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1. How to install SmartAire™ Power Damper with Santa Fe Ultra70
2. How to install SmartAire™ Power Damper with Santa Fe Ultra unit with dedicated ventilation duct
3. How to set-up and program SmartAire™ Power Damper

The **Santa Fe SmartAire™ Power Damper** easily integrates with the Santa Fe line of Ultra Whole House Ventilating dehumidifiers to control the ventilation through the dehumidifier - eliminating the need for an external ventilation controller.

Serial Number _____

Install Date _____

Sold By _____

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Santa Fe Indoor Air Quality Products is committed to manufacturing quality products.
To maintain our standards, product specifications may change without notice.



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SAFETY INSTRUCTIONS

READ THE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS CAREFULLY BEFORE INSTALLING AND OPERATING THIS DEVICE. PROPER ADHERENCE TO THESE INSTRUCTIONS IS ESSENTIAL TO OBTAIN MAXIMUM BENEFIT FROM YOUR SANTA FE WHOLE HOUSE VENTILATING DEHUMIDIFIER.

⚠ WARNING!

THIS SYMBOL MEANS IMPORTANT INSTRUCTIONS. FAILURE TO HEED THEM CAN RESULT IN SERIOUS INJURY OR DEATH.

⚠ CAUTION!

THIS SYMBOL MEANS IMPORTANT INSTRUCTIONS. FAILURE TO HEED THEM CAN RESULT IN INJURY OR MATERIAL PROPERTY DAMAGE.

⚠ WARNING!

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSON(S) OBSERVE THE FOLLOWING:

1. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
2. Before cleaning this unit, turn off the power to the dehumidifier and/or AHU at service panel.
3. This unit is not designed to provide combustion and/or dilution air for fuel-burning appliances.
4. Installation work must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
5. When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.
6. When cleaning or performing installation of this unit, it is recommended to wear safety glasses and gloves.
7. When applicable local regulation comprises more restrictive installation and/or certification requirements, the aforementioned requirements prevail on those of this document and the installer agrees to conform to these at his own expense.
8. The unit must be mounted at least 3.3 feet (1.0 meter) away from any accessible opening of the duct.
9. Must be powered using a Class 2 transformer rated 10VA or higher.

⚠ CAUTION!

1. Please read specification label on product for further information and requirements.
2. Do not intake air into spaces within walls or ceiling or into attics, crawl spaces, or garage. Do not attempt to recover the exhaust air from a dryer or a range hood.
3. Intended for residential installation only in accordance with the requirements of NFPA 90B.
4. When leaving the house for a long period of time (more than two weeks), a responsible person should regularly check if the unit operates adequately.
5. At least once a year, the unit mechanical and electronic parts should be inspected by qualified service personnel.
6. Since the electronic control system of the unit uses a microprocessor, it may not operate correctly because of external noise or very short power failure. If this happens, turn power off at dehumidifier and/or AHU service panel and wait approximately 10 seconds. Then, restore the power to the unit.
7. Outdoor intake hood must be weather tight and comprise a bird screen.
8. Should you decide to dispose of this unit or of parts of it, do so in accordance with local laws and regulation.

PREPARATION

Before you start:

Choose the best location and installation type for the SmartAire™ Power Damper according to the current system. Ducting widely affects the performance of this type of device. Use the shortest, straightest duct run possible to maximize the results.

CAUTION!

DO NOT INSTALL IN AN AREA WHERE THE TEMPERATURE MAY EXCEED 160°F.

The installer shall ensure that, if necessary, an in-line heater sized according to the required airflow and outside design heating temperature from Manual J or ASHRAE table is installed to ensure that the air delivered to the AHU is never below the minimum temperature allowed by the manufacturer. The in-line heater shall have an integrated airflow sensor and an over temperature sensor to prevent heating in no-flow or low-flow conditions.

When deciding if a preheater is required and whether it should be installed BEFORE or AFTER the SmartAire™ Power Damper, consider the following:

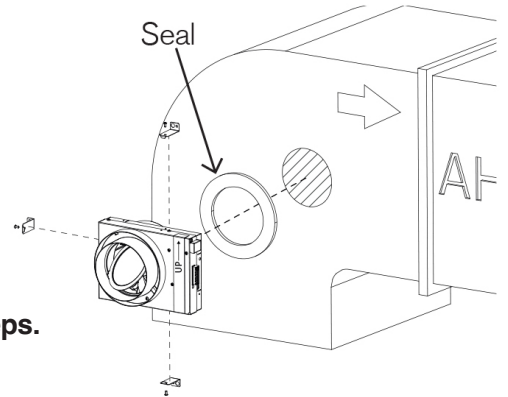
- The SmartAire™ Power Damper's minimum operating temperature is -4°F.
- The temperature distributed to the AHU should never be below the temperature recommended by the AHU manufacturer.
- The minimum distance between the preheater and the SmartAire™ Power Damper is 12 inches.

DAMPER INSTALLATION

Always respect the orientation of the SmartAire™ Power Damper and the direction of the airflow, as indicated on the unit.

Direct-to-AHU:

1. Make a 6-inch diameter hole in the return duct of your AHU.
2. Install the seal on the SmartAire™ Power Damper port that will insert the AHU ducting. Make sure that the direction of the airflow indicated on the unit is respected.
3. Install the 3 installation brackets on the unit, as illustrated.
4. Mark and drill holes for the brackets on the AHU ducting and, using appropriate screws, secure the SmartAire™ Power Damper to the duct of the AHU, making sure it is leveled horizontally.

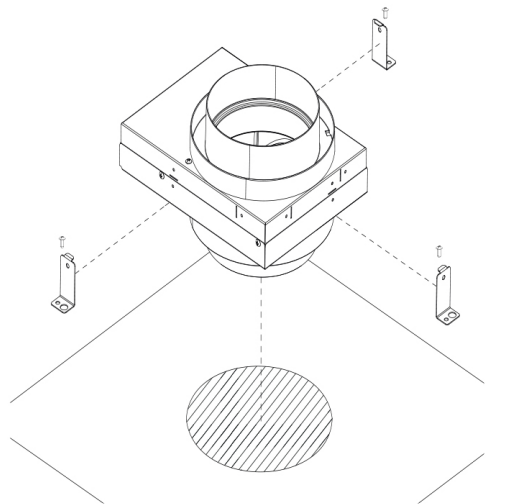


Use self-drilling screws (not included) to avoid marking and drilling steps.

5. Follow steps on page 6 to connect the insulated duct to the SmartAire™ Power Damper.
6. Perform the electrical connection to the AHU following the wiring diagrams on pages 8 and 10.

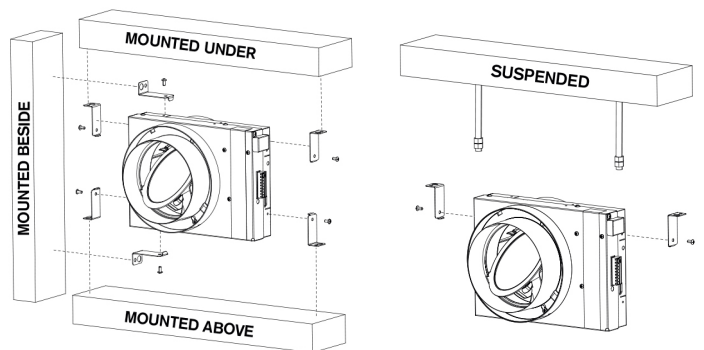
Through a Horizontal Surface:

1. Make a hole in the surface that the duct will run through. Size the hole so that the vapor barrier of the insulated ducting is not damaged, and the insulation not compressed.
2. Install the 3 installation brackets on the unit, as illustrated.
3. Run a piece of insulated duct through the hole and connect to the SmartAire™ Power Damper following the steps on page 6. Make sure the direction of the airflow as indicated on the unit is respected.
4. Push the excess ducting on the other side of the surface and, using appropriate screws, secure the SmartAire™ Power Damper to the surface.
5. Run the insulated duct to the AHU and connect to the AHU ducting, making sure that the vapor barrier sealing is leak-free.
6. Follow steps on page 6 to connect the second insulated duct to the SmartAire™ Power Damper.
7. Perform the connections to the AHU following the wiring diagrams on pages 8 and 10.



Mounted Under, Above or Beside a Structure:

1. Install 2 installation brackets on the unit, as illustrated, according to the surface the unit will mount to.
2. Using appropriate screws, secure the SmartAire™ Power Damper to the structure, making sure it is level horizontally. Make sure the direction of the airflow as indicated on the unit is respected.
3. Follow steps on page 6 to connect both insulated ducts to the SmartAire™ Power Damper.
4. Run the insulated duct to the AHU and connect to the AHU ducting, making sure that the vapor barrier sealing is leak-free.
5. Perform the connections to the AHU following the wiring diagrams on pages 8 and 10.



CONNECTING DUCTS

⚠ CAUTION!

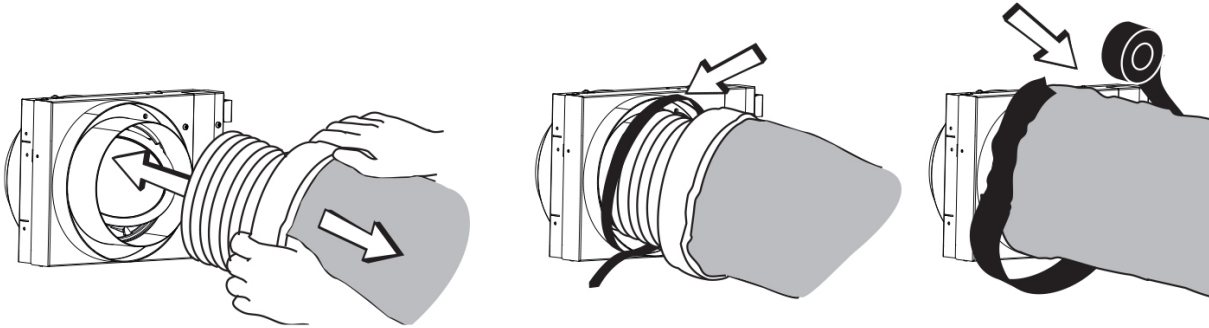
ALWAYS USE INSULATED DUCTING OF A MINIMUM R-4 INSULATION FACTOR.

1. Slide the inner flexible duct over the port and secure it using a tie wrap.
2. Pull the insulation over the flexible duct and port without compressing it.
3. Use duct tape to seal the outer membrane of the insulated duct to the outer ring of the port.

⚠ WARNING!

MAKE SURE THE OUTDOOR INTAKE HOOD IS AT LEAST 18 INCHES ABOVE THE GROUND AND 6 FEET AWAY FROM ANY OF THE FOLLOWING: DRYER EXHAUST, HIGH-EFFICIENCY FURNACE VENT, CENTRAL VACUUM VENT, GAS METER EXHAUST, GAS BARBECUE-GRILL, ANY EXHAUST FROM A COMBUSTION SOURCE, GARBAGE BIN AND ANY OTHER SOURCE OF CONTAMINATION.

Make sure the outdoor intake hood is easily accessible for annual maintenance. If located above the first floor, place it close to a window or balcony to allow easy access.



DEHUMIDIFIER INSTALLATION

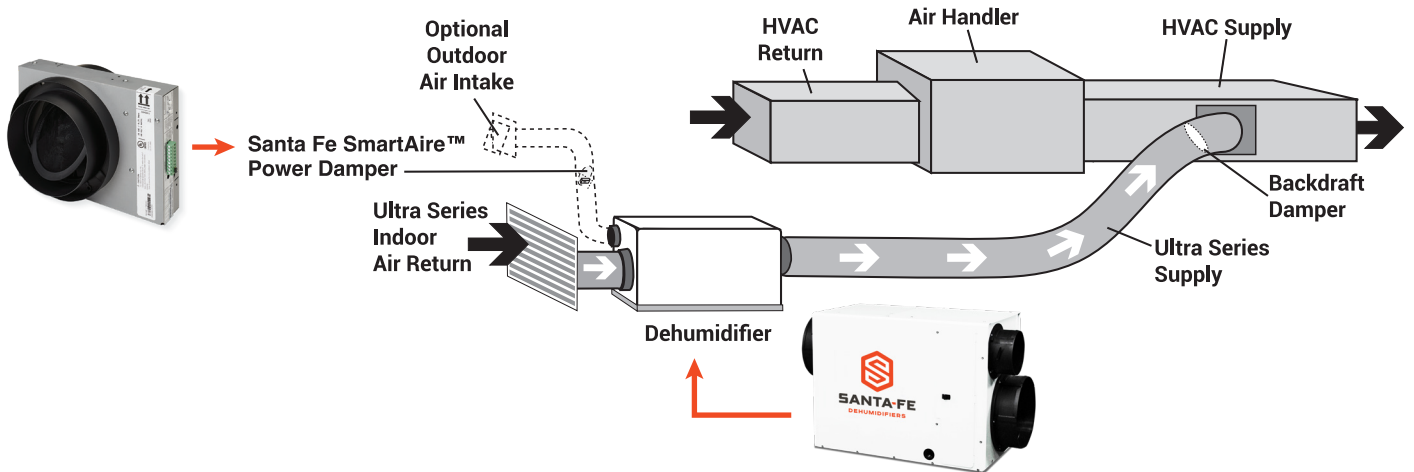
Utilize the Santa Fe dehumidifier fan to provide fresh air ventilation in place of the air handler central fan.

- Dehumidifier fan can operate separate of dehumidifier compressor, allowing ventilation when compressor is not running.
- Dehumidifier compressor and fan will still operate based on humidistat control.

Installation Made Easy

Engineered with the end user in mind, this motorized damper from Santa Fe offers the ultimate in installation flexibility.

- In-line Installation: Capable of being installed in the conventional in-line configuration, it can be placed on a horizontal surface or suspended beside, below, or above studs and trusses.
- Simple Wiring: A removable terminal block for easier wiring installation.



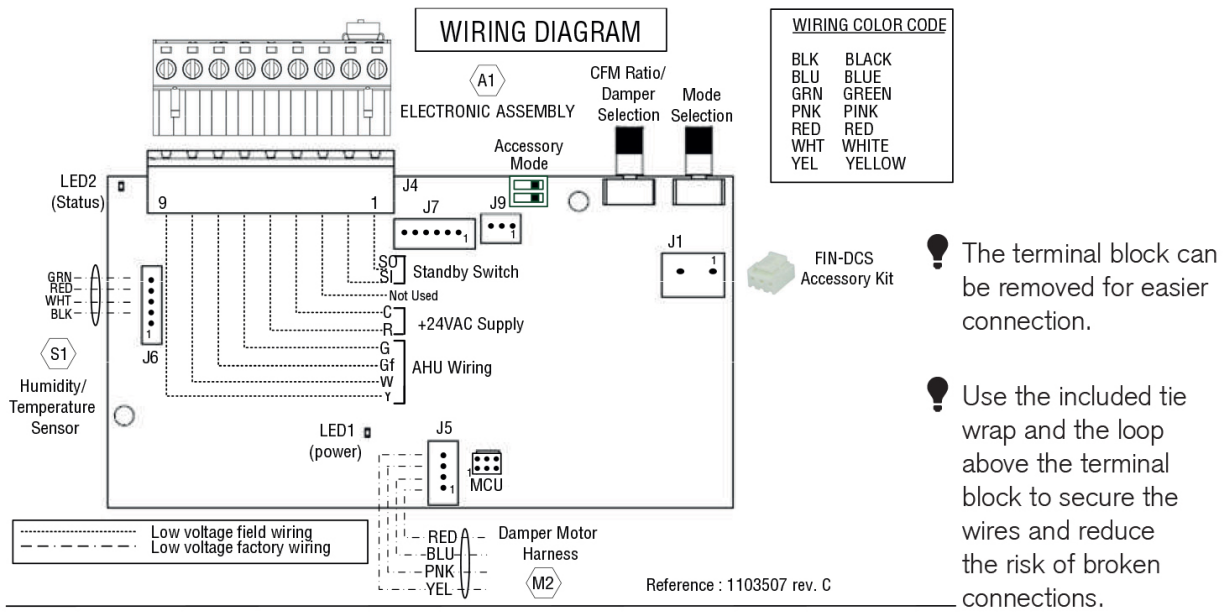
WIRING DIAGRAM

⚠ WARNING!

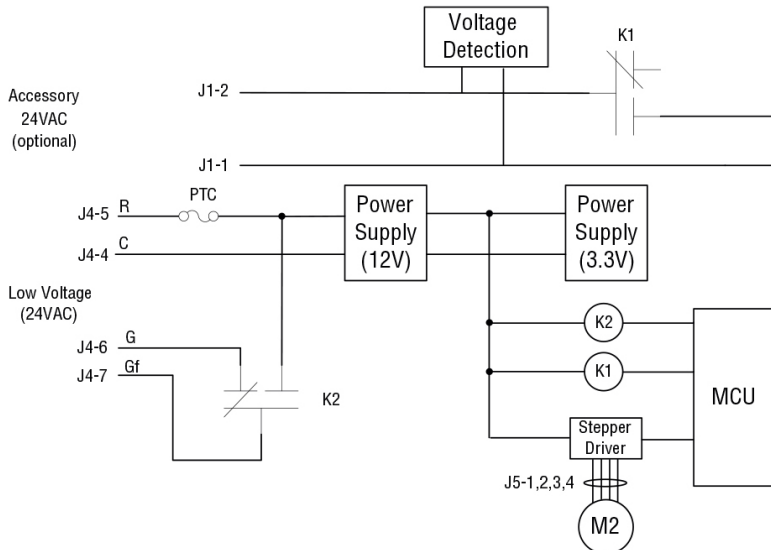
RISK OF ELECTRIC SHOCK. ELECTRICAL WIRING MUST BE DONE BY QUALIFIED PERSONNEL IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS. BEFORE CONNECTING WIRES, SWITCH OFF THE POWER TO THE AHU AT SERVICE PANEL AND LOCK SERVICE DISCONNECTING MEANS TO PREVENT POWER FROM BEING SWITCHED ON ACCIDENTALLY.

⚠ CAUTION!

FAULTY CONNECTIONS CAN CAUSE DAMAGE TO THE AHU, TO THE THERMOSTAT AND/OR TO THIS UNIT. ALWAYS DOUBLE CHECK CONNECTIONS BEFORE TURNING POWER BACK ON.



LOGIC DIAGRAM

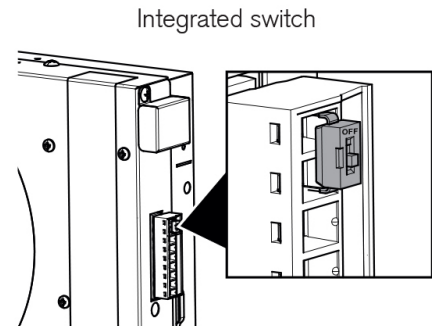
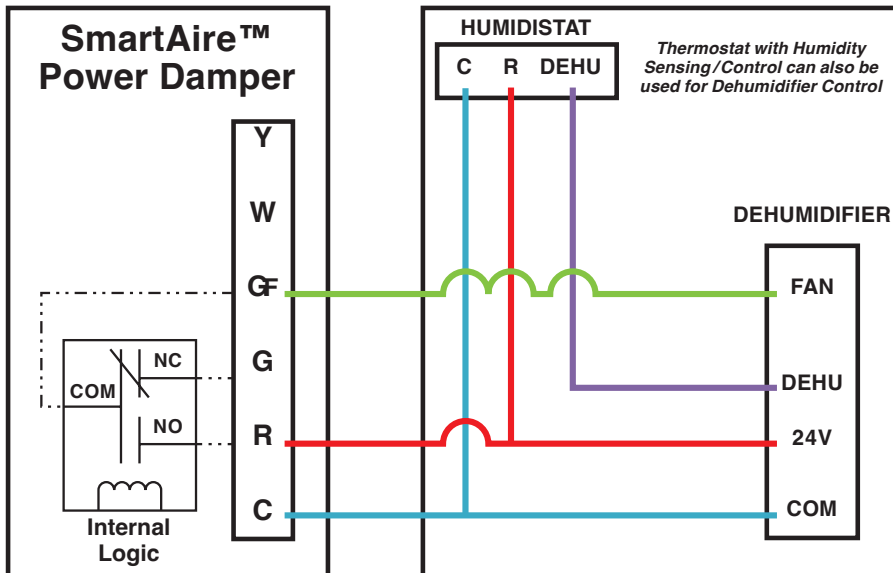


DAMPER WIRING

Wiring the SmartAire™ Power Damper:

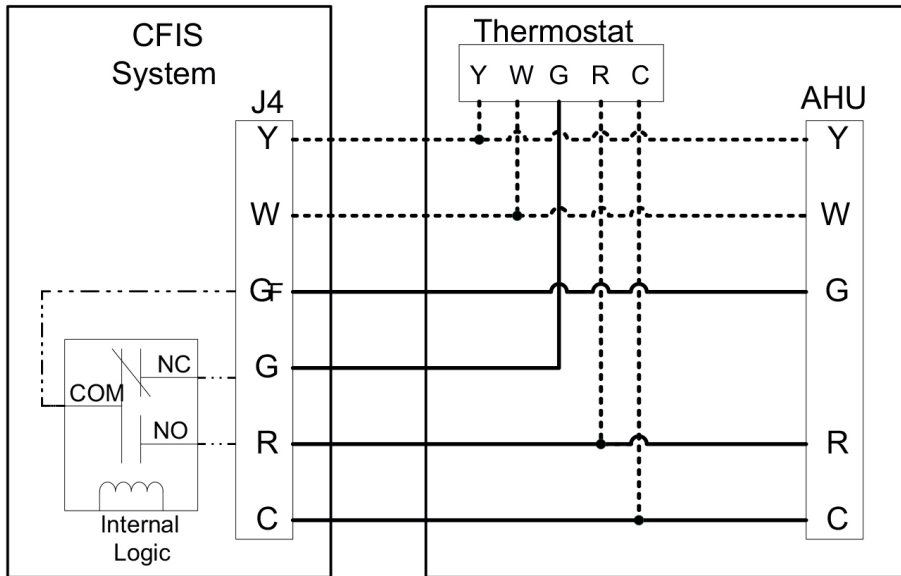
Wire according to the below diagram and set integrated switch to Off (I)

Wiring Schematic



AHU WIRING

AHU Wiring Options



Synchronize the SmartAire™ Power Damper operation with the heating and cooling runtime to prevent unnecessary central fan operating time (refer to the dotted lines in the diagram).

- Mandatory Installation Wiring
- - - CFIS Internal Hard Connections
- Optional Installation Wiring for Synchronization

SET UP

Initial Setup

1. Ensure MODE knob is NOT set to Damper adjustment. 1, 2, A, B, C, D, E are OK.
2. Ensure Run Time % knob is NOT set to OFF position. 50% is OK.
3. Ensure Remote Switch on Terminal Block is in ON position.
4. Install wired Terminal Block per diagram on page 9.
5. Wait for Damper to run initialization cycle, approximately 1 minute (fan on, damper open and close, fan will turn off).

How to Set-Up and Program SmartAir™ Power Damper



Set Damper Open Position

1. Install jumper wire between R and Y Terminal (see Figure A). This will turn the fan on and keep the fan on until the jumper wire is removed.
2. Rotate MODE dial to “Damper Adjustment” position (all the way counter clockwise).
3. Use Run % Knob to adjust the open position of the damper. 100% is fully Open. 20% means the damper is open 20%. Adjust while measuring the CFM until the desired CFM is met.
4. Rotate MODE knob to ventilation mode desired (1,2, A, B, C, D, E). See diagram on page 14 for details on each mode.

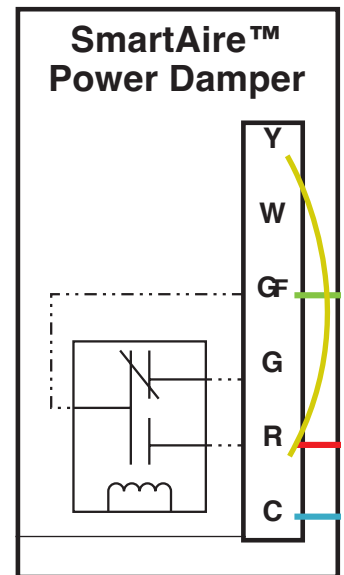


Figure A.

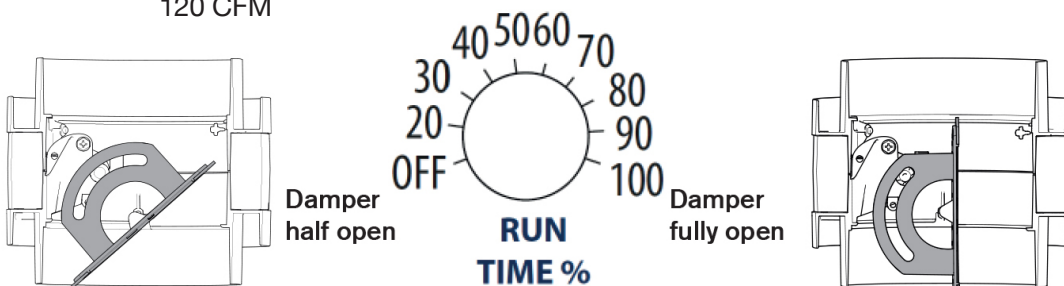
Set Runtime Percentage

1. Ensure MODE knob is not set to “Damper Adjustment”.
2. Rotate Run Time % knob to the percentage you want the damper and fan to be on. 100% means continuous ventilation.

$$\text{Run Time \%} = \frac{\text{Required Airflow}}{\text{Measured Airflow}}$$

Example:

$$\text{Run Time \%} = \frac{60 \text{ CFM}}{120 \text{ CFM}} = 50\%$$



IMPORTANT! Remove jumper between R and Y after setup is complete (yellow wire in Figure A).

Now the ventilation will be called per the MODE selected and the run time selected.

TESTING

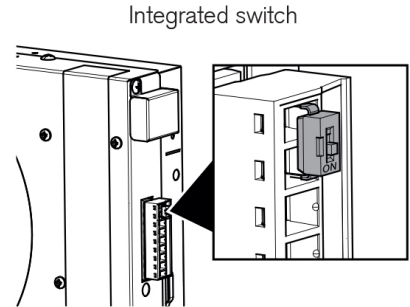
When powered ON, the SmartAire™ Power Damper performs a 30-second booting sequence followed by a 30-minute period where it stays OFF, but will activate if a heating or cooling call is sent to the AHU.

Blower Door Test (Force the Damper Closed):

If the access to the integrated switch OR to the remote switch (if applicable) is easy, set the integrated switch OR remote switch to OFF.

If the access to the switch is not easy, such as in an attic:

1. Turn OFF the power to the AHU at the service panel.
2. Turn the power to the AHU back ON at the service panel.
3. Wait 30 seconds for the booting sequence to execute.
4. Make sure that the thermostat will not send a heating or cooling call.
5. Unit is OFF with its damper closed for 30 minutes, but will activate if a heating or cooling call is sent to the AHU.



Ventilation Test (Forcing the Unit On):

1. Turn OFF the power to the AHU at the service panel, and make sure that the integrated or remote switch is set to ON.
2. Turn the power back ON at the service panel.
3. Wait 30 seconds for the booting sequence to execute.
4. Set the thermostat to send a heating or cooling call, or jump R and Y on the terminal block. This will force the ventilation ON for at least 5 minutes.

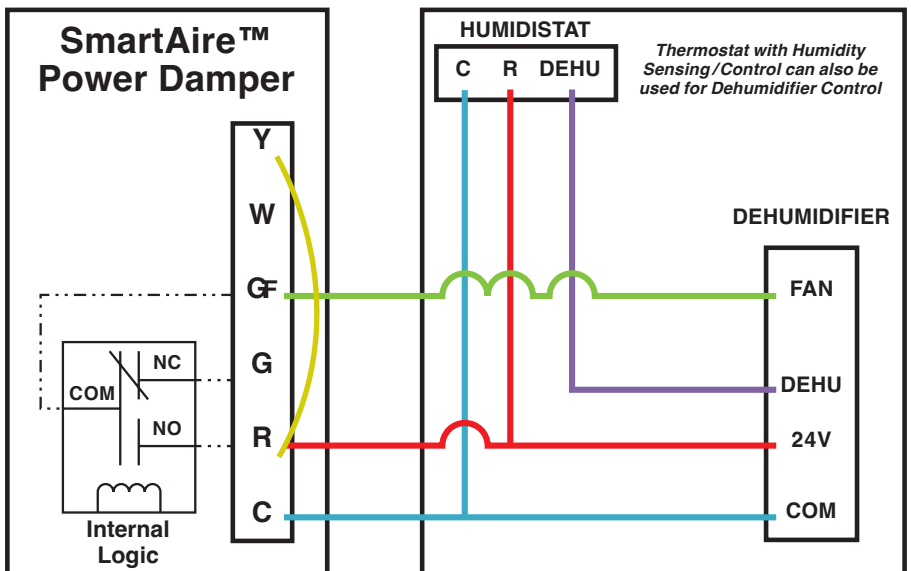
Testing Function of the SmartAire™ Power Damper:

- Set the integrated switch to ON and either:
- Wait 30 minutes for operation.
- Use a temporary jumper wire to connect R and Y for immediate operation. See yellow wire diagram below.
- The damper should then operate and the Dehumidifier fan should come on.
- Make sure to set integrated switch back to Off (I) after testing.
- Remove jumper wire after test is complete.



OR

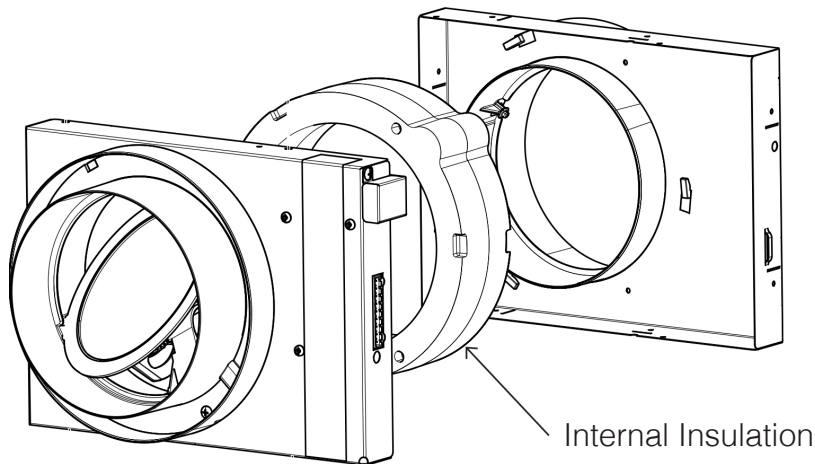
Wiring Schematic



TROUBLESHOOTING

A LED indicator is located to the right of the terminal block on the unit and communicates the different states of the unit. Blinking patterns and ways to address them, if applicable, are as follows:

Sensor error	1 blink	Disconnect the terminal block, and connect again. If the error persists, replace the unit.
Damper error	2 blinks	Disconnect the terminal block. Open unit (see image below). Perform a visual inspection and remove any debris hindering damper movement. Close unit and put the terminal block back in place. If error persists, replace the unit.
Damper adjustment mode	Continuous blink	This is normal while the unit is in adjustment mode.
Learning mode	1 s ON, 10 s OFF	This is normal. Will blink for 48 hours after being powered ON.



USER INFORMATION

Integrated and Remote Switches:

This unit is equipped with an integrated ON/OFF switch. For more convenience, your SmartAire™ Power Damper can also be connected to a remote switch.

To use a remote switch, disconnect the integrated switch and connect the remote switch in the same manner that the integrated one was connected.

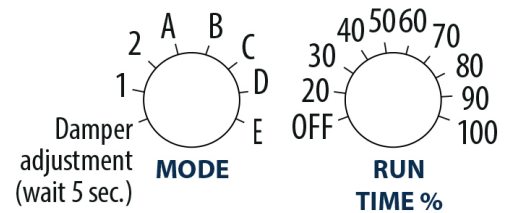
User Servicing Instructions:

- Inspect the outdoor air intake at least once a year.
- These recommendations may change according to the environmental conditions in your area.

Comfort Mode:

Should the air inside your house become too humid, or if such conditions want to be prevented, the operation mode of your SmartAire™ Power Damper can be changed from a Code-Compliant one (modes 1 and 2) to a Comfort Mode (modes A to E). Refer to the map below to make the right choice.

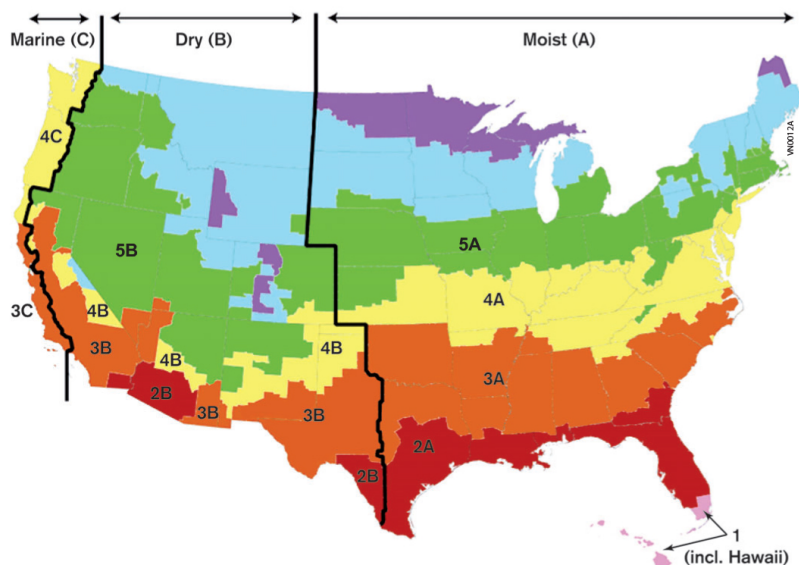
When making such change, make sure to only change the Mode and to leave the Run time % as it was set by your installer. If in doubt, refer to your HVAC contractor.



Selected mode*	Climate Zones**
1 - Ashrae 2010/IRC/IMC (factory set)	Zones 1-5
2 - Ashrae 2016/2019	Zones 1-5
A - Comfort mode Hot / Humid #1	Zones 2A and 1
B - Comfort mode Hot / Humid #2	Zones 1 and 2A
C - Comfort mode Hot / Dry	Zone 2B
D - Comfort mode Mixed / Humid	Zones 3A, 4A, 5A, 3C and 4C
E - Comfort mode Mixed / Dry	Zones 3B, 4B and 5B

*Refer to the label on the unit for the full limits table.

**As defined by the Department of Energy.





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