

FAV – H – Installation Instructions

Introductions

Zonex Systems (FAV–H) **Fresh Air – Humidity Mitigation System** is a microprocessor based controller that measures the temperature and humidity each minute to mitigate humidity problems caused by minimum fresh air ventilation requirements when the HVAC unit is not running or taxed during night operation or shoulder periods when the temperature is low.

The FAV–H System includes electronic controller with temperature and humidity sensors and fresh air damper to provide ventilation air based on outdoor air temperature and humidity and air requirements for each 12-hour period to meet either ASHRAE 62.2 or International Mechanical Code (IMC) 403.3.2.1 Indoor Air Quality Standards.

Using a software algorithm, outdoor air temperature sensor and a humidistat – Fresh Air Sensor (FAS), the controller will monitor outdoor conditions and provide fresh air as required when conditions meet the software parameters. When conditions exceed software parameters for temperature and humidity, controller will track and calculate HVAC system operation to provide fresh air when the system can remove humidity. When outdoor conditions do not permit HVAC system operations, software will store missed minutes for use once the HVAC system is operating. System logic operates on a 12-hour timer; once timer reaches 8 hours, controller will evaluate number of minutes run and number of minutes stored and then run stored minutes to make up needed fresh air to complete ASHRAE 62.2 or IMC 403.3.2.1 code requirements.

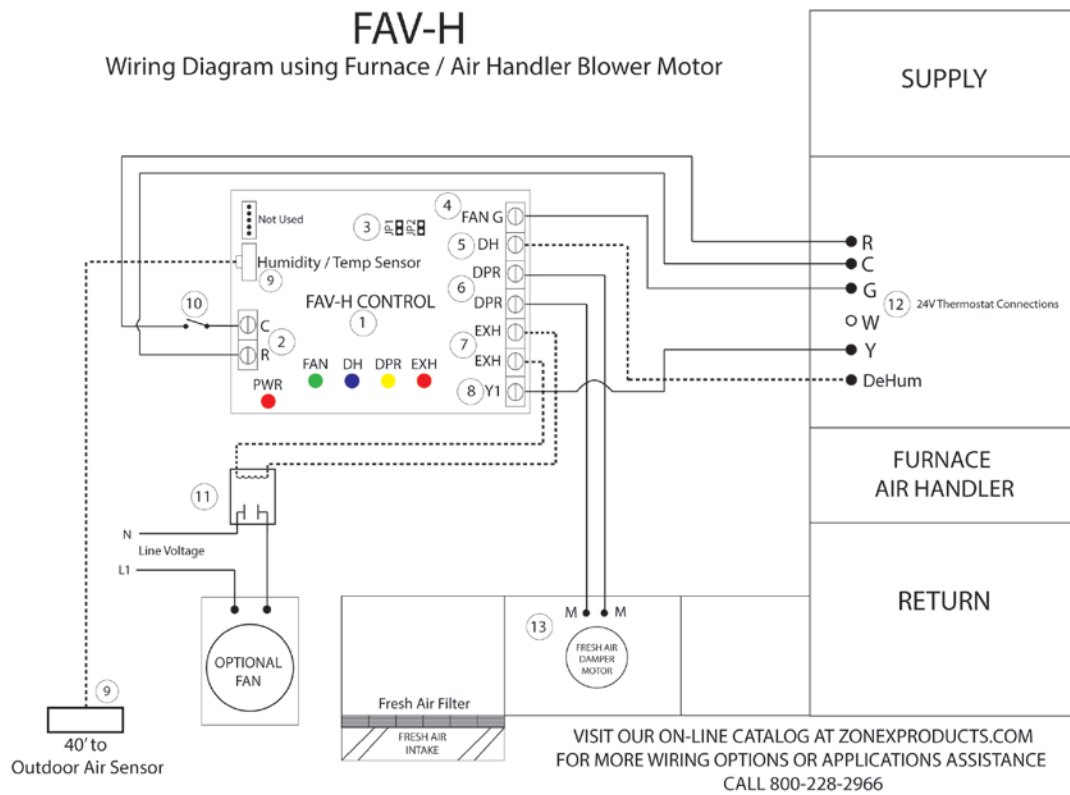
Installation

It is recommended that the intake air hood be an open metal type with ¼” screen and that a fresh air filter be installed prior to fresh air damper. The fresh air intake should be located away from dryer vents, driveways, trash area, and pool equipment. If the application is in a cold climate, locate the fresh air intake above snow line. Verify local code requirements for your location to insure you are in compliance. An air intake duct will be used with a Zonex FAV-H system. Review the recommended duct sizing chart.

1. Calculate Ventilation needed – Use Ventilation Needed formulas below to determine fresh air requirement for house. Two formulas are listed, ASHRAE 62.2 and IMC 403.3.2.1. Use the formula needed for your code requirement.
2. Once fresh air quantity is determined, use Recommended Duct Sizing Chart to size fresh air duct and intake for house.
3. Mount FAV–H fresh air damper in close proximity to HVAC unit, Furnace or Air Handler, to allow for damper outlet to easily connect to the return air plenum
4. Connect inlet fresh air duct to inlet of fresh air damper
5. Connect outlet of damper to return plenum of HVAC unit
6. Install Fresh Air Outdoor Air Sensors (FAS) on south facing side of building away from direct sunlight and connect wire harness to FAV-H control board using provided wire harness and plug in FAV-H controller. (FAV-H is supplied with a 40-ft wire harness.

7. Wire R, C, Y, and G terminals of FAV-H to HVAC Unit R, C, Y and G terminals. Review installation wire diagram.
8. Wire DPR and DPR terminals to M and M terminals of fresh air damper (FAD)
9. If Furnace/Air Handler is equipped with DEHUM feature, install wire from DH of FAV-H controller to DEHUM terminal of Furnace/Air Handler control board.
10. If using field supplied AUX Booster or Exhaust Fan. Install field supplied 24V SPDT relay and wire relay coil terminals to EXH and EXH on FAV-H controller.
11. Energize FAV-H.

Review FAV-H wiring diagram



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|---|---|--|
| 1. FAV-H Controller | 5. Dehumidifier output (For use with Furnace / Air handler equipped with Dehum function) | 9. FAS - Temperature Humidity Sensor |
| 2. FAV-H 24v Power provided from Furnace / Air handler | 6. Damper control output | 10. Optional " On - Off" Switch (Field Supplied) |
| 3. JP1- Used for 50% operation
JP2 - Exhaust Fan Jumper | 7. EXH outputs to operate AUX Booster Fan or Exhaust Fan | 11. Field Supplied SPST Relay to be used with Optional Booster / Exhaust Fan |
| 4. G output, connect to G on Furnace / Air handler control terminal | 8. Y1 input, connect to Y1 on Furnace / Air handler control terminal | 12. Furnace / Air handler 24V Thermostat Connections |
| | | 13. Fresh Air Damper |

Zonex Systems FAV-H can be configured to meet either ASHRAE 62.2 or IMC 403.3.2.1 fresh air requirements. Based on local code and application specifications, installer will need to confirm proper formula.

ASHRAE 62.2 Formula

$$\text{House Square Feet (Sq.Ft.)} \times .01 + ((\# \text{Bedrooms} + 1) \times 7.5) = \text{CFM}$$

Example 2000 (Sq. Ft.) House with 3 bedrooms

$$2000 \times .01 + ((3 + 1) \times 7.5)$$

$$20 + (4 \times 7.5)$$

$$20 + 30 = 50 \text{ CFM}$$

Worksheet – ASHRAE Requirement

House Size _____ Sq. Ft. Number of Bedrooms _____

$$\text{_____} \times .01 + ((\text{_____} + 1) \times 7.5) = \text{_____} \text{ CFM Required}$$

Sq. Ft. of House Bedrooms

Or

International Mechanical Code 403.3.2.1 Formula

$$\text{House Square Feet (Sq.Ft.)} \times .03 + ((\# \text{Bedrooms} + 1) \times 7.5) = \text{CFM}$$

Example 2000 (Sq. Ft.) House with 3 bedrooms

$$2000 \times .03 + ((3 + 1) \times 7.5)$$

$$60 + (4 \times 7.5)$$

$$60 + 30 = 90 \text{ CFM}$$

Worksheet – IMC 4.3.3.2.1 Requirement

House Size _____ Sq. Ft. Number of Bedrooms _____

$$\text{_____} \times .03 + ((\text{_____} + 1) \times 7.5) = \text{_____} \text{ CFM Required}$$

Sq. Ft. of House Bedrooms

Fresh Air Duct Sizing Chart

Required CFM	Duct Size
40	5"
50	6"
60	6"
75	6"
90	7"
100	7"
105	8"
110	8"
125	8"

Fresh Air Duct Sizing is based on .3 inch of static for a 100 ft. run of duct. An air balancing damper may be used to tune airflow to specific CFM requirement.

Optional Operation

In some applications, design will require operations of 50% per hour. FAV-H may be configured to 50% run.

Place jumper JP1 on a single pin and energize controller. FAV-H will energize G, EXH, and open FAD damper for 30 minutes of each hour.

Replacement and Accessory Parts

Part #

FAV-H - Fresh Air Ventilation – Humidity Controller

FAS - Fresh Air Sensor with temperature and Humidity with 40' wire harness

TRXFAD - Fresh Air Damper 24v power open spring close

FAV-H Kit – Fresh Air Ventilation Kit - (FAV-H, FAS with 40' harness, TRFAD Damper 4" to 8")