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**Humiditrol® Interface Kit for
Harmony III Zoning System**

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Supersedes 505,337M

Humiditrol® Interface Kit (39W67) Installation Instruction

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Use this kit to add the Humiditrol® (enhanced dehumidification accessory) to a Harmony III™ zoning system. This installation instruction also provide basic information for service technician and homeowners on all the operational system settings.

The zone 1 master room thermostat must have a dehumidification output that is a “reverse logic” type, i.e., it outputs a 24 VAC signal when there is NO dehumidification demand and outputs 0 volts when there is a dehumidification demand.

NOTE: See the Harmony III™ zoning system Installation Instruction for details on compatible Lennox thermostats.

TRANSFORMER

Five (5) volt-amps (VA) are required for the Humiditrol interface control. The relays on the interface board must be powered by the same system transformer that provides 24 VAC power to the zone control, thermostats, zone dampers and **DS** output signal to the air handler/furnace. The air handler/furnace transformer provides 24VAC through the zone control equipment relays and interface board relay contacts to cycle heating or cooling demands to the outdoor unit, the indoor unit, and the Humiditrol. See Harmony III zoning system Installation Instructions for transformer list.

FREEZE-STATS (FOR INDOOR COIL)

If the minimum air requirement for the Humiditrol system is less than 350 CFM per ton, it is recommended that a freeze-stat be installed on the indoor coil to prevent icing of the coil. Lennox Freezestats are:

- 93G35 [3/8"] (Opens at 29°F and closes at 58°F)
- 50A93 [5/8"] (Opens at 36°F and closes at 58°F)

The freeze-stat senses when suction line temperature falls below its setpoint and cycles the compressor off; it opens at 29°F and closes at 58°F. Install the freeze-stat on an out-let tube of the evaporator coil. See figure 1.

DISCHARGE AIR TEMPERATURE SENSOR (DATS) (88K38)

Locate the Discharge Air Sensor (DATS) on the outlet side of the Humiditrol. See “Figure 1. Discharge Air Sensor and Freezestat Installations” on page 2.

Shipping and Packing List

Package 1 of 1 contains:

Item	Quantity
Humiditrol Interface Control	1
Installation Instruction	1
Wiring Diagram (535,851W)	1

! CAUTION

Danger of sharp metallic edges.
Can cause injury. Take care when servicing unit to avoid accidental contact with sharp edges.

General Information

IMPORTANT

This dehumidification kit is for use with ONLY Harmony III™ zoning system. A copy of these instructions must be left with the homeowner.

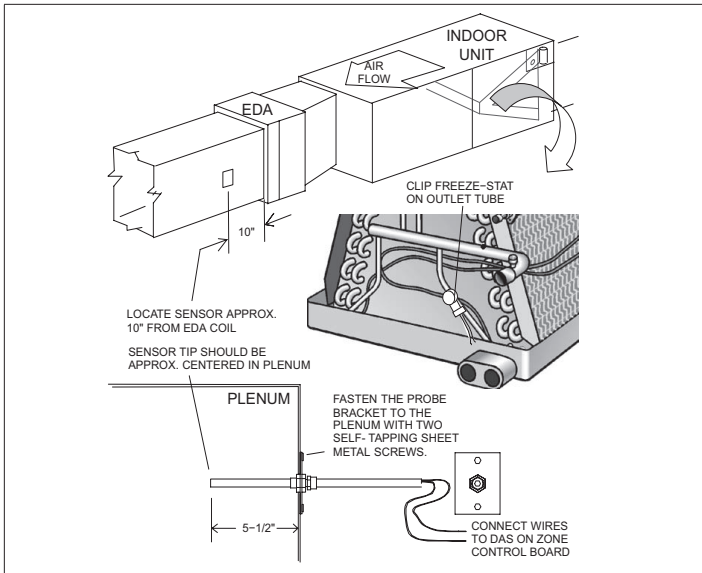


Figure 1. Discharge Air Sensor and Freezestat Installations

OUTDOOR AIR TEMPERATURE SENSOR (OATS) (X2658)

For proper operation of Humiditrol applications, an outdoor air temperature sensor **MUST** be installed!

Installing the Dehumidification Interface Control

Use the interface control unit's enclosure back-plate as a template for locating mounting holes. Attach the interface unit near the Harmony III™ zoning system control. Wire the system according to wiring diagram, see "Figure 4. Zone Control for Humiditrol Operations" on page 5.

RELAYS

- K1 closes contacts and puts the zone control in vacation mode when there is a call for dehumidification (**RVS** to **RVS**).
- K2 closes contacts to send a **Y2** signal to the outdoor unit when there is a dehumidification call (**RC** to **Y2**).
- K3 closes contacts to send a **Y1** signal to the outdoor unit when there is a dehumidification call (**RC** to **Y1**).
- K4 opens contacts to remove 24VAC signal to Humiditrol and outdoor unit Humiditrol fan relay. This will energize the Humiditrol and slow the outdoor fan motor down to a lower RPM (**RC** to **D**).
- K5 opens contacts to remove the **Y1** thermostat signal to the Zone 1 input on the zone control (**Y1** thermostat to **Y1** zone).

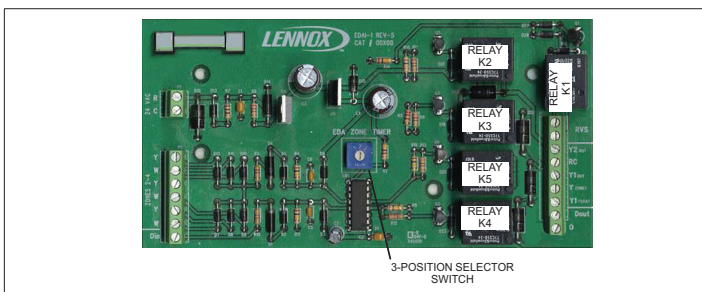
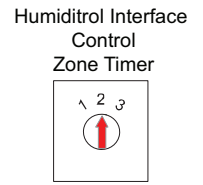


Figure 2. Humiditrol Interface Three Position Selector Switch

THREE-POLE SELECTOR SWITCH

The three-pole selector switch is wired to toggle to three separate operational modes, where:

1. Humiditrol (dehumidification) demand is master of system operation, or
2. Zone (factory-default setting) demand is master of system operation (see "Table 1. Humiditrol Interface Control Switch Selections (Vacation OFF mode)" on page 3), or
3. Internal non-adjustable TIMER will cycle system between dehumidification and heat/cool demands every twenty minutes. (This cycling will only occur when there is a call for both demands.)



HUMIDITROL / ZONE CONTROL DEMAND PRIORITIES AND FLOW DIAGRAMS

"Figure 3. System Flow Diagram Central Mode (Vacation ON)" and "Table 2. System Flow Diagrams Zoning mode (Vacation OFF)" on page 3 show the Harmony III™ zone control system with the Humiditrol interface control and how the Humiditrol interface control's three-position switch changes the priority of demands for heating and cooling and for dehumidification.

"Table 1. Humiditrol Interface Control Switch Selections (Vacation OFF mode)" on page 3 shows the heat, cool, and dehumidification priorities using all the possible scenarios of heating/cooling and dehumidification calls. (Individual calls of any type are answered as received.)

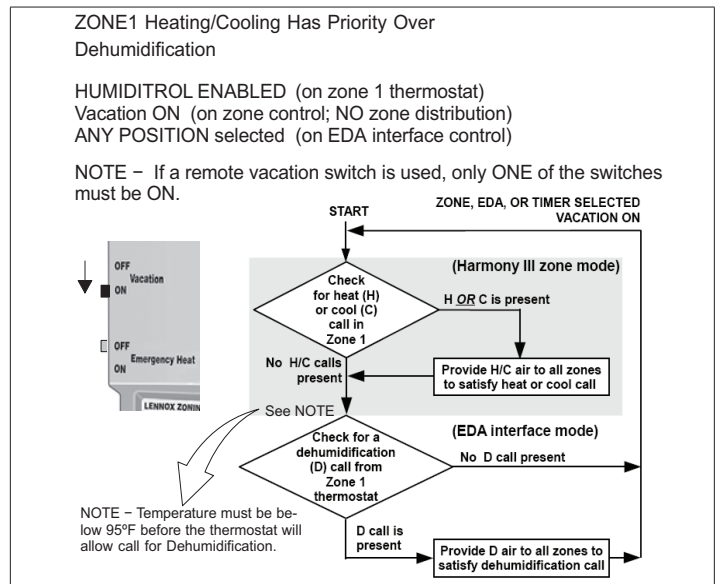


Figure 3. System Flow Diagram Central Mode (Vacation ON)

HUMIDITROL / ZONE CONTROL WIRING

"Figure 4. Zone Control for Humiditrol Operations" on page 5 shows how the Humiditrol interface control and Harmony III™ zoning system control are wired for use with the enhanced dehumidification accessory.

NOTE: The diagram shows only Humiditrol interface control wiring. See Harmony III installation instruction for all other zone control wiring.

Table 1. Humiditrol Interface Control Switch Selections (Vacation OFF mode)

Zone Room Thermostat Demand Priority Chart (Reads left to right) - Three-Pole Selector Switch (Default 2)						
Combination of Room Thermostat Demands From:			Demands Served First when Humiditrol interface switch is set to:			
Zone 1		Zones 2-4	Humiditrol		Zone	
Heat or Cool	Dehumidification	Heat or Cool	H/C	D	H/C	D
√	√		√		√	
	√	√		√	√	
√		√	√		√	
√	√	√	√		√	

NOTE: A dehumidification demand can NOT be activated on Zone 1 room thermostat until heat or cool demand is satisfied and the room temperature is within the required calculated temperature range.

Harmony III – Heat and cool demands presented at the same time from different zones (opposing demands) are satisfied on a first-come, first-serve basis. If a cooling demand reaches the Harmony III zone control board at the same time as the heating demand, heating is satisfied first. If opposing demands persist, the system will work to satisfy the current demand for a maximum of 20 minutes, then switch over and try to satisfy the opposing demand for a maximum of 20 minutes. When either demand is satisfied, the system works to satisfy any other demand.

Table 2. System Flow Diagrams Zoning mode (Vacation OFF)

How the Humiditrol Interface control's three position selector switch settings affect functional operation:

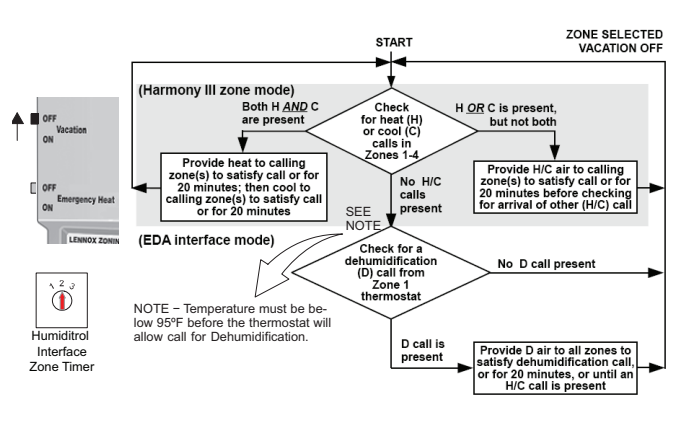
Heating/Cooling Calls for all Zones have Priority over a Dehumidification Call

HUMIDITROL ENABLED (on zone 1 thermostat) Vacation OFF (on zone control; zone distribution enabled) ZONE selected (on Humiditrol interface control)

NOTE: If a remote vacation switch is used, both switches must be in OFF position.

NOTE: Heat demand will be satisfied first ONLY in the event that heat and cool calls arrive at the same instant. If cooling is being provided, that demand will be satisfied first (or until 20 minutes has elapsed), then heat will be provided to calling zone(s).

PRIORITIES – All H/C calls must be satisfied before any attempt to satisfy a D call is allowed. Then, a D call may be satisfied, or allowed to run for up to 20 minutes, after which time the zone control checks for and satisfies any new H/C calls before again attempting to satisfy D.



Dehumidification Call has Priority over Heating/Cooling Calls from Zones 2 - 4

- HUMIDITROL ENABLED (on zone 1 thermostat)
- Vacation OFF (on zone control; zone distribution enabled)
- Humiditrol selected (on Humiditrol interface control)

NOTE: If a remote vacation switch is used, both switches must be in OFF position.

NOTE: When both thermostat (H and/or C) and dehumidification (D) calls are present, the H/C call being addressed will run for 20 minutes, then D will be run until satisfied.

PRIORITIES – A zone 1 call for H or C is allowed to run until satisfied before checking and addressing a dehumidification call. Then, a D call MUST be satisfied before addressing any H/C calls.

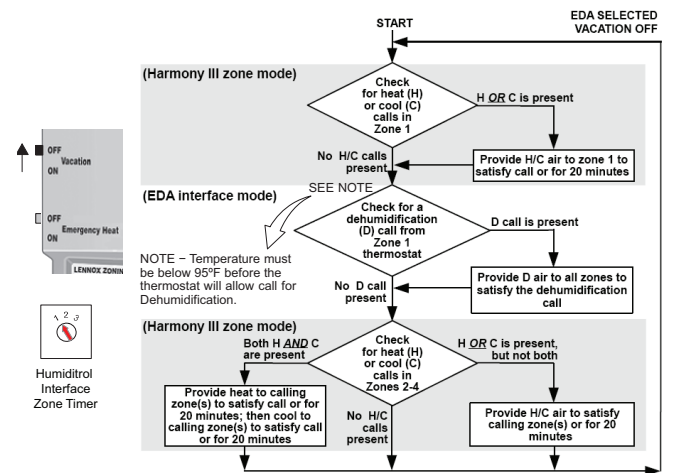


Table 2. System Flow Diagrams Zoning mode (Vacation OFF)

How the Humiditrol Interface control's three position selector switch settings affect functional operation:

Timer Alternates Between Heating/Cooling and Dehumidification Calls

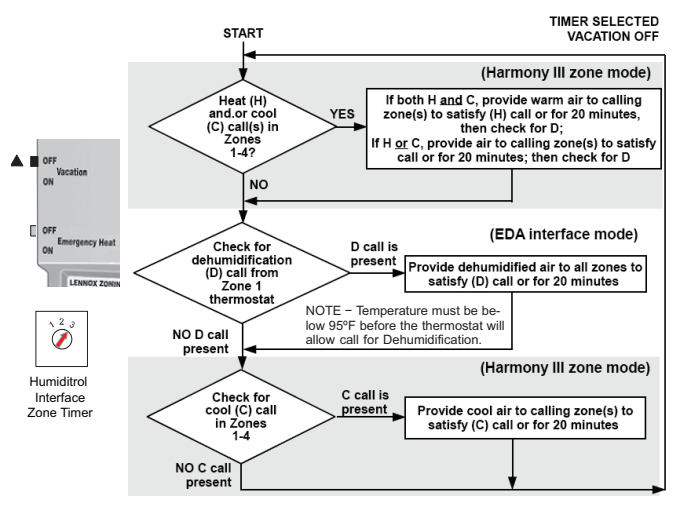
HUMIDITROL ENABLED (on zone 1 thermostat) Vacation OFF (on zone control; zone distribution enabled) TIMER Selected (on Humiditrol interface control)

NOTE: If a remote vacation switch is used, both switches must be in OFF position.

NOTE: If the system is addressing zones calling for both H and C when a D call arrives, the H call will be allowed to run for 20 minutes, then switch to dehumidification for 20 minutes before addressing a C call.

PRIORITIES – The timed interval mode accepts and addresses each call, as received, to satisfy the call or run for up to 20 minutes, except when multiple calls arrive simultaneously. Then, the order is 1) H or C then 2) D. If calls for all three are present (H and C and D), then the order is H, D and C.

NOTE: If there is a Y1 output from the thermostat, the dehumidification is delayed until Y1 is satisfied.



Note 1. This diagram shows wiring in addition to Harmony III zone control wiring; see zone control manual for all other wiring.

Note 2. If a remote vacation switch is used, it is recommended that the remote switch be located near the ZONE 1 thermostat and NOT located near any other household switches. The switch on this board should then be switched OFF permanently.

Note 3. Be sure continuous air reduction jumper is set on 25%.

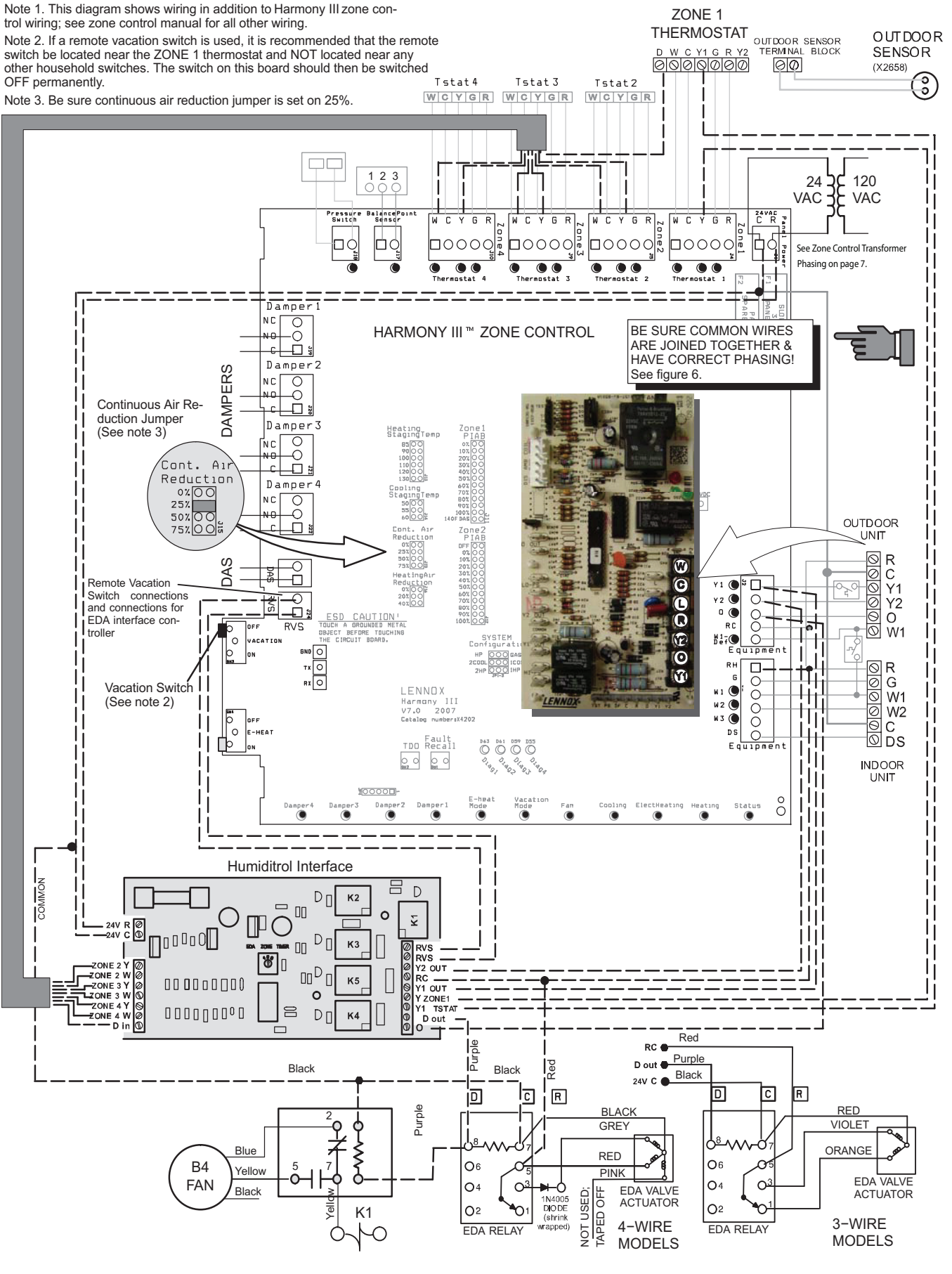


Figure 4. Zone Control for Humiditrol Operations

Note 1. This diagram shows wiring in addition to Harmony III™ zone control wiring; see zone control manual for all other wiring.
 Note 2. If a remote vacation switch is used, it is recommended that the remote switch be located near the ZONE 1 thermostat and NOT located near any other household switches. The switch on this board should then be switched OFF permanently.
 Note 3. Be sure continuous air reduction jumper is set to 25%.

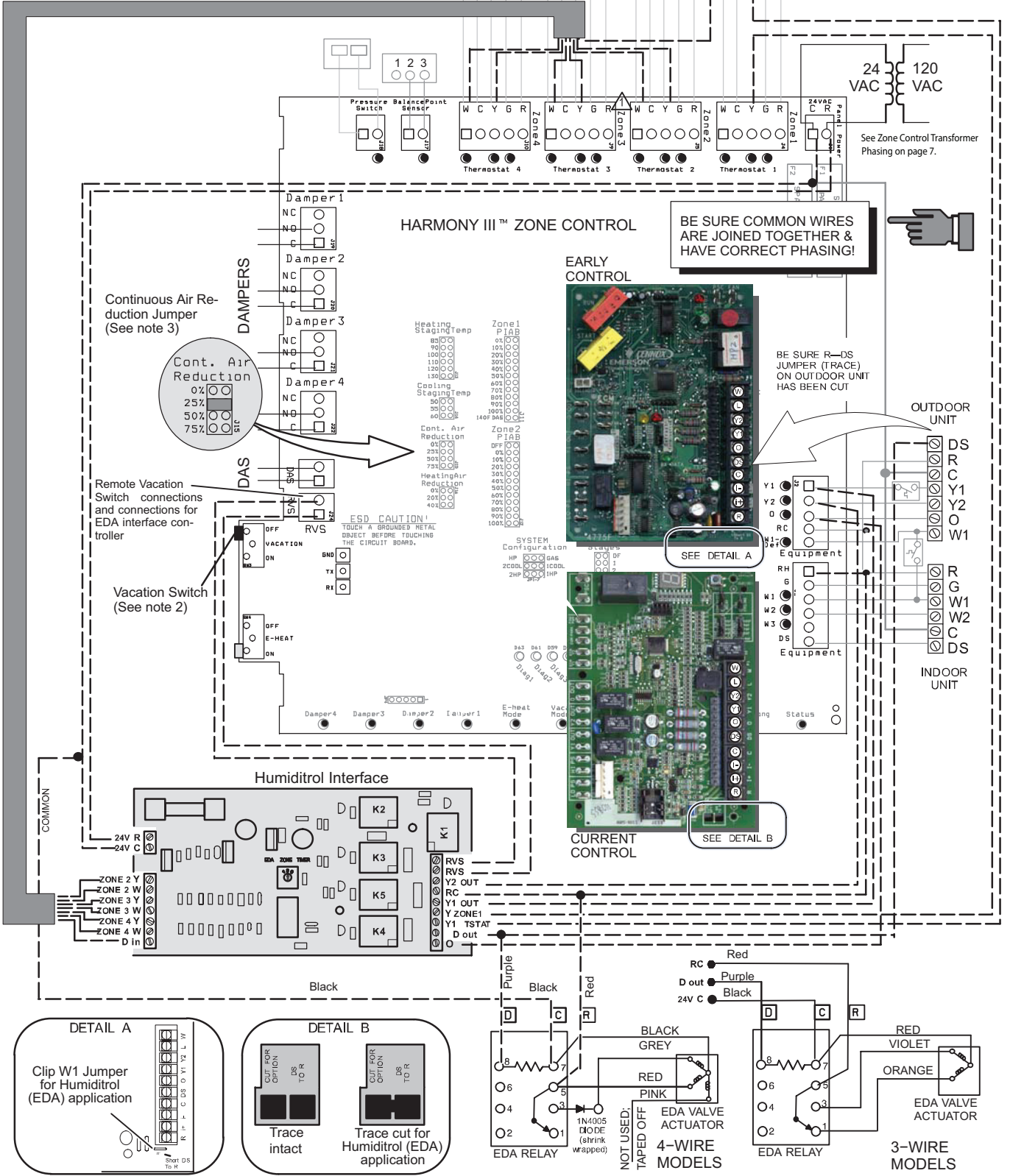


Figure 5. Zone Control for Humidritrol Operations (Lennox Communicating Controls - 24VAC)

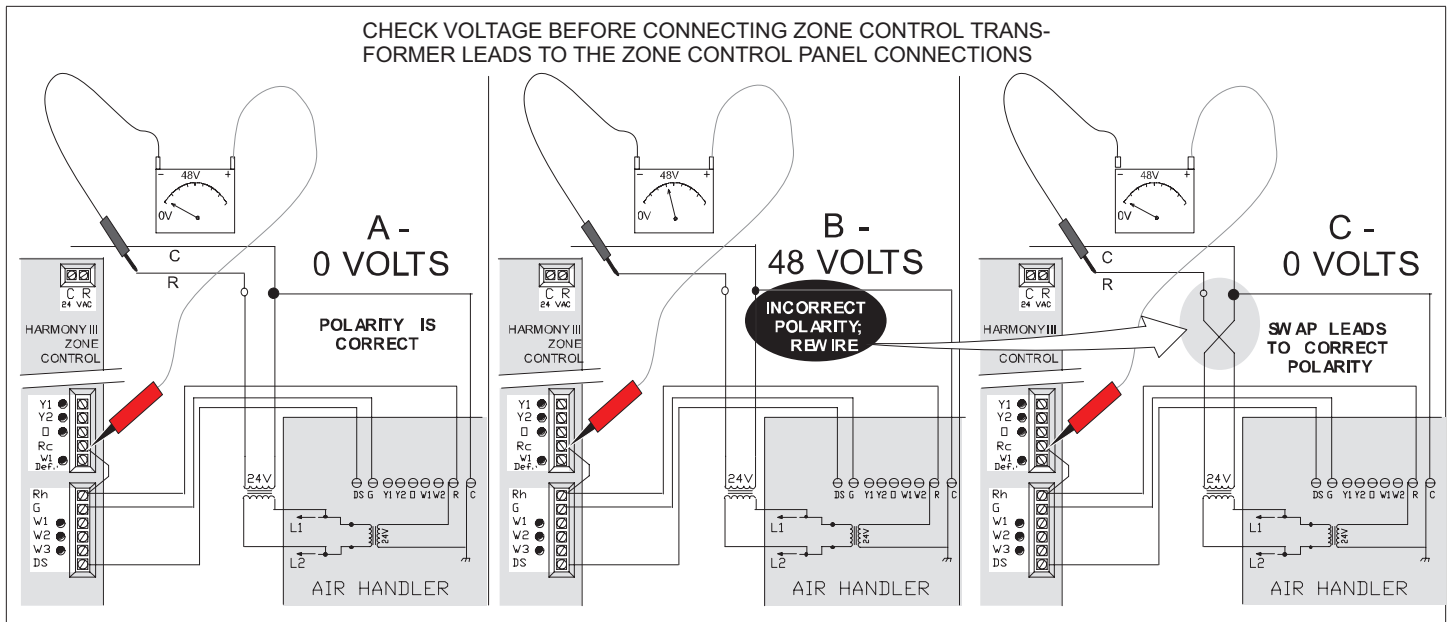


Figure 6. Confirming Transformer Phasing (Polarity) is Correct

Zone Control Transformer Phasing

Using two transformers on a single system when the Harmony III zoning system is connected to a system that has its own transformer, the phasing (or polarity) of the air handler transformer to the zone control's add-on transformer is extremely **IMPORTANT** because the zone control transformer powers the **DS** circuit within the zone control and then connects to the air handler **DS** circuit.

The only two transformers that need correct phasing with their commons connected are the zone control and air handler transformers. Check the phasing prior to connecting the zone control transformer zone control panel's connections. The zone control transformer primary should be the same source as the air handler to keep it uncomplicated. Use a 230 VAC primary transformer with 230 VAC coil/blowers and use a 115 VAC transformer with furnaces.

1. Connect the zone control transformer primary to the air handler voltage source (see "Figure 6. Confirming Transformer Phasing (Polarity) is Correct").
2. Do not connect the zone control transformer secondary to the zone control panel at this time.
3. Connect air handler secondary common to the assumed zone control transformer common.
4. Measure voltage between air handler **R** and unconnected zone control transformer secondary lead (see Figure 6):
 - If 0 volts (A, Figure 6) then polarity is correct; connect the leads to zone control **C** and **R** as shown.
 - If 48 volts (B, Figure 6) then polarity is reversed; swap leads as shown and confirm 0 volts (C, figure 6); connect the leads to zone control **C** and **R** as shown.
5. With the correct polarity determined, connect **C** wire to zone control 24VAC **C** terminal and **R** wire to **R** terminal.

Important Installer Information

If a remote vacation switch is used and locate it near the Zone 1 thermostat. Label the switch (field-provided) and instruct user on proper operation:

- Toggle up – ZONING ON (vacation off)
- Toggle down – VACATION ON (zoning off)

NOTE: DO NOT locate the remote vacation switch next to other house switches or anywhere it may be inadvertently switched on or off.

Before leaving the site, check the following and confirm that all applicable items have been addressed:

- Outdoor sensor installed and connected to Zone 1 thermostat Humiditrol operation requires use of an outdoor sensor (see "Outdoor Air Temperature Sensor (OATS) (X2658)" on page 2). If sensor is not connected and Humiditrol is enabled, "OUTDOOR SENSOR REQUIRED" is displayed in the information display.
- Remote Vacation Switch installed near Zone 1 thermostat.
- Remote Vacation Switch clearly labeled.
- Remote Vacation Switch to Zoning ON (vacation off).
- Vacation Switch on the Harmony III™ zoning system control OFF.
- Continuous Air Reduction jumper on Harmony III™ zoning system control board set to 25%.
- Humiditrol enabled.
- Humiditrol Interface Control Switch set.
- User understands how to control system, how to setup for vacation, how to restore zoning after vacation.

Enable and Adjust Humiditrol

ENABLING OR DISABLING DEHUMIDIFICATION (USER SETTINGS)

If dehumidification is NOT needed during vacation you can switch off dehumidification as follows:

CS7500

Go to **Menu** > **press and hold settings** > select **confirm** > **humidity settings** > **dehumidify** and select **off**.

iComfort M30

Go to **Menu** > **settings** > **humidity control** and select **off** or **dehumidify**.

iComfort E30

Go to **Menu** > **settings** > **humidity** and select **off** or **dehumidify**.

ADJUSTING DEHUMIDIFICATION

Dehumidification set point can be adjusted from the user settings screen under either humidity or humidity control. Typical the adjust range is 40% to 60%. Factory default is typically 55%.

For detail instructions on Humiditrol adjustments and other settings, refer to the thermostat's installation and setup guide.

Homeowner Vacation Setup and Reset

Switching the Vacation Switch on forces the system to act as a conventional central air conditioning and heating system. All zones will be controlled by zone 1 room thermostat and all zone dampers will remain in the open position.

While vacation mode is ON, and if there is no heating or cooling call demand from Zone 1 and there is a dehumidification demand, those demands will continue to be served without further operator settings.

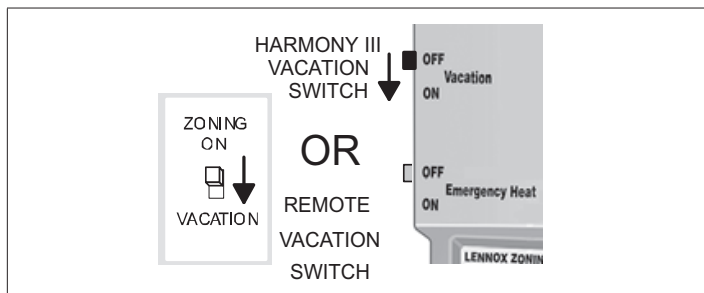


Figure 7. Vacation Switch