USER GUIDE

MAN0144 rev 8

AERO^{BT} VAV PHONE APP

Style conventions used in this document:

UI Text: Text that represents elements of the UI such as button names, menu options etc. is presented with a grey background and border, in Tahoma font which is traditionally used in Windows UIs. For example:

`Ok`

Standard Terms (Jargon): Text that is not English Language but instead refers to industry standard concepts such as Strategy, BACnet, or Analog Input is represents in slightly condensed font. For example:

BACnet

Code: Text that represents File paths, Code snippets or text file configuration settings is presented in fixed-width font, with a grey background and border. For example:

```
$config_file = c:\CYLON\settings\config.txt
```

Parameter values: Text that represents values to be entered into UI fields or displayed in dialogs is represented in fixed-width font with a shaded background. For example

`10°C`

Product Names: Text that represents a product name is represented in bold colored text. For example

INTEGRA™

Company Brand names: Brands that are not product names are represented by bold slightly compressed text:

ABB Active Energy

PC Keyboard keys: Text representing an instruction to press a particular key on the keyboard is enclosed in square brackets and in bold font. For example:

[Ctrl]+[1]

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1 Introduction

WHAT IS THE Aero^{BT} APP?

Aero^{BT} is a mobile app for balancing Cylon **CBV** and **FBVi** Line of controllers, including:

- **CBV 2U4-3T**
- **CBV2U4-3T-N**
- **FBVi-2U4-4T**

Aero^{BT} App is available for both iOS® and Android™ and can be downloaded to your device for free from Google Play™ or the Apple® Store.

You can find this App by searching for AeroBT

REQUIREMENTS

Android™ – device able to access the Google Play™ store and running

- Minimum version 5.0 (API Level 21 - Lollipop)
- Maximum version 11.0 (API Level 30 -R)

iOS® – device able to access the Apple® Store and running iOS 10.0 or newer.

Network Requirements – a wireless IP connection to a router on the BACnet® building system.

The App will detect strategy ID versions in **CBV, CBV-N, FBVi** controllers and only list controllers that have the listed strategy ID under the About screen.

DOWNLOADING AND INSTALLATION

ANDROID™

If you are on a website that offers the App, click on the 

Icon.

Search for **Aero**^{BT},

then follow the directions for your device.

If you are on an Android™ device, navigate to the Play Store™ App icon 

and click.

Search for **Aero**^{BT}.

Click on the "Get" button and it will install on your device.

IOS®

On your iOS® device, navigate to the App Store® icon  and click.

Search for **Aero**^{BT}.

Click on the "Get" button and it will install on your device.

After installation, the **Aero**^{BT} icon  should be visible on your device.

Click this icon to start **Aero**^{BT}.

Note: **If you don't have wireless network access when you start the Aero^{BT} app, any network packets continue to go out of the cellular service until you "cold start" the app – i.e. close the Aero^{BT} app and then restart it.**

- **To close an app in Android™ OS, open Settings > Apps and click on the Aero^{BT} entry in the apps list. On the App info screen for Aero^{BT}, click the Force Stop button**
- **To close an app in iOS®, double-tp the home button to see recently used apps, scroll until the Aero^{BT} app is in the center of the screen, then drag the Aero^{BT} app up so that it disappears from the screen.**

Note: **On iOS® devices, the Wifi Assist should be disabled, because it can cause the device to use cellular data, which will prevent connection to the BMS Wifi access point.**

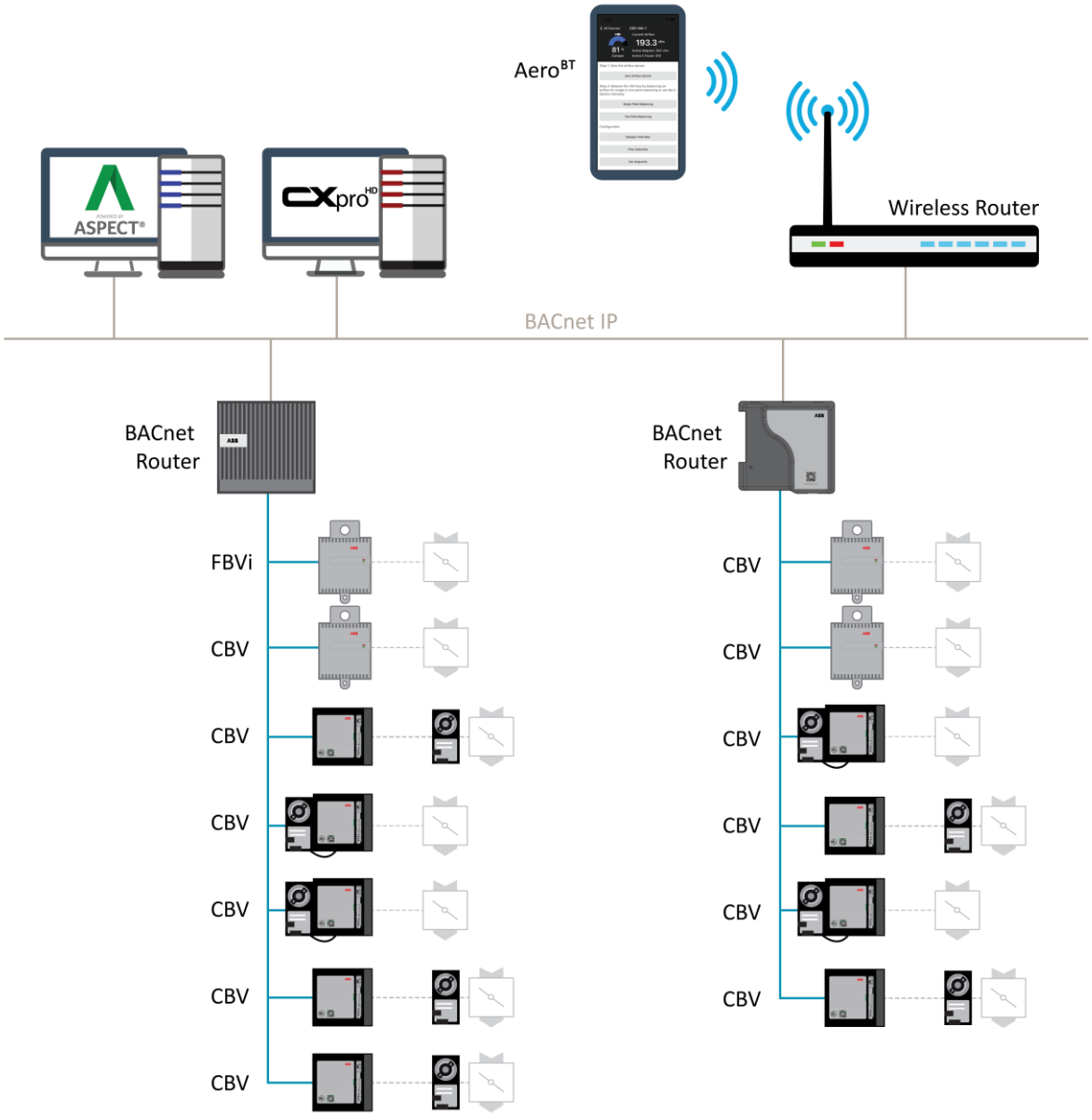
2 Application Setup

NETWORK TOPOLOGY

BACNET® NETWORK

Aero^{BT} requires a wireless connection to the BMS so that the Android^{TM} or iOS® system can connect to the **CBV** devices. If no wireless connection is available, a Wifi Router must be added temporarily to allow **Aero**^{BT} to access the network.

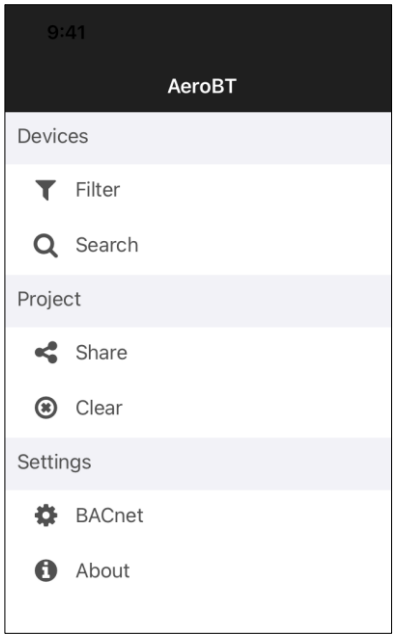
- If the building automation system is located on the building IT system, consult with the system IT coordinator before adding additional wireless hardware.
- If the system is on its own separate network, consult with the system integrator for IP addressing.



STARTUP

Initial setup screen when first starting up the application.

MAIN SCREEN



Filter – Filter devices by the network, checked as complete, or flagged.

Search – Search the network for devices

Share – Email a report

Clear – Clear current device search

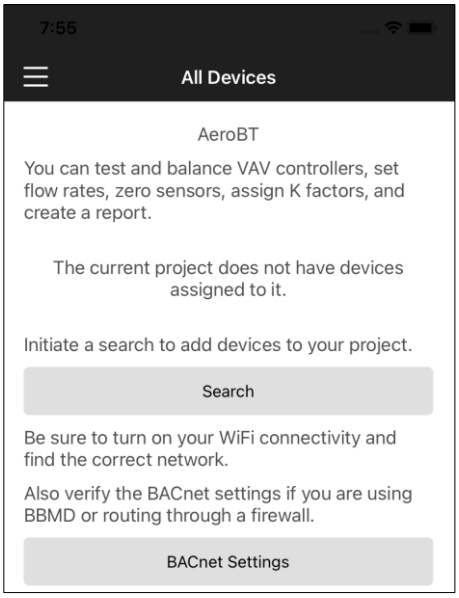
BACnet – Set up BACnet settings

About - Version and strategy information

QUICKSTART

There are two steps to get your devices listed:

1. Configure the BACnet® settings
2. search the network

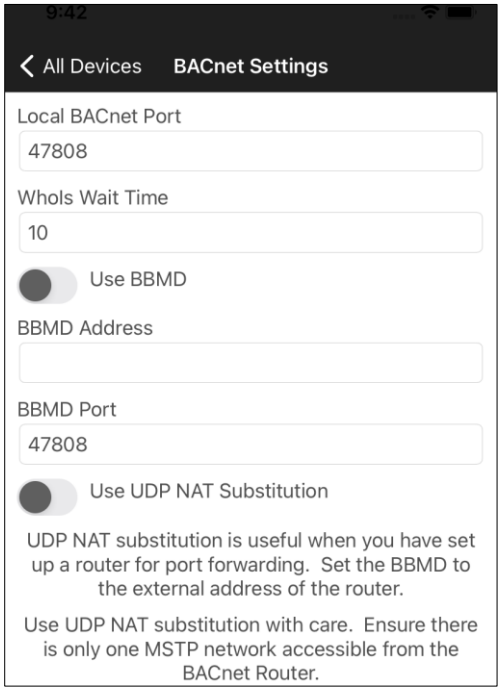


SEARCH – click this after BACnet Settings have been configured.

BACnet SETTINGS - Click this to configure the BACnet Settings

STEP 1 CONFIGURE THE BACNET® SETTINGS

Click the BACNET SETTINGS button in the Main Menu to open the BACnet Settings page:



Local BACnet Port – this must match the local BACnet® Port on the router. This should be the standard BACnet Port number.

> **Note:** if you change the Local BACnet Port, the **AeroBT** app must be shut down (see *Downloading and Installation on page* 5) and restarted in order for the port to engage.

WhoIs Wait Time. This is the time the system waits for a device to repone with an I-am message.

Use BBMD - Toggle to use BBMD if needed.

BBMD Address – this should be the IP address of the controller used as a gateway. This could be for example a BACnet® router, a **CBXi**, a **MATRIX Series** device, or a **NEXUS Series** device.

BBMD Port – the Port used by BBMD on the gateway controller.

Use UDP NAT Substitution – used when the router is using port forwarding.

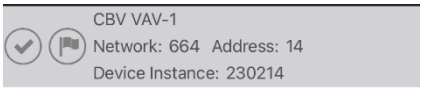
> **Note:** BBMD is needed if messages are transferring between two routers. Only one BBMD per subnet is allowed. If more than one BBMD is setup for a subnet, network issues will result.
>
> **Note:** In most cases, BBMD is not needed. In that case Use BBMD should be toggled 'Off' and the IP address should be set to the controller used to access **CBV** boxes.

STEP 2 SEARCH THE NETWORK (DEVICE LIST)

Click the SEARCH button in the Main Menu to list all devices on the Network

For each Device found that match the strategy IDs the following will be listed here:

- Device Name
- Network Number
- Mac Address
- Device Instance



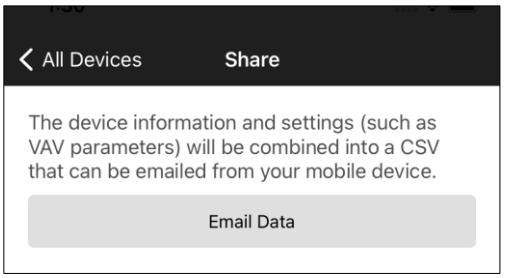
To access a Device, click on the Device name in the list.

To mark a Device for review at a later stage, you can toggle the Flag icon . Use the Filter option Filter on the main menu to sort by flag.

To mark a Device as 'Finished', click the Check icon Use the Filter option Filter on the Main Menu to sort by check.

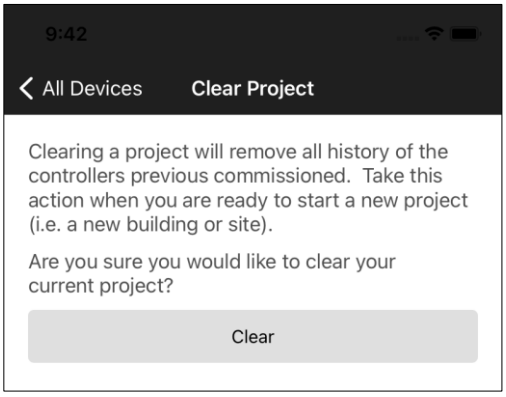
MAIN SCREEN OPTIONS

SHARE



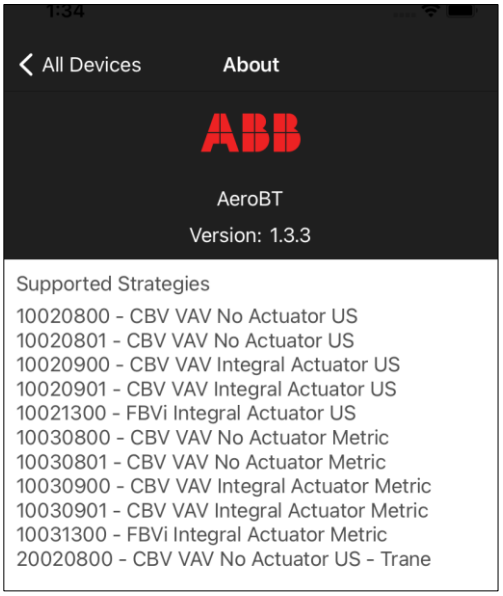
You can email the report findings on the balanced VAV boxes by clicking the SEND CSV TO EMAIL button and selecting the email app on your device from which you wish to send out the reports.

CLEAR



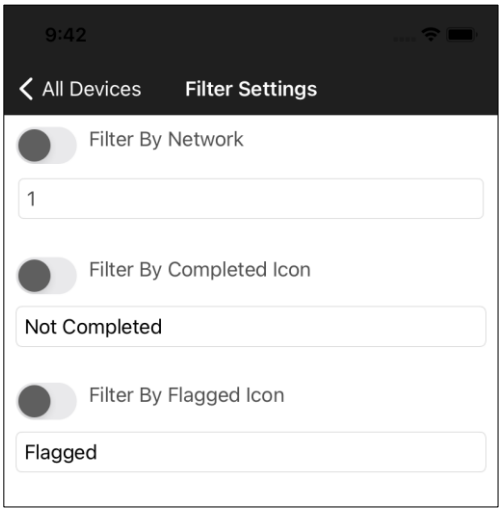
Click the CLEAR button to clear the current list of controllers. This might be used for example to clear a finished floor.

ABOUT



Shows the current version of the **Aero**^{BT} App, and the current list of strategies it supports.

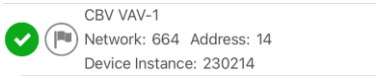
FILTER SETTINGS



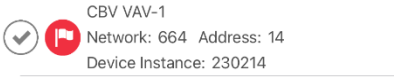
The device list returned by a search can be filtered by the following:

Network Number

Checkmark (Completed) Icon toggled `ON` or `OFF`



Flag Icon toggled `ON` or `OFF`

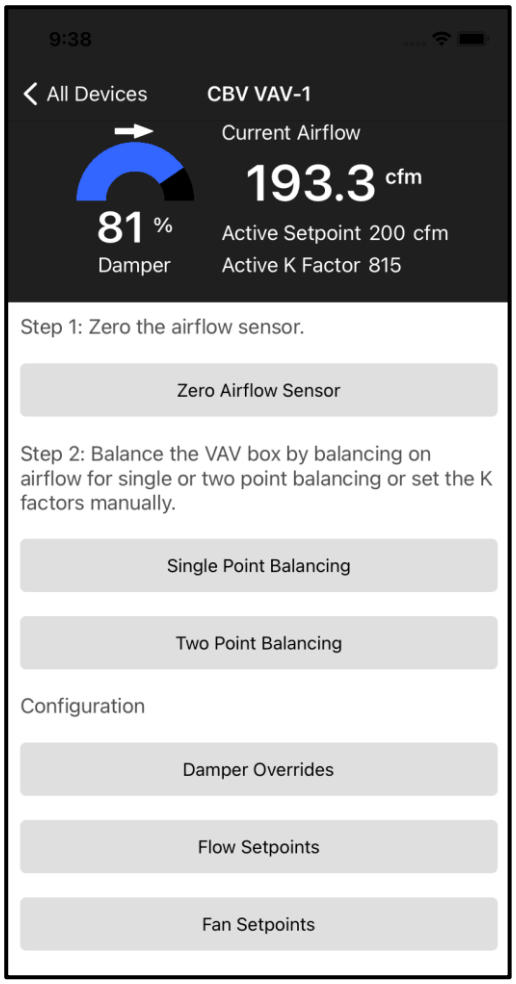


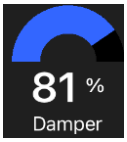
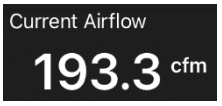
3 Balancing VAVs

BALANCING VAVS

DEVICE MAIN SCREEN

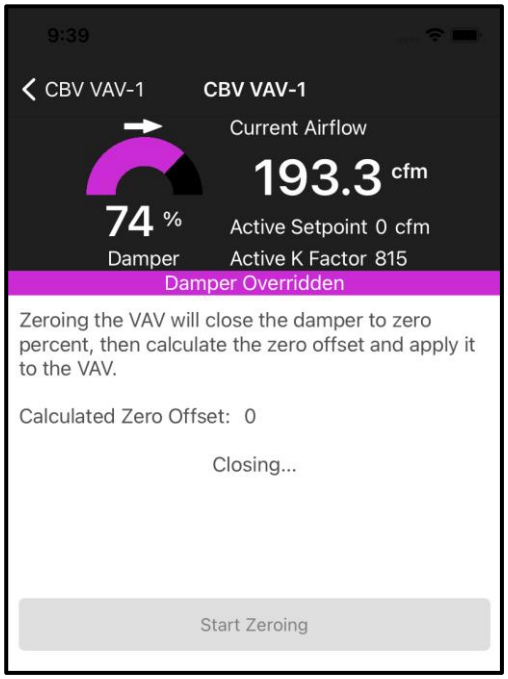
When you select a Device for the All Devices list, the Device's Main Screen is displayed:



CBV VAV-1	Device Name
	Damper Direction
	Damper Position
	Active Airflow
Active Setpoint 200 cfm	Active Airflow Setpoint
Active K Factor 815	Unit K Factor
ZERO AIRFLOW SENSOR – close the damper 100% and calculate the offset during operation.	
SINGLE POINT BALANCING – balance the vav to its max airflow setpoint.	
TWO POINT BALANCING – balance the vav to both its min and max airflow setpoint.	
DAMPER OVERRIDES – User can override different damper positions.	
FLOW SETPOINTS – User can set airflow setpoints.	
FAN SETPOINTS – User can set fan setpoints	

ZERO AIRFLOW SENSOR – FBVi AND CBV

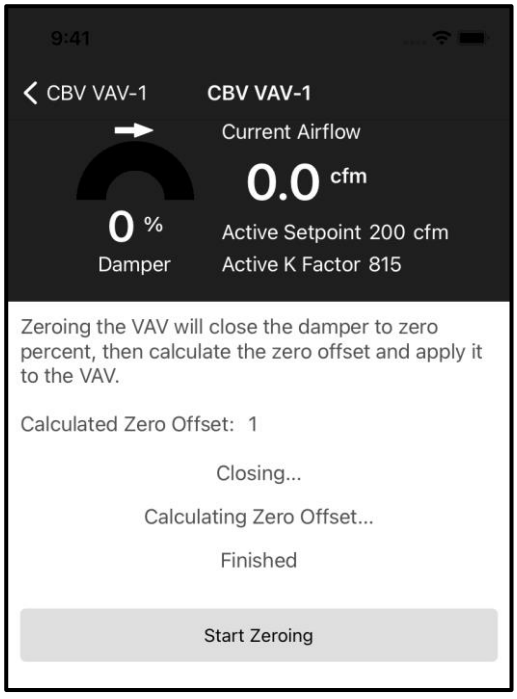
Clicking the ZERO AIRFLOW SENSOR button on the Device Main Screen opens the Zero Airflow screen:



Click the START ZEROING Button

- The damper will close to 0%
- The strategy will calculate the zero offset
- The damper will be released.
- When the damper has been overridden, the color will change from yellow to purple to indicate its status.

At any time, if you click the back arrow <, the system will stop and release back to auto control.



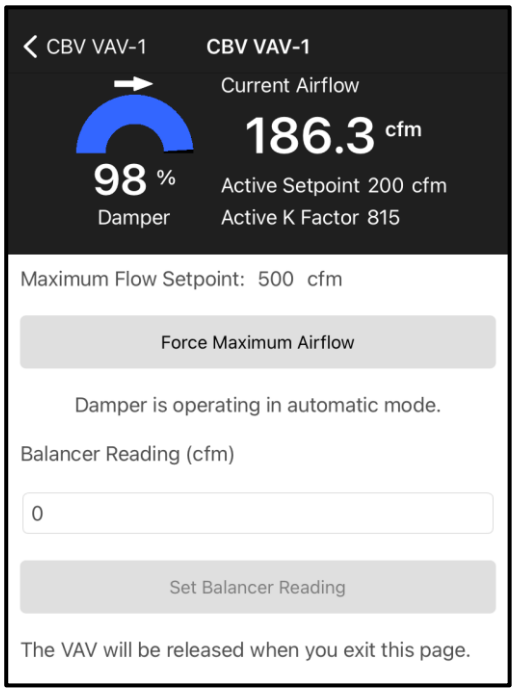
After the calculation is finished, the Calculated Zero Offset will be shown.

The damper color will change back from purple to blue to indicate that the system is back in auto mode.

When finished, leave the screen by pressing the back arrow <. This will also release any overrides.

SINGLE POINT BALANCING – FBVi AND CBV

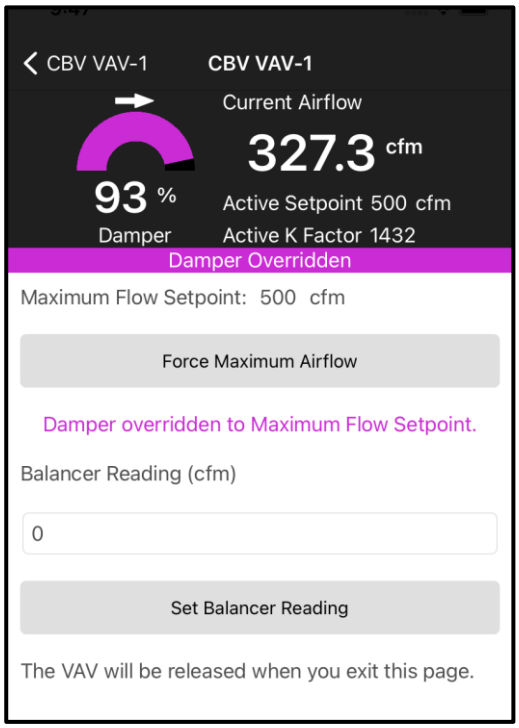
Clicking the BALANCE MAX AIRFLOW button on the Device Main Screen opens the Balance Max Airflow Screen:



Step 1 – Verify your maximum flow setpoint. This can be set by returning to the main screen and selecting FLOW SETPOINTS

Step 2 – Click the FORCE MAXIMUM AIRFLOW Button.

The Active Setpoint display will change to the Maximum Flow Setpoint.



The color of the damper position will change to purple, indicating the unit is not in auto mode and is being overridden.

Step 3 – after the airflow has settled, take a balancer reading, and enter the cfm reading into the Balancer Reading input box. The K Factor will be re-calculated.

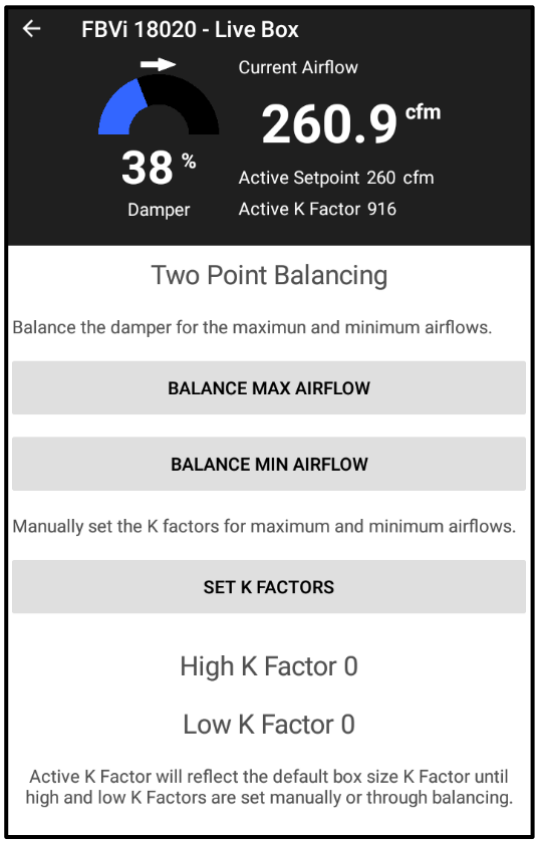
> **Note:** **In the CBV, the K Factor will go to a random number from the set K Factor during the first balance run.**
>
> **In the FBVi, the initial K Factor will be set by the Box Size setpoint.**

Step 4 - Once the balancer reading has been entered, click the SET BALANCER READING button to send the information to the controller.

When finished, leave the screen by pressing the back arrow <. This will also release any overrides.

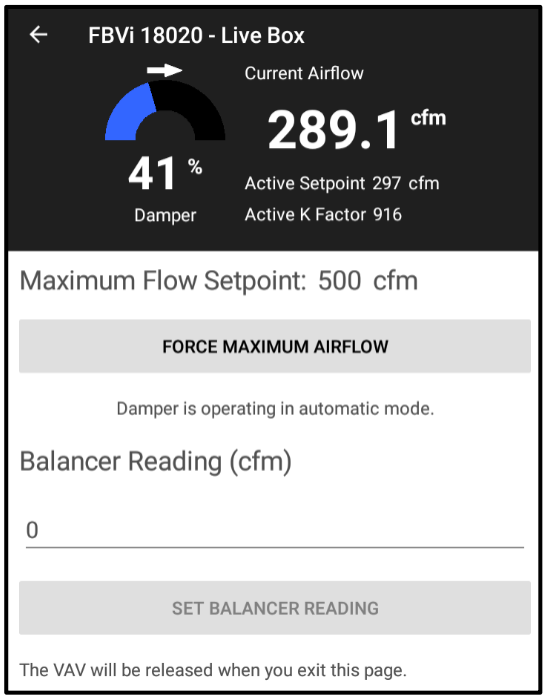
2-POINT BALANCING – FBVI

Clicking the TWO POINT BALANCING button on the Device Main Screen opens the Two Point Balancing Screen:



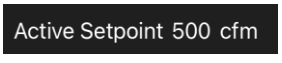
Step 1 – Verify your maximum flow setpoints and minimum flow setpoints. This can be set by returning to the Main Screen and selecting FLOW SETPOINTS

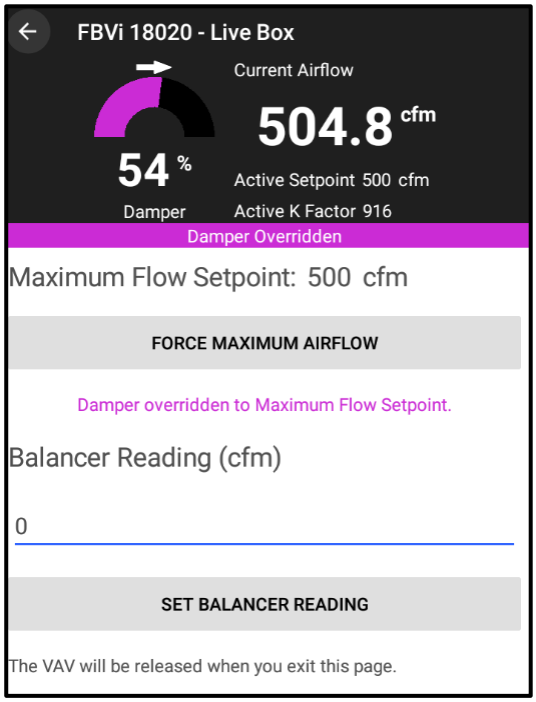
The High K Factor and Low K Factor will show the current calculated K Factors after balancing. If not balanced, the Active K Factor will reflect the pre-determined K Factor based on the box-size selected.



Step 2 – Click the FORCE MAXIMUM AIRFLOW Button.

The Active Setpoint display will change to the Maximum Flow Setpoint.





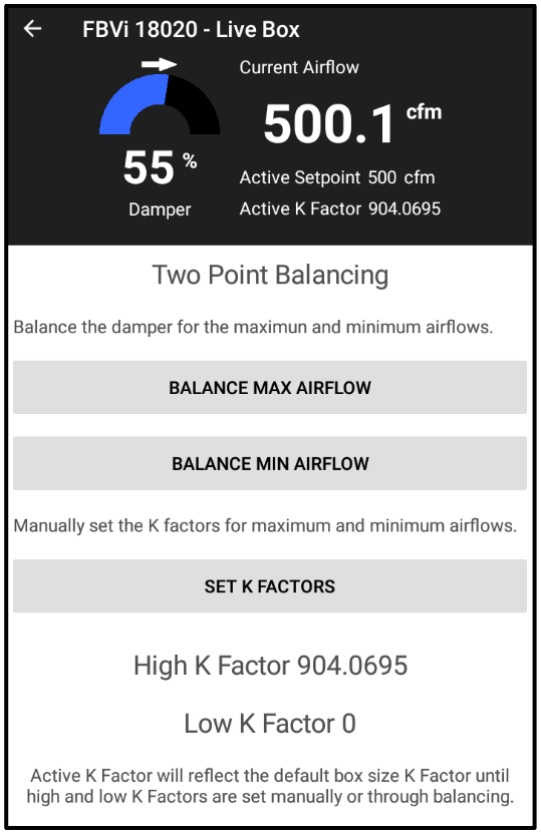
The color of the damper position will change to purple, indicating the unit is not in auto mode and is being overridden.

Step 3 – after the airflow has settled, take a balancer reading, and enter the cfm reading into the Balancer Reading input box. The K Factor will be re-calculated.

Step 4 - Once the balancer reading has been entered, click the SET BALANCER READING button to send the information to the controller.

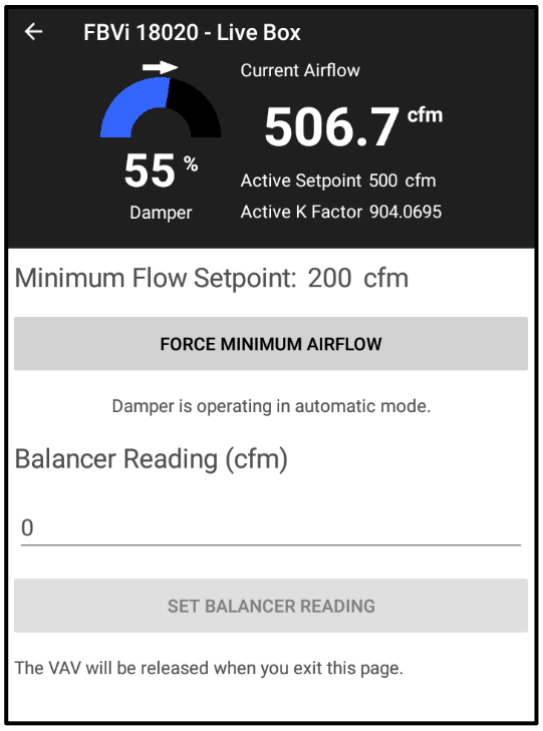
When finished, leave the screen by pressing the back arrow <. This will also release any overrides.

Note: If Low K Factor was calculated first, the Low K Factor will be used as the basepoint. If the Low K Factor was not calculated yet, the standard K Factor available with the box size will be used. Once the balancer reading is entered, the new High K Factor will be displayed.



If the max airflow has been balanced, the Active Setpoint will show the calculated maximum K Factor. It can also be read from the Two Point Balance screen.

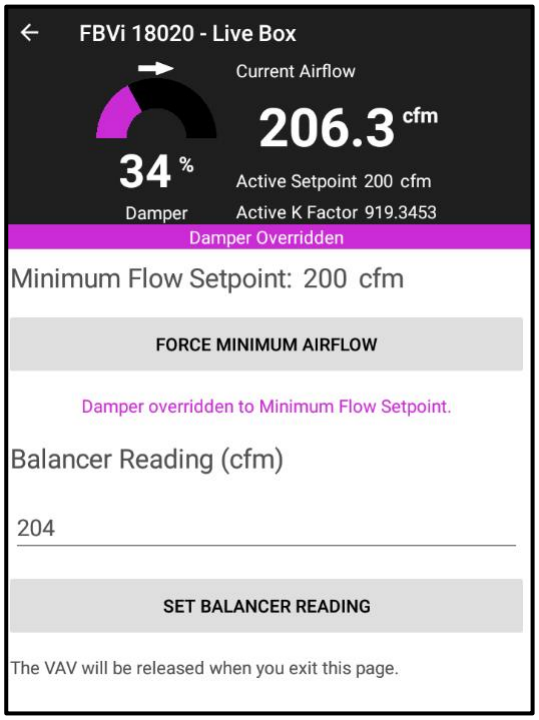
Clicking the BALANCE MIN AIRFLOW button on the Device Main Screen opens the Balance Mix Airflow Screen



Step 1 – Verify your minimum flow setpoint. This can be set by returning to the main screen and selecting FLOW SETPOINTS

Step 2 – Click the FORCE MINIMUM AIRFLOW Button.

The Active Setpoint display will change to the Minimum Flow Setpoint.



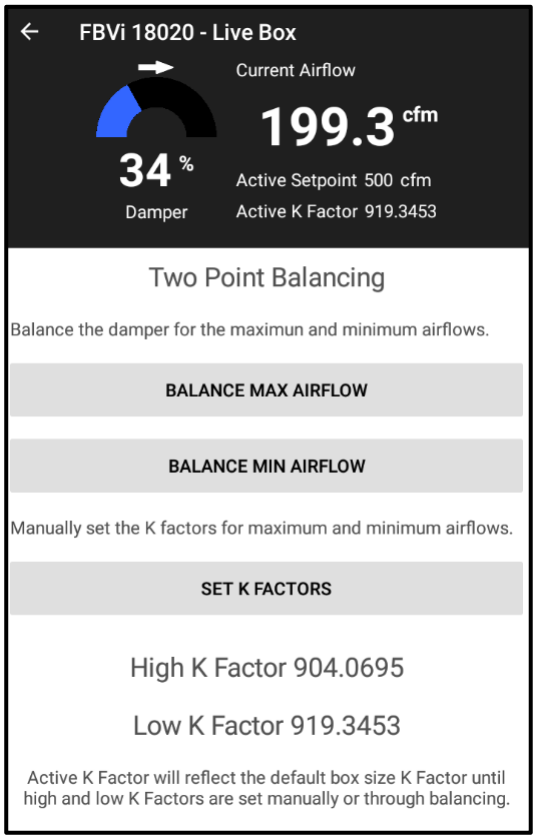
The color of the damper position will change to purple, indicating the unit is not in auto mode and is being overridden.

Step 3 – after the airflow has settled, take a balancer reading, and enter the cfm reading into the Balancer Reading input box. The K Factor will be re-calculated.

Step 4 - Once the balancer reading has been entered, click the SET BALANCER READING button to send the information to the controller.

When finished, leave the screen by pressing the back arrow  . This will also release any overrides.

Note: If High K Factor was calculated first, the High K Factor will be used as the basepoint. If the High K Factor was not calculated yet, the standard K Factor available with the box size will be used. Once the balancer reading is entered, the new Low K Factor will be displayed.



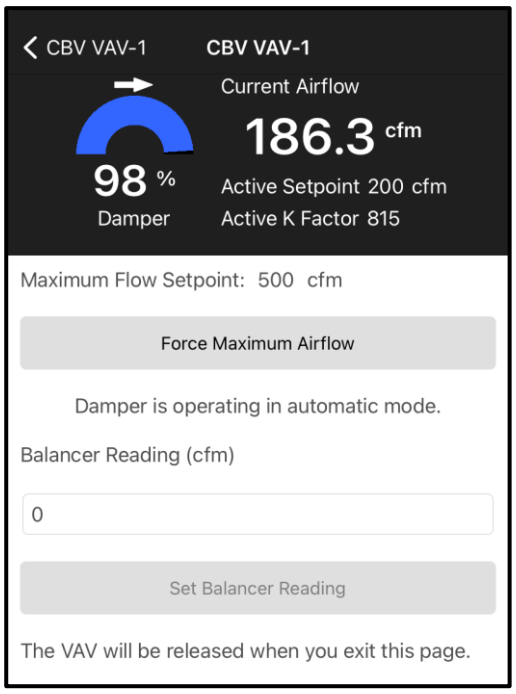
If both the min and max airflow has been balanced, the Active Setpoint will show the calculated K Factor, which will actively reset between the Low K Factor and the High K Factor.

Both calculated K Factors will appear at the bottom of the Two Point Balancing Page for easy referral.

Note: Both Low K Factor and High K Factor can be re-balanced after they have been calculated. Repeat the BALANCE MAX AIRFLOW procedure, or the BALANCE MIN AIRFLOW procedure to re-calculate.

BALANCE MIN AIRFLOW – CBV

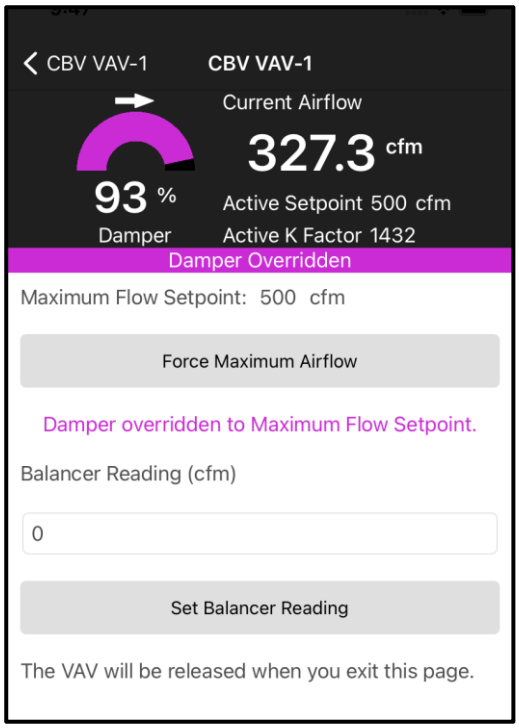
Clicking the BALANCE MIN AIRFLOW button on the Device Main Screen opens the Balance Mix Airflow Screen:



Step 1 – Verify your minimum flow setpoint. This can be set by returning to the main screen and selecting FLOW SETPOINTS

Step 2 – Click the FORCE MINIMUM AIRFLOW Button.

The Active Setpoint display will change to the Minimum Flow Setpoint.



The color of the damper position will change to purple, indicating the unit is not in auto mode and is being overridden.

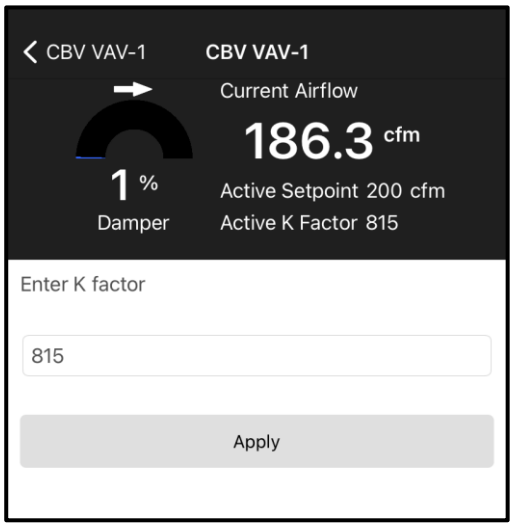
Step 3 – after the airflow has settled, take a balancer reading, and enter the cfm reading into the Balancer Reading input box. The K Factor will be re-calculated. (note K Factor will go to a random number from the set K Factor during the first balance run)

Step 4 - Once the balancer reading has been entered, click the SET BALANCER READING button to send the information to the controller.

When finished, leave the screen by pressing the back arrow <. This will also release any overrides.

SET SINGLE POINT K FACTOR - FBVi AND CBV

If balancing isn't required, you can manually configure the K Factor by clicking the SET K FACTOR button on the Device Main Screen to open the K Factor Screen.



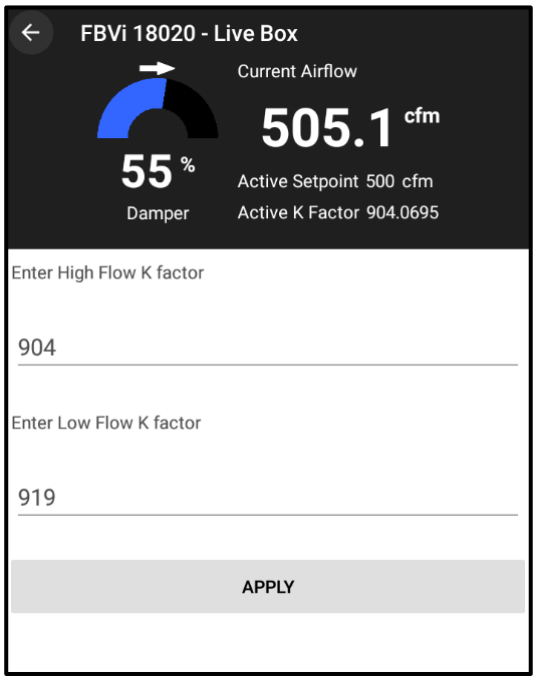
Enter the K Factor number for the VAV. This is available from a chart mounted on the side of an installed VAV, or from documentation from the unit manufacturer.

After entering the K Factor, click the APPLY button.

The active K Factor shown should change to the number entered if doing single point balancing.

SET 2-POINT K FACTOR – FBVi

If balancing is not required, you can manually configure the K Factors by clicking the SET K FACTOR button on the Two Point Balancing Screen to open the K Factor Screen.



Enter both the high and low K Factors for the VAV. For maximum flow, this is available from a chart mounted on the side of an installed VAV, or from documentation from the unit manufacturer.

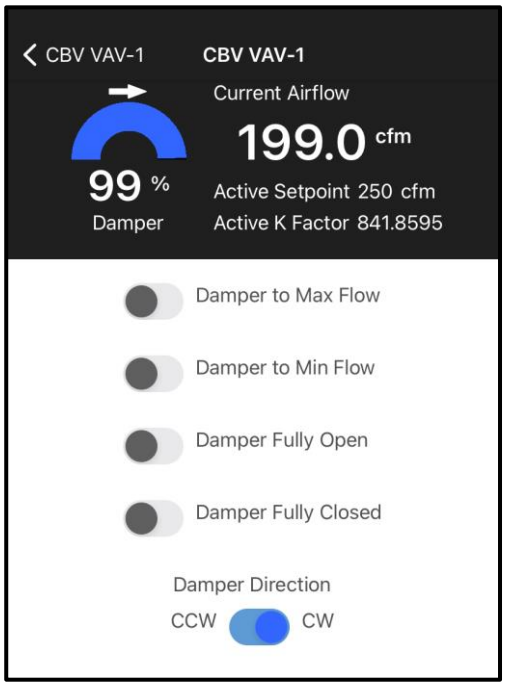
After entering the K Factors, click the APPLY button.

The active K Factor shown will reset between both the high and low K Factors based on the active flow.

Note: If there was a mistake or the box needs to be reset back to the initial box size value, enter `0` in both the High and Low factors.

DAMPER OVERRIDES - CBV

Clicking the DAMPER OVERRIDES button on the Device Main Screen opens the Damper Override screen:

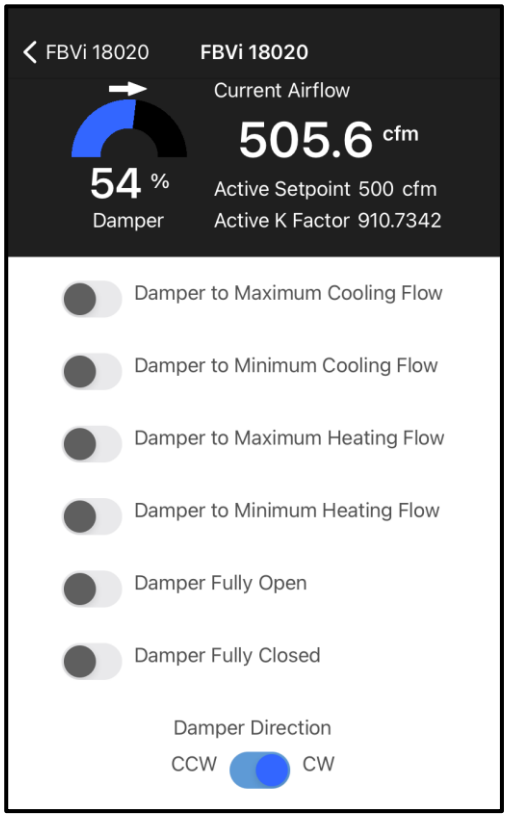


Switch to force Damper to Max Flow Setpoint.
Switch to force damper to Min Flow Setpoint.
Switch to force Damper fully open.
Switch to force Damper fully closed.
Toggle Damper direction either **C**lock**W**ise or **C**ounter**C**lock**W**ise.

When finished, leave the screen by pressing the back arrow < This will also release any overrides.

DAMPER OVERRIDES – FBVi

Clicking the DAMPER OVERRIDES button on the Device Main Screen opens the Damper Override screen:

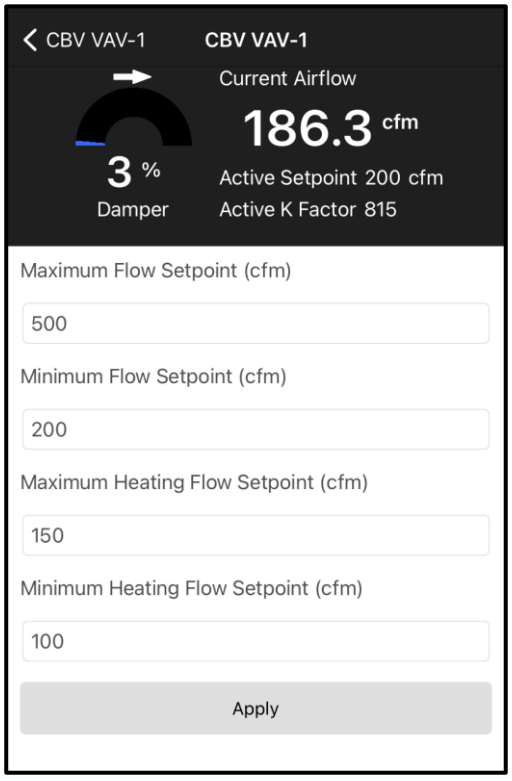


Switch to force Damper to Max Cooling Flow Setpoint.
Switch to force Damper to Min Cooling Flow Setpoint.
Switch to force Damper to Max Heating Flow Setpoint.
Switch to force Damper to Min Heating Flow Setpoint.
Switch to force Damper fully open.
Switch to force Damper fully closed.
Toggle Damper direction either **C**lock**W**ise or **C**ounter**C**lock**W**ise.

When finished, leave the screen by pressing the back arrow  . This will also release any overrides.

FLOW SETPOINTS – FBVI AND CBV

Clicking the FLOW SETPOINTS button on the Device Main Screen opens the Flow Setpoints screen:



Enter the Maximum Flow Setpoint

Enter the Minimum Flow Setpoint

Enter the Maximum Heating Flow Setpoint

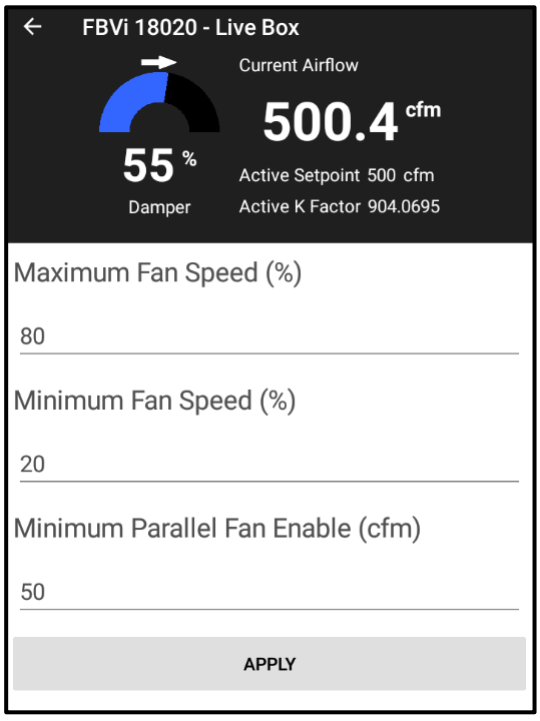
Enter the Minimum Heating Flow Setpoint

After entering the flow setpoints, click the Apply button.

When finished, leave the screen by pressing the back arrow  .

FAN SETPOINTS -FBVI

Clicking the FAN SETPOINTS button on the Device Main Screen opens the Fan Setpoints Screen:



Enter the Maximum Fan Speed Setpoint

Enter the Minimum Fan Speed Setpoint

Enter the Minimum Parallel Fan Enable.

If the airflow falls below this level, the parallel fan will be activated.

After entering the flow setpoints, click the APPLY button.

When finished, leave the screen by pressing the back arrow  .

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