



## RESIDENTIAL PRODUCT SPECIFICATIONS

### FEATURES

#### WARRANTY

- Zone Control Panel - Two year limited warranty in residential applications

**NOTE** - Refer to Lennox Equipment Limited Warranty certificate included with unit for specific details.

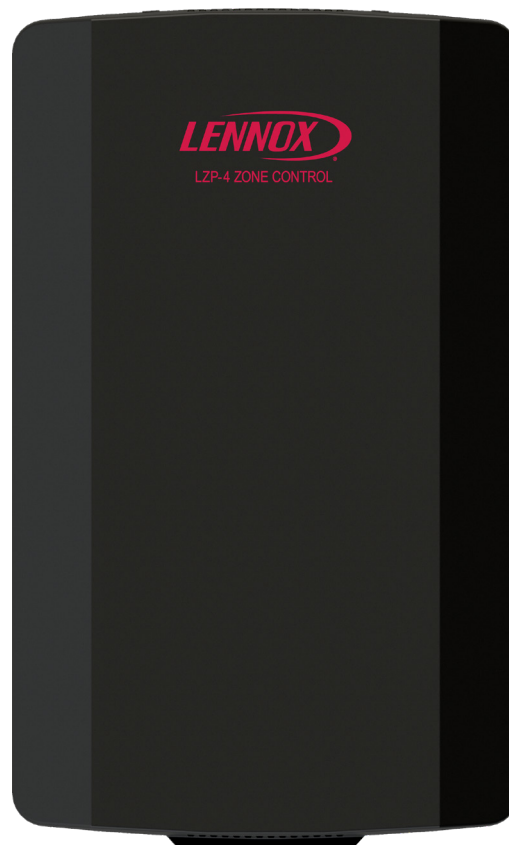
#### ZONE CONTROL SYSTEM

- LZP-4 Zone Control Panel (**Y7768**) is capable of controlling up to four separate zones
- Panel is capable of controlling multi-stage equipment, 2 heat / 2 cool conventional heating/cooling systems and 3 heat, 2 cool heat pump and dual-fuel systems
- System consists of the LZP-4 Zone Control Panel, discharge air sensor (furnished), field supplied duct mounted motorized zone dampers with a thermostat in each zone and a field supplied bypass damper
- Panel is powered by a separate stand-alone transformer
- Zone dampers are automatically controlled to supply air flow only to zones with a thermostat demand
- Individual air volumes for heating or cooling are available to each zone
- Round or rectangular dampers can be used
- Zoning system allows temperature setback in unoccupied areas while maintaining comfort in occupied areas
- Auto-changeover control from any zone thermostat
- Results in lower equipment costs by eliminating the need for two separate heating/cooling systems
- Compatible with standard heat/cool or heat pump electronic thermostats (non-power robbing)
- See recommended thermostats on page 2

**NOTE** - Not for use with variable-speed gas furnaces, air handlers or variable-capacity outdoor units (see iHarmony® Zoning System for variable-capacity units).

#### ZONE CONTROL PANEL

- Microprocessor controlled panel contains all necessary relays and controls to operate the system
- Automatic reset in case of operation error or power failure
- Built-in time delay function (4 minutes) prevents short cycling of system
- Spring-loaded push terminals for easy wiring connections
- Color-coded terminal labels and multiple wiring paths on back and sides of panel



- 3A fuse protects panel from shorts in the thermostat and damper field wiring (spare 3A fuse included)
- Cabinet and removable cover constructed of high impact plastic
- Holes for mounting are furnished and electrical inlets are provided in cabinet
- Dimensions (H x W x D): 14-3/4 x 8-7/8 x 1-7/8 in.
- Shipping weight: 3 lbs.
- Power requirements: 24VAC (18-30VAC) 50/60Hz

#### Low Voltage Terminal Designations

- DAMPER 1, DAMPER 2, DAMPER 3, DAMPER 4 (NC, NO, COM)
- HVAC (Heating/Cooling equipment connections) (RH, RC, W, W2, Y, Y2, G, O, B, L, C)
- ZONE 1 THERMOSTAT (R, C, W, W2, Y, Y2, G, O, L)  
ZONES 2 through 4 THERMOSTATS (R, C, W, W2, Y, Y2, G, O)
- REMOTE SENSORS (Discharge air sensor - DAT)  
(Outdoor Air Sensor - ODT)
- DAMPER POWER (R, C)
- POWER (Panel) (R, C)

## FEATURES

### ZONE CONTROL PANEL (continued)

#### Status LED's (under cover)

##### Power

- Solid Green - Power on
- Flashing Green when TDO (Time Delay Override) button is pressed

##### Heating

- Solid Green - Heating is active
- Flashing Green - Discharge air temperature high limit is reached

##### Cooling

- Solid Green - Cooling is active
- Flashing Green - Discharge air temperature low limit is reached

##### Fan

- Solid Green - Fan is operating

##### Zones 1 to 4

- Solid Green - Damper is open
- Solid Red - Damper is closed

##### Em Heat

- Solid Amber - Emergency Heat mode is enabled using the EM Heat button or an Emergency Heat call is active based on a thermostat Emergency Heat call

##### Vacation

- Solid Green - Vacation mode is enabled

### EM HEAT (Emergency Heat) Button (under cover)

- Enables/disables Emergency Heat mode
- In Emergency heat mode the compressor will be locked out and only auxiliary heat will be used to satisfy heating calls

**NOTE:** Disabled when the Zone Panel is configured to control conventional heat/cool equipment.

### Vacation Mode Button (under cover)

- In vacation mode all zones are controlled by the Zone 1 thermostat.

### Timer Delay Override Button (TDO) (under cover)

- Speeds up onboard timer by a factor of 60 for system checkout

### Zone Panel LCD Display (under cover)

- Displays Zone Panel status. In installer setup, used to configure the Zone Panel

**NOTE** - In installer checkout, used to step-through the installer test.

### Navigation Buttons (under cover)

- Step-through installer setup and system checkout
- UP ▲ and DOWN ▼ arrows adjust settings
- BACK ◀ and NEXT ▶ arrows sets current setting and returns to the previous setting
- See the Installation Instructions for a complete list of settings available

### SYSTEM EQUIPMENT DATA

- For furnace data, see Gas Furnaces or Oil Furnaces
- For air handler data, see Air Handlers
- For air conditioner data, see Air Conditioners
- For heat pump data, see Heat Pumps
- For add-on indoor coil unit data, see Indoor Coils

### Optional Accessories

### CONTROLS

#### Transformer

- 24VAC transformer is required for operation of Zone Control Panel, thermostats and zone dampers
- Transformer size is determined by the total power requirements of the control panel, thermostats and damper

**NOTE** - Zone Control Panel and Thermostats require 10VA total - Dampers require 10VA each. See table for additional information

Size	Description	Catalog No.
40VA	120/208/240V - 24V	<b>10P17</b>
50VA	120/208/240V - 24V	<b>10P87</b>
75VA	120/208/240V - 24V	<b>12P61</b>
- - -	Electrical Box (4 in. sq.)	<b>83P74</b>

#### Zone Thermostats

- Any single stage heating/cooling digital electronic thermostat with 24VAC common terminal may be used
- Also see Thermostat bulletins and the Lennox Price Book

#### Recommended thermostats:

iComfort® E30 Smart  
Wi-Fi Thermostat



Model	Stages	Type	Catalog No.
iComfort® E30 Smart Wi-Fi Thermostat	3 htg. / 2 clg.	Universal	<b>20A65</b>
iComfort® M30 Smart Wi-Fi Thermostat	4 htg. / 2 clg.	Universal	<b>15Z69</b>
ComfortSense® 7500 Programmable Touchscreen	4 htg. / 2 clg.	Universal	<b>13H15</b>
ComfortSense® 5500 Programmable Touchscreen	1 htg. / 1 clg.	Conventional	<b>13H13</b>
ComfortSense® 3000 Programmable	2 htg. / 2 clg.	Conventional	<b>51M35</b>
	1 htg. / 1 clg.	Conventional	<b>51M34</b>
	3 htg. / 2 clg.	Heat Pump	<b>51M37</b>
ComfortSense® 3000 Non-Programmable	1 htg. / 1 clg.	Conventional	<b>51M32</b>
	2 htg. / 1 clg.	Heat Pump	<b>51M33</b>

## FEATURES

### SYSTEM EQUIPMENT DATA (continued)

#### DAMPERS

##### Zone Dampers

- Must be field supplied
- Any style 24VAC damper is compatible with the Zone Control Panel
- Spring Open / Power Close is the preferred type damper to use with this system
- At least one damper per zone is required
- Up to 5 dampers per zone may be connected in parallel to the Zone Control Panel - not to exceed a total of six dampers for entire system

**NOTE** - If additional dampers are required, refer to the special wiring diagram in the installation instructions for additional information.

#### Bypass Damper



Description	Catalog No.
8 in. round	<b>X4142</b>
10 in. round	<b>X4203</b>
12 in. round	<b>X4204</b>
14 in. round	<b>X4205</b>
16 in. round	<b>X4206</b>

- See Bypass Damper Sizing requirements on page 3

#### SENSORS

##### Discharge Air Temperature Sensor (furnished)

- Field installed in supply air plenum
- Senses discharge air temperature to control system based on low temperature and high temperature limit settings on Zone Control Panel

##### Outdoor Air Temperature Sensor (X2658)

- Required for balance point control in dual-fuel heat pump systems to lock out the heat pump at low ambient conditions (below the system balance point) and use the gas furnace for heating demands

## BYPASS DAMPER SIZING

100% of the rated air volume must always move through the duct work when zoning with high cooling demand areas. (i.e. Florida)

Assume that the smallest zone will be the only one to have a demand at any given time

65%-70% of the rated air volume should always move through the duct system with standard heating systems

If one zone is less than 15% of total air volume, consider sizing the zones more equally

Bypass damper method takes the excess pressure from the supply duct and sends it back to the return duct. This is done by tapping into the supply air and running a duct back to the return air and mounting a bypass damper in that run

When tapping back into the return duct, the tap should be a minimum of at least 6 ft. away from the equipment to insure that the hot or cold air coming off of the plenum has time to mix with the return air before going across the coil again. The Discharge Air Sensor (furnished) will prevent any damage to the equipment from overheating or coil freeze-up

The bypass should be sized to handle the excess pressure build-up for the smallest zone. This is the worst possible condition for the airflow and will cause the most excess pressure build-up. The calculation is done by taking the total air volume capacity of the smallest zone and subtracting it from the total air volume of the system

#### Example:

- Total System air volume: 2000 cfm
- Less smallest zone air volume: - 600 cfm
- Bypass amount: 1400 cfm

The bypass duct would be sized to handle the 1400 cfm which would be the excess pressure when only the smallest zone has a demand. The bypass method must be used on zoning systems that will have unequal size zones and might be needed on some jobs that will have a smaller number of zones. This will be determined by the dealer at the time of installation. For bypass damper air volume capacities see the chart below.

Round	Rectangular
8 in. dia. - 400 cfm	12 x 8 - 1000 cfm
10 in. dia. - 750 cfm	12 x 10 - 1200 cfm
12 in. dia. - 1200 cfm	12 x 12 - 1400 cfm
14 in. dia. - 1800 cfm	20 x 8 - 1600 cfm
16 in. dia. - 2400 cfm	20 x 10 - 2000 cfm
	20 x 12 - 3000 cfm

## FEATURES

### SEQUENCE OF OPERATION

When power is first applied, the green POWER LED will flash, indicating that the board is functioning normally. When the board is first powered on, there is a 4 minute minimum off time delay during which only the fan output will respond.

The Zone Panel operates with a "heat call priority" with automatic heating/cooling changeover after 20 minutes of operation. If two opposing (heating/cooling) thermostat calls exist while the system is idle, the heating call will be satisfied first.

The Zone Panel can be configured to control either a conventional heat/cool system or heat pump system based on the EQUIPMENT TYPE setting.

For heat/cool systems, the COOLING STAGES, HEATING STAGES, and HEAT EQUIPMENT settings are used to configure the Zone Panel for the appropriate number of stages and type of heating equipment.

For heat pump systems the COMPRESSOR STAGES, AUX HEAT STAGES, and AUX HEAT settings are used to configure the Zone Panel for the appropriate number of stages and type of auxiliary heating equipment.

For heat pump applications either universal, heat/cool or heat pump thermostats can be used and the Zone Panel will translate the thermostat call to the appropriate equipment call. The THERMOSTAT TYPE setting is used to configure the Zone Panel for the type of thermostat used in the application.

### **Heat/Cool Changeover**

When a demand for heating or cooling exists and an opposing demand is made from another zone, a 20 minute timer is activated. If the original demand is not satisfied within the 20-minute time period, the demand will be interrupted, turning the equipment off and allowing for the normal fan purge cycle and minimum equipment off time delay. The opposing demand will then be initiated. After 20 minutes, if the original demand still exists, the opposing demand will be terminated and the original demand can once again be reinstated.

### **Discharge Air Temperature Sensor (DAT) High/Low Temperature Limit**

The high/low temperature limit settings are designed to prevent the heat exchanger from overheating or the cooling coil from freezing. A Discharge Air Temperature Sensor mounted in the supply duct senses the discharge air temperature and can either downstage or interrupt the heating/cooling equipment before overheating/freezing occurs.

When DOWNSTAGE ON DAT is set to YES, and the DAT temperature is within 5°F of the HIGH DAT LIMIT or LOW DAT LIMIT setting the Zone Panel will go to the next lowest equipment stage, if it is not already in first stage heating or cooling. The Zone Panel will remain in this lower stage until the DAT is 10°F from the HIGH DAT LIMIT or LOW DAT LIMIT setting. The LCD will display the DOWN STAGED ON HIGH TEMP LIMIT or DOWN STAGED ON LOW TEMP LIMIT message while the Zone Panel is in a lower stage based on the DAT.

When the DAT temperature reaches the HIGH DAT LIMIT or LOW DAT LIMIT the Zone Panel will interrupt the heating/cooling call. When the interrupt occurs the Zone Panel ends the heating/cooling call and energizes the fan terminal (if not already energized). The Heating LED (high limit) or Cooling LED (low limit) on the Zone Panel will flash during the interrupt and the LCD will display DISCHARGE HIGH TEMP EXCEEDED or DISCHARGE LOW TEMP EXCEEDED. Once the temperature drops/rises 10°F, the high/low temperature interrupt will end and the heating/cooling call to the equipment can resume.

### **Vacation Mode**

Allows Zone 1 to control entire system during unoccupied times. All zone dampers remain open. Vacation Mode LED is lit when operating.

### **Emergency Heat Mode**

Used with heat pump systems only. Allows any call for heat to use auxiliary heat. Allows homeowner to activate emergency heat when heat/cool thermostats are installed in all zones. Em Heat LED is lit when operating.

### **Fan Operation**

A call for Fan from any zone will initiate the G equipment output terminal. The dampers for all zones not calling for a continuous fan will be closed during the fan call.

## FEATURES

### SEQUENCE OF OPERATION (continued)

#### Heating Operation

When a thermostat makes a heating call to the Zone Panel, the Zone Panel will initiate a heating call to the equipment and close the damper for all zones that are not calling for heat. Following a 2-minute (heat/cool or auxiliary) or 4-minute (heat pump) minimum on time, the heating call will end when one of the following occurs:

- All zones stop calling for heat.
- The call has exceeded the 20 minute heating/cooling changeover time limit while a cooling call exists.
- The call is interrupted because the DAT sensor reaches the DAT HIGH LIMIT setting.

When the heating call ends, if FAN CTL IN PURGE is set to ZONE PANEL, the fan output will remain on and the dampers will hold their position for 2 to 5 minutes based on the PURGE TIME setting. After the fan output turns off the dampers will hold their position for an additional minute before completing purge. If FAN CTL IN PURGE is set to HVAC, when a heating call ends the fan output will turn off immediately and the dampers will hold their position for 3.5 minutes before completing the purge. When a heating call ends, a minimum off time delay of 4 minutes must elapse before another heating/cooling call can begin.

#### Cooling Operation

When a thermostat makes a cooling call to the Zone Panel, The Zone Panel will initiate a cooling call to the equipment and close the damper for all zones that are not calling for cooling. Following a 4-minute minimum on time, the cooling call will end when one of the following occurs:

- All zones stop calling for cooling.
- The call has exceeded the 20 minute heating/cooling changeover time limit while a heat call exists.
- The call is interrupted because the DAT sensor has reach the DAT LOW LIMIT setting.

When the cooling call ends, if FAN CTL IN PURGE is set to ZONE PANEL, the fan output will remain on and the dampers will hold their position for 2 to 5 minutes based on the PURGE TIME setting. After the fan output turns off the Dampers will hold their position for an additional minute before completing purge. If FAN CTL IN PURGE is set to HVAC, when a cooling call ends the fan output will turn off immediately and the dampers will hold their position for 3.5 minutes before completing the purge. When a cooling call ends, a minimum off time delay of 4 minutes must elapse before another heating/cooling call can begin.

#### Multi-stage Equipment Staging

The Zone Panel can be configured to control staging of multi-stage HVAC equipment multiple ways based on the STAGING BASED ON setting.

#### Staging Based on the Zone Thermostat

When STAGING is set to TSTAT, the Zone Panel will stage the HVAC equipment to the highest stage thermostat call.

Example, if the thermostat in Zone 1 is calling for first stage heating, and the thermostat in Zone 2 is calling for second stage heating, the Zone Panel will create a second stage heating call to the equipment, open the dampers for Zone 1 and Zone 2 and close the dampers for all other zones.

**NOTE:** This setting should only be used when multi-stage thermostats are installed.

#### Staging Based on Time

When STAGING is set to TIME, the Zone Panel will stage the HVAC equipment based on the time (duration) of the active call and the TIME TO STAGE and STAGE TIME TO AUX settings. This is useful when single stage thermostats are installed in applications with multi-stage equipment.

Example:

- EQUIPMENT TYPE = HTPUMP
- COMPRESSOR STAGES = 2
- AUX HEAT STAGES = 1
- AUX HEAT = ELECTRIC
- TIME TO STAGE = 20 MINUTES
- STAGE TIME TO AUX = 20 MINUTES

When a heating call occurs from a thermostat the Zone Panel will initiate a first stage heating call to the heat pump. If that call continues for 20 minutes the Zone Panel will initiate a second stage heating call to the heat pump. If the second stage heating call continues for 10 minutes the Zone Panel will initiate electric auxiliary heat to the heating call.

## FEATURES

### SEQUENCE OF OPERATION (continued)

#### **Staging Based on Zones Calling**

When STAGING is set to ZONES, the Zone Panel will stage the HVAC equipment based on the number of zones calling and the ZONES TO STAGE setting. Note that each zone can be counted as more than one zone calling based on the ZONE WEIGHTING setting for that zone. This is useful if the zones are not equally sized. Additionally, this can be used when single stage thermostats are installed in applications with multi-stage equipment.

ZONE WEIGHTING allows more control when staging is based on the number of zones calling. Each zone can be assigned a weight;. For example, a single zone can be weighted to count as 3 zones when 2nd stage operation is required.

Example:

- EQUIPMENT TYPE = HTPUMP
- COMPRESSOR STAGES = 2
- ZONES TO STAGE = 3
- ZONE 1 WEIGHTING = 3
- ZONE 2 WEIGHTING = 1
- ZONE 3 WEIGHTING = 1
- ZONE 4 WEIGHTING = 1

When a cooling call occurs from the thermostats in Zones 2 and 3, the Zone Panel will initiate first stage cooling operation because the total number of zones calling is 2, which does not meet the ZONES TO STAGE setting of 3. If the thermostat in Zone 4 then initiates a call for cooling the Zone Panel initiates second stage cooling because the number of zones calling is now 3. With the same set-up as the example above, if only the thermostat in Zone 1 calls for cooling the Zone Panel would initiate a second stage cooling call immediately because Zone 1 meets the ZONES TO STAGE setting of 3.

#### **Dual-Fuel Operation**

For heat pump applications, an outdoor temperature sensor can be installed to efficiently utilize an air source heat pump. When the OUTDOOR SENSOR setting is set to YES, The HIGH BALANCE POINT and LOW BALANCE POINT settings will determine the temperatures at which the heat pump and auxiliary heat will be locked out.

When the outdoor temperature is less than the LOW BALANCE POINT setting, the heat pump will be locked out and only auxiliary heating will be used when the Zone Panel initiates a heating call.

When the outdoor temperature is greater than the HIGH BALANCE POINT setting the auxiliary heating will be locked out and only the heat pump will be used when the Zone Panel initiates a heating call.

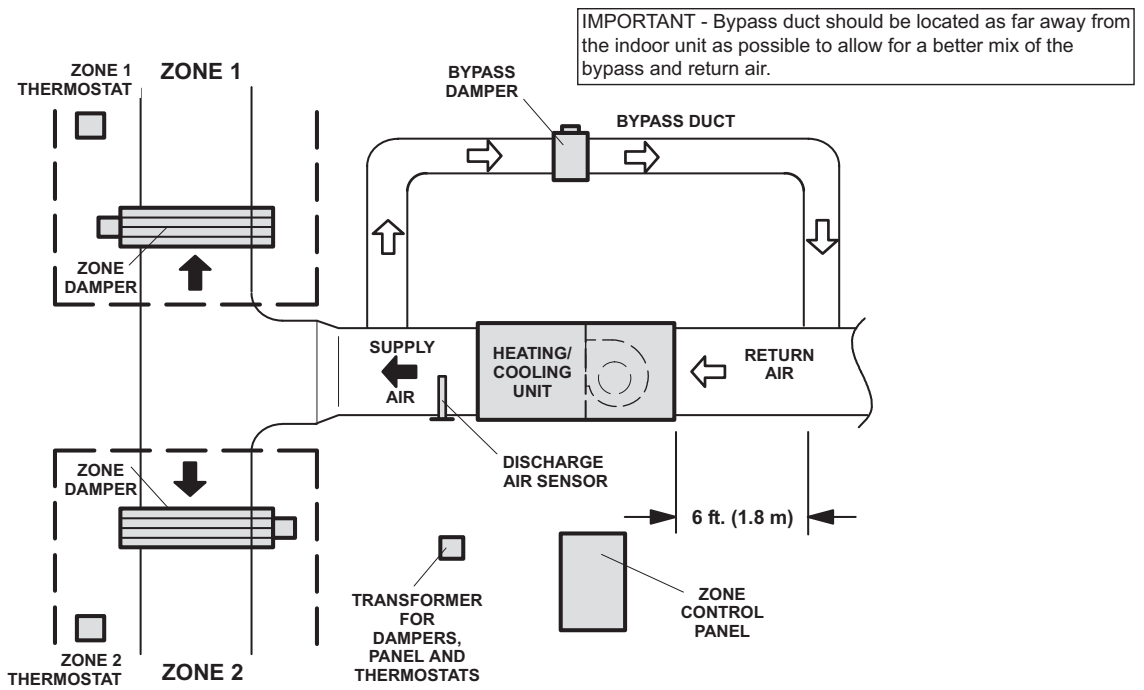
#### **Damper Operation**

The "NO" output will be energized and the "NC" output will be de-energized for any zone not calling for heating or cooling during heating/cooling equipment operation and during the damper purge time delay. During heating/cooling equipment operation or during the damper purge time delay, should all zones stop calling for heating or cooling, the dampers will remain in the position they were in before all zones stopped calling.

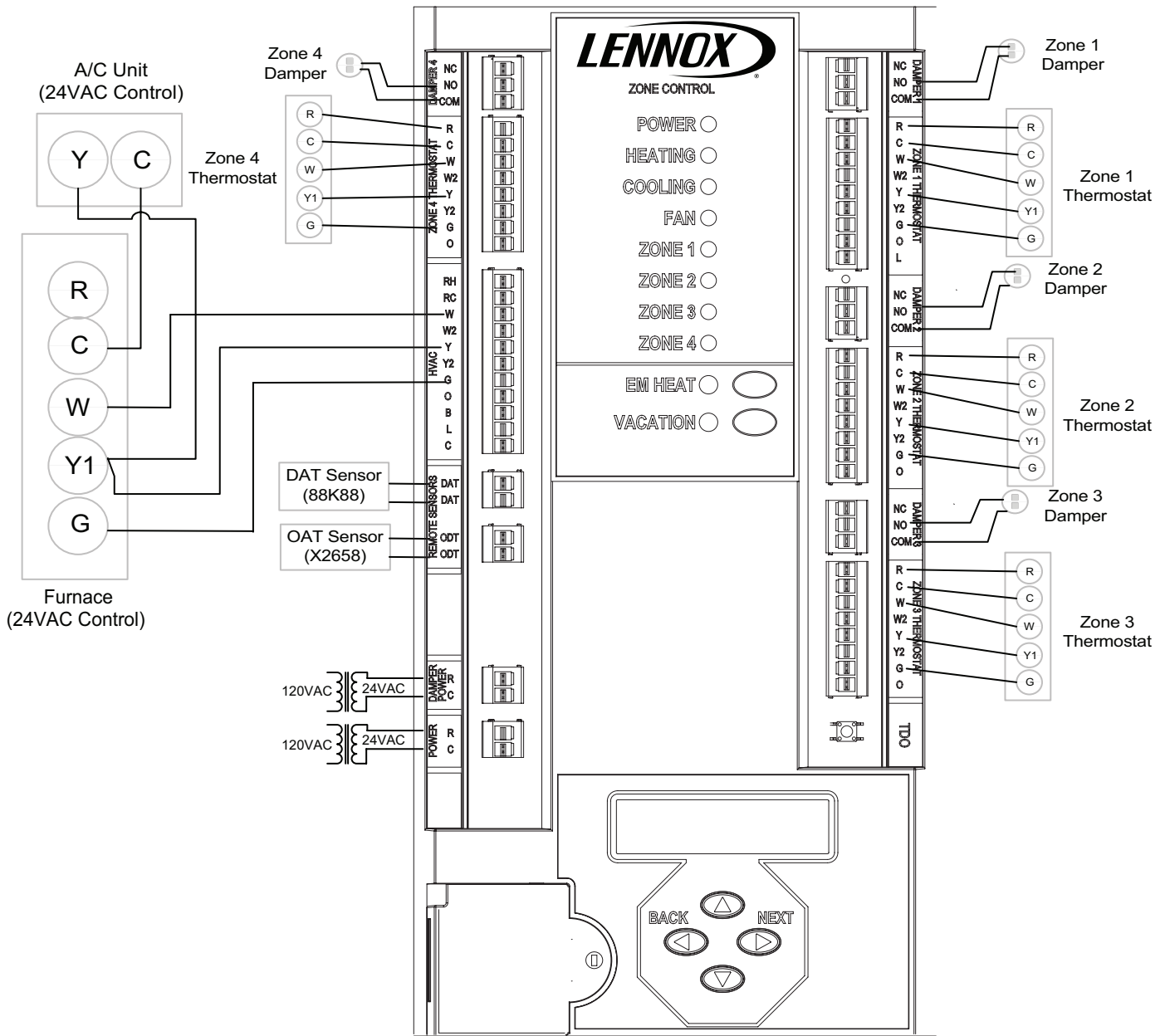
#### **Fan Purge Operation**

ON/OFF purge time can be controlled by the HVAC equipment or the Zone Panel (default) during a fan purge. Default time is 3 minutes (adjustable from 2 to 5 minutes).

# TYPICAL SYSTEM LAYOUT



# TYPICAL FIELD WIRING



Visit us at [www.Lennox.com](http://www.Lennox.com)

For the latest technical information, [www.LennoxPros.com](http://www.LennoxPros.com)

Contact us at 1-800-4-LENNOX

NOTE - Due to Lennox' ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability. Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury. Installation and service must be performed by a qualified installer and servicing agency.

©2020 Lennox Industries, Inc.