

# CONTROL TIPS

A ROBERTSHAW® INFORMATIONAL GUIDE

THIS ISSUE

## TROUBLESHOOTING CLASSIC ZONE CONTROL PANEL PROBLEMS

### Introduction

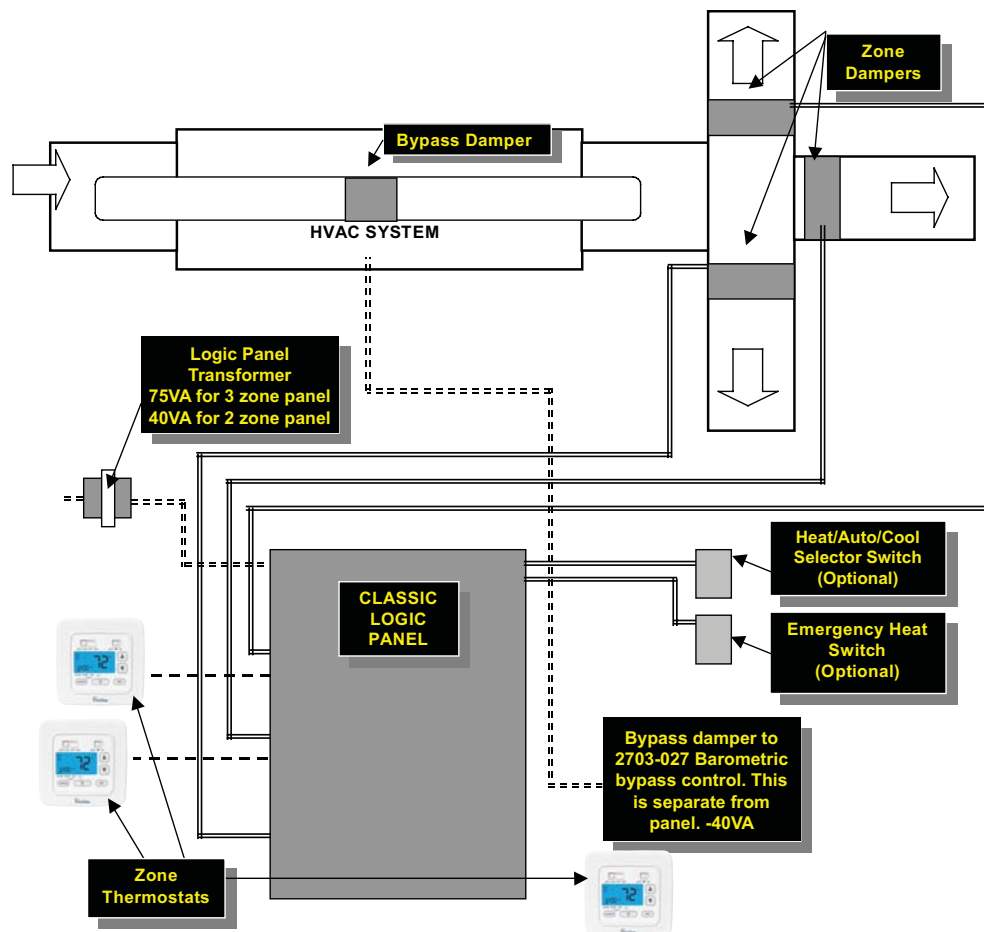
This technical manual will provide setup and operational assistance for the SlimZone® Classic 2 Zone (2701-006) and the SlimZone® Classic 3 Zone (2701-001) panels.

Always use a duct calculator to properly size the bypass damper for the static pressure of the system.

Bypassing excess air into crawl spaces and attics is NOT recommended. This may cause structural damage.

The zone panel is intended to be installed in a conditioned space. Maximum temperature rating is 14°F (-10°C) to 158°F (70°C).

### Typical Zone System



## **Establishing Mode of Operation**

The equipment mode of operation (Heat/Auto/Cool) is only limited to the capability of the selected zone thermostats. The logic panel is designed to accept Auto or Manual (4 or 5 wire) changeover thermostats. However, Heat Only or Cool Only operation also can be selected through the panel via an optional external selector switch or jumper wire to a set of dedicated terminals (R-H, R-C). When the logic panel is set in a single mode of operation, it will ignore opposite calls from all zone thermostats.

### **Control Operation (Heat/Cool)**

Once the heating or cooling mode is established and the logic panel has received a call for that mode, the panel will open the associated damper(s) and close any damper not matching the established mode of operation. The panel will ignore any zone thermostat fan call input. The logic panel will energize the equipment in the proper mode of operation and will establish a minimum four (4) minute ON time or until the last zone calling is satisfied. Once all zones are satisfied, the equipment will be de-energized at which time the logic panel will initiate a forty-five (45) second purge cycle into the last zone calling. After the purge cycle, the panel will perform the following sequence:

1. If no zone thermostats are calling for constant fan, all zone dampers will be opened and the fan relay de-energized to allow for any hard-wired low speed fan distribution of air into all zones.
2. If any zone is calling for constant fan, the control panel will keep the fan relay energized and open all zone dampers.
3. If an opposite call has taken place and the logic panel is in the Auto Changeover mode, it will change the mode of operation to satisfy the new call(s) as described above.

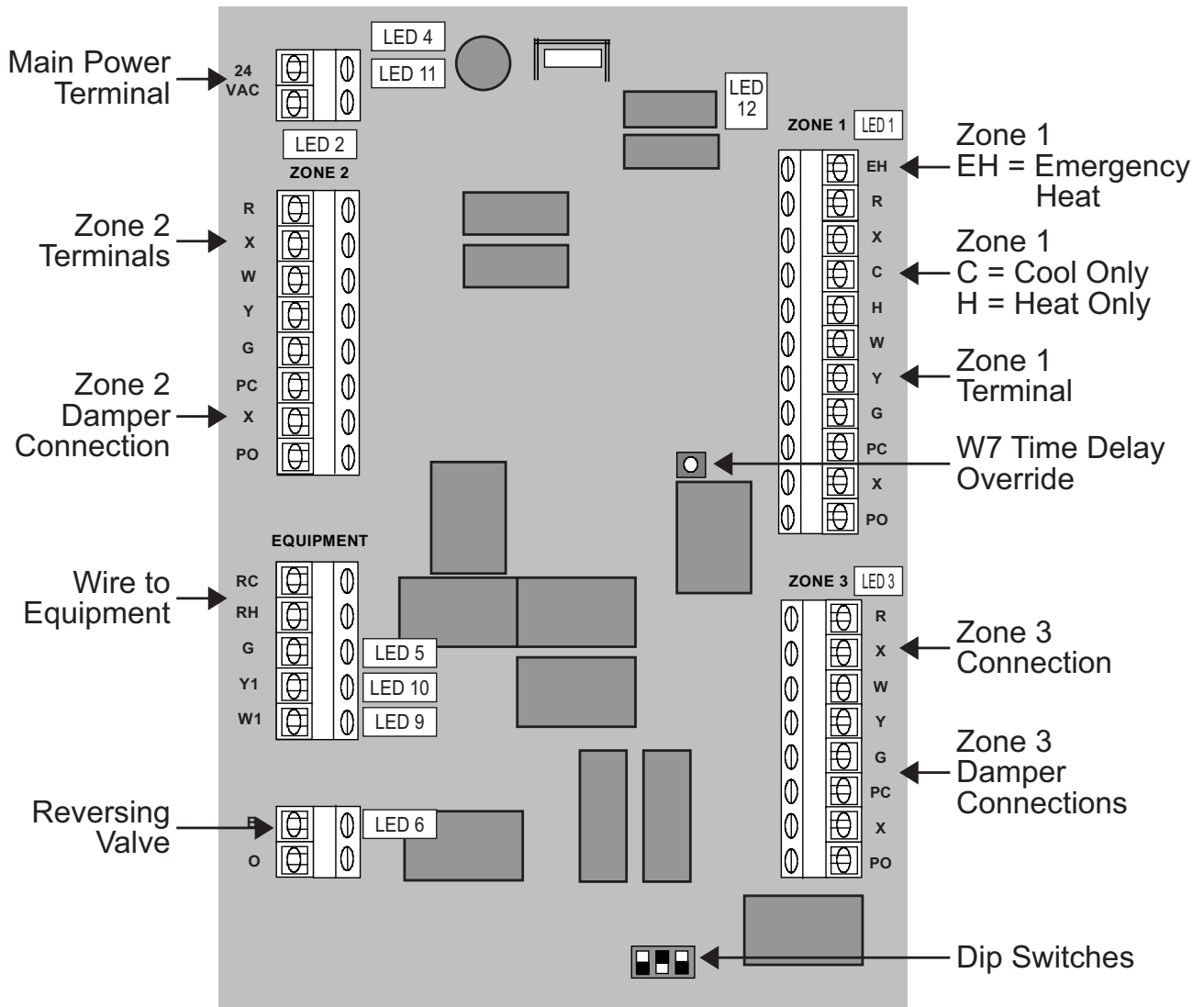
### **Control Operation (Heat Pump)**

The following sequence is only applicable when the SlimZone Classic system is used in heat pump applications and the system is in the Heat Only or Auto mode of operation. An internal control panel timer controls the auxiliary heat in heat pump systems. Whenever the heat pump is in the heating mode, the control panel will energize the auxiliary heat output if the heating call is not satisfied within fifteen (15) minutes. Once the auxiliary heat is energized, it will remain on until the last zone calling is satisfied.

### **Control Operation (Add-On Heat Pump)**

When the SlimZone Classic is used with an add-on heat pump, it will ensure that the compressor is de-energized whenever the auxiliary heat is energized. This eliminates the need for a fossil fuel kit. In the event of a heat pump compressor failure, emergency heat is activated through an emergency heat (EH) switch located on the control panel or through the use of an external switch wired to dedicated terminals, upper right (EH and R). When the switch is in the EH position, the Y1 Terminal output to the compressor will always be de-energized and the W1 terminal will automatically replace the Y1 function. The upstaging sequence will be canceled and any call for heating will energize W1.

# Control Board Layout



## Identifying LED Indicators

<b>SlimZone Classic Panel</b>			based on K3911-10 rev 1
<b>Reference Designator</b>	<b>Color</b>	<b>Location</b>	<b>Function</b>
LED 1	Green	Zone 1	Damper open
LED 2	Green	Zone 2	
LED 3	Green	Zone 3	
LED 4	Green	24VAC terminal	Panel is powered
LED 5	Green	G terminal	Fan relay energized
LED 6	Orange	B terminal	Reversing valve relay energized (for heating)
LED 9	Orange	W1 terminal	Heating relay energized
LED 10	Yellow	Y1 terminal	Cooling/compressor relay energized
LED 11	Red	24VAC terminal	Short / Fault
LED 12	Green	Upper right corner	Functioning properly when flashing

- 1) Is the transformer at least 40 VA (2 zone) or 75VA (3 zone)?
- 2) Look at panel and identify all panels LED's.
- 3) LED 4, upper left side, is it on?

If No, look at transformer connections and check if line voltage is applied to primary side of transformer. Correct to illuminate LED 4.

If yes, go to the next step.

- 4) Check LED 12 on the upper right side of the control board. If it is flashing yellow it is in normal operation. If it is a solid yellow, you can press the W7 button to override the 4-minute time delay.
- 5) Heat/cool operation:
  - A. When in heating and zone thermostats are set to the highest setting:
    - The system power LED 4 is on (Green).
    - The heat LED 9 is on (Orange).
    - The fan LED 5 is on (Green) except when the plenum switch is selected on dipswitch #2.
    - The reversing valve (RV) LED 6 is on (Orange).
    - All zone dampers are open LED 1, LED 2, LED 3 (Green).
  - B. When in cooling and the thermostats are set to the lowest setting:
    - The cooling LED10 is on (Yellow).
    - The fan LED5 is on (Green).
    - All zone dampers LED1, LED2, LED3 are on (Green).

- 6) If LED 4 is powered and no other LED is on, evaluate the current draw on each zone. Is the amperage draw more than 3.75A@68°F (20°C)? NOTE: The higher the temperature the lower the amperage!  
 If yes, correct the short or cause of the current draw. The panel has an automatic resettable fuse that is beige and is next to and below right of the panel's power input. To reset the fuse, disconnect the transformer power and allow to cool.  
 If NO to amp draw and power on LED 4 is Green, the fault LED 11 is on (Red – below the power on LED 4) and there are no shorts detected within each zone, then the panel needs to be replaced.  
 If NO to amp draw and LED 11 is not Red, continue to the next step.
- 7) Look toward the upper right side and verify a wire is connected to C and H terminals that is also connected to R through a selector switch. The board will ignore the opposite call. (e.g., call for heat only is jumpered between R and H.) The board will ignore any call for cooling.

### Setup of Dip Switches and Thermostat

- 1) Make sure the dip switches are set correctly. This can be found at the bottom lower right on the PC board (see the attached board diagram layout). The number 3 switch should be OFF at all times.

HEATPUMP SETTINGS		
SWITCH	POSITION	DESCRIPTION
1	ON (UP)	HEATPUMP MODE OF OPERATION
2	OFF (DOWN)	STANDARD HEATPUMP SYSTEM
	ON (UP)	ADD-ON SYSTEM
3	OFF (DOWN)	NORMAL OPERATION
	ON (UP)	EMERGENCY HEAT OPERATION (EH)

HEAT/COOL SETTINGS		
SWITCH	POSITION	DESCRIPTION
1	OFF (DOWN)	HEAT/COOL MODE OF OPERATION
2	OFF (DOWN)	FAN CONTROLLED BY PLENUM THERMOSTAT
	ON (UP)	FAN ON IMMEDIATELY WITH HEAT CALLS
3	OFF (DOWN)	THIS SWITCH HAS NO FUNCTION WHEN IN HEAT/COOL MODE (KEEP IN OFF POSITION)

ON

- 2) If the thermostat is a Triac (electronic switch-no relay thermostat), replace it with a 5-wire or battery operated 4-wire thermostat, or install a 5 watt 300-ohm resistor across the loads W1 TO COMMON (X), Y1 TO COMMON (X).

## Setup of Dampers

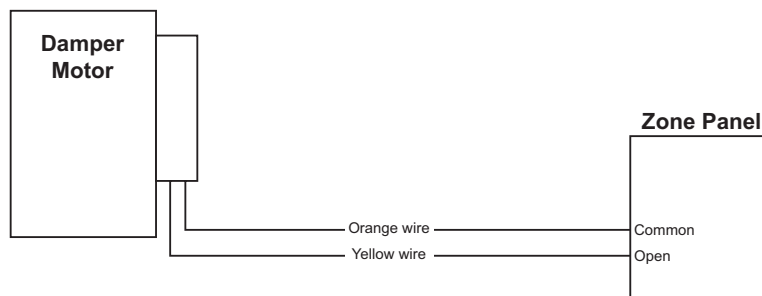
Check to make sure the damper motor connections are correct.

If the damper is a spring open and power closed, the wires need to connect to common and PC terminals.

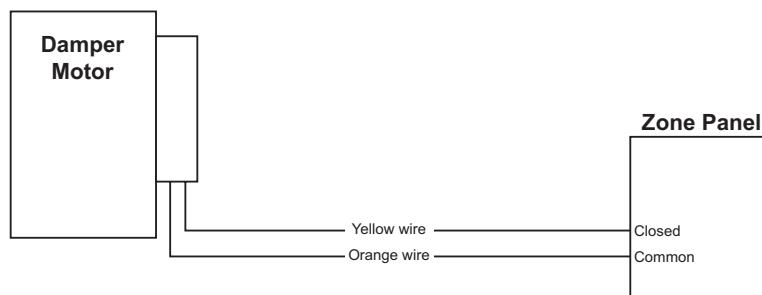
If the damper is a spring closed and power open, the wires need to connect to common and PO terminals.

If the damper is power open and power closed, check the connections of the power open wire and the power closed wire.

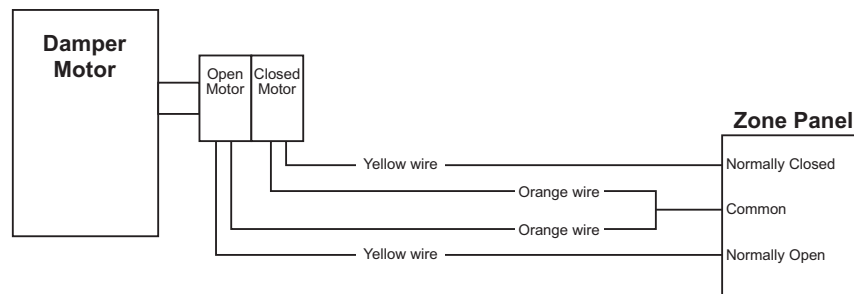
### 2-Wire N/C Damper Power Open Spring Closed



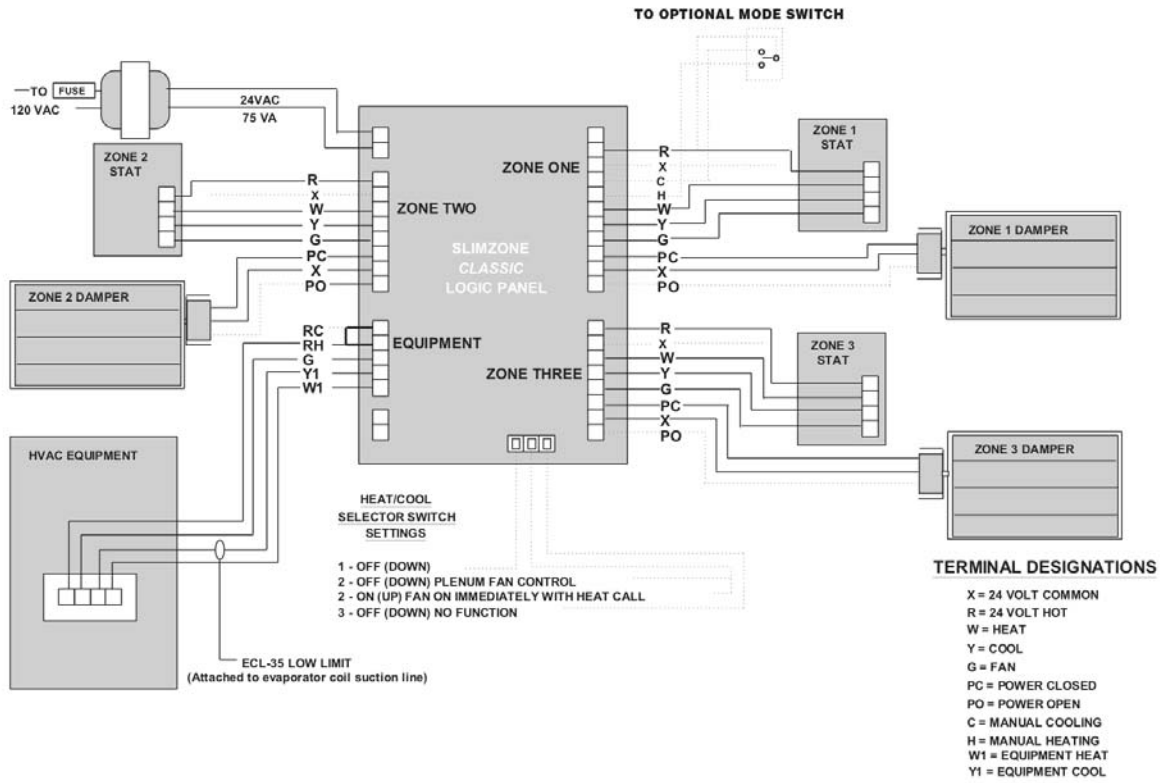
### 2-Wire N/O Damper Power Closed Spring Open



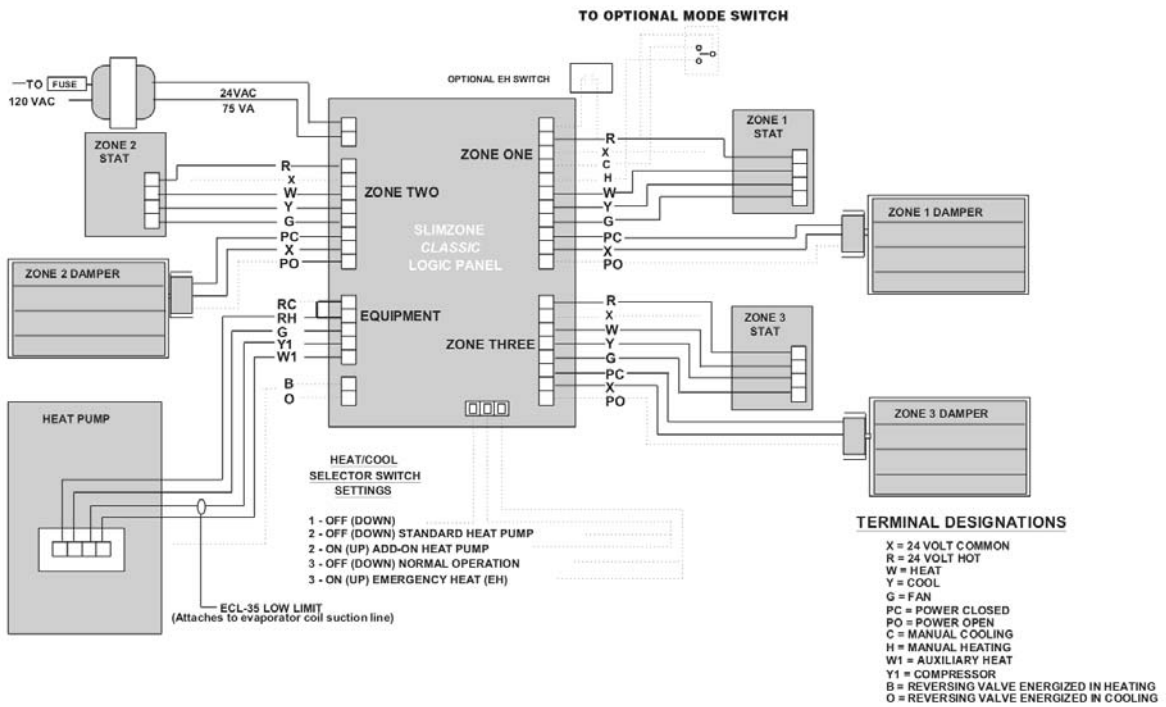
### Single Heat / Single Cool Setup



# Heat / Cool



# Heat Pump (Dual Fuel)



**i n v e n s y s**  
Controls

191 E. North Avenue  
Carol Stream Illinois 60188 USA  
Customer Service Telephone 1.800.304.6563  
Customer Service Facsimile 1.800.426.0804  
HVACCustomerService@Invensys.com

For Technical Service  
Telephone 1.800.445.8299  
Facsimile 1.630.260.7294  
TechnicalService@Invensys.com

Invensys®, Robertshaw®, Uni-Line® and Simply the Right Choice™ are trademarks of Invensys plc., its subsidiaries and/or affiliated companies. All other brands mentioned may be the trademarks of their respective owners.

www.Uni-Line.com  
www.InvensysControls.com  
©2010 Invensys Controls

11/10 – 150-1999B