubing Kit mounted differentially across the filter.

## Optional Dry Contact Relay Output Operation

1. When connecting the relay output to an external building automation system (BAS) or alarm, it is recommended that the Common and Normally Closed contacts be used. This allows the external system or alarm to detect when the cabling is cut.
2. During a clog alarm, the relay will activate for one second, opening the Normally Closed contacts, and closing the Normally Open contacts.
3. Note: If the power is lost, there will be no relay indication of such power failure.

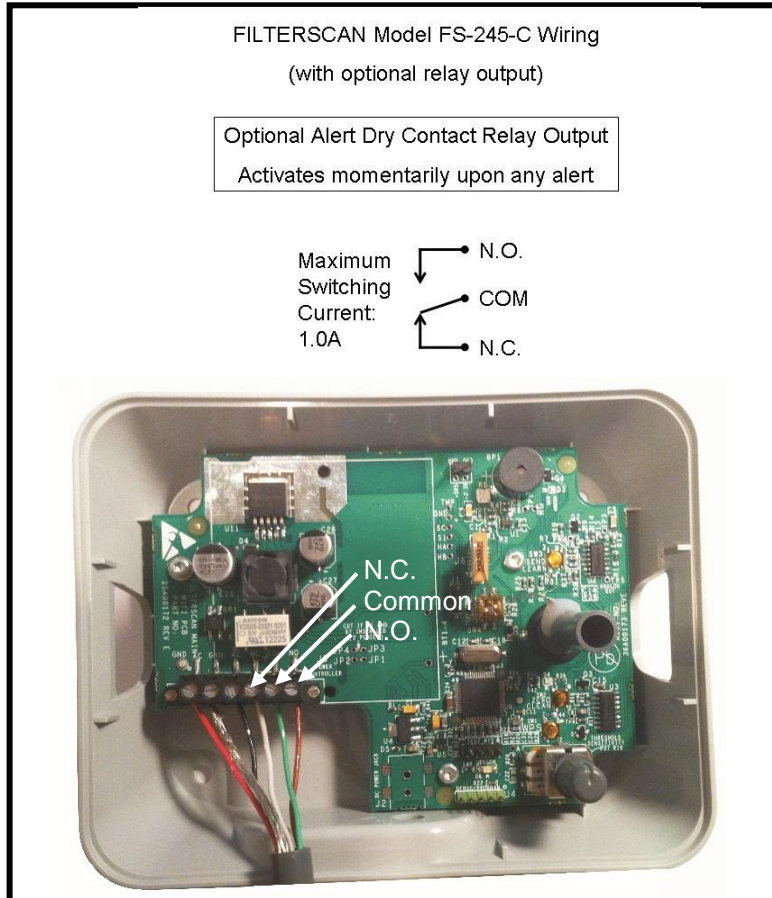


Figure 21: Model FS-245-C with Optional Relay Output

## Disclaimer

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