

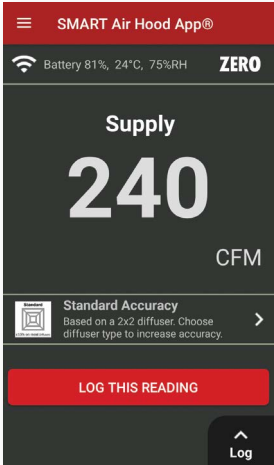


Series SAH SMART Air Hood® Balancing Instrument -
SMART Air Hood® App Software Android® Devices

Specifications - Installation and Operating Instructions



Optional handheld
device UHH7 shown



The **SMART AIR HOOD® (SAH) Balancing Instrument** is the most accurate and easy to operate air flow hood on the market today. The low profile design allows balancers to work in occupied spaces (bathroom stalls, MRI machines, cubicles, tables/chairs, etc.) and maneuver through doorways easier. By using the included 12 foot hood pole and wireless communications to a mobile device, one operator can balance a branch in less time than traditional balancing teams. Besides being lighter than most traditional capture hoods, the ergonomic design makes the technician exude less energy as the SAH has a lighter, balanced design. The rugged polypropylene base hood features Quad Flow Design Technology for controlling air flow and minimizing back pressure, which yields superior measurement accuracy. The Wi-Fi protocol back to the user's Android® or iOS® device gives the user real-time feedback, as they may be up to 200 yards (183 m) from the hood which saves the technician from unnecessarily going up and down their ladder multiple times to cut or open the dampers to balance the system.

The **SMART AIR HOOD® Application Software** reduces the number of steps in the air flow balancing process using Predictive Balancing. Predictive Balancing is a method of predicting the optimal flow set point for each register and the order in which they should be adjusted.

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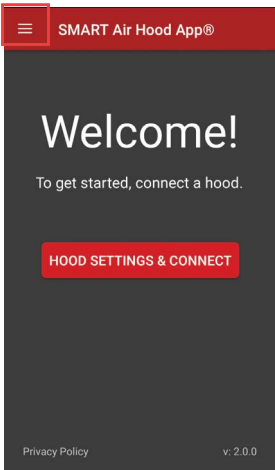
I. SETUP
To begin, ensure the latest version of the SMART Air Hood® App is installed from the Google Play™ store, on a supported device. Supported devices include the Dwyer Series UHH6 or newer, and smart devices with Android® firmware version 8.0 and above. If using an iOS® device, please see Bulletin TE-SAH-IOS.

SMART Air Hood® App

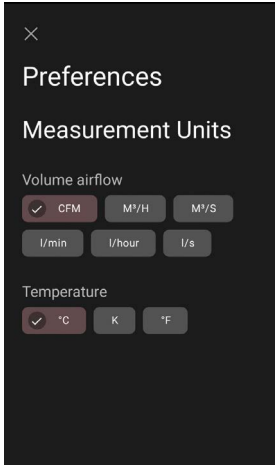


APPLICATION PREFERENCES

When the application is first opened, the following screen will be shown.

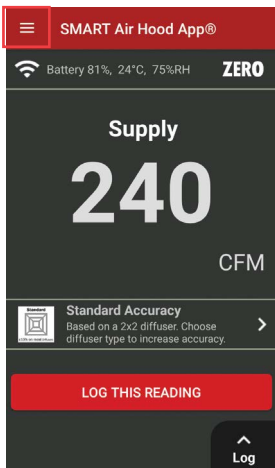


To access the application preferences, press the three lines at the top left of the page and select “Preferences”. The following screen will appear.



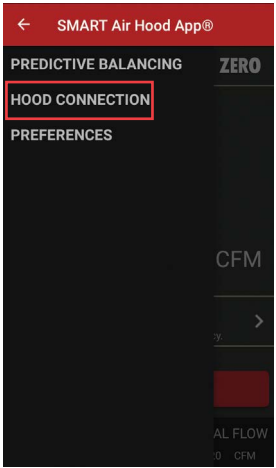
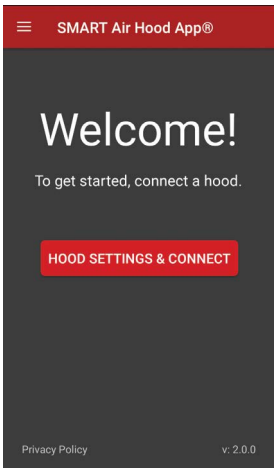
Touch to edit the default units of these fields

After the initial startup, the app will automatically open to the home screen shown below. The Preferences can also be accessed from the home screen by pressing the three lines at the top left of the page and selecting “Preferences”.

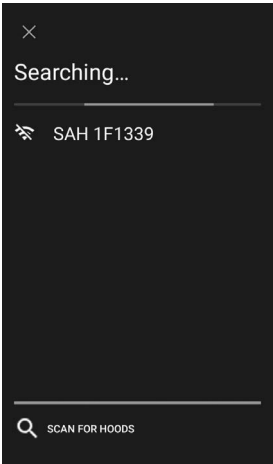


CONNECTING TO THE HOOD

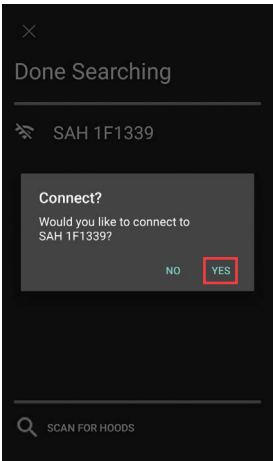
When you press the “Hood Settings & Connect” button on the title screen the app will start searching for a hood right away. You would select “Hood Connection” in the slide out drawer if you lost connection and need to reconnect to a hood after being in the readings screen.



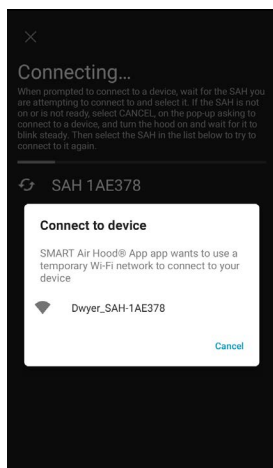
As the app discovers hoods, they will be added to the list below the search status bar.



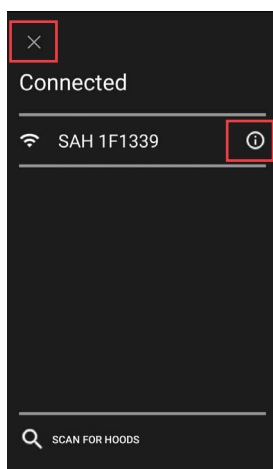
Select the hood that is to be paired and confirm your selection by clicking “YES” when prompted to do so.



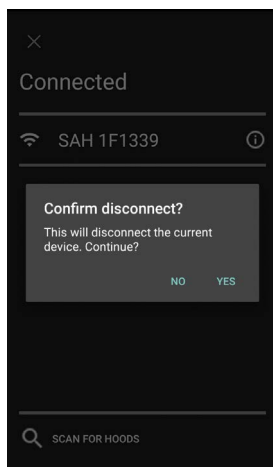
You have to select "Dwyer_SAH-XXXXXX" in the screenshot below to actually connect to the hood.



Once connected, press the "X" in the top left corner to return to the home screen. Note: Press the information button "i" on the hood connection screen to obtain general hood information such as calibration date, serial number, etc.



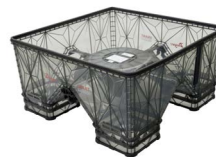
To disconnect from the current hood, press the hood name on hood connection screen. The disconnect dialog comes up, which allows for the hood to be disconnected. If "No" is selected, the dialog will be closed without any other action being taken. If "Yes" is selected, the hood will be disconnected, but still paired.



ZEROING THE HOOD

In order for the hood to be zeroed, place it in the desired orientation in which is going to be utilized. Make sure that the hood is blocked so that no air is flowing through it.

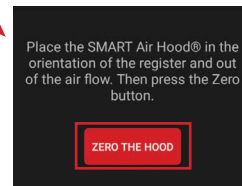
For ceiling diffusers



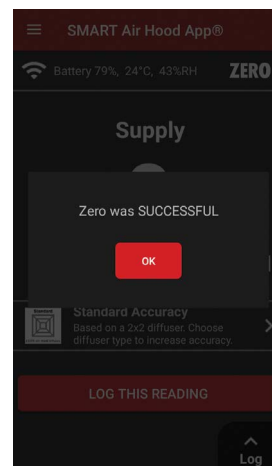
For side-wall diffusers



Press the "Zero" button at the top of the home screen. After the correct hood position is verified, select "Zero The Hood" to begin the zeroing process.

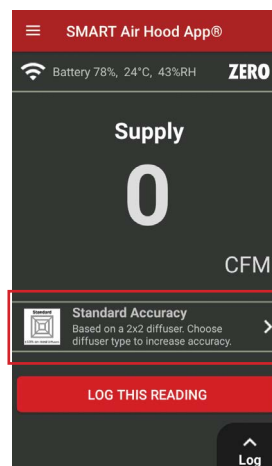


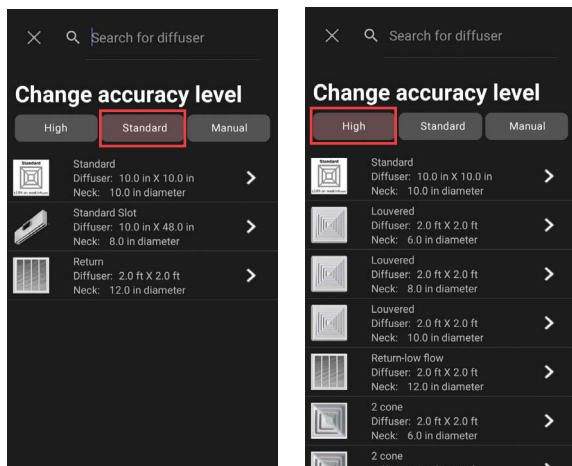
When the zeroing process is complete, it will show the following screen and the reading will be 0. Note: If there is too much air flow, the zero button will be disabled.



SELECTING THE DIFFUSER

To select a diffuser, press the diffuser tab above the "Log This Reading" button.





Select the "Standard" accuracy level to take readings at the industry standard accuracy level.

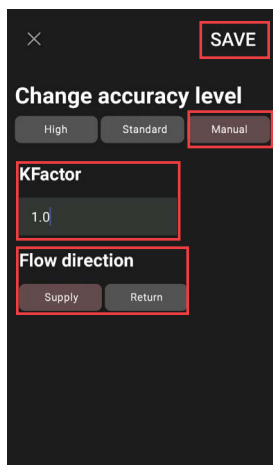
Select the "High" accuracy tab to take high accuracy readings. The neck size and diffuser type must be considered for high accuracy readings which results in a larger diffuser selection list.

If the desired diffuser is not available in the diffuser library, the K-factor can be entered under the "Manual" tab.

MANUAL K-FACTOR

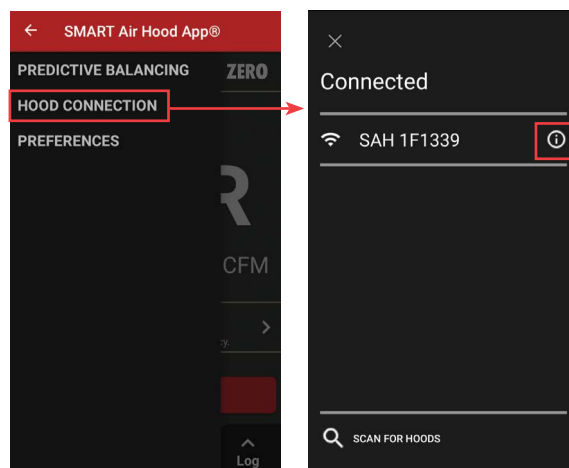
In the case that diffuser being used is not in the downloadable library, but the K-factor of the diffuser is known, the K-factor can be manually entered into the application. While on the application home screen, tap on the diffuser to open the Diffuser list.

Select "Manual" under the accuracy level selection. Define it as a Register for supply flow or Return for return flow and press on the K-Factor field to enter the K-factor of the diffuser. Once completed, select "SAVE" in the top right corner to exit to the main menu.

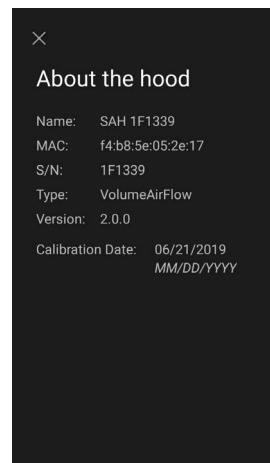


HOOD INFORMATION

As mentioned in the hood connection menu, general hood information can be obtained by selecting the "i" next to the desired hood.



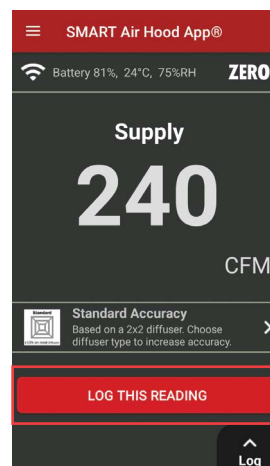
Once the "i" button is selected, the information below will appear.



To return to the main menu, select the "X" in the top left corner of the "About the hood" screen and again in the "Hood Connection" screen.

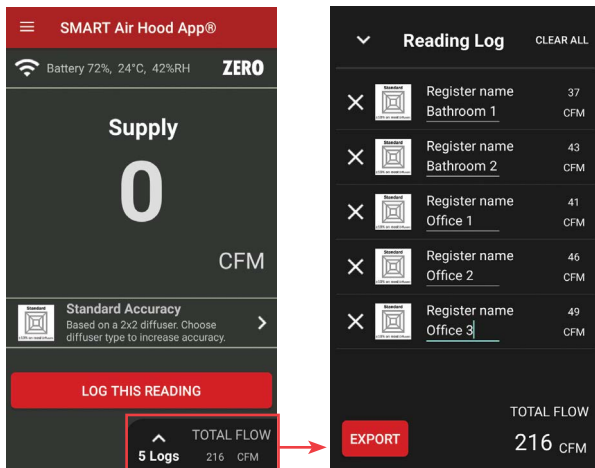
LOGGING

Log files can be generated from the main home screen. To begin logging, press the "LOG THIS READING" towards the bottom of the screen.



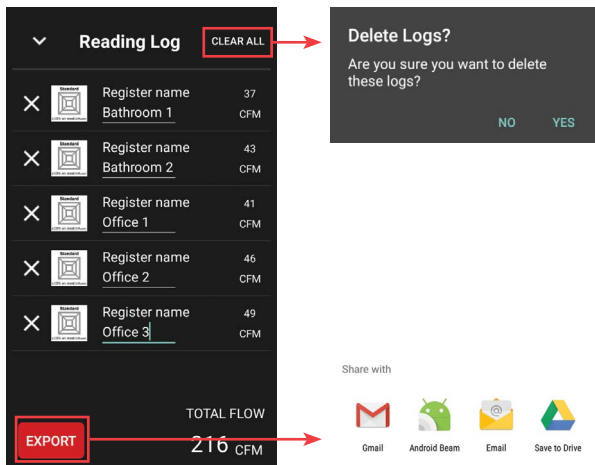
Once the reading has been logged, the reading will be indicated in the bottom right corner.

To view the logged readings, press the log button in the bottom right corner.



In the reading log screen, the individual logs can be named by clicking below the "Register name" heading. To delete individual logs, select the "X" corresponding to the log that is to be deleted.

Logs can be exported by selecting the "EXPORT" button in the bottom left corner. To delete all logs, select the "CLEAR ALL" button in the top right corner and confirm the action by selecting "YES" on the pop up.

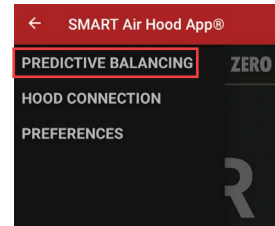


PREDICTIVE BALANCING

NOTICE

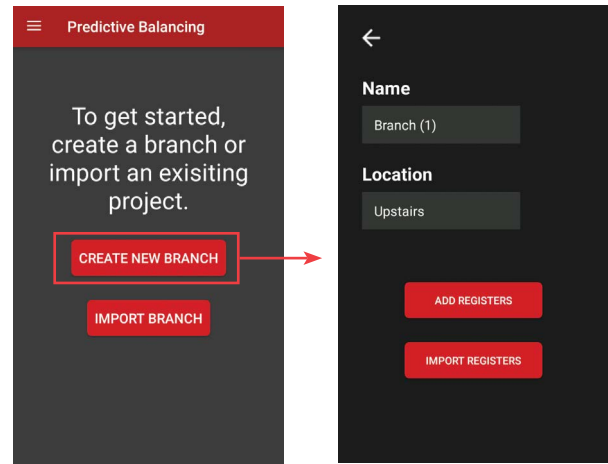
Predictive balancing is available on Android applications only

To enter predictive balancing, press the menu button in the top left corner of the home screen (three horizontal bars) and select "PREDICTIVE BALANCING".



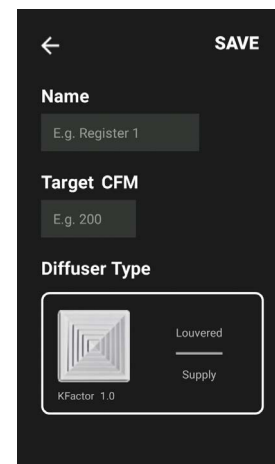
BRANCHES

Once Predictive Balancing is opened, you will be prompted to create a new branch or to import an existing branch if there is not currently any branches set up.

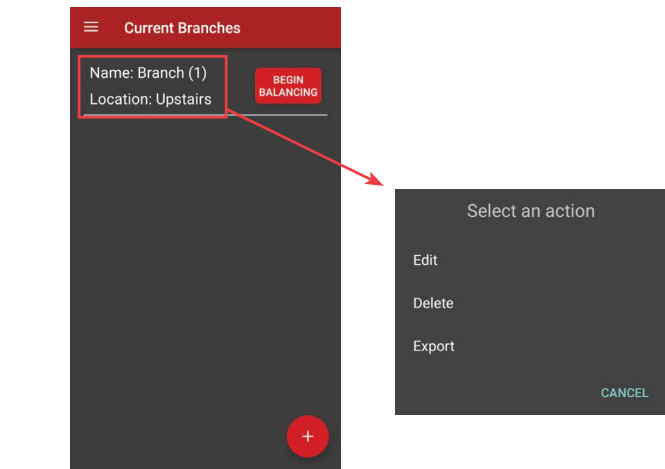


To create a new branch, select "CREATE NEW BRANCH" and enter the name and location of the branch when prompted to do so. Once the branch has been named, registers can either be imported or added manually.

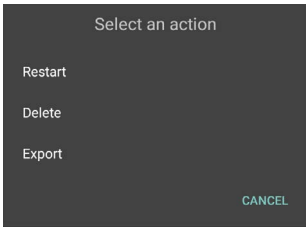
To manually add registers, select "ADD REGISTERS". From the register screen, the name, target CFM, and diffuser type can be entered.



Once all of the necessary registers have been entered or imported, the branch will be added to the “Current Branches” list.

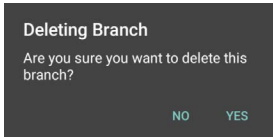


Next, click on the desired branch name. This will bring up a dialog with the available actions for that branch. If the branch has been previously started, then the following menu will be shown.

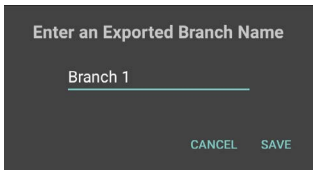


“Edit” will bring up the “Add Edit Branch” screen. **Note:** “Restart” will appear instead of “Edit” if balancing has already begun. “Restart” will clear any balancing data for that branch and allow you to restart balancing from the beginning.

“Delete” will bring up a dialog asking to confirm the deletion.



“Export Branch” will bring up a file dialog.

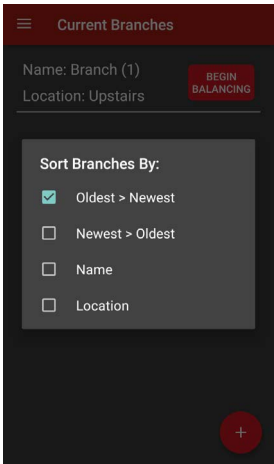


Once “Save” is selected, if the branch is deleted, the branch can be brought back by adding a branch and selecting “Import”.

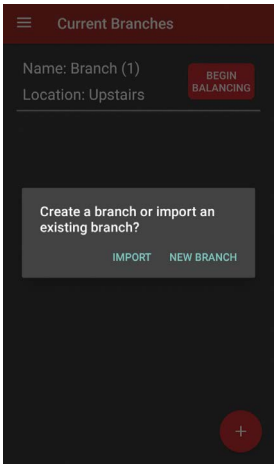
BRANCHES MENU

Clicking the 3 horizontal lines at the top of the page will open the Branches Menu.

Pressing “Sort Branches” will bring up a dialog that contains the options to sort branches by different methods.



Clicking the “+” symbol in the bottom right corner will allow you to add a new branch.

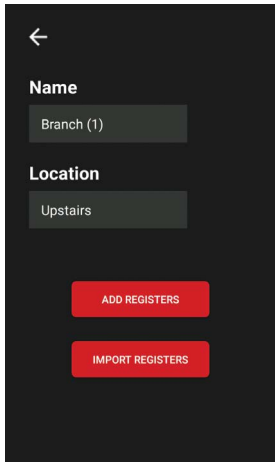


“Import” will allow you to select a file to choose which branch to load. Clicking the branch name loads that branch and adds it to the list of branches. Once complete, the app will be return to the Branches main page with the new branch added to the list.

“New Branch” will allow you to set up an additional branch by manually entering in the registers.

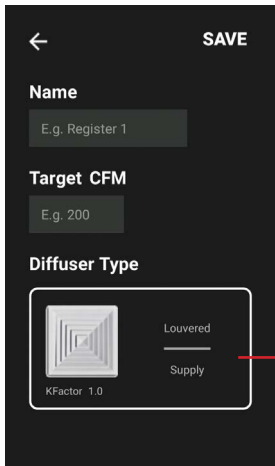
ADD REGISTERS

If "New Branch" was selected, registers will have to be added.



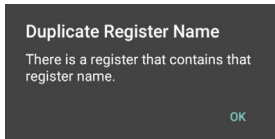
"Import Registers" will open a dialog with a list of exported register lists that you can choose from.

"Add Register" will bring up the Add Edit Register screen with nothing filled in except for the default diffuser. As in Meter Mode, if the desired diffuser is not shown, select the manual diffuser to create a diffuser with a known K-Factor.



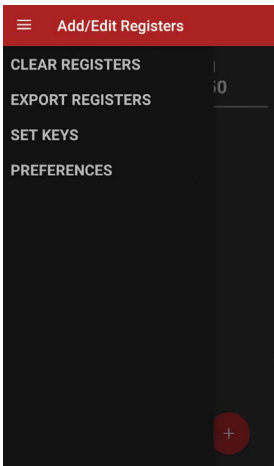
Touch to change diffuser

Clicking either the Name or Target field will bring up a keyboard allowing values to be entered. Note that the register name must be unique. If a register name is entered that is already in the list, the following dialog will be shown.



Both the name and the target fields must be filled in to create a register.

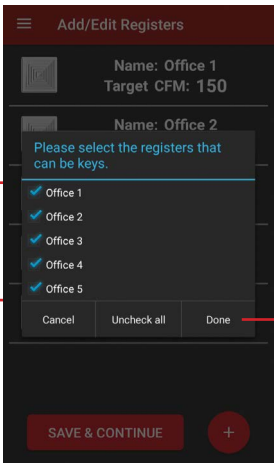
For more options on the Add/Edit Registers screen, press the three horizontal bars in the top left corner to open the menu.



"Clear Registers" will erase all the registers in the list for the selected branch.

"Export Registers" will allow the registers to be saved to the mobile device. Note that the same dialog will come up asking to overwrite the file if a name is chosen that is already in use.

"Set Keys" will bring up a dialog that allows the selection of which registers are candidates to be the key (checked registers can be the key and unchecked cannot be the key). At least one register must be selected.



Touch to check and uncheck registers

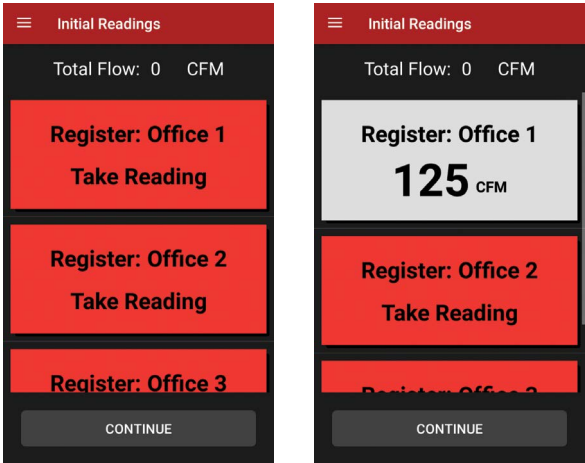
Touch to close dialog and set which registers can be key

BALANCING PROCEDURE

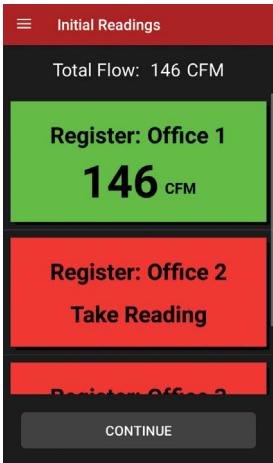
Once the desired branches have been created, the balancing can be started by selecting "Begin Balancing".

After confirming all dampers are opened, the first step of the balancing procedure is to take an initial sweep of all registers within the selected branch .

Red indicates that a reading still needs to be taken from the register. After selecting the register to measure, its button will turn from red to white, indicating that it is the active register.

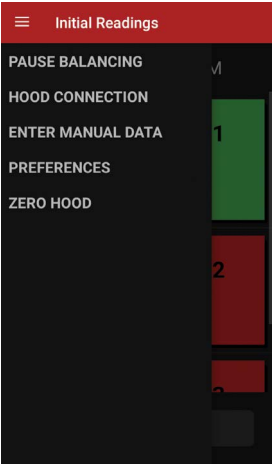


Click register button again to store the reading, at which point it will change from white to green, indicating that a value has been stored for that register.

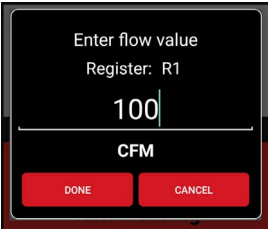


Repeat this procedure until all of the registers have been measured. Clicking on a register again allows for a retaking of that register if needed.

If the slide out menu is opened, the following choices will be shown.



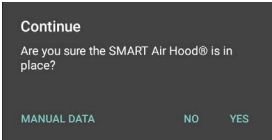
"Pause Balancing" will pause the balancing project and return to the home screen.



"Enter Manual Data" allows data to be entered manually for a register that cannot be measured. To manually enter data, select a register (changing the button from red to white) and then select "Enter Manual Data" to enter the flow value.

Once all of the registers have been measured, press and hold the continue button at the bottom until the predictive balancing screen appears.

As shown below, the app will direct you to the register to measure:



Press and hold the OK button to bring up the dialog box asking to confirm that the hood is correctly placed.

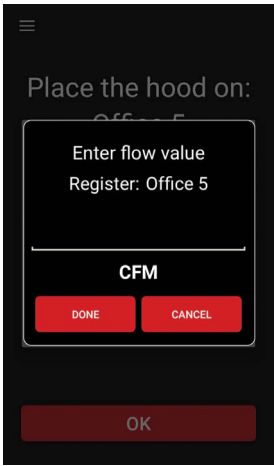


If "Manual Data" is selected, a dialog box will come up asking for the value for the reading of the register.

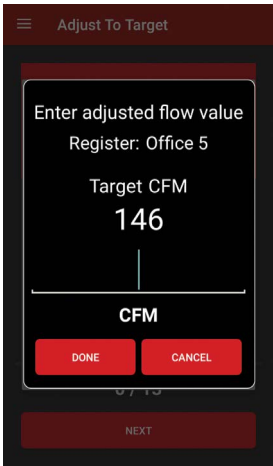


The screen is titled "Adjust To Target". It has a red header bar with a menu icon and the title. Below the header, there is a red box with white text that says "Adjust the damper for Office 2" and "Target: 160 CFM". In the center, the number "142" is displayed in large white font, with "CFM" in smaller white font below it. At the bottom, there is a progress indicator "0 / 7" and a red button labeled "NEXT".

If "Manual Data" is selected, a dialog box will come up asking for the value for the reading of the register. After the manual data is entered, another dialog will appear. This manual entry dialog asks for the flow of the register after adjusting (if it can be adjusted). The dialog includes the target flow that the register needs to reach to balance the system.



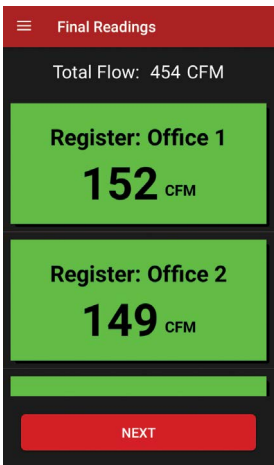
The screen is titled "Place the hood on:". It has a dark background. In the center, there is a white box with the text "Enter flow value Register: Office 5". Below this box, there is a line for input, followed by the text "CFM". At the bottom, there are two red buttons labeled "DONE" and "CANCEL", and a larger red button labeled "OK" at the very bottom.



The screen is titled "Adjust To Target". It has a red header bar with a menu icon and the title. Below the header, there is a white box with the text "Enter adjusted flow value Register: Office 5". Below this box, the number "146" is displayed in large white font, with "CFM" in smaller white font below it. At the bottom, there is a progress indicator "0 / 7" and a red button labeled "NEXT".

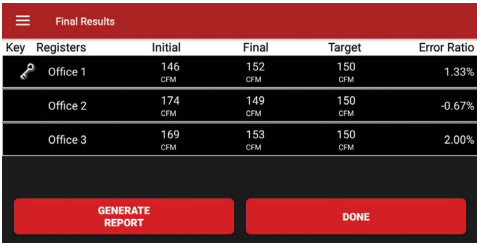
Once the hood is in place, the application will then instruct you to adjust the damper to the target value. Press and hold the NEXT button to bring up the next screen which will guide you to the next register to measure and adjust. The last register measured will be the key register after which the adjust system will come up requesting to adjust the branch's flow source to the given target.

After adjusting all the registers, the Final Reading screen will appear. This screen's purpose is to gather the final readings to calculate the error ratio of the balancing process which is displayed on the final screen.



The screen is titled "Final Readings". It has a red header bar with a menu icon and the title. Below the header, the text "Total Flow: 454 CFM" is displayed. There are two green boxes with white text. The first box says "Register: Office 1" and "152 CFM". The second box says "Register: Office 2" and "149 CFM". At the bottom, there is a red button labeled "NEXT".

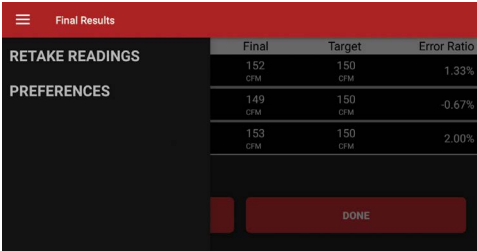
Once all of the registers are measured, Press and hold the NEXT button, to bring up the Final Results screen. This screen displays how accurate the balancing method was.



Key	Registers	Initial	Final	Target	Error Ratio
	Office 1	146 CFM	152 CFM	150 CFM	1.33%
	Office 2	174 CFM	149 CFM	150 CFM	-0.67%
	Office 3	169 CFM	153 CFM	150 CFM	2.00%

At the bottom, there are two red buttons labeled "GENERATE REPORT" and "DONE".

Sliding a finger from the left edge of the screen towards the right, clicking the menu button, or clicking the 3 lines at the top of the page will open the Final Results Menu.



	Final	Target	Error Ratio
RETAKED READINGS	152 CFM	150 CFM	1.33%
PREFERENCES	149 CFM	150 CFM	-0.67%
	153 CFM	150 CFM	2.00%

At the bottom, there is a red button labeled "DONE".

"Retake Readings" will return to the Final Readings screen so that one or more of the register readings can be retaken.

Back in the "Branches" screen, the context menu for the branch will now have "View Results". The "View Results" option allows you to go back to the results screen for that branch to see the results of that balance.

This button will produce a report in the format of a CSV file that can be exported and opened in an application like Excel. The report contains all the results on the results screen.

FCC/INDUSTRY CANADA NOTICE

NOTICE

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.

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 equipment and receiver
- Connect the equipment to 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.

NOTICE

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 harmful interference;
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

CAUTION

Pursuant to FCC 15.21 of the FCC rules, changes or modifications not expressly approved by Dwyer Instruments, LLC may void the user's authority to operate the equipment.

RF NOTICE

NOTICE

This product complies with FCC OED Bulletin 65 and Industry Canada's RSS-102 radiation exposure limits set forth for an uncontrolled environment.

NOTICE

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

CAUTION

The antenna used for this transmitter must maintain a separation of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

AVIS

Cet appareil est conforme à Industrie Canada une licence standard RSS exonérés (s). Son fonctionnement est soumis aux deux conditions suivantes:

1. Cet appareil ne doit pas provoquer d'interférences,
2. Cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant provoquer un fonctionnement indésirable de l'appareil.

AVIS

Ce produit est conforme aux limites d'expositions aux rayonnements définies pour un environnement non contrôlé du Bulletin 65 FCC OET et RSS-102 Industry Canada.

MAINTENANCE/REPAIR

Upon final installation of the Series SAH, no routine maintenance is required. The Series SAH is not field serviceable and is not possible to repair the unit. Field repair should not be attempted and may void warranty.

WARRANTY/RETURN

Refer to "Terms and Conditions of Sale" in our catalog and on our website. Contact customer service to receive a Return Goods Authorization number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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