

# THE GREEN ZONE™

Zone Control Made Simple™

## Z-300-HC-MS Installation and Operation Instructions

### 2 Heat / 2 Cool - Auto Changeover - First Call Priority - Time Share



#### Sequence of Operation:

The Green Zone™ Z-300-HC-MS is a residential / light commercial zone control system that allows a single HVAC unit to have up to three separate zones. Each zone is controlled by its own space thermostat and motorized zone damper. If a zone thermostat calls for heating or cooling, the zones not calling will have their dampers powered closed, and the zone calling will have its damper opened. The heating or cooling equipment will also be brought on at the same time. When the zone calling is satisfied, the heating or cooling equipment turns off. If one zone calls for heating and another zone calls for cooling, the first zone to call receives priority. When the first call is satisfied, the system will changeover and take care of the opposite call. If a zone being served (heating or cooling) has not been satisfied within 20 minutes while an opposite call is taking place, the system will changeover. When the zone is satisfied or 20 minutes has elapsed, the system will again changeover if an opposite call exists. This is referred to as Auto Changeover - First Call Priority - Time Share. In the event of a tie, cooling will receive priority.

#### High and Low Limit Protection:

The Z-300-DAS Discharge Air Sensor should be mounted on the discharge air plenum of the HVAC unit and wired to the DAS terminals on the panel. If the heating temperature rises above 160° F or if the cooling temperature falls below 45° F, the sensor will cycle the equipment, while the fan continues to run. When the system goes out on low limit a 3 minute time delay is activated before cooling is allowed to energize (providing the discharge air temperature has risen above 45° F). LIMIT LED blinks when high or low limit is reached.

#### Ventilation Mode:

Zone ventilation is established by the individual zone thermostat fan setting. Any thermostat set in the fan AUTO mode will not receive ventilation air when there are no heating or cooling calls. Any thermostat set in the fan ON mode will receive ventilation air whenever there are no heating or cooling calls.

#### Power Requirements:

The Z-300 requires a separate 24 Vac transformer. A 40 VA transformer will power the panel and up to four (4) dampers. A 75 VA transformer will power the panel and up to seven (7) dampers. If more than three (3) dampers for an individual zone are required, a RY-1-HB relay should be used with an additional properly sized transformer. Jackson Systems HD-XXXX rectangular and D-XX round dampers are powered closed / spring return open. Damper actuators are rated at 10 VA. If 3-wire dampers (powered open / powered closed) are installed, VA ratings will vary depending on the damper actuator used.

#### Wiring:

All wiring should be conventional 18 gauge thermostat wire. Thermostats and zone dampers may be located up to 300 feet from the Z-300 panel.

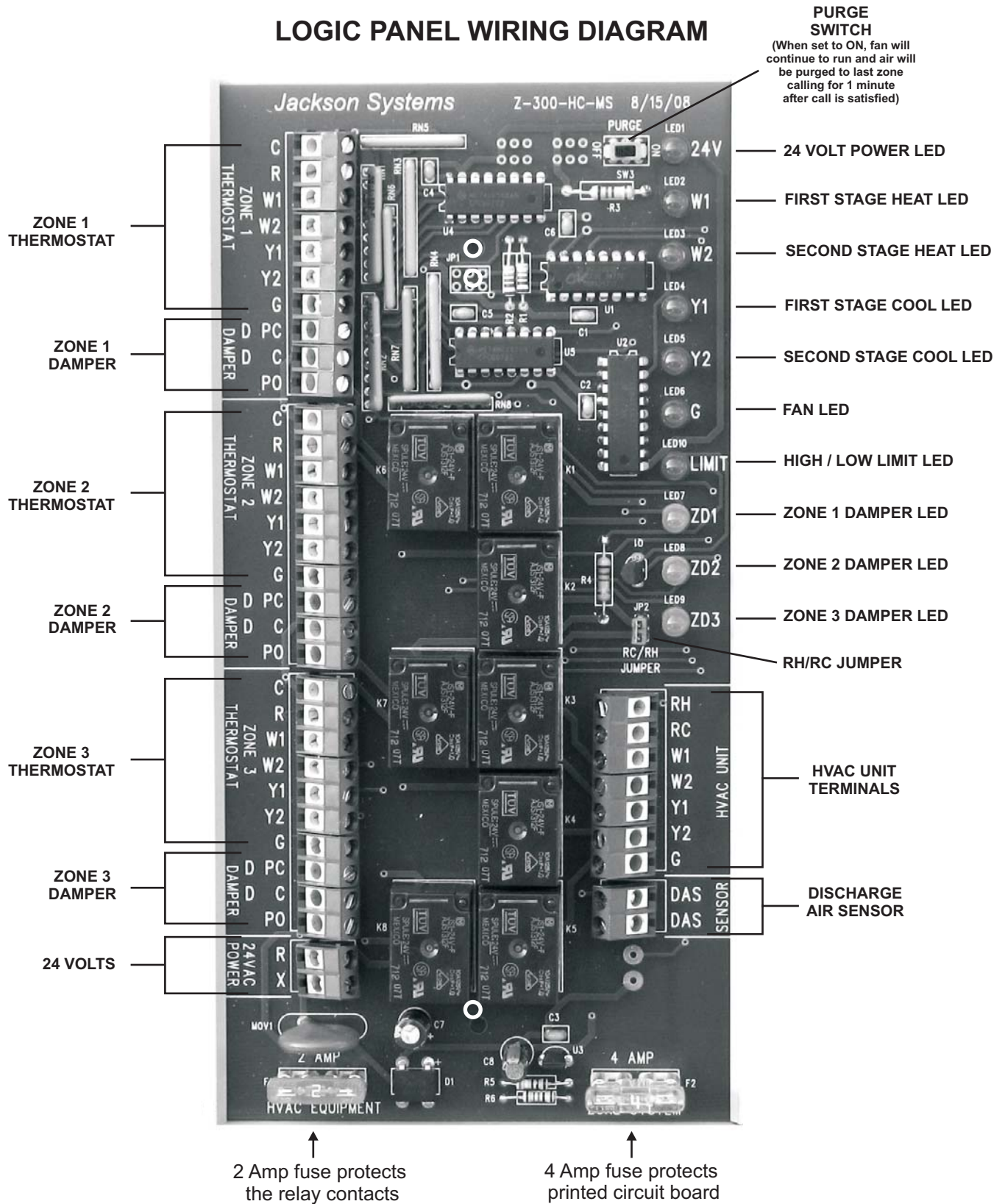
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### LOGIC PANEL WIRING DIAGRAM



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### Installation

#### Mounting the Panel:

Carefully remove the Z-300 panel and cover from the shipping carton. Slide the PC board out of the snap track base and mount the base to a flat surface either on or near the HVAC indoor unit in an area that will facilitate easy access for wiring. Reinstall the PC board by carefully centering it over the base and snapping it back into the track grooves.

#### Wiring the Zone Thermostats and Dampers:

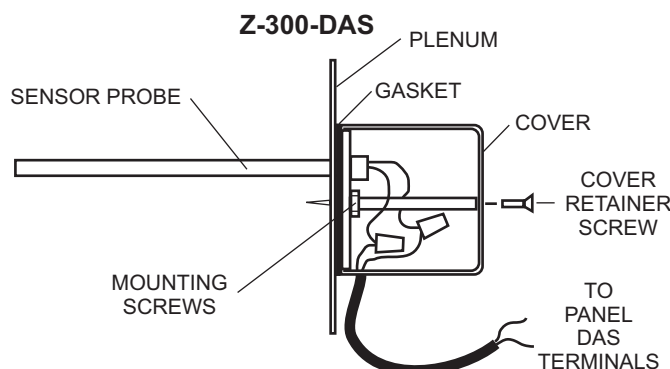
Refer to the logic panel wiring diagram. Wire zone 1 thermostat and its associated damper to the ZONE 1 terminals on the logic panel. Wire zone 2 and 3 thermostats and dampers in the same manner.

#### Wiring the HVAC Equipment:

Wire the HVAC unit to the panel terminals. Do not wire the equipment common to the Z-300 panel.

#### Installing and Wiring the Z-300-DAS Discharge Air Sensor:

Drill a ½" hole in the middle of the main discharge air plenum approximately 18" downstream of the heat exchanger. Remove the Z-300-DAS cover. Slide the probe into the hole and use two self-tapping sheet metal screws to secure the base making sure that the gasket is in place. Use 18-2 thermostat wire and wire nuts to attach the sensor leads. Replace the cover and wire the sensor to the DAS terminals on the Z-300 panel.



#### Wiring the Transformer:

Wire a separate 24 Volt transformer of the proper VA to the logic panel terminals marked (X) and (H). Do not power the panel up until all wiring is completed.

#### Test, Check and Startup:

1. Verify that all component wires have been connected to the proper terminals and are secure.
2. Disconnect the HVAC equipment (R) terminal wire at the panel and apply 24 Volts to panel.
3. Take a jumper wire and momentarily short the DAS terminals. This will put the panel's time delays in "speed up" mode.
4. Place the zone thermostats in the OFF position.
5. Place zone 1 thermostat in the heating mode and have the thermostat call for heat. Confirm that (ZD1) LED is ON and that (W) LED is ON. Confirm that zone 1 damper is open and zone 2 and 3 dampers are closed. There will be no voltage across zone 1 (D) and (D) terminals and 24 volts on zone 2 and 3 (D) and (D) terminals.
6. Put zone #1 thermostat in the cooling mode and have the thermostat call for cooling. Confirm that (ZD1) LED is ON and that the (Y) and (G) LEDs are ON. If the thermostat has internal time delays, the cooling call may not activate immediately.
7. Turn zone 1 thermostat off and repeat steps 5 and 6 with the zone 2 and 3 thermostat. Remember, the zone calling will have its damper open and there will be no voltage on the (D) and (D) terminals for that zone.
8. Determine the ventilation mode of each zone thermostat by setting the thermostats in the Fan AUTO or ON mode.
9. Remove 24 Volts to the panel and reconnect the HVAC (R) wire.
10. When 24 Volts is again applied to the panel, the internal time delays will be activated.
11. Confirm that the LIMIT LED is ON. If not, check LIMIT wiring. If the system goes out on high or low limit, the LIMIT LED will blink.

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#### Specifications

##### Panel Dimensions:

Height: 8.0 Inches  
 Width: 6.0 Inches  
 Depth: 1.375 Inches

##### Mounting:

Snap Track with 2 back plate screws

##### Operating Temperature Rating:

-40° F to 150° F

##### Operating Humidity:

5% to 90% RH non-condensing

##### Wiring:

18-gauge wire for all equipment and system connections

##### Time Delays:

3 minutes minimum off between cooling calls  
 3 minutes minimum off on low limit  
 20 minute time share  
 Purge ON = 1 minute

##### Thermostats:

Single or multi-stage heat / cool  
 Programmable or non-programmable  
 Auto or manual changeover

#### Terminal Designations

##### Thermostats:

C 24Vac (Common)  
 R 24Vac (Hot)  
 W1 First Stage Heat  
 W2 Second Stage Heat  
 Y1 First Stage Cool  
 Y2 Second Stage Cool  
 G Fan

##### Dampers:

D PC Powered Closed  
 D C Common  
 PO Powered Open

##### High / Low Limit

DAS Discharge Air Sensor  
 (2 wire)

##### HVAC Equipment:

RH 24Vac Heating Transformer  
 RC 24Vac Cooling Transformer  
 W1 First Stage Heat  
 W2 Second Stage Heat  
 Y1 First Stage Cool  
 Y2 Second Stage Cool  
 G Fan

##### Panel Power:

R 24Vac (Hot)  
 X 24Vac (Common)

