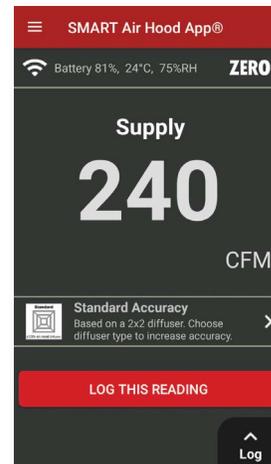




**Series SAH SMART Air Hood® Balancing Instrument -  
SMART Air Hood App® Software**

**Specifications - Installation and Operating Instructions**



The **Series SAH SMART Air Hood® Balancing Instrument** is the most accurate air flow hood on the market. With single-user ability, the ergonomic design is light weight and easy to maneuver, with less physical stress, while speeding up the balancing process and reducing costs. Constructed of a rugged polypropylene material, the Hood features Quad Flow Design Technology for controlling air flow and minimizing back pressure, which yields superior measurement accuracy. Featuring Wi-Fi direct communication, with a range of up to 200 yards between the hood and the handheld test instrument.

The SMART Air Hood® Balancing Instrument includes the SMART Air Hood App® Software for air flow balancing. The app uses predictive balancing which is a method of predicting the optimal flow set point for each diffuser while balancing the HVAC system. The handheld application software includes algorithms enabling the SMART Air Hood to achieve best in class accuracy.

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## I. SETUP

To be able to update the PredictAir™ Application Software, a Google account must be created so that the application can be updated from Google Play™ store. To properly connect to Google Play™ store a connection to a Wi-Fi network must be established.

### CONNECTING TO A WI-FI NETWORK

First, press the application icon on the home screen (should look similar to the below image).



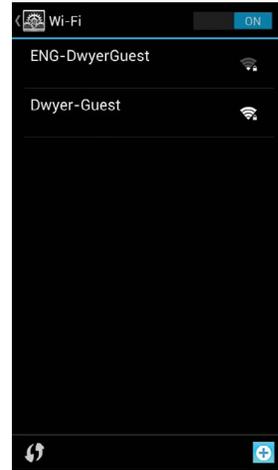
Then find the settings icon and click on it.



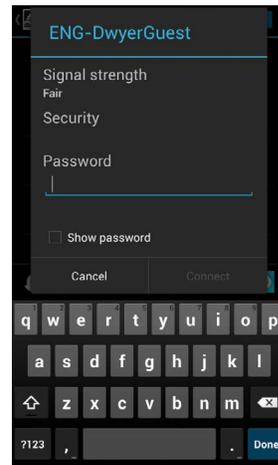
Next, press Wi-Fi to enter into the Wi-Fi settings.



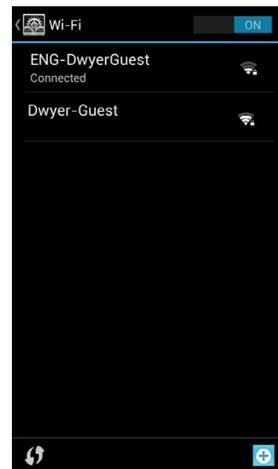
Next, choose a local Wi-Fi network to connect to.



Enter in the password to connect to the Wi-Fi access point.

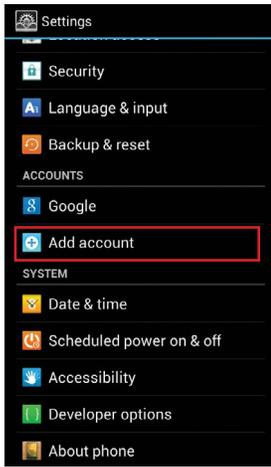


The handheld will now be connected to the Wi-Fi network.

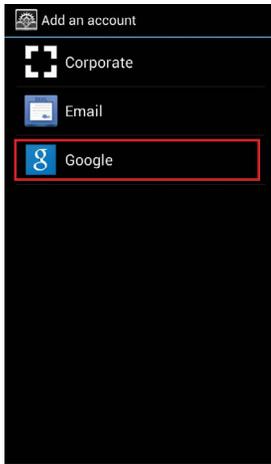


## SETTING UP A GOOGLE ACCOUNT

First, go back to main Settings screen and choose the "Add account" option.



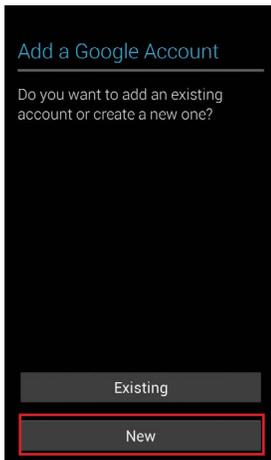
Select Google.



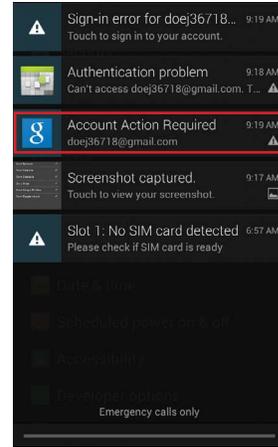
If you have a Google account select "Existing" and enter in your account information to register your Google account to the device.

If you do not have a Google account follow the guide below to add one.

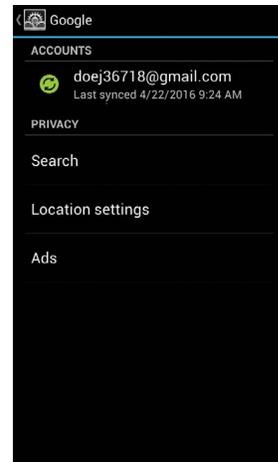
First, press "New" and follow the on screen prompts.



When the account is created you might need to do an authentication check to activate the account. The notice will be in the pull down menu on the device. Press the notification and follow the instructions to activate the account.



If the account was created correctly the following screen will show your new account.



## UPDATING THE SMART AIR HOOD® APPLICATION SOFTWARE

Now that a Wi-Fi connection is established and a Google account is tied to the handheld instrument, the Google Play™ store can now be accessed. Open Google Play™ store from the applications.

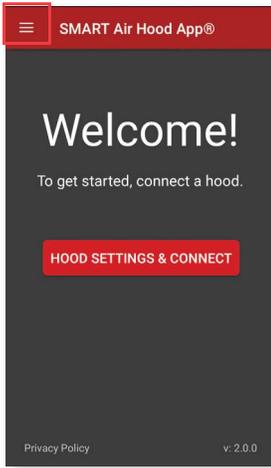


Search for SMART Air Hood® Application Software and press it. Once selected, press the "UPDATE" button to update the application.

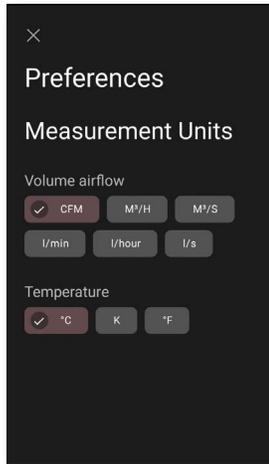
The SMART Air Hood® App should now be up to date.

### 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.



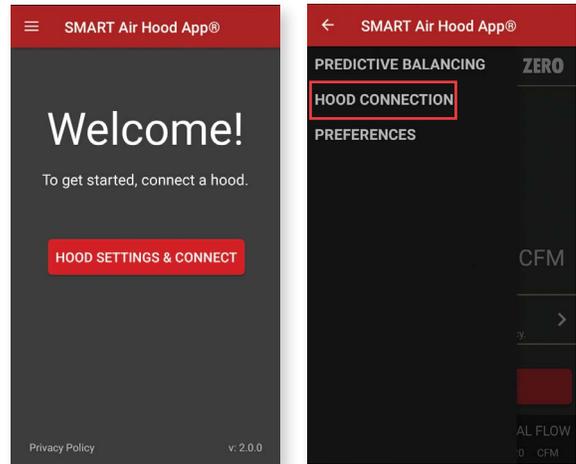
Touch to edit the default units of these fields

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".

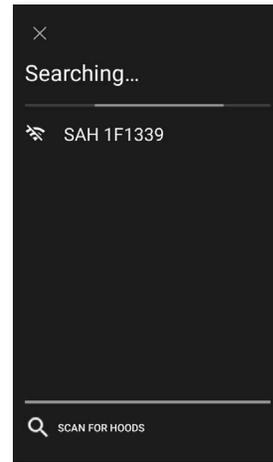


### CONNECTING TO THE HOOD

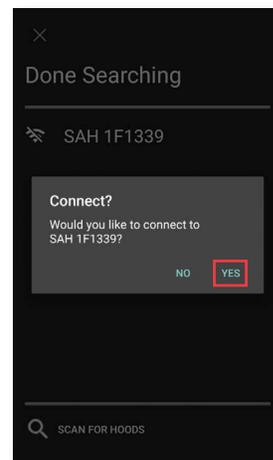
Once the handheld instrument is on, open the SMART Air Hood® Application Software. To begin searching for the air flow hood, the hood connection screen can be accessed by pressing the "HOOD SETTINGS & CONNECT BUTTON" on the welcome screen, or by selecting hood connection from the menu on the main screen..



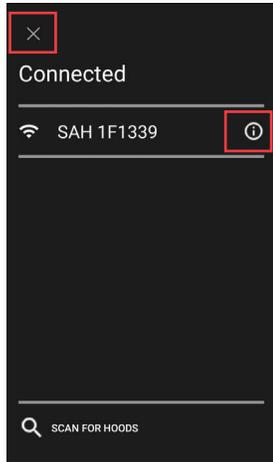
As the app discovers hoods, they will be added to the list below the search status bar.



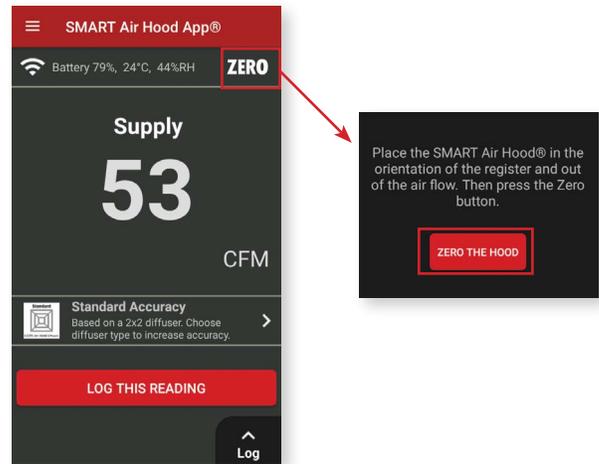
Select the hood that is to be paired and confirm your selection by clicking "YES" when prompted to do so.



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.

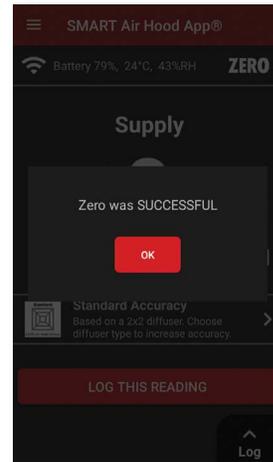
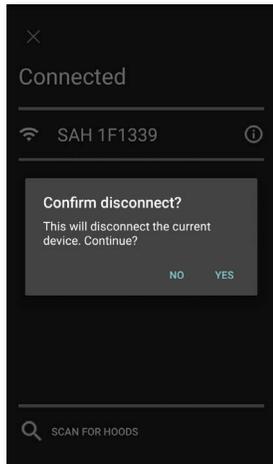


In order to zero the hood, press the three bars at the top of the screen or slide from the left or press the menu button. Press the "Zero" button at the top of the home screen. After the correct hood position is verified, select "Zero The Hood" to begin the zeroing process.



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.

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.



**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.

**SELECTING THE DIFFUSER**

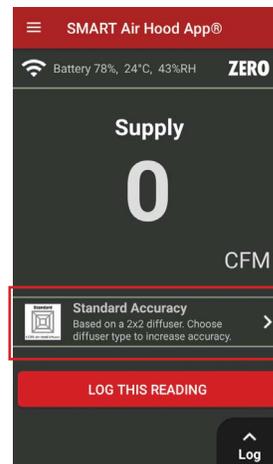
To select a diffuser, press the diffuser tab above the "Log This Reading" button.

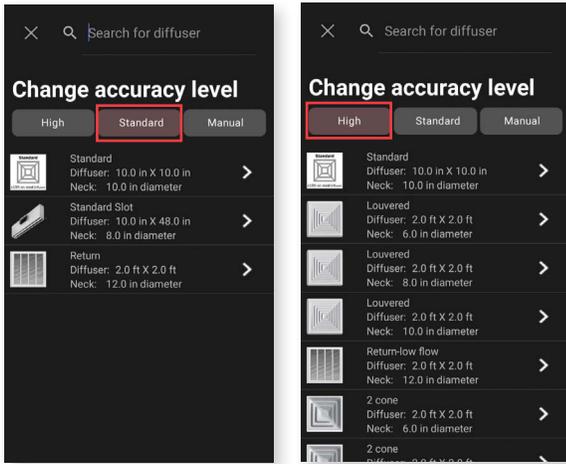


For ceiling diffusers



For side-wall diffusers





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

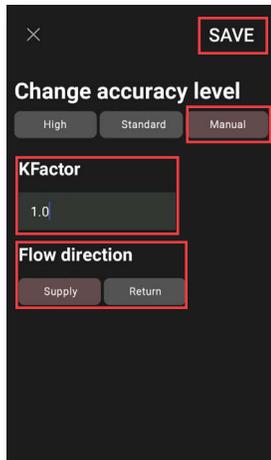
Select the "High" accuracy tab to take high accuracy readings. The neck size and diffuser type must be considered for high accuracy readings which results in a larger diffuser selection list.

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

#### MANUAL K-FACTOR

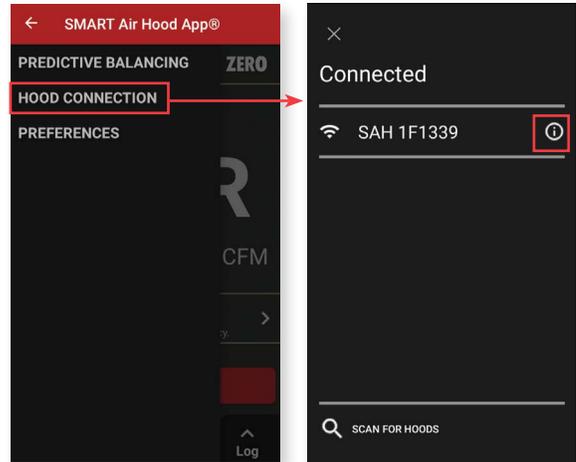
In the case that diffuser being used is not in the downloadable library, but the K-factor of the diffuser is known, the K-factor can be manually entered into the application. While on the application home screen, tap on the diffuser to open the Diffuser list.

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.



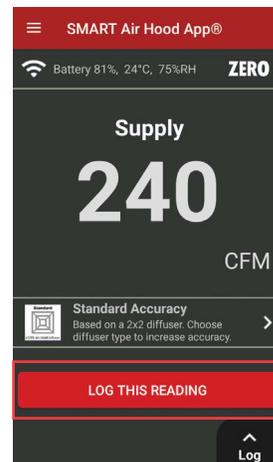
Once the "i" button is selected, the information below will appear.



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.

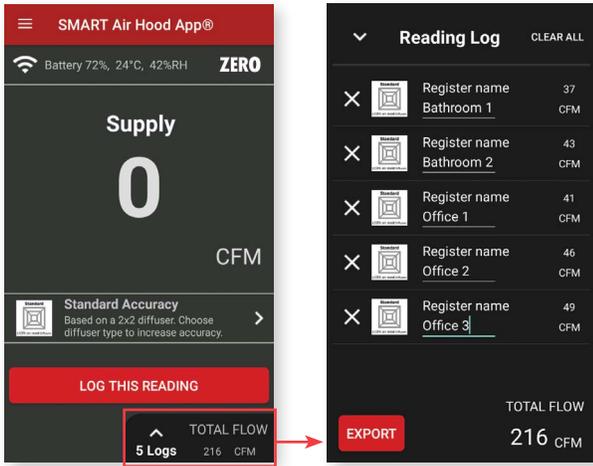
#### LOGGING

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



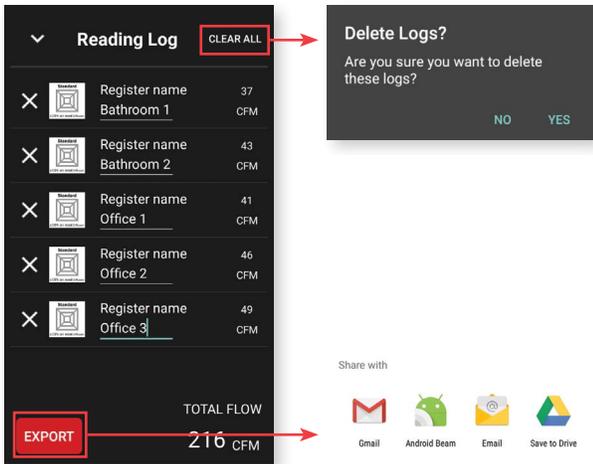
Once the reading has been logged, the reading will be indicated in the bottom right corner.

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



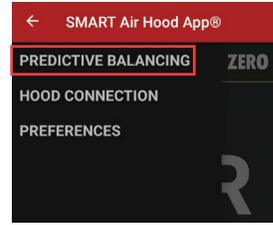
In the reading log screen, the individual logs can be named by clicking below the "Register name" heading. To delete individual logs, select the "X" corresponding to the log that is to be deleted.

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.



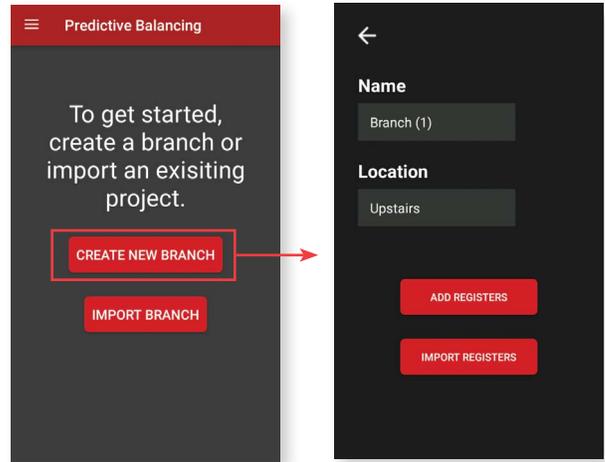
## PREDICTIVE BALANCING

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



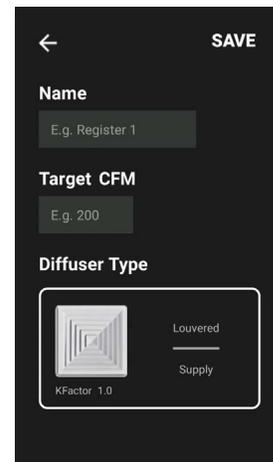
## BRANCHES

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.

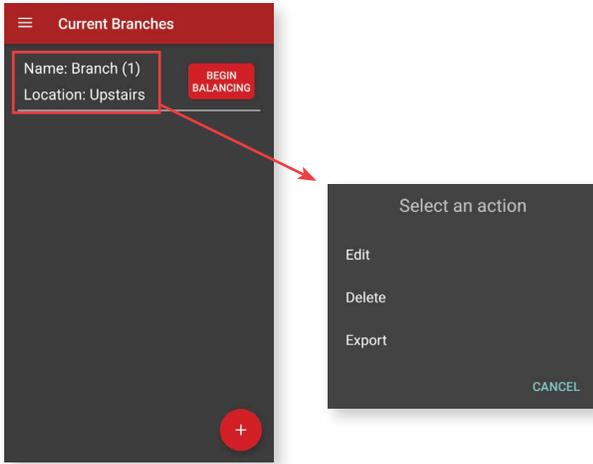


To create a new branch, select "CREATE NEW BRANCH" and enter the name and location of the branch when prompted to do so. Once the branch has been named, registers can either be imported or added manually.

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



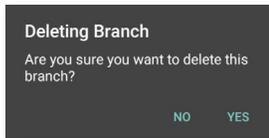
Once all of the necessary registers have been entered or imported, the branch will be added to the "Current Branches" list.



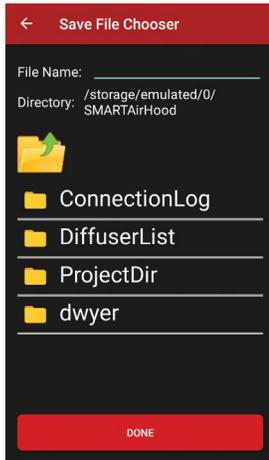
Next, click on the desired branch name. This will bring up a dialog with the available actions for that branch. If the branch has been previously started, then the following menu will be shown.

"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.

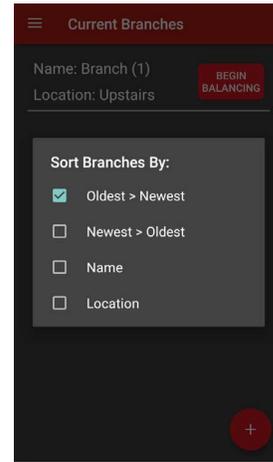


Click on the "File Name" field to enter the file name associated with this branch. This field can't be blank or an error message will appear. The folder icon with the arrow will navigate up a folder. Folder names do not have extensions and file names will have extensions.

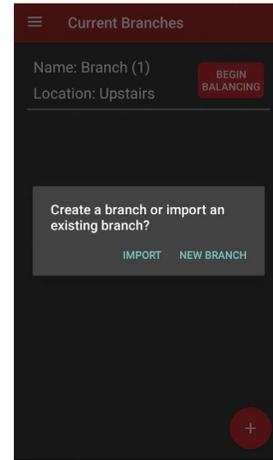
## BRANCHES MENU

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.

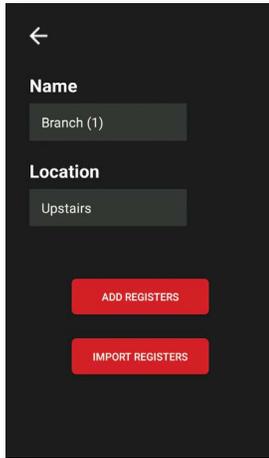


"Import" will allow you to select a file to choose which branch to load. Clicking the branch name loads that branch and adds it to the list of branches. Once complete, the app will be return to the Branches main page with the new branch added to the list.

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

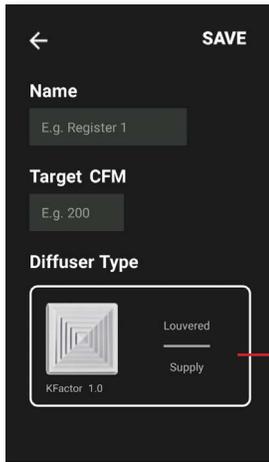
## ADD REGISTERS

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



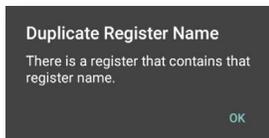
"Import Registers" will open the file manager and allow a .csv file to be chosen. Note that some of the files might not be a register file, which displays an error if selected.

"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.



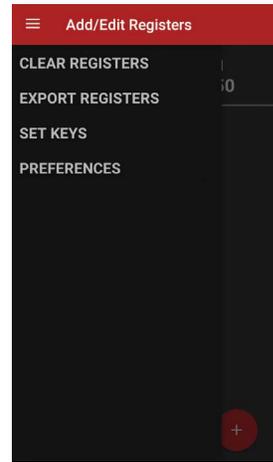
Touch to change diffuser

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.

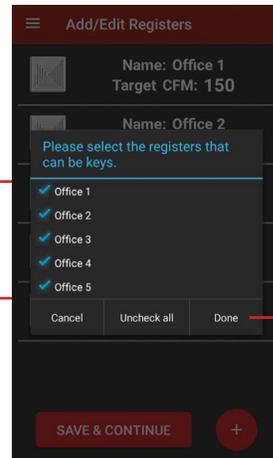
For more options on the Add/Edit Registers screen, press the three horizontal bars in the top left corner to open the menu.



"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 handheld instrument. 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

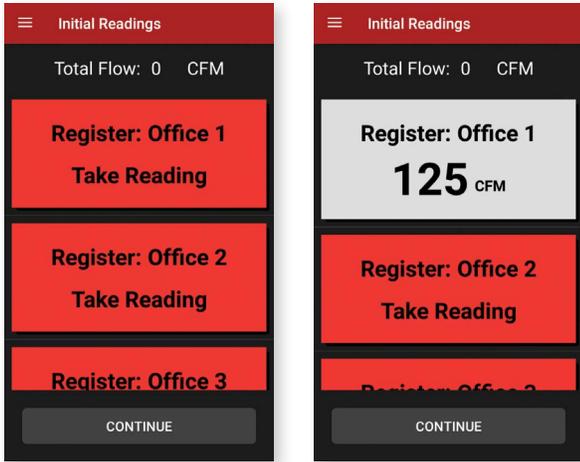
Touch to close dialog and set which registers can be key

**BALANCING PROCEDURE**

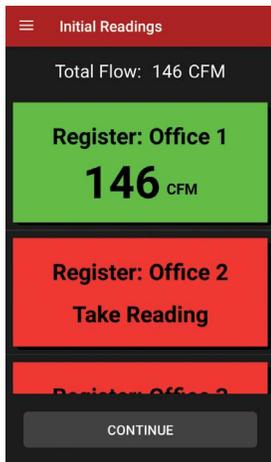
Once the desired branches have been created, the balancing can be started by selecting "Begin Balancing".

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.



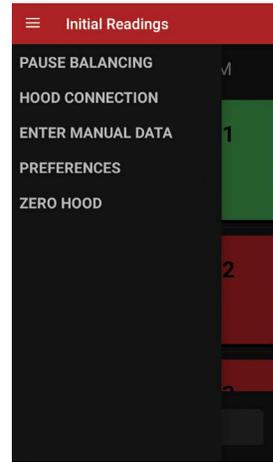
Click register button again to store the reading, at which point it will change from white to green, indicating that a value has been stored for that register.



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.

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



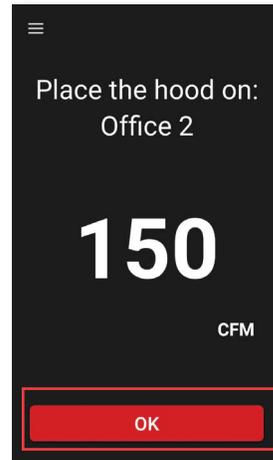
"Pause Balancing" will pause the balancing project and return to the home screen.

"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.



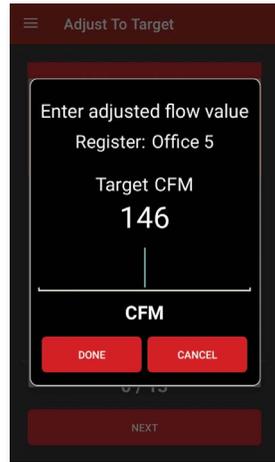
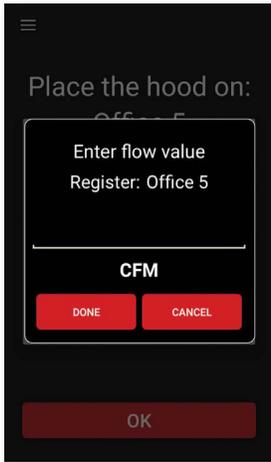
If the "Yes" button on the hood placement confirmation dialog was pressed the app will bring up the Adjust to Target screen.



After adjusting all the registers, the Final Reading screen can be accessed. This screen is to gather the final readings to calculate the error ratio of the balancing process which is displayed on the next screen.



"Manual Data" will bring up the Manual Data screen similar to the initial sweep manual entry dialog. 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.



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%

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%

If the CANCEL button is pressed, a Pause Balancing screen will be brought up. Pressing the PAUSE button in the pause dialog will store the current location and data within the selected balancing method and return back to the Branches screen.

While in this screen, the damper needs to be adjusted to match the target. Press and hold the NEXT button to bring up the next screen which will guide you to the next register to measure and adjust. Once all registers except the key register are adjusted the app will require a post reading from all the registers. The app will guide you through the post reading process.

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.

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

When back in the "Branches" screen the menu when the branch will now have the option "View Results" instead of "Resume Balancing" or "Start Balancing".

"View Results" will bring you back to the "Final Results" screen with the previous balancing process's final results.

## 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, Inc. 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 a u x 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.