



## CERV2 Zone Option Manual



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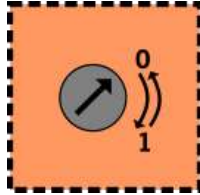
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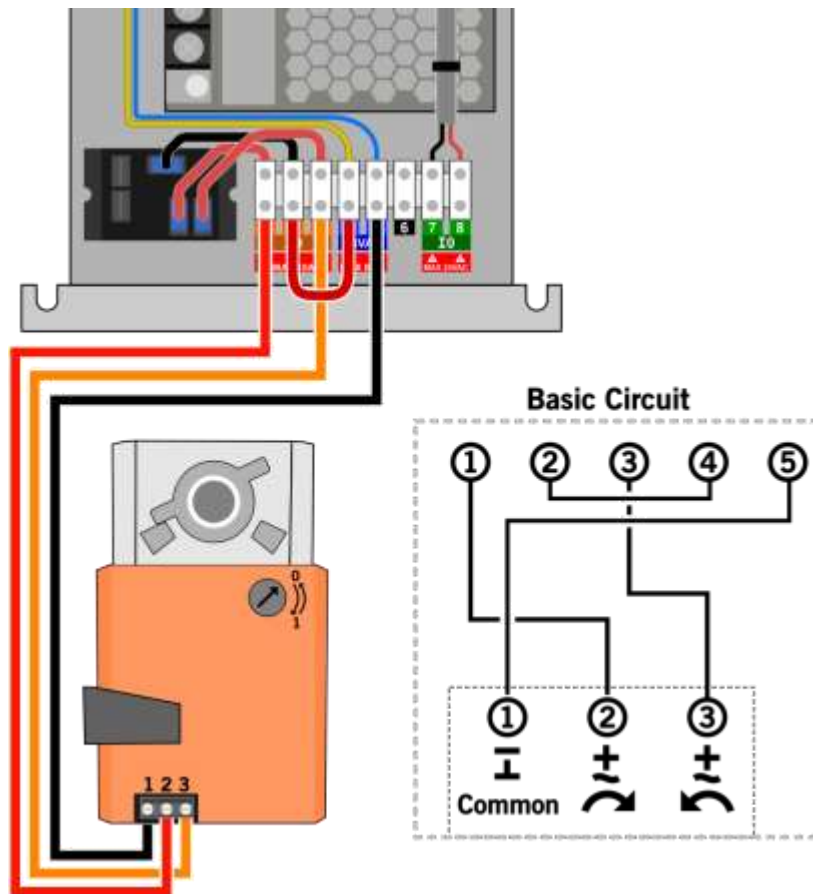
# Zone Damper Wiring

There are two ways to physically control the Zone Damper motors – With the CERV’s integrated X0 Auxiliary Output, or with the optional IO Expansion Board. Both options require 3 conductor wire capable of carrying 24VAC at 0.5A (thermostat wire is acceptable).

The standard damper motor terminal block is three positions, with the first as a common, while the second and third activate the damper motor to turn clockwise or counterclockwise when voltage is applied. This may vary if other damper motors, such as spring return, are used. Rotation of the damper motor can sometimes be confusing when wiring the terminals, so the damper motor has an integrated switch to reverse the rotation direction. If you apply system power and find that the damper motor is rotating the wrong way, you can simply toggle the switch with a small flathead screwdriver.

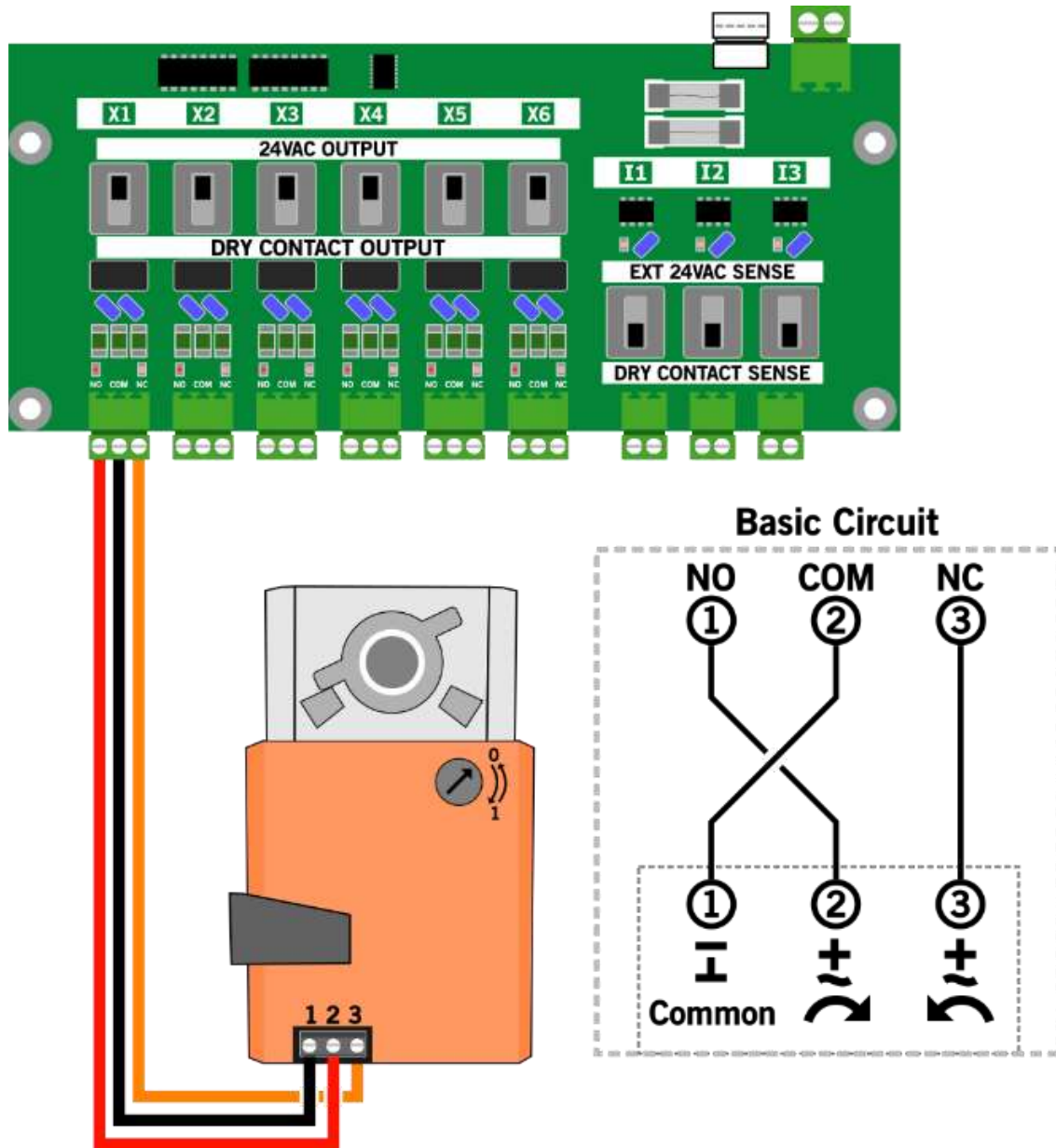


## Integrated X0 Auxiliary Output



The terminal block for the X0 Auxiliary Output is located in the bottom section of the CERV2 (**see appendix at end of document for access instructions**). Because the X0 is a standard dry contact with Normally Open (1), Common (2), and Normally Closed (3) terminals, it must be used in conjunction with the 24VAC output terminals (4, 5) as seen above.

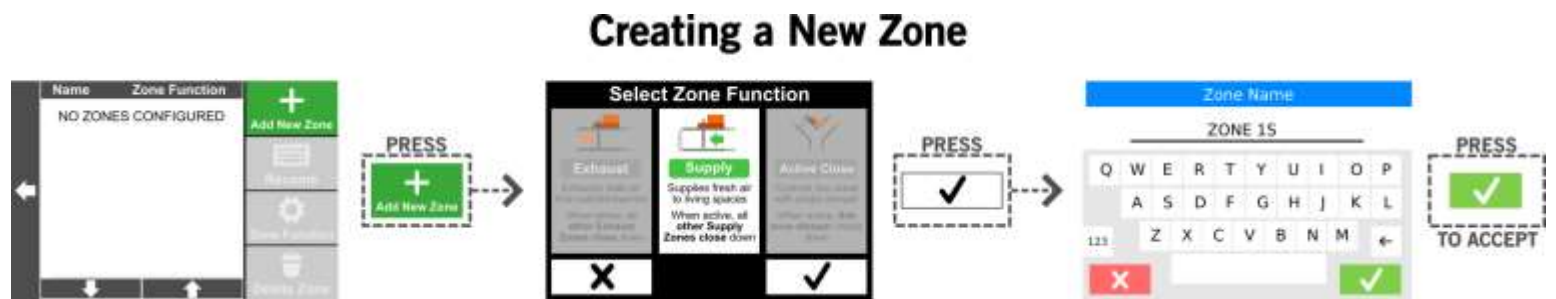
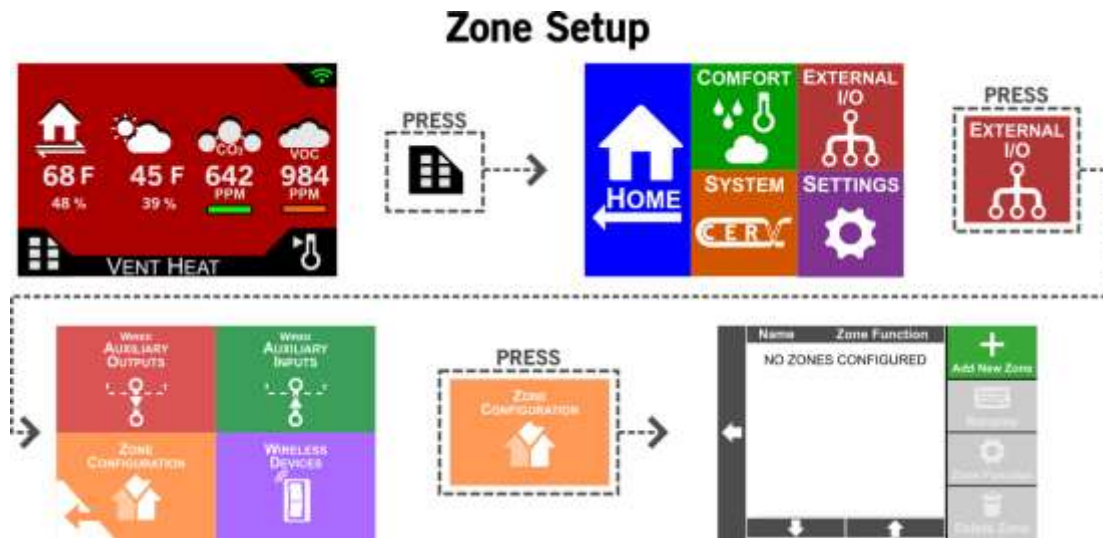
## IO Expansion Board, X1-X6 Auxiliary Outputs



As opposed to the integrated X0 Auxiliary output, the IO Expansion Board is capable of directly outputting 24VAC through its terminals without requiring connection to an external 24VAC source. NOTE: for this configuration, you must move the slide-switch above the terminal block towards the 24VAC OUTPUT label. LED indicators on the IO Expansion Board will light up above either the NO or NC terminals, to indicate which is active. Up to six zone dampers may be connected to the IO Expansion Board.

# Touchscreen Zone Configuration

The first step in setting up your zone damper system is to define Zone areas. The following examples describe how to access the Zone Configuration screen, as well as how to create a new zone, rename a zone, and delete a zone.

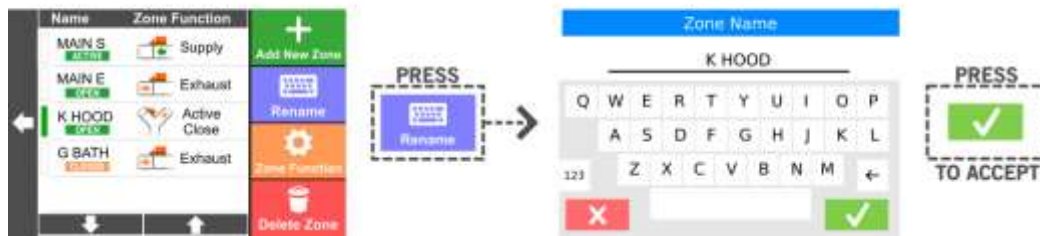


When a new zone is created, the first selection gives you the option of choosing whether the zone is an Exhaust Zone, Supply Zone, or Active Close zone. Descriptions of the zone types are as follows:

- 1. Exhaust Zone:** Exhausts stale air from bathroom, kitchen, or other area with stale air. When this zone is activated (through a paired wireless ventilation switch, auxiliary input, etc.), all other zones configured as Exhaust Zones will close down ensure maximum flow to this zone. Zones configured as Supply or Active Close will not be influenced by activity in Exhaust Zones.
- 2. Supply Zone:** Supplies fresh air to living spaces. When this zone is activated (through a paired wireless ventilation switch, auxiliary input, etc.), all other zones configured as Supply Zones will close down ensure maximum flow to this zone. Zones configured as Exhaust or Active Close will not be influenced by activity in Exhaust Zones.
- 3. Active Close Zone:** For use when only one zone damper is used to control two spaces. An example of this zone configuration can be seen in the Appendix under Single Damper, Single Zone (Active Close Configuration).

For examples of each zone type, please see the Appendix at the end of this document.

## Renaming a Zone



## Changing a Zone Type



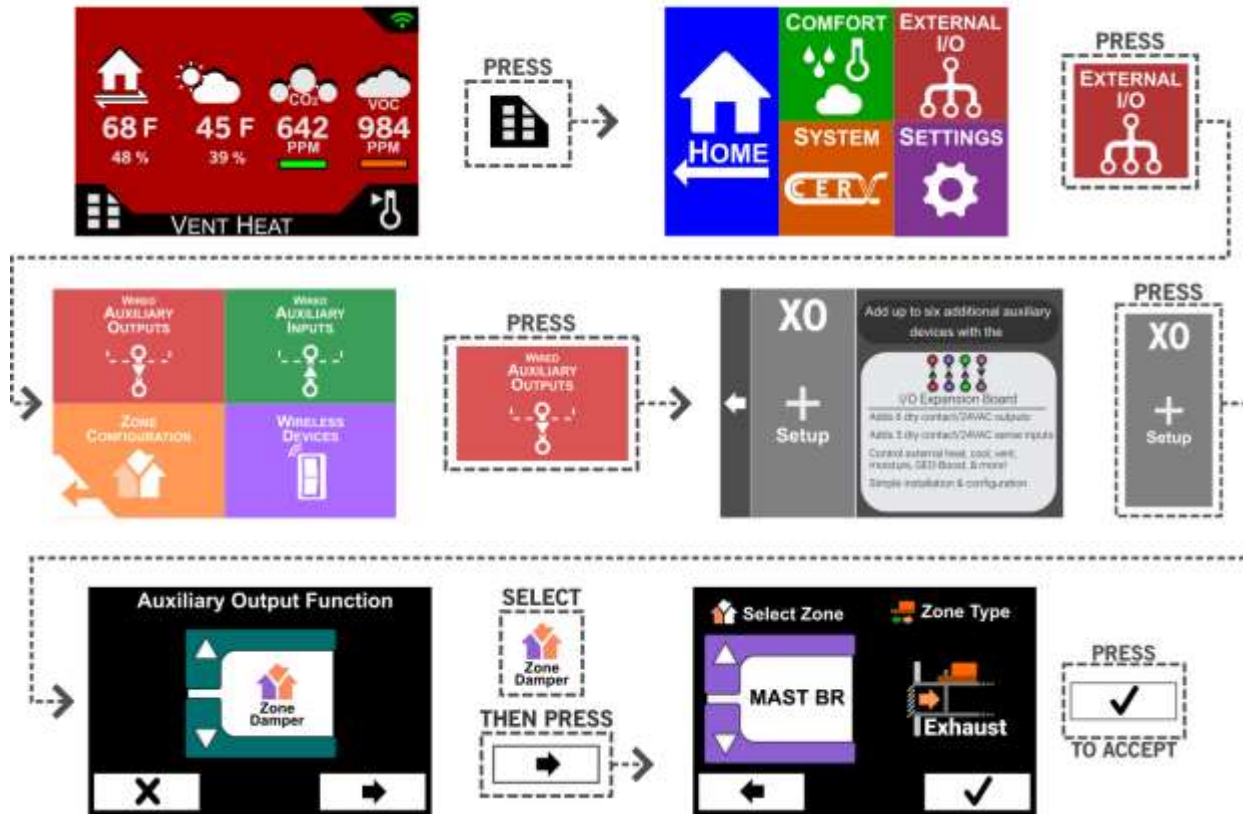
## Deleting a Zone



Note: when deleting a zone, any auxiliary inputs or wireless devices linked to this zone will revert to controlling the CERV as a whole (i.e. triggering a ventilation switch would ventilate the whole home instead of the previous zone). Any auxiliary outputs configured as Zone Dampers linked to this zone will be unset.

The next step after creating the Zone, is to set up an auxiliary output which will be connected to a zone damper.

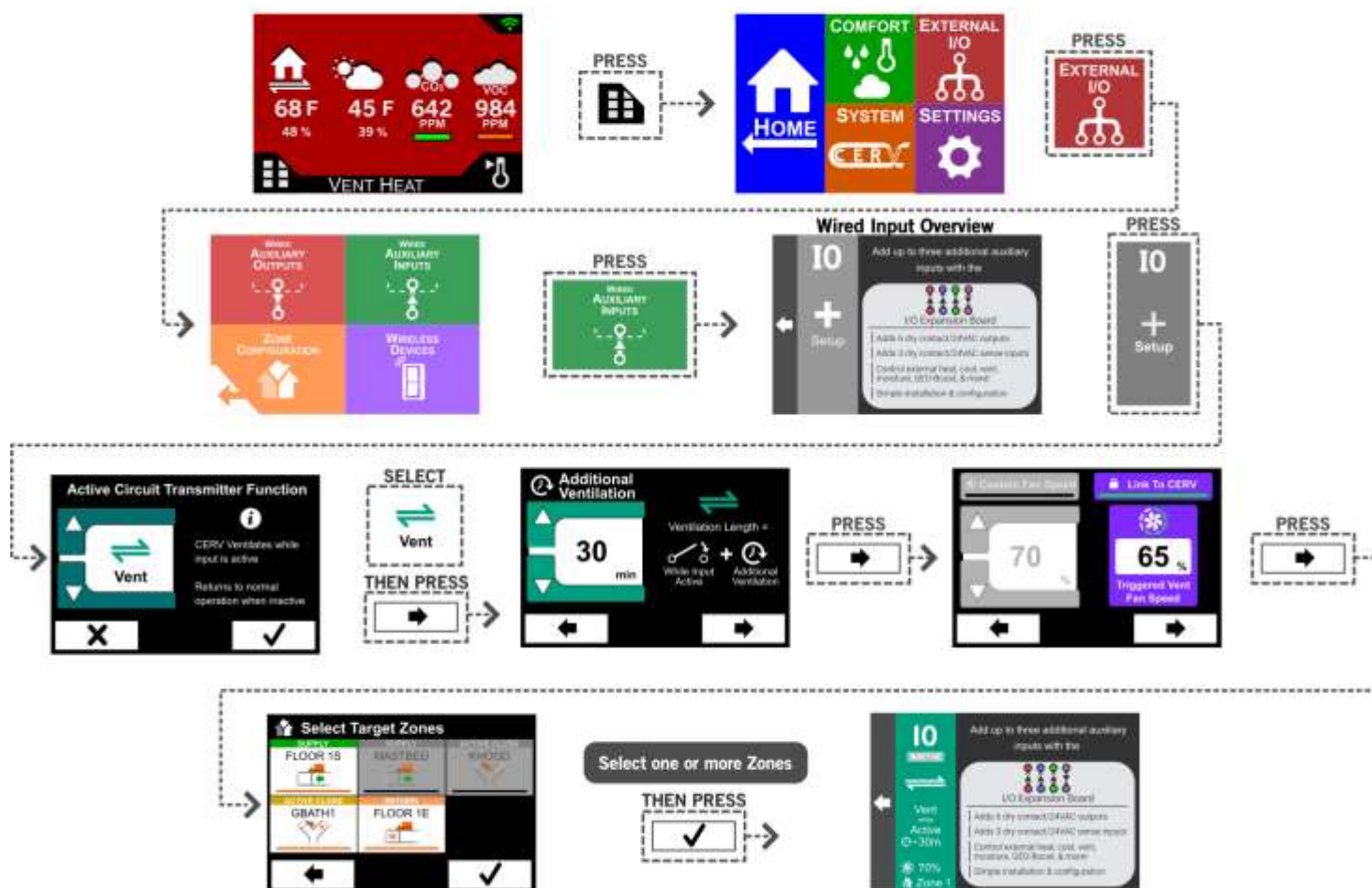
## Linking a Damper to a Zone



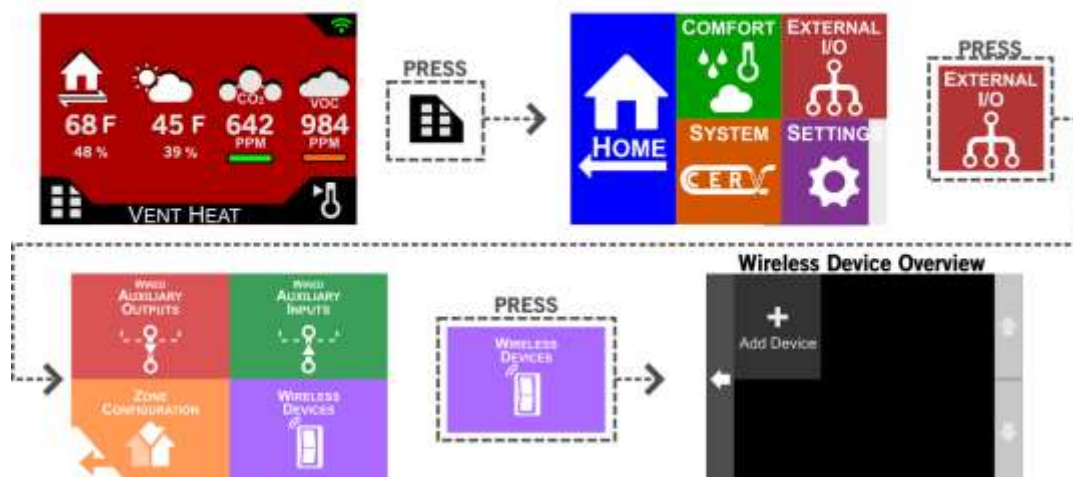


After an auxiliary output has been set to actuate a damper motor, you may configure inputs to trigger one of your configured zones. The steps below walk through setup of wired auxiliary inputs (I0, or I1-I3 on the IO Expansion Board), as well as wireless options such as the wireless ventilation switch or active circuit transmitter. Note: If no zone selection is made, the input will trigger the CERV as a whole to ventilate. Additionally, multiple zones may be linked to the same input if desired

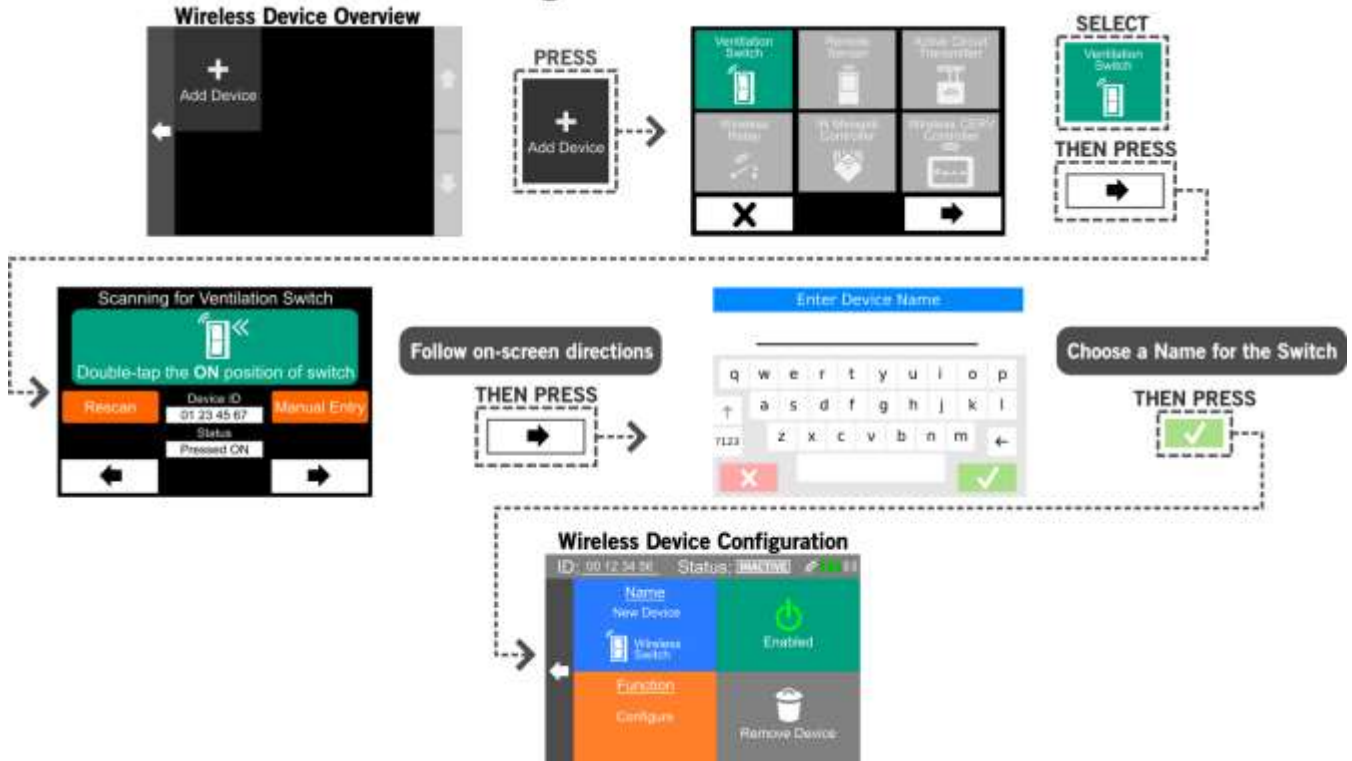
## Pairing a Wired Input to Activate a Zone



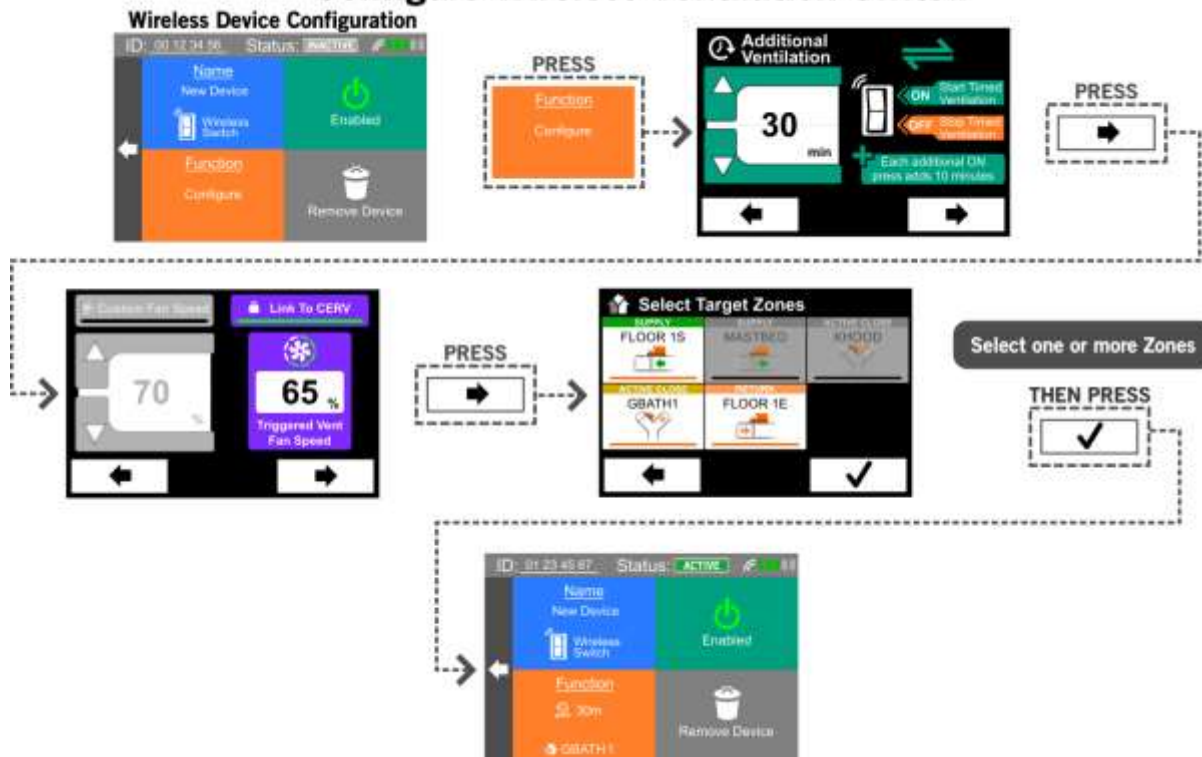
## Pairing a Wireless Switch / ACT to Activate a Zone



## Adding a New Wireless Switch

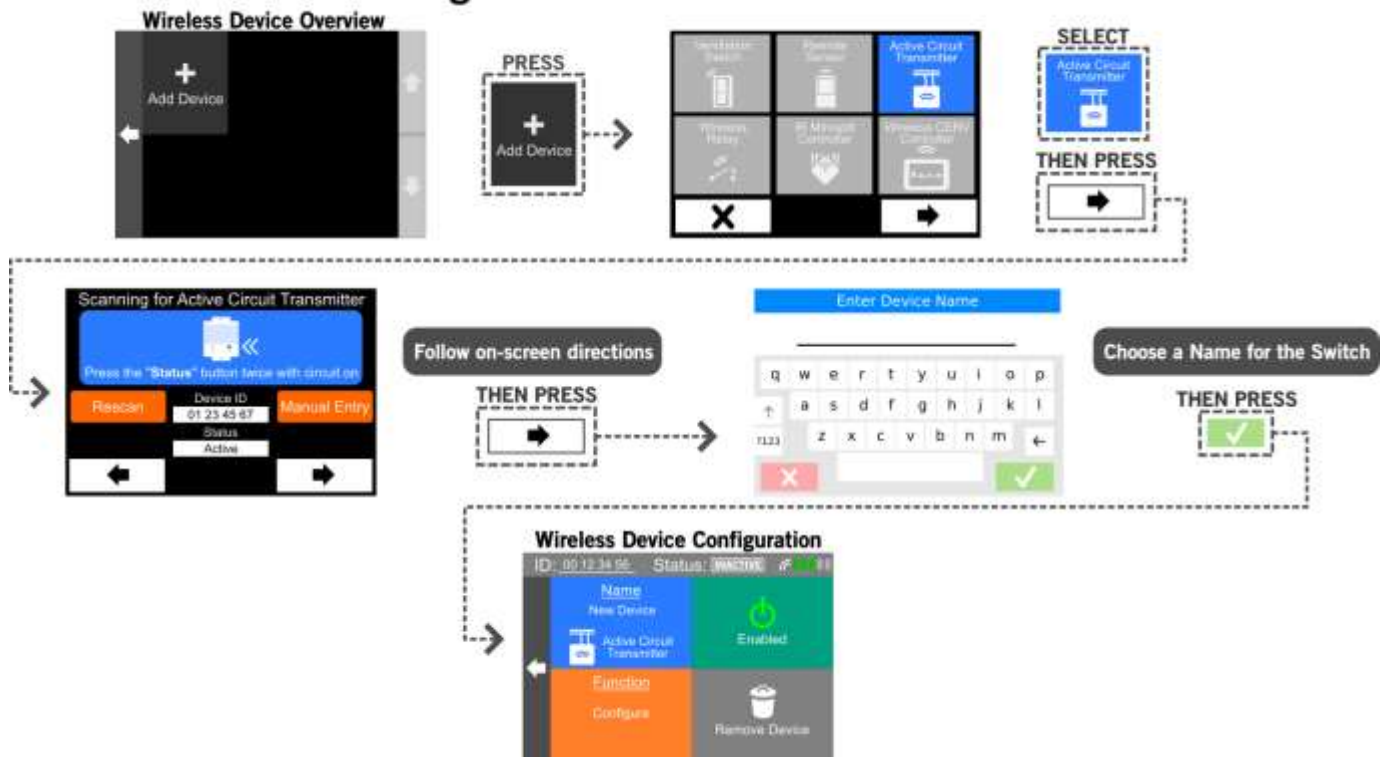


## Configure Wireless Ventilation Switch

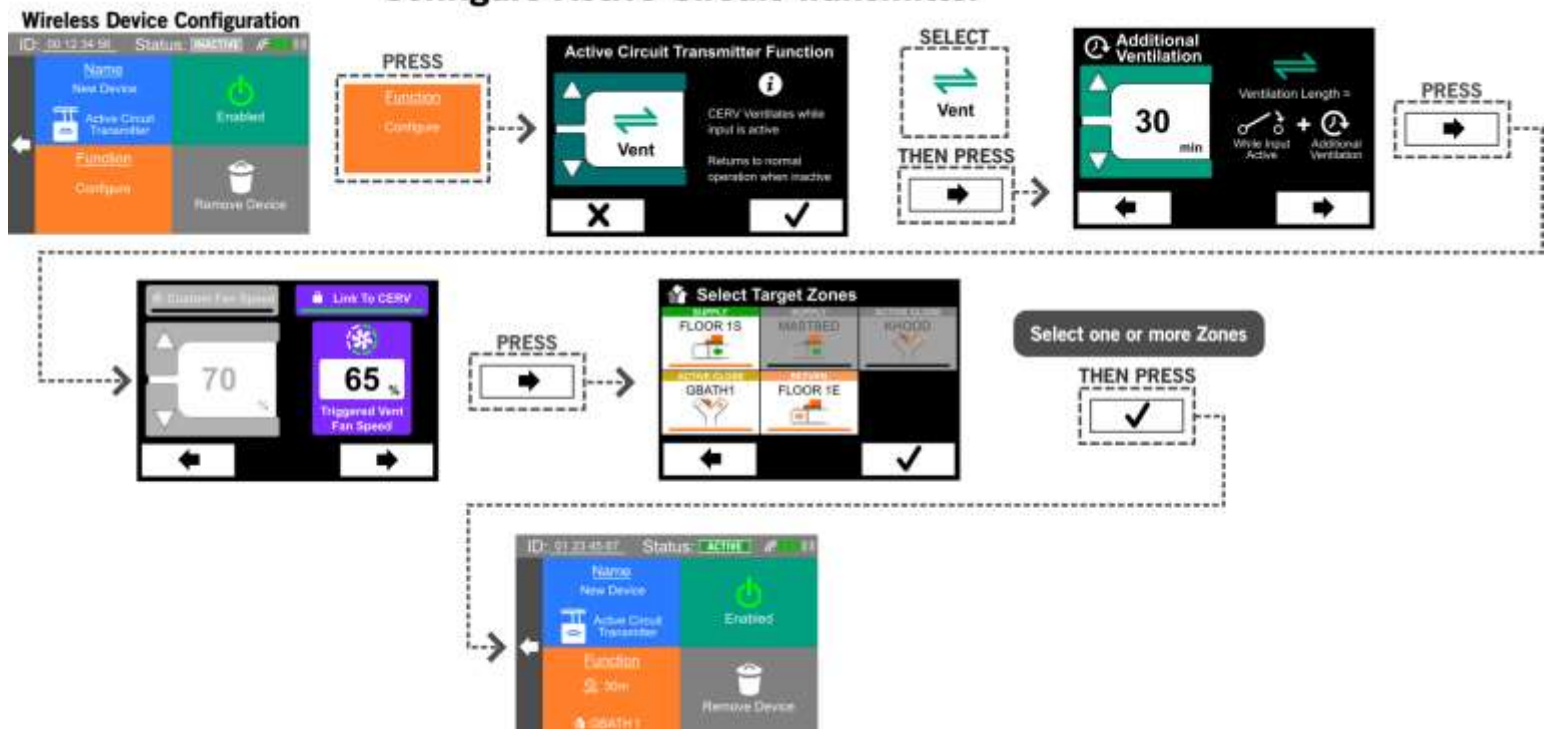




## Adding a New Active Circuit Transmitter



## Configure Active Circuit Transmitter

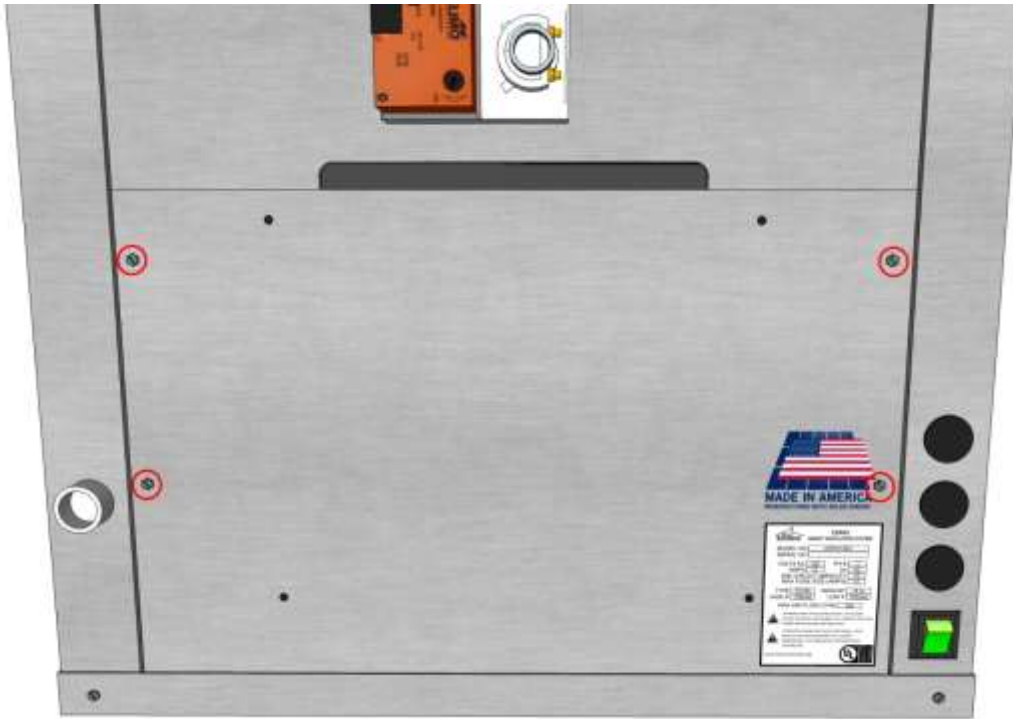


## **Appendix: Front Panel Removal and Auxiliary Input/Output (X0 and I0) Access**

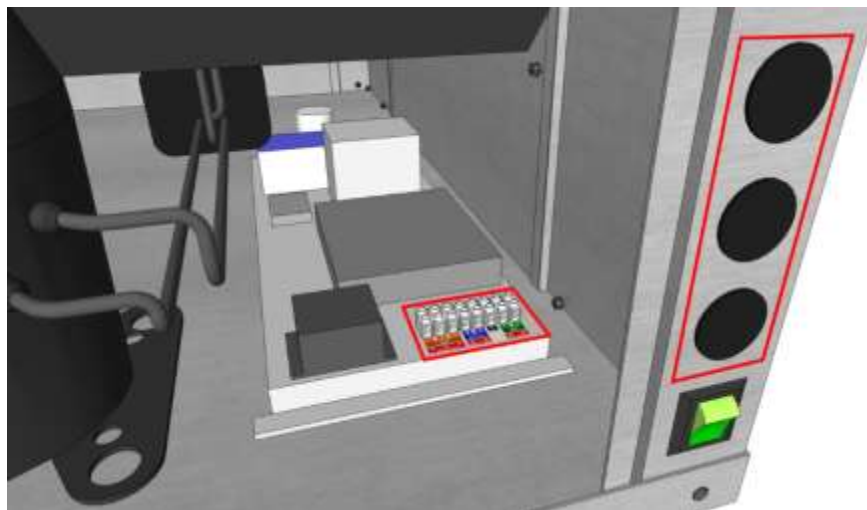
These instructions show how to access the internal input/output connections in the CERV2. Before removing any access covers, power to the CERV2 should be turned off and the unit either unplugged or the electric breaker switched off. Remove the lower front plastic cover by removing the 13 screws shown below.



Once the lower front cover is off, the four screws for the lower access panel can be removed. Screw locations are shown below. With the screws removed, the panel will be free to come out. **Note:** If using the I/O Expansion Board, the module will be accessible on this panel. Wiring should be run through the knockout holes and panel slot for the I/O Expansion Board.

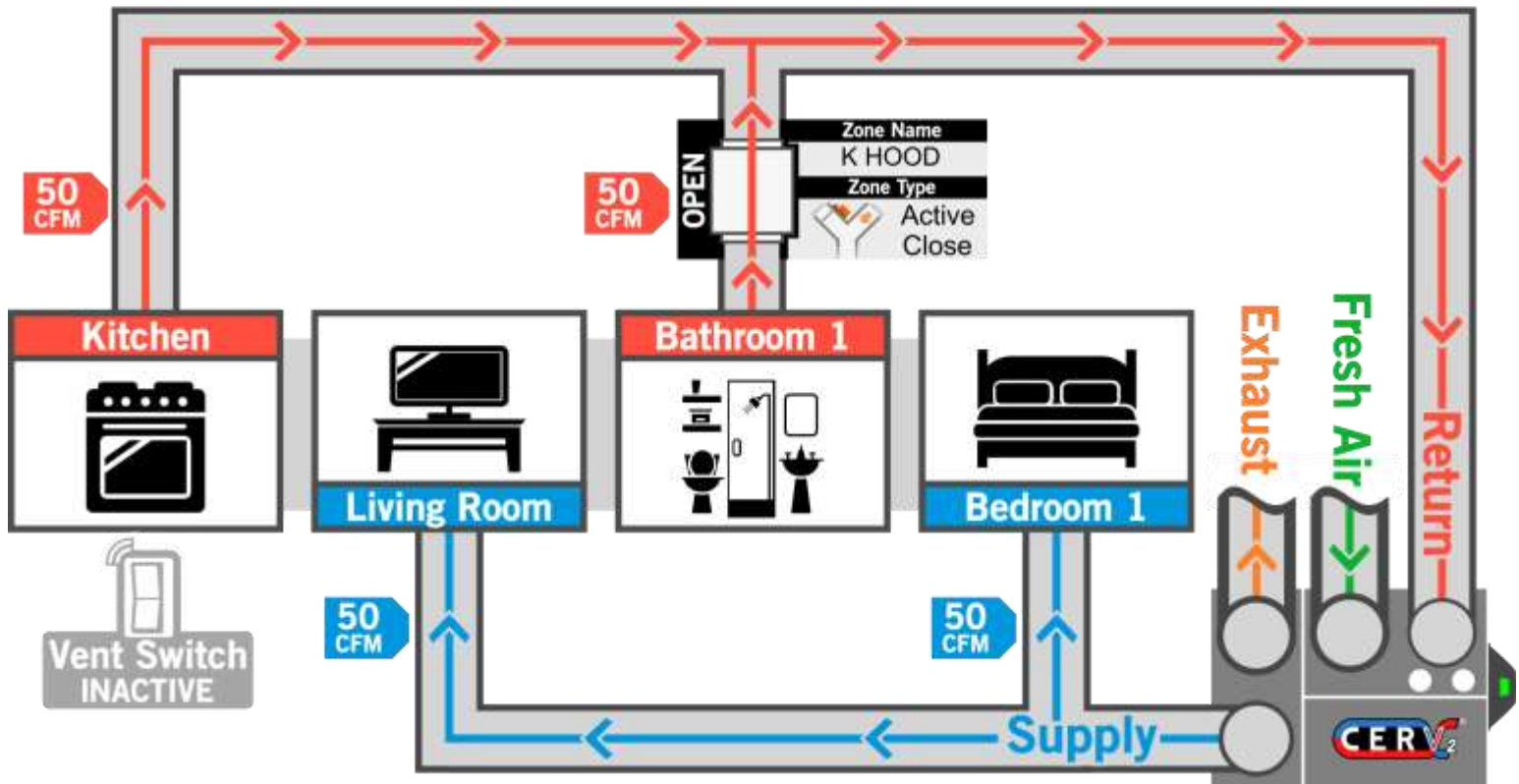


On the right side is the power conditioning and distribution electronics assembly. The I/O terminals are located at the front of this assembly. Three  $\frac{3}{4}$ " knockouts are provided for running wires to the I/O terminals. Conduit or wire strain relief fittings should be used in these knockouts.



## Appendix: Zone Configuration Examples

### Single Damper, Single Zone (Active Close Configuration) Normal Operation



### CERV Configuration Screens

#### Zone Configuration

Name	Zone Function
K HOOD OPEN	Active Close

Create a zone with Active Close function.  
When zone is triggered, zone closes.

#### Wired Auxiliary Outputs

XO  
OPEN

Zone  
Damper

Active Close  
K HOOD

Add up to six additional auxiliary devices with the I/O Expansion Board. Adds 6 dry contact/24VAC outputs. Adds 3 dry contact/24VAC sense inputs. Control external heat, cool, vent, moisture, GEO-Boost, & more! Simple installation & configuration.

#### Wireless Devices

KitchenSw  
Wireless Switch  
INACTIVE  
30m

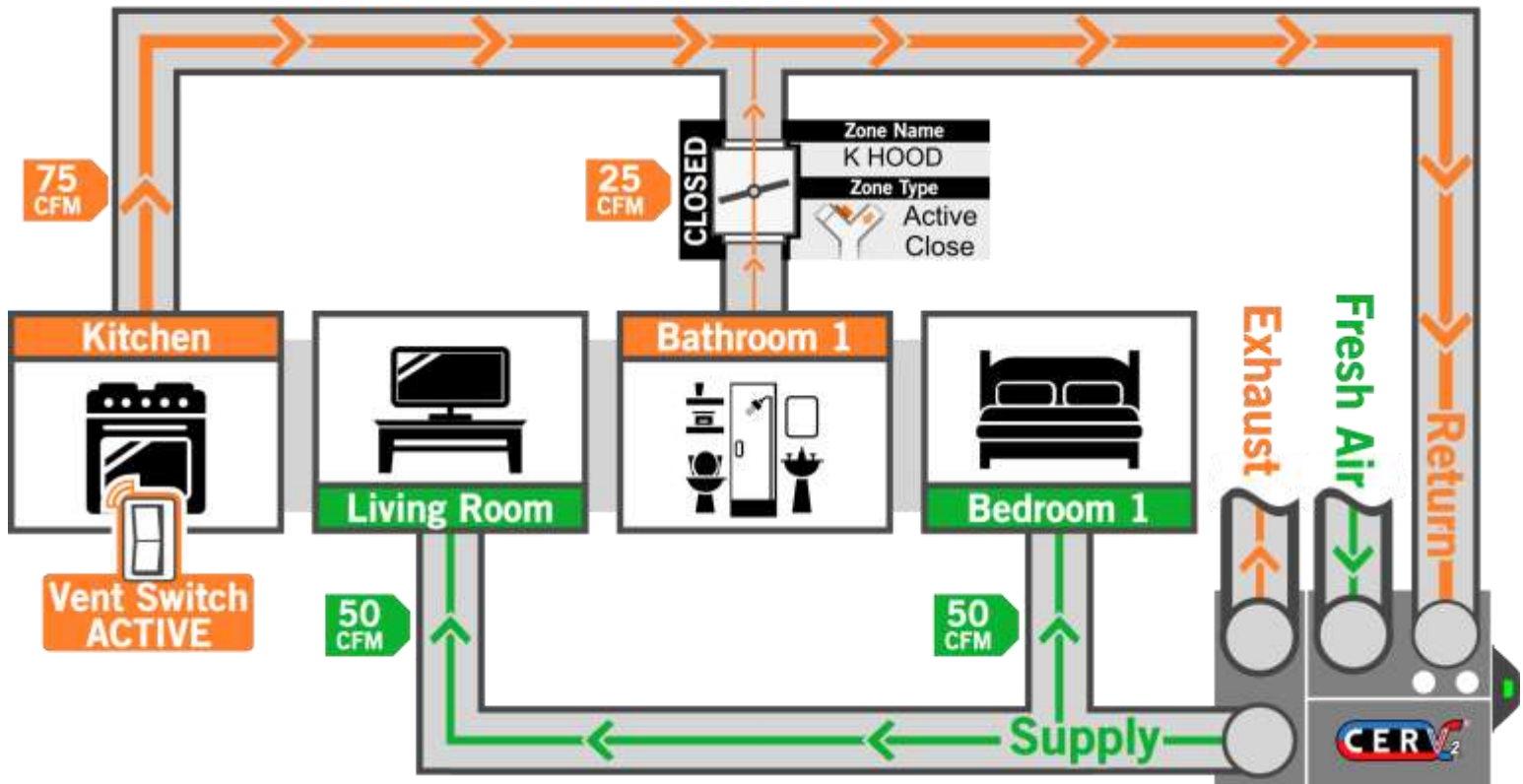
K HOOD

Add Device

Pair a wireless switch, set the time length and fan speed (if desired), and associate the switch with the zone.

In the Active Close Zone configuration, a single damper may be used to separate two or more return areas. In this scenario, the active close zone damper is installed in the return line of the bathroom, so that when the zone is “activated” (i.e. paired wireless ventilation switch is pressed) the bathroom return airflow is reduced, and the kitchen airflow is increased. This is a simple example of what may be done to meet localized kitchen ventilation requirements. Additionally, the wireless ventilation switch can be set to increase the ECM fan speed in the CERV for even more effective pollutant removal.

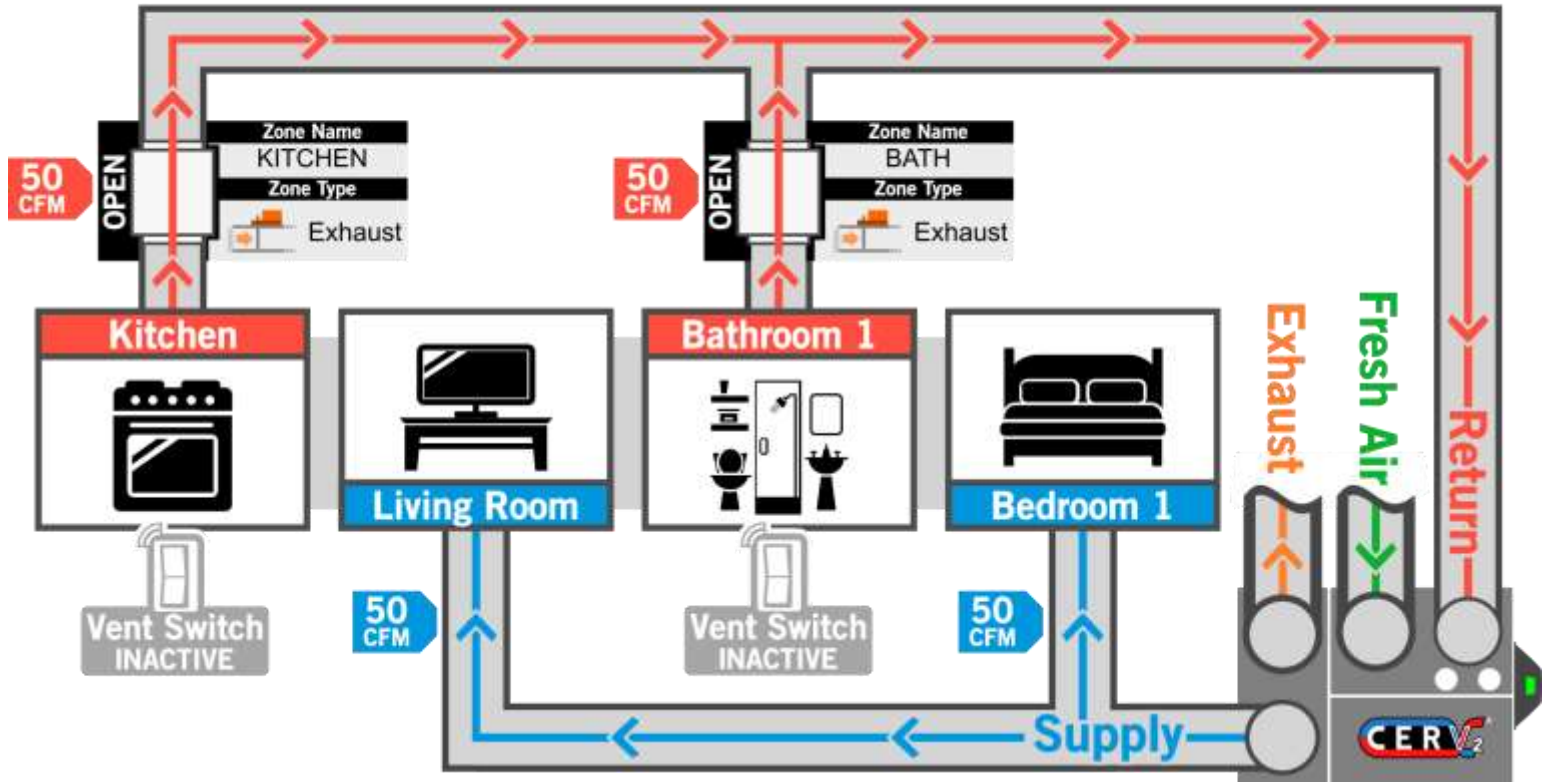
## Single Damper, Single Zone (Active Close Configuration) Ventilation Switch Triggered - Zone Damper Active



When the Wireless Ventilation Switch is activated, the Active Close damper in the bathroom return line closes down, reducing the airflow from 50 to 25 CFM, while the kitchen return is now favored, producing 75 CFM.

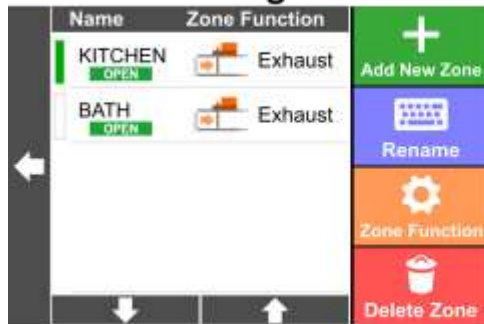


## Dual Damper, Dual Zone (Exhaust Configuration) Normal Operation



## CERV Configuration Screens

### Zone Configuration



Create two zones with Exhaust functionality.  
When one zone is triggered, the other zone closes.

### Wired Auxiliary Outputs



Set up a wired Auxiliary Output for each damper electrical connection.

### Wireless Devices



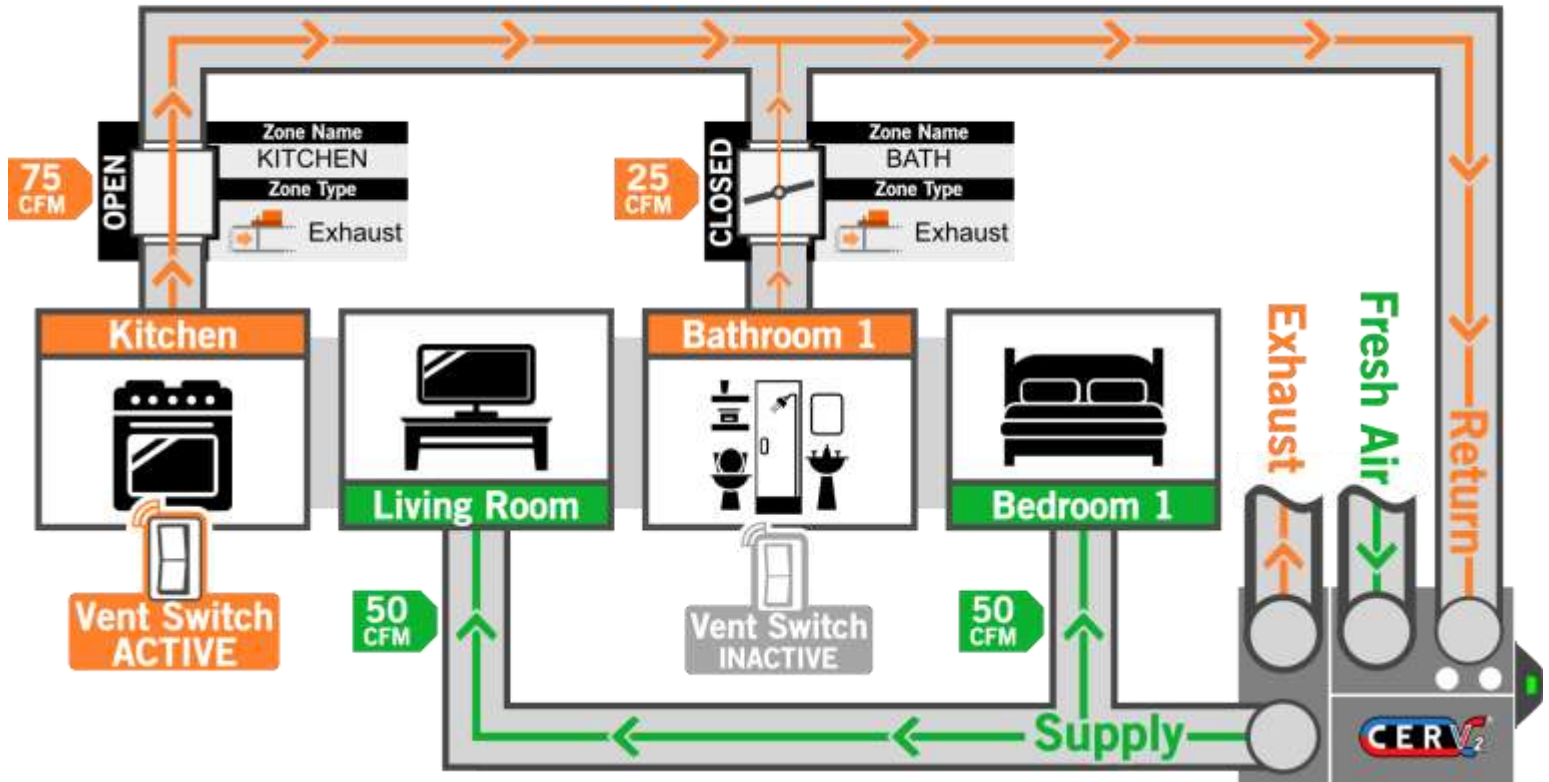
Pair wireless both switches, set the time length and fan speed (if desired), and associate each switch with the appropriate zone.

With this Dual Damper, Dual Zone configuration, zone dampers are installed in the return of both the kitchen and bathroom. This allows both areas to be independently favored if their associated wireless ventilation switches are triggered. Triggering the kitchen switch will cause the bathroom zone damper to close down, while triggering the bathroom switch will close the kitchen damper. If both switches are active at the same time, both zone dampers will open.

Example: both switches are hit at the same time. The kitchen switch is configured for 30 minutes of ventilation, while the bathroom switch is configured for 45 minutes. After the switches are both triggered, both kitchen and bathroom zone dampers remain open. After 30 minutes, the kitchen switch timer expires, leaving only the bathroom ventilation switch active. For the next 15 minutes, the kitchen damper will be closed and bathroom damper will be open. After the last timer expires, both dampers fully open.

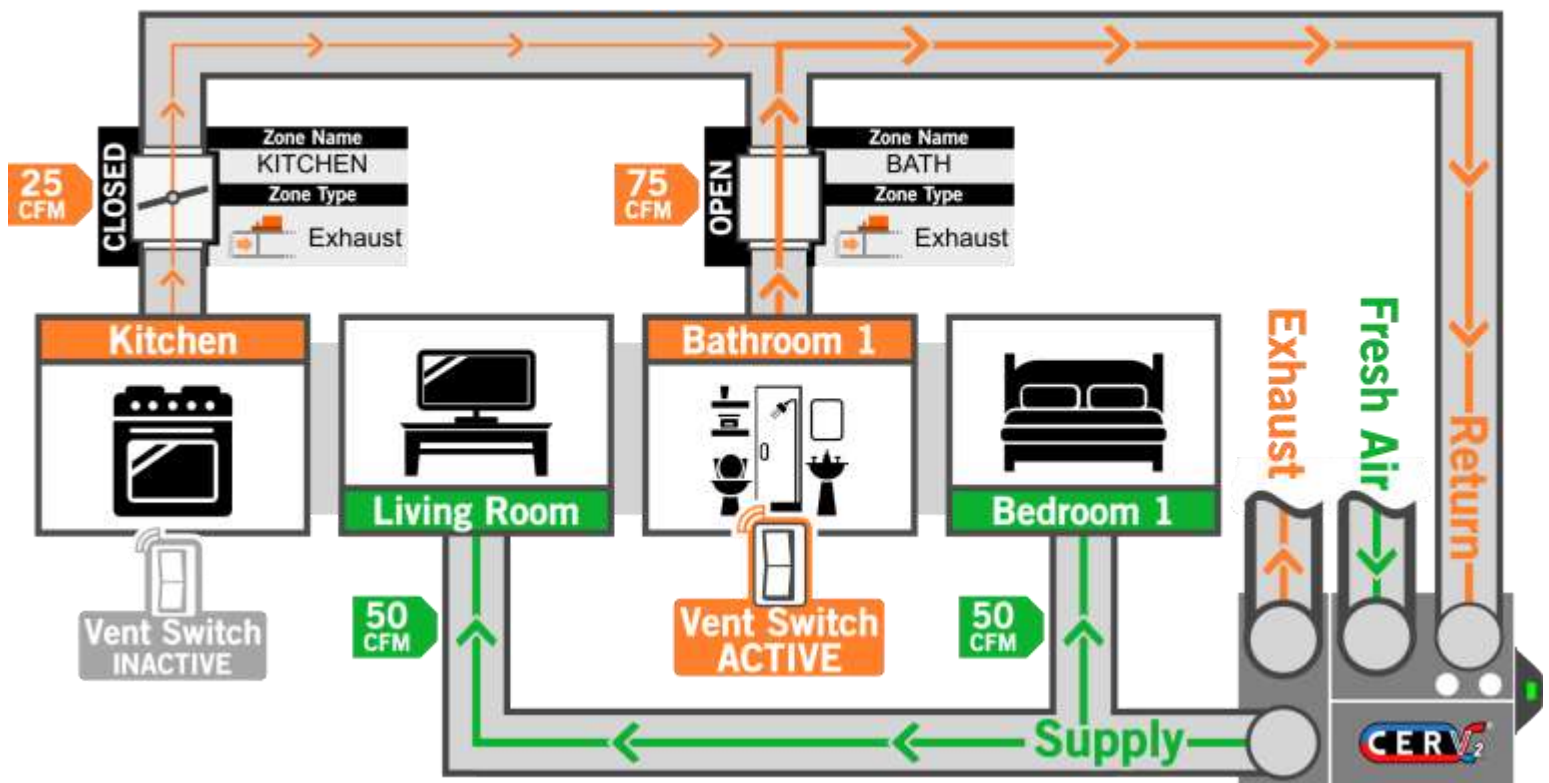
## Dual Damper, Dual Zone (Exhaust Configuration)

### Kitchen Vent Switch Triggered

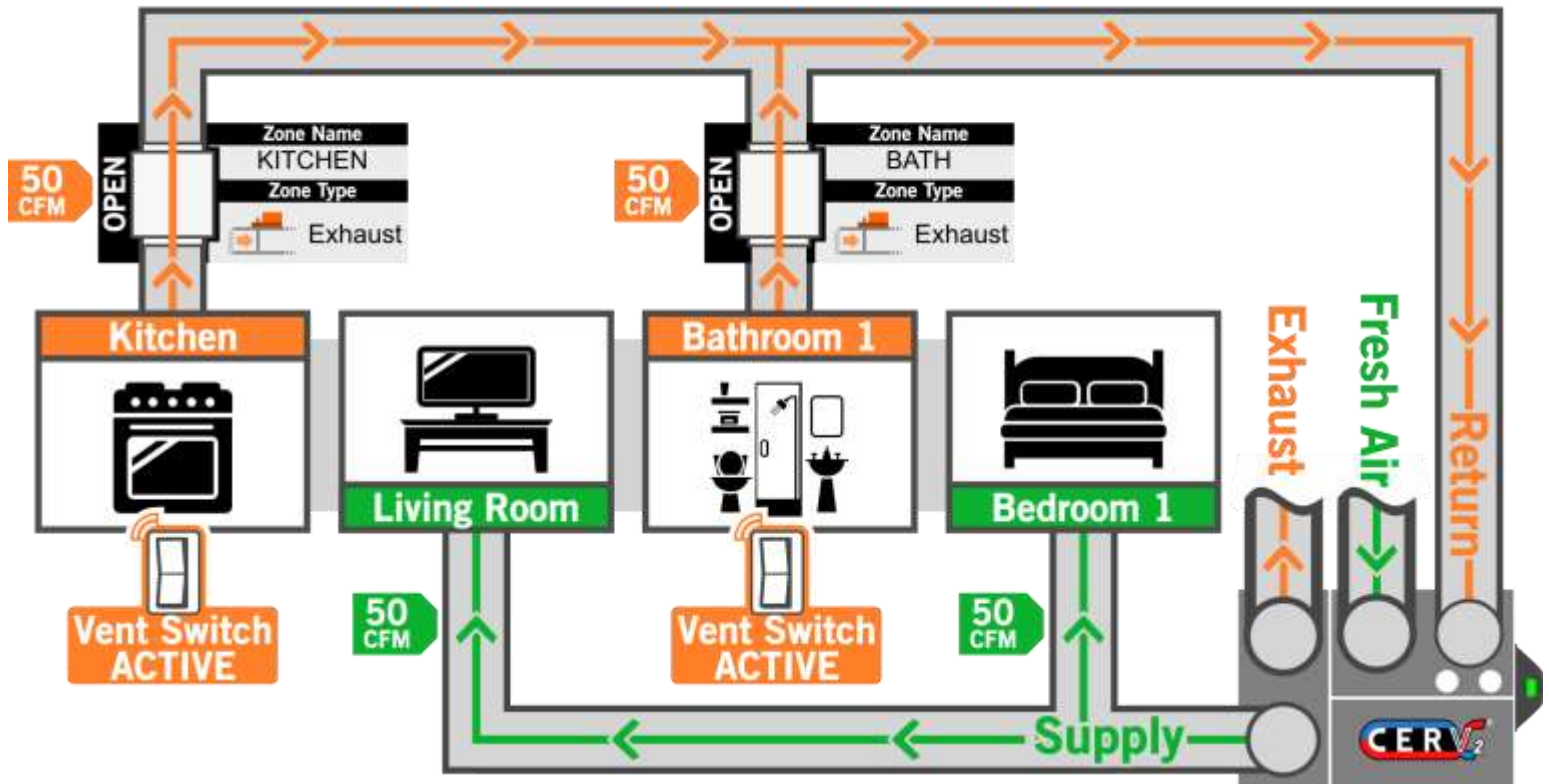


## Dual Damper, Dual Zone (Exhaust Configuration)

### Bathroom Vent Switch Triggered

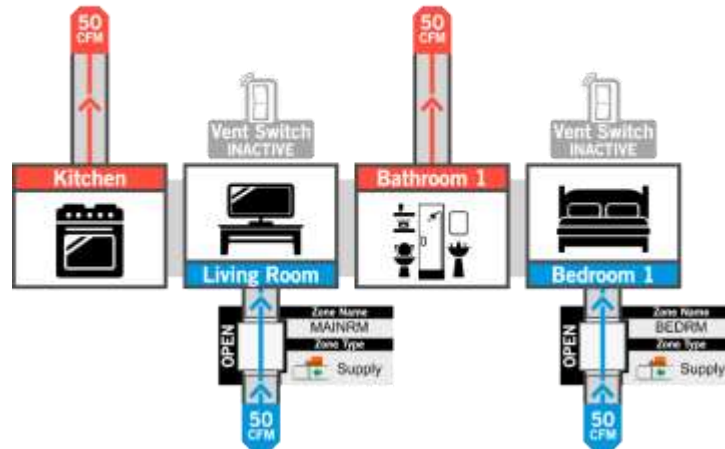


## Dual Damper, Dual Zone (Exhaust Configuration) Kitchen and Bathroom Vent Switches Triggered

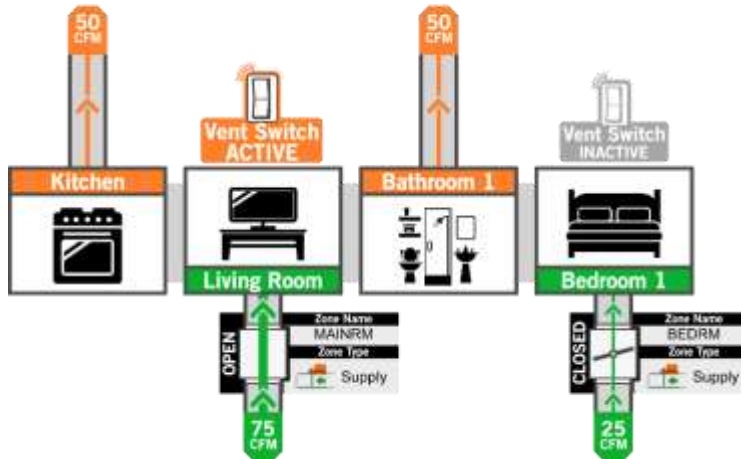




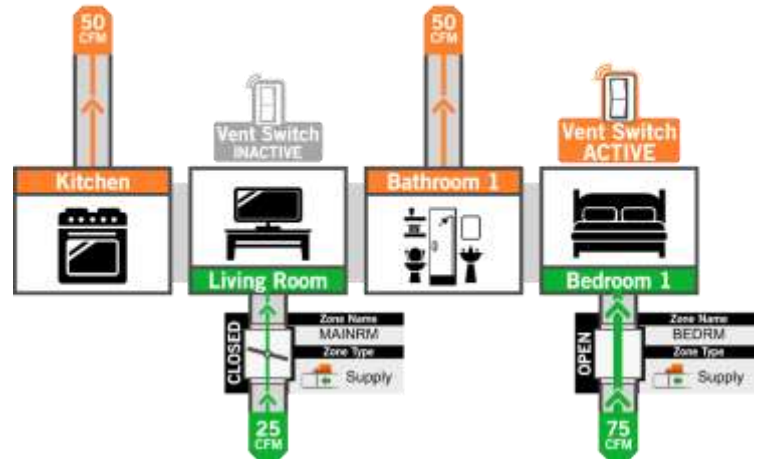
## Dual Damper, Dual Zone (Supply Configuration) Normal Operation



## Dual Damper, Dual Zone (Supply Configuration) Living Room Vent Switch Triggered



## Dual Damper, Dual Zone (Supply Configuration) Bedroom Vent Switch Triggered



## CERV Configuration Screens

### Zone Configuration



Create two zones with Exhaust functionality. When one zone is triggered, the other zone closes.

### Wired Auxiliary Outputs



Set up a wired Auxiliary Output for each damper electrical connection.

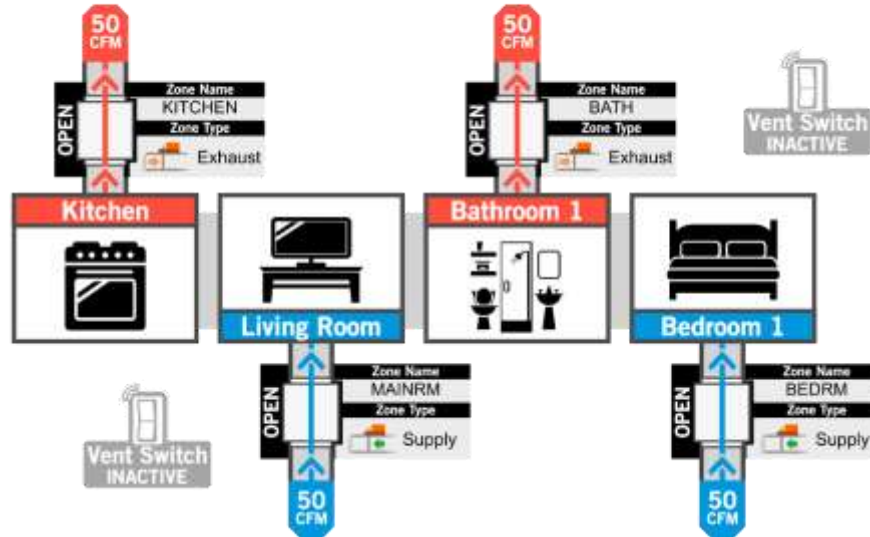
### Wireless Devices



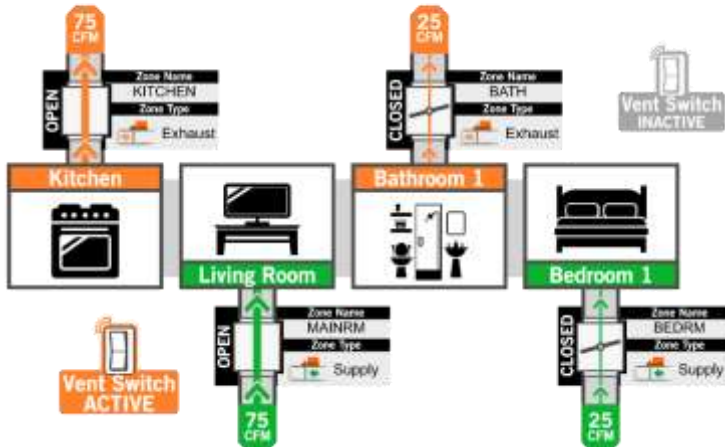
Pair wireless both switches, set the time length and fan speed (if desired), and associate each switch with the appropriate zone.

This configuration is similar to the previous Dual Damper, Dual Zone (Exhaust Configuration), but with the dampers on the supply side. This configuration could be used when you want to direct more fresh air into specific living spaces.

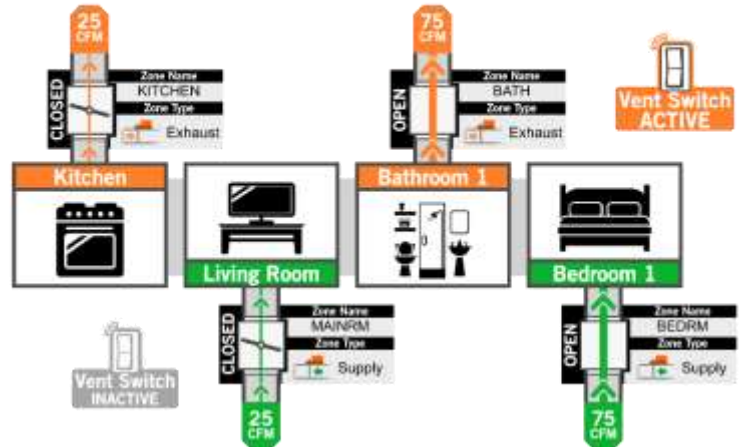
### Multi Damper, Multi Zone (Supply & Exhaust Configuration) Normal Operation



**Multi Damper, Multi Zone (Supply & Exhaust Configuration)**  
**Kitchen/Living Room** switch triggered



**Multi Damper, Multi Zone (Supply & Exhaust Configuration)**  
**Bedroom/Bathroom** switch triggered



## CERV Configuration Screens

## Zone Configuration

Name	Zone Function
MAINRM <small>OPEN</small>	Supply
BEDRM <small>OPEN</small>	Supply
KITCHEN <small>OPEN</small>	Exhaust
BATH <small>OPEN</small>	Exhaust

Create two zones with Exhaust functionality, and two with Supply.

## Wired Auxiliary Outputs

 <div> <h1>X0</h1> <p>OPEN</p> <p>Zone</p>  <p>Damper</p> <p>Supply</p> <h2>MAINRM</h2> </div>	<div> <h3>X1</h3> <p>OPEN</p> <p>Zone</p>  <p>Damper</p> <p>Supply</p> <h2>BEDRM</h2> </div>	<div> <h3>X2</h3> <p>OPEN</p> <p>Zone</p>  <p>Damper</p> <p>Exhaust</p> <h2>KITCHEN</h2> </div>
	<div> <h3>X3</h3> <p>OPEN</p> <p>Zone</p>  <p>Damper</p> <p>Exhaust</p> <h2>BATH</h2> </div>	<div> <h3>X4</h3> <p>+</p> <p>Setup</p> </div>
	<div> <h3>X5</h3> <p>+</p> <p>Setup</p> </div>	<div> <h3>X6</h3> <p>+</p> <p>Setup</p> </div>

Set up a wired Auxiliary Output for each damper electrical connection.

## Wireless Devices

Pair wireless both switches, set the time length and fan speed (if desired). The first switch activates both Kitchen and Living room Zones, while the second activates the bedroom and bath.

In this unique configuration, the home has zone dampers installed in both supply and return ducts. Two wireless switches are used, each one controlling multiple zones. When the first ventilation switch is triggered, it signals the CERV to close down the bedroom and bathroom, while favoring the living room and kitchen. This directs the most fresh air into the living room space, while removing the most air from the kitchen (an ideal operation, say, if you were hosting a large party). The other ventilation switch triggers the CERV to instead favor the bedroom and bathroom supply and returns.