



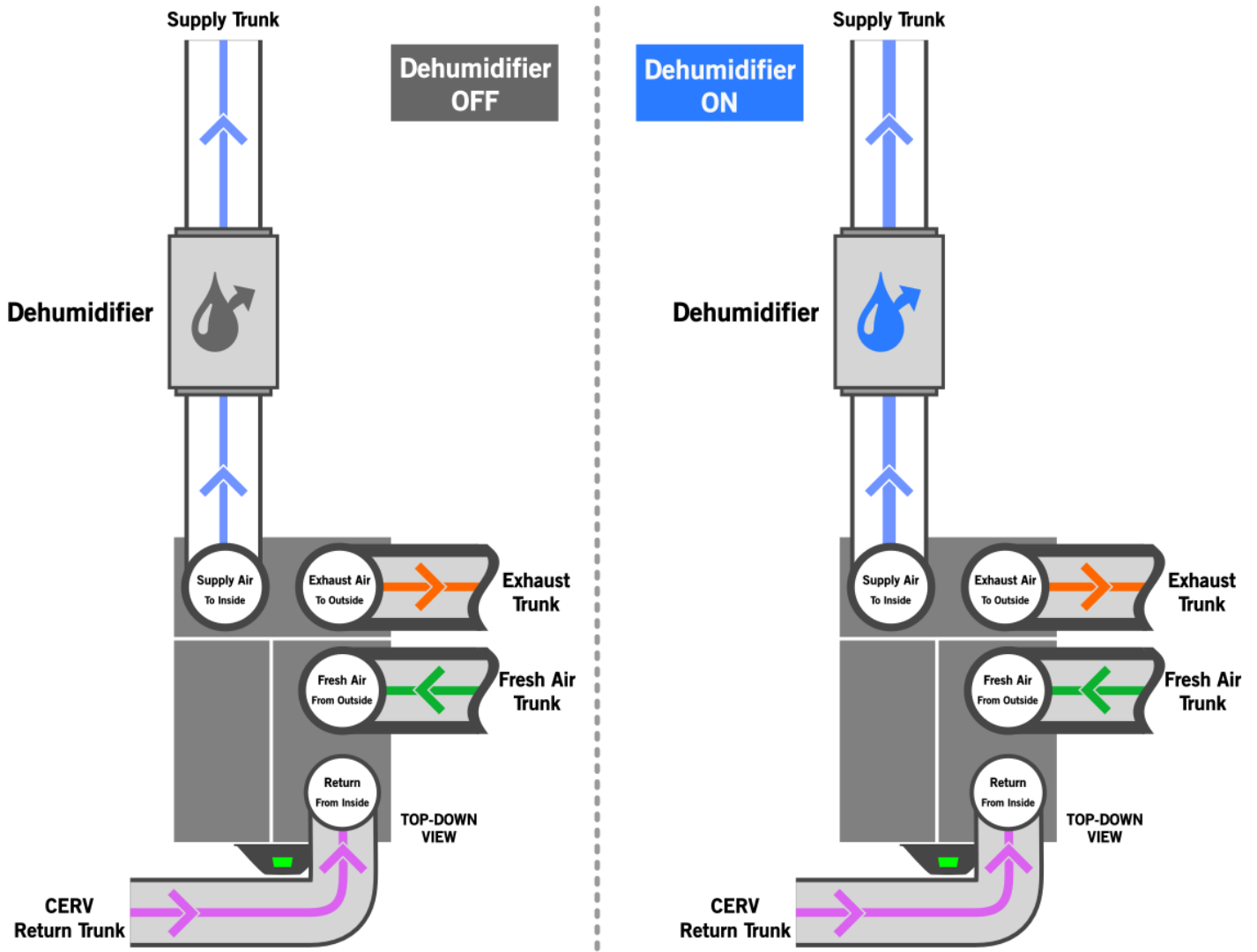
Dehumidifier Installation and Control with a CERV2

Overview

Installing a whole house dehumidifier with the CERV2 provides independent humidity control in a home, which is extremely important for maximizing comfort while eliminating any potential for mold/mildew problems. Controlling humidity separately from temperature lets homeowners attain better comfort with greater efficiency, especially when the cooling load is not sufficient to remove moisture during air conditioning operation. Our article [CERV2 Smart, Integrated, Supercharged Dehumidification](#) discusses managing moisture in homes with the CERV2.

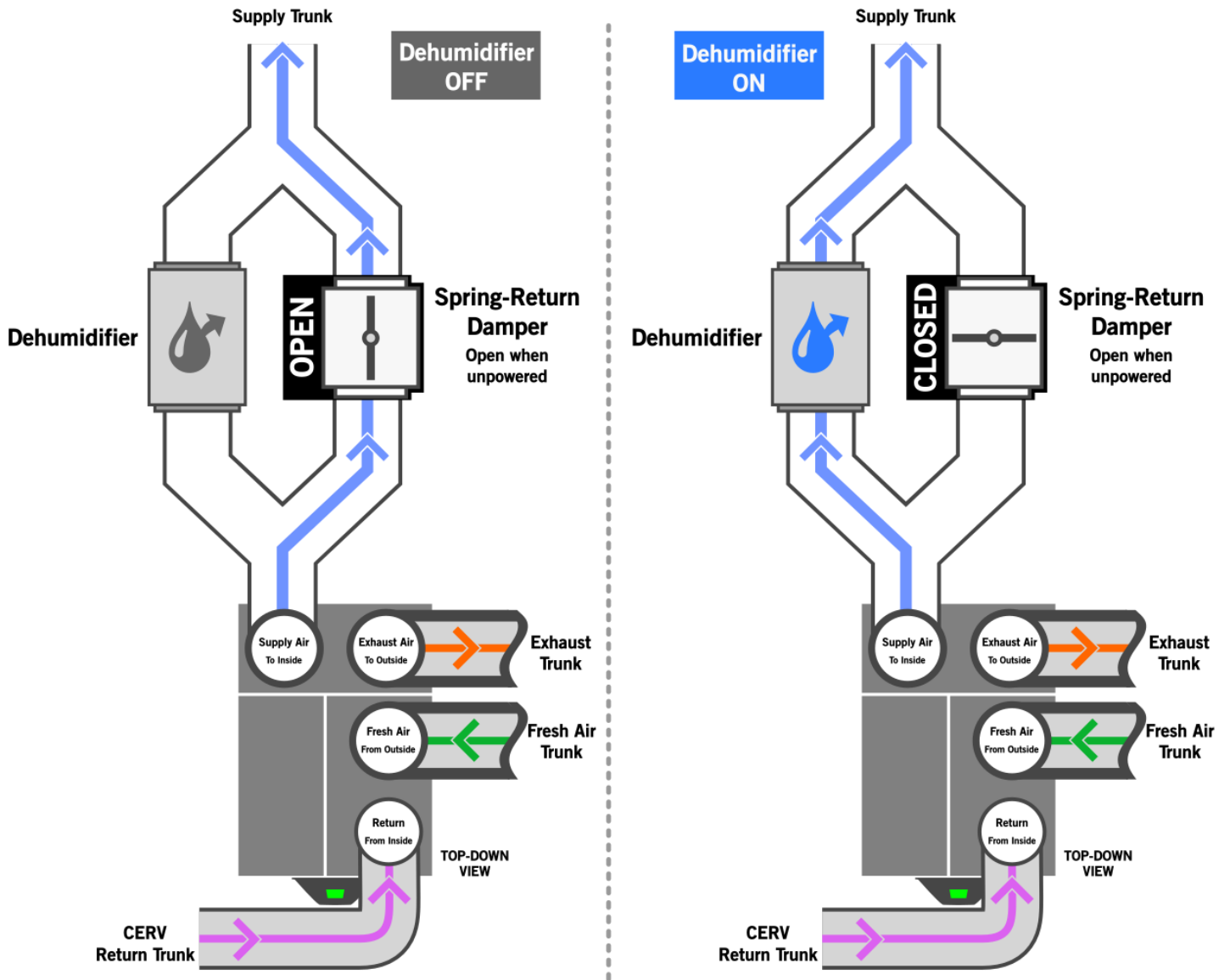
This guide explains the installation and control setup for installing a whole home dehumidifier in the CERV2 supply duct where the CERV2 has dedicated supply ducting in the home. A ducted mini split can also be installed in parallel with a dehumidifier. Both of these configurations are shown. For installations where the CERV2 supply is fed into a central air handler, it is recommended that a dehumidifier is installed on the central air handler.

Ducting – CERV + Dehumidifier Directly Inline w/ Dedicated Ductwork



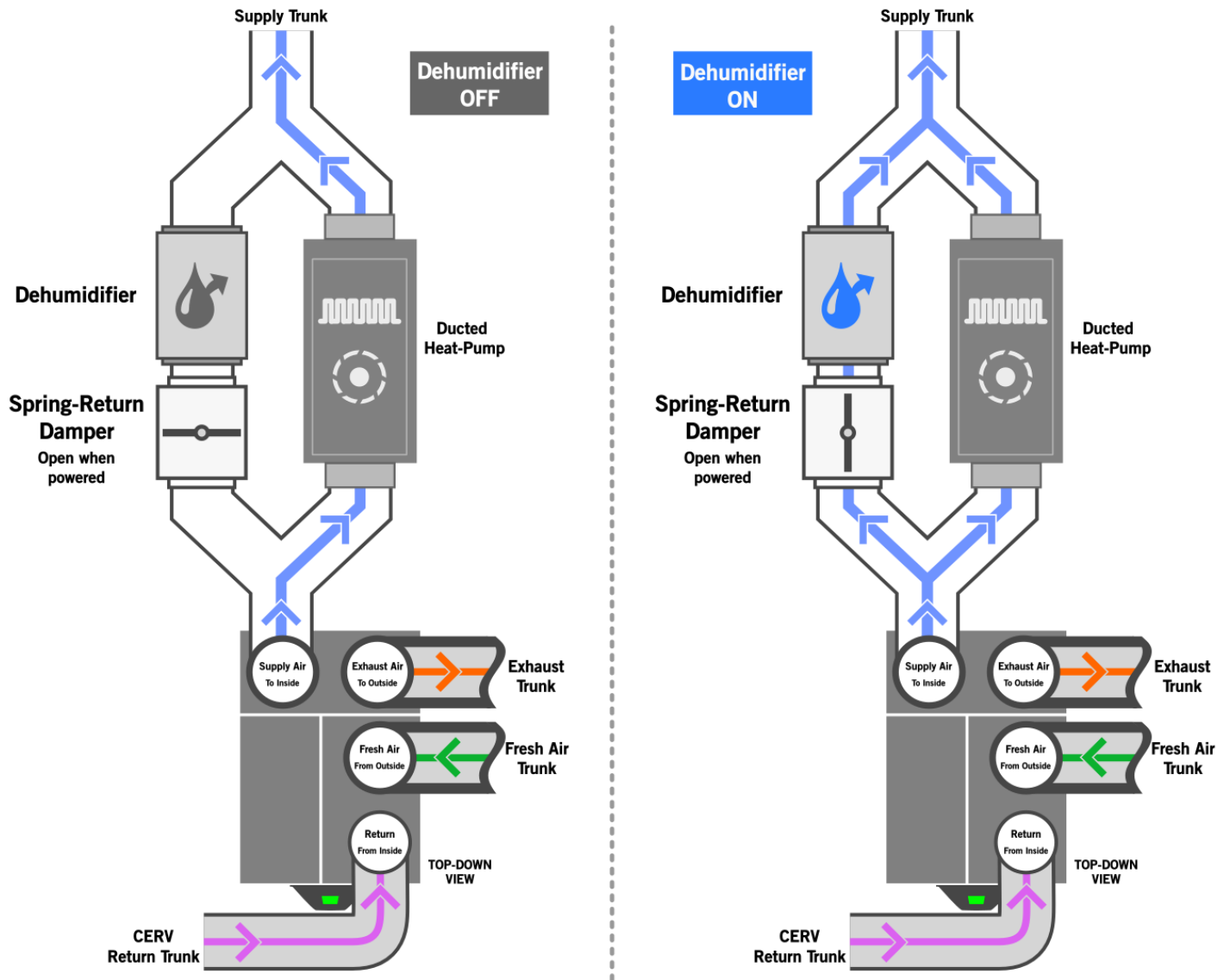
In this configuration with the dehumidifier directly in-line with the Supply Air, the CERV will continue to push air through the dehumidifier even when the dehumidifier is not active. This may result in increased static pressure and therefore lower airflow for a given fan speed (and power). If this is a concern, the following design with a bypass may be used instead. See the Electrical section below for information regarding wiring connections to the damper.

Ducting – CERV + Dehumidifier w/ Dampered Bypass



With a dampered bypass, airflow is allowed an unrestricted path when the dehumidifier is off (left image), but must pass through the dehumidifier when it is running (right image). To use this configuration, a **Power Close** spring-return damper should be used. The spring-return damper should be **open** when in an **unpowered** state, and **closed** in a **powered** state. See the Electrical section below for information regarding wiring connections to the damper.

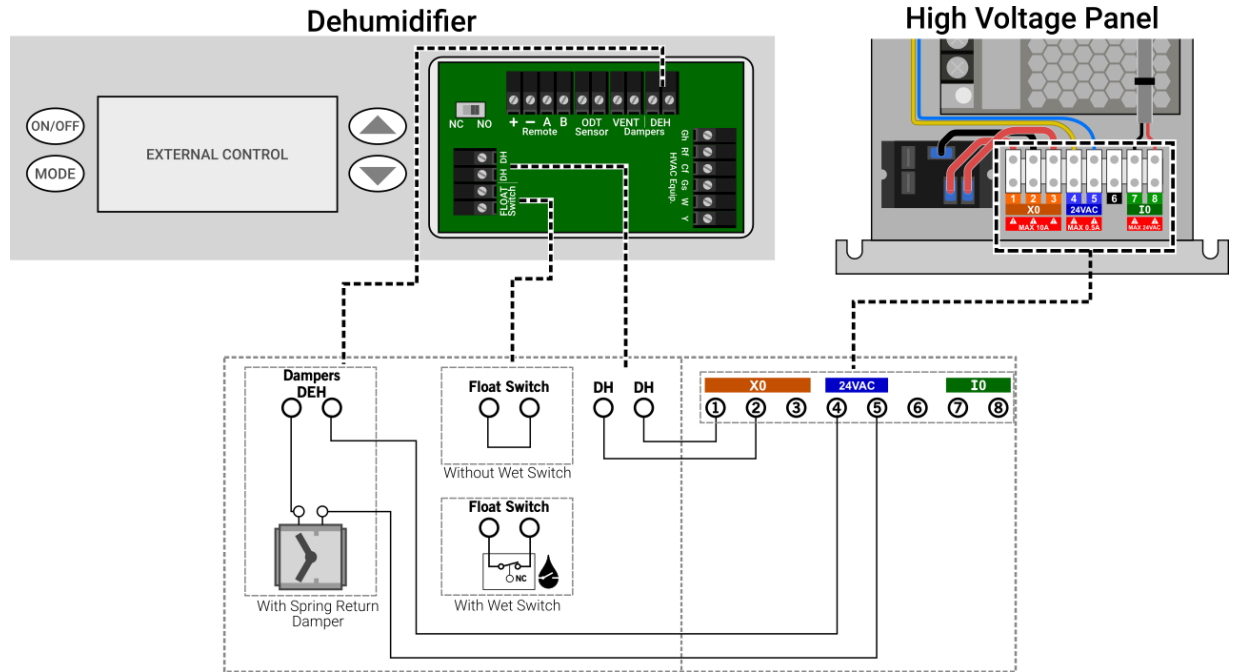
Ducting – CERV + Dehumidifier + Ducted Heat Pump (Magic Box)



Notes:

- In this configuration, where bypass air through the dehumidifier is not desired when the dehumidifier is off, a **Power Close** spring-return damper should be used. See the Electrical section below for information regarding wiring connections to the damper.
- It is preferable for the damper to be placed before the dehumidifier, although it may be placed after the dehumidifier if absolutely necessary.

Electrical – Connecting CERV2 to Aprilaire E Series Dehumidifier



General Considerations:

- This wiring example is for E Series Aprilaire Dehumidifiers. The wiring connections and controls for other dehumidifiers may differ. Read installation literature carefully to ensure proper operation and to avoid possible damage.
- Standard thermostat wire may be used for the above connections.
- Both systems must be powered OFF while performing any electrical wiring.
- CERV2 output channel X0 – terminals 1 & 2 provide a Normally Open Dry Contact. When dehumidification is called, terminals 1 & 2 are internally connected.
 - NOTE: If the CERV2's X0 output is occupied by another device, the Wireless Relay option, I/O Expansion Board, or CERV-IR-4 may be used to provide a dry contact closure for the DH terminals.
 - Aprilaire E Series dehumidifiers use a dry contact for external control. Other dehumidifiers may use dry contact or 24V control, which the CERV2 can also provide.

Float Switch:

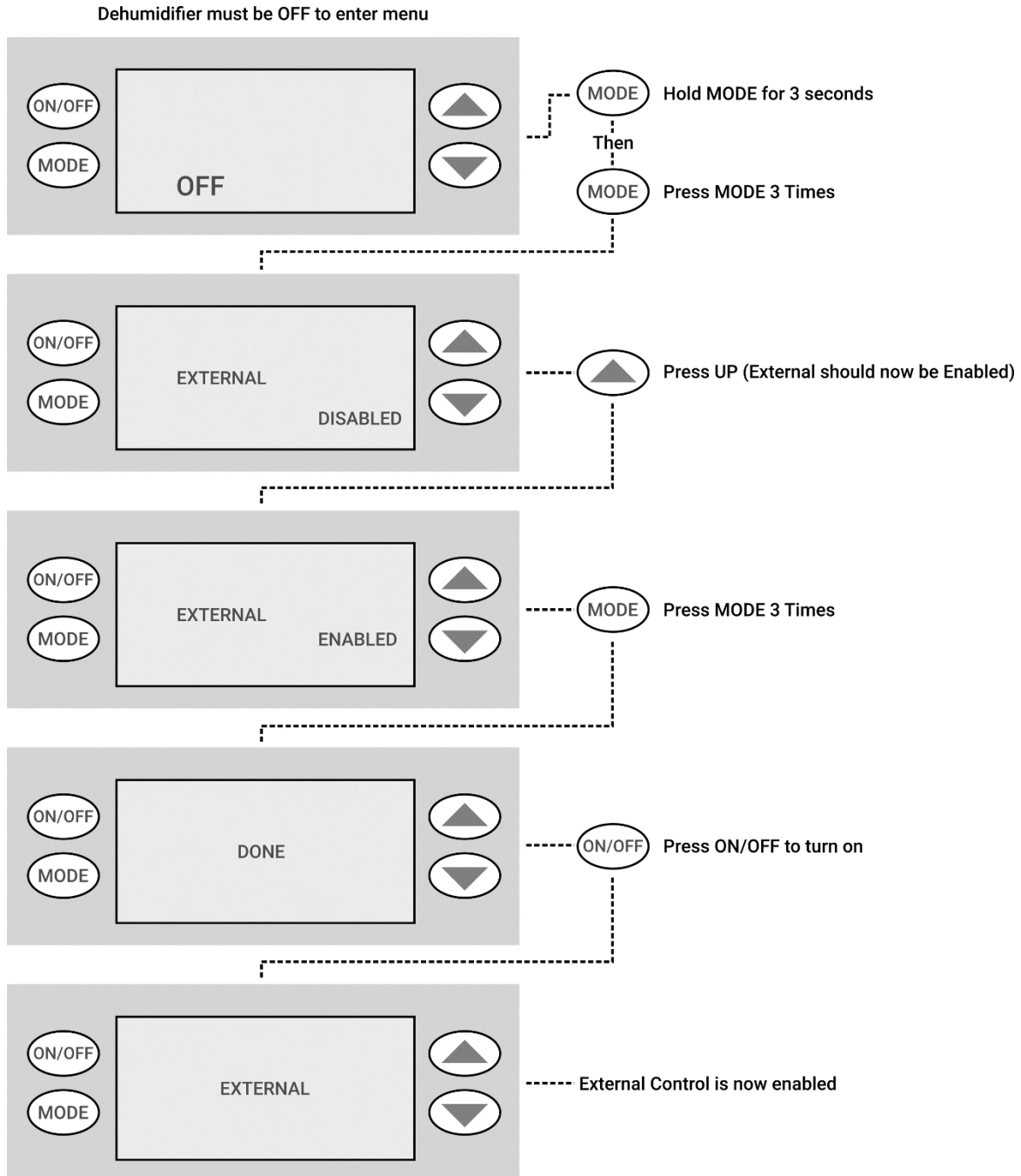
- If the dehumidifier is located in an area where water damage would be of concern (i.e. from a plugged condensate line), a wet switch may be connected to prevent the system from running if a water leak is detected.
- If a wet switch is not used, install a wire jumper between the two terminals of the Float Switch block.

Dampers:

- If the dehumidifier is installed in a way that requires a damper (such as the Magic Box example above), a spring return damper may be used along with the Dampers DEH terminals. The spring return damper should be 24VAC, < 10VA.
 - If the CERV has the CERV-UV kit or the Expansion Board installed, a separate 24VAC power supply must be used for the spring return damper (do not use terminals 4 & 5 of the CERV2 High Voltage Panel)
 - If the CERV does NOT have CERV-UV or the I/O Expansion Board, and nothing else is wired to terminals 4 & 5 of the High Voltage Panel, you CAN use terminals 4 & 5 to power the spring return damper, as seen in the diagram above.

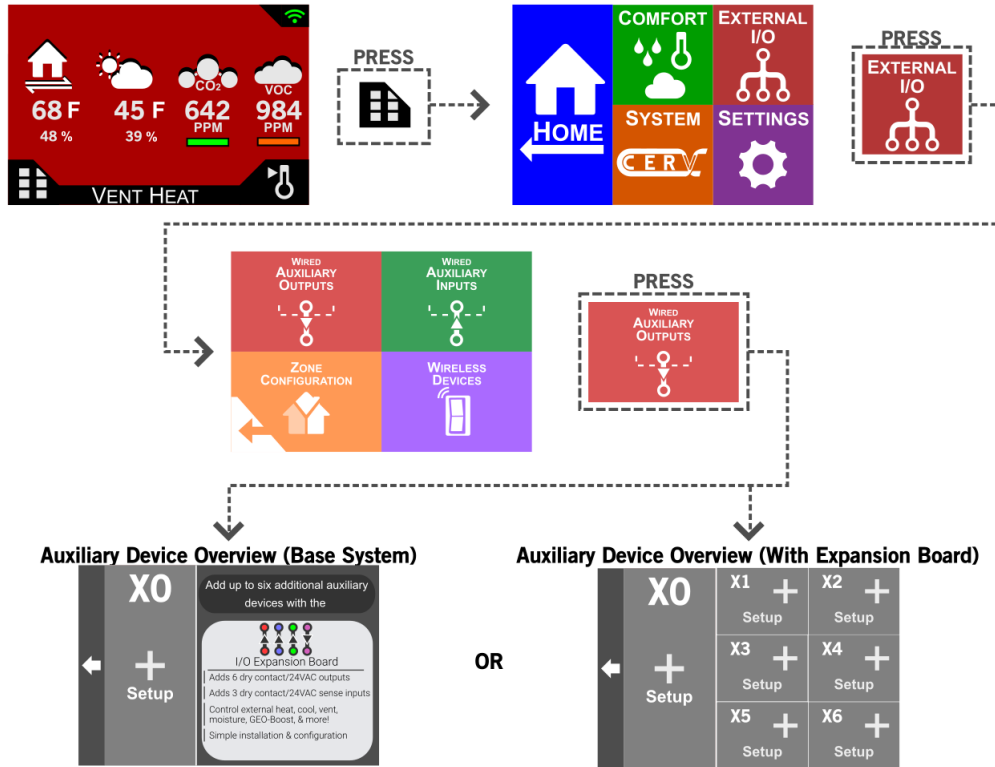
Setup – Aprilaire E Series Dehumidifier Configuration for External Control

To enable the dehumidifier to be controlled by the CERV2, it must first be set to External Control mode. After all wiring is complete, turn on the dehumidifier. The display should say “Off” – if not, press the On/Off button to turn off. Follow the diagram below to move through the dehumidifier’s control menus and enable the External Control. For other dehumidifier brands, read the manual to see setup needed for controlling the dehumidifier from an external source.

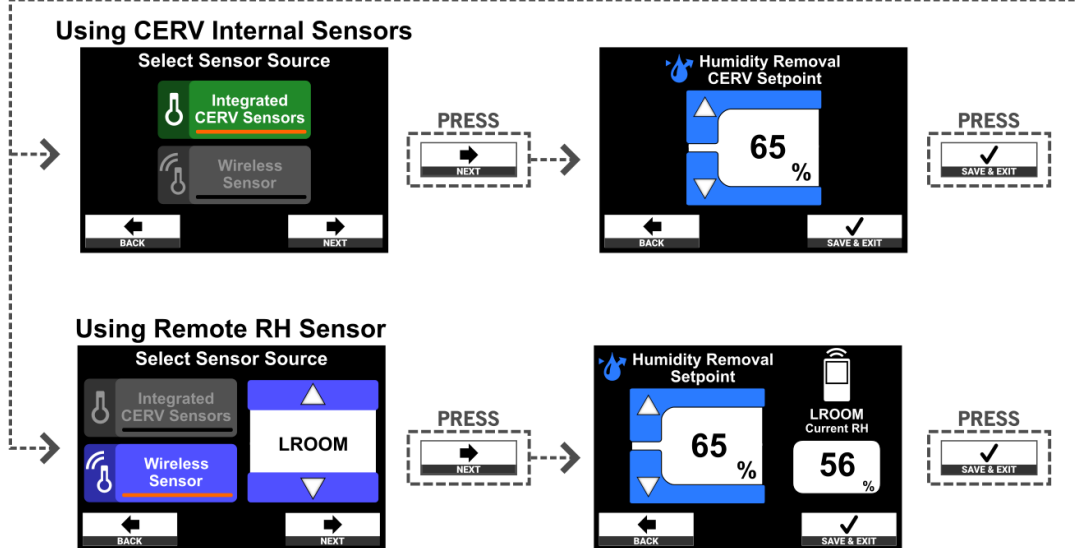
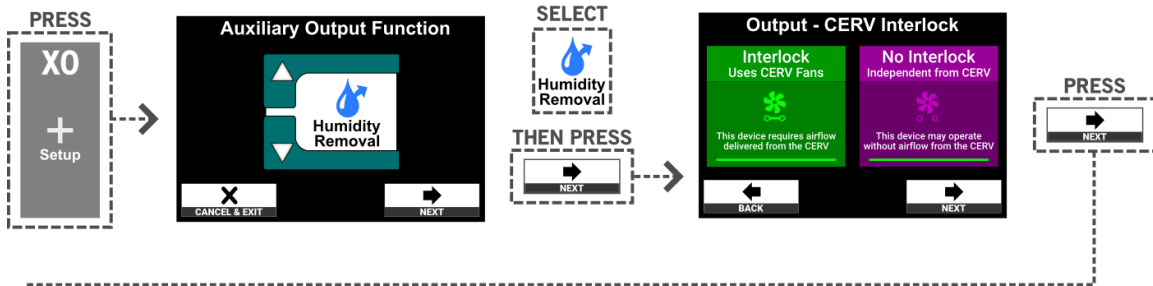


Setup – CERV Configuration

Wired Auxiliary Output Setup



Configure Auxiliary Output



Output – CERV Interlock

- Interlock (Uses CERV Fans): The dehumidifier requires airflow delivered from the CERV. Select this option if the dehumidifier is ducted in-line with the CERV (any of the examples shown earlier in this document).
- No Interlock (independent from CERV): This device may operate without airflow from the CERV. Select this option if the dehumidifier is NOT ducted in-line with the CERV. For example: a standalone room / basement dehumidifier.

Sensor Source

- Integrated CERV Sensors: The relative humidity measurement at the Return Air Inlet of the CERV will be used to determine when dehumidification is needed (in relation to the Humidity Removal Setpoint).
- Wireless Sensor: The relative humidity measurement of a remote wireless temperature & RH sensor will be used to control the dehumidifier. Select this option if humidity control of a specific area is desired.

Humidity Removal Setpoint

- This value is the desired humidity level of the home / monitored space. The deadband for this value is 3%. For example, if the Humidity Removal Setpoint is 65%, the dehumidifier will turn on when the inside humidity reaches 65%, then dehumidify down to 62%.