

140311 3-Zone Control Panel

1 Heat / 1 Cool
Conventional Systems

Store this manual for future reference.

Installer Manual



Warning *Read all of the instructions before proceeding*

Caution *Voltage Hazard*

Can cause electrical shock or equipment damage. Always turn off power to the heating/air conditioning system prior to installing or adjusting the expandable zone panel. Wire the entire panel before applying transformer power.

This panel is designed for professional installation, and is to be installed and configured as described in this manual. Any other use is not recommended and will void the warranty. Install disconnect and overload protection on circuits as required by code authorities having jurisdiction for the installation.

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1 Specifications

Storage temperature:
-40°–167°F (-40°–75°C)

Operating temperature:
-22°–167°F (-30°–75°C)

Voltage:
24 VAC, Nominal 60Hz
18-30 VAC Maximum

Operating humidity:
5–95% RH

Panel Power:
6 VA @ 24 VAC

Current Draw Max:
100 VA @ 24 VAC

Current Draw Per Zone:
50 VA Max

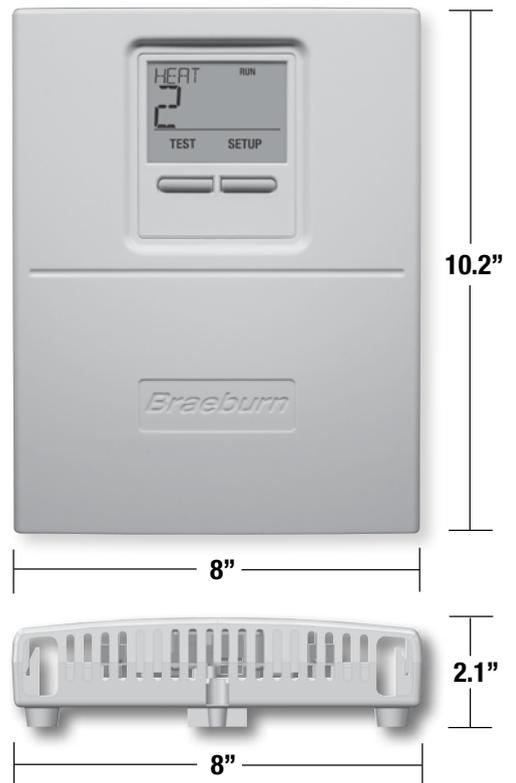
Protection:
Electronic self resetting current limiting for panel power and damper zones

Configuration:
Single Stage Conventional equipment

Maximum Zones:
3 Zones Maximum

Dimensions:
See Figure 1

Figure 1



2 Suitable Mounting Locations

Mount the Zone Panel near the HVAC equipment. The panel can be mounted in any orientation on a wall, stud, roof truss, or the return-air plenum. For appearance, mount the panel level. Remove the panel cover and use the base as a template to drill mounting holes (see Figure 2). Attach the panel with appropriate screws. Use mounting anchors as needed for drywall or plaster installations.

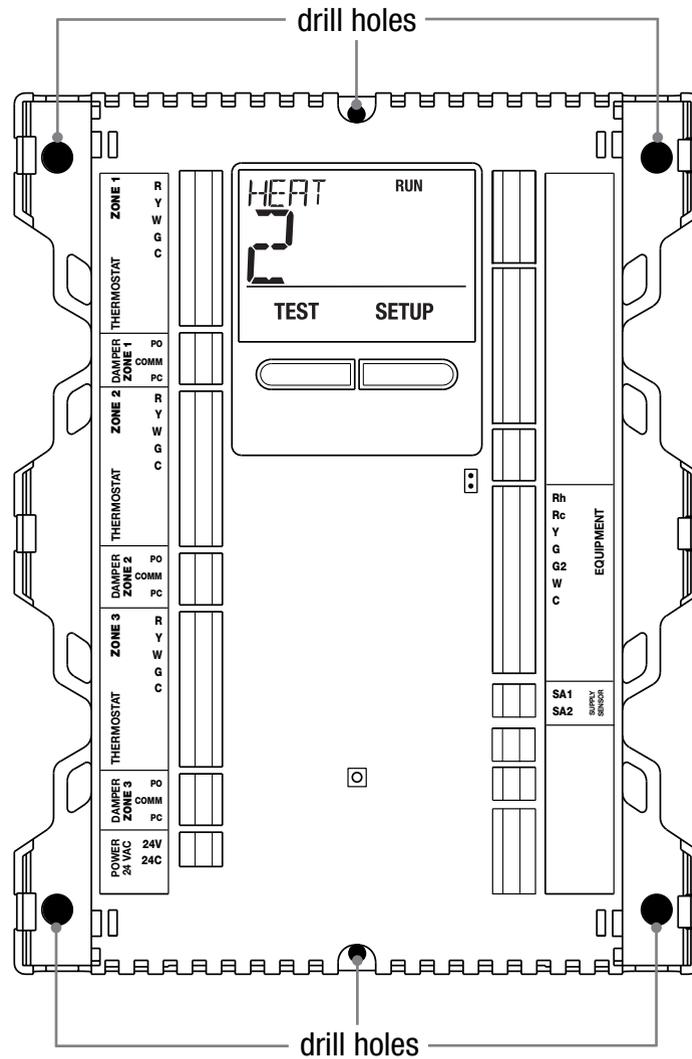


Figure 2

3 Wiring the Panel

Always turn off power to the heating/air conditioning system prior to installing or adjusting the Zone Panel. Wire the entire panel before applying transformer power. Use the following general wiring instructions for all systems. Specific wiring will vary depending on the equipment and type of system (conventional or heat pump). **NOTE:** Up to 2 wires can be inserted into each terminal. To release wires, press down on top of wiring terminal and gently pull out wire(s).

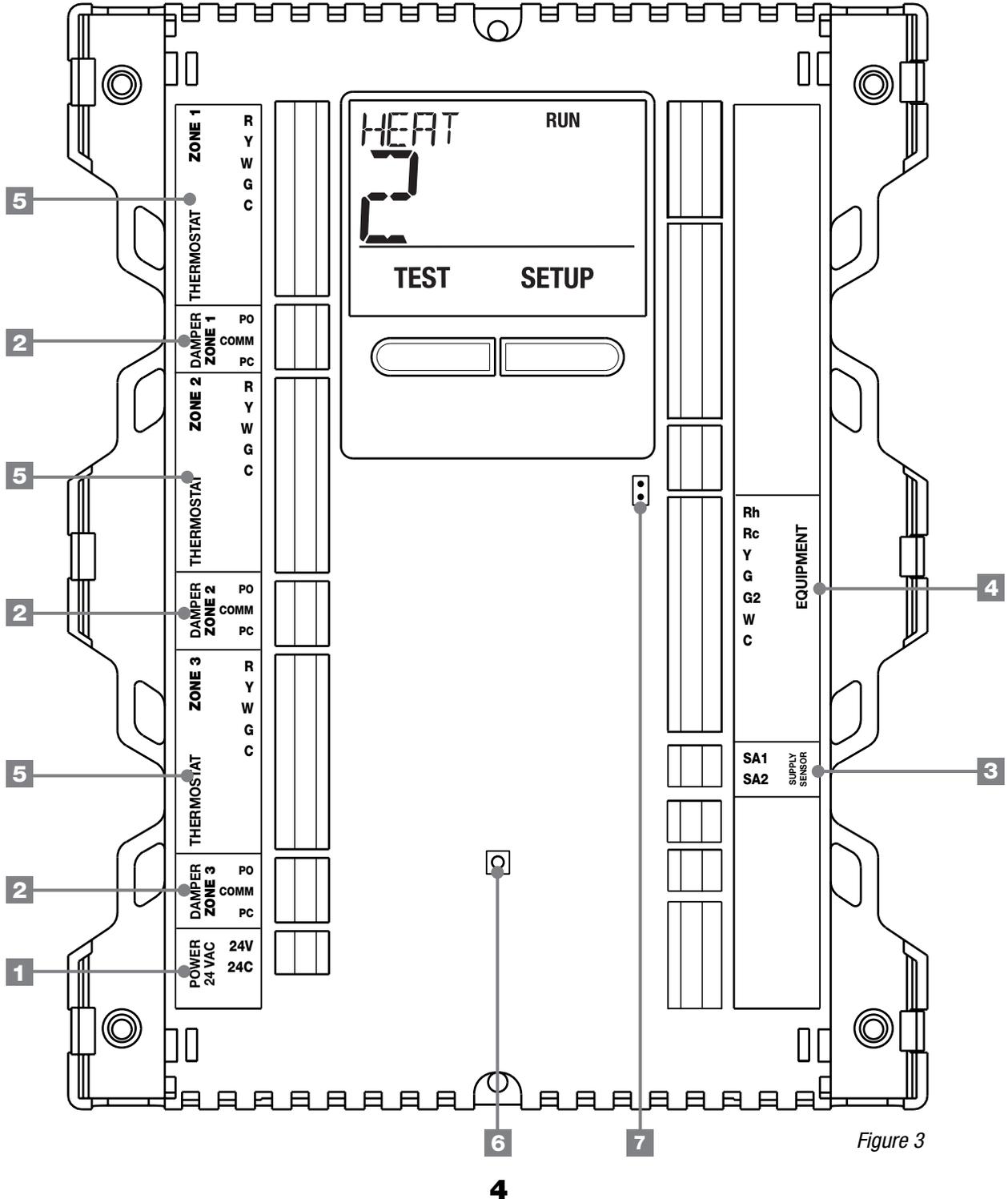


Figure 3

ZONE PANEL WIRING TERMINALS

	Terminal	Qty.	Function	Description	
PANEL POWER	1	24V	1	INPUT	24 VAC Transformer Power 100 VA Maximum
		24C	1	INPUT	24 VAC Transformer Common
DAMPERS	2	PO	3	OUTPUT	24 VAC Power Open Zone Damper Terminal
		COMM	3	OUTPUT	Zone Damper Common Terminal
		PC	3	OUTPUT	24 VAC Power Close Zone Damper Terminal
SUPPLY AIR	3	SA1	1	INPUT	Optional Plenum Supply Air Sensor Terminal 1 (No Polarity) Model 149156
		SA2	1	INPUT	Optional Plenum Supply Air Sensor Terminal 2 (No Polarity) Model 149156
EQUIPMENT	4	Rh	1	INPUT	24 VAC Equipment Transformer Power Connection
		Rc	1	INPUT	24 VAC Cooling Equipment Transformer (Dual Transformer Systems Only)
		Y	1	OUTPUT	1st Stage Compressor
		G	1	OUTPUT	1st Stage Fan Control
		G2	1	OUTPUT	2nd Stage Fan Control
		W	1	OUTPUT	1st Stage Conventional Heat
		C	1	INPUT	24 VAC Transformer Common
THERMOSTAT	5	R	3	OUTPUT	24 VAC Thermostat Power
		Y	3	INPUT	1st Stage Compressor Call
		W	3	INPUT	1st Stage Conventional Heat Call
		G	3	INPUT	Fan Call
		C	3	OUTPUT	24 VAC Transformer Common
6	RESET BUTTON			Press once to restart panel Hold for 5 seconds to reset panel and restore all factory defaults	
7	Rc/Rh TERMINAL JUMPER (J1)			Open jumper for dual transformer installations	

Note: Wire should be stripped to 3/8 inch minimum.

3.1 Damper Wiring

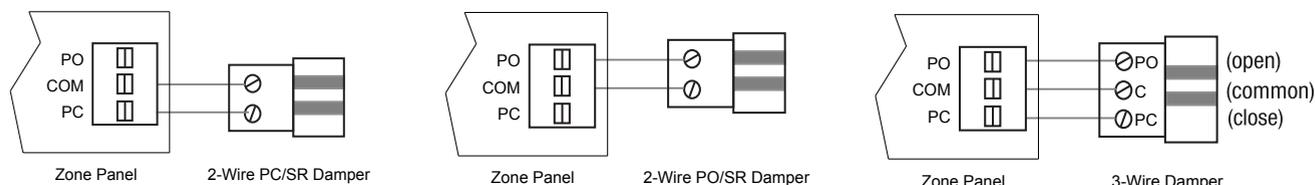
Always turn off power to the heating/air conditioning system prior to installing or adjusting the zone panel. Wire the entire panel before applying transformer power.

Use the following general wiring instructions for all systems. Specific wiring will vary depending on the equipment and type of system (conventional or heat pump).

Install the system dampers using the instructions provided by the manufacturer. Connect the dampers to the zone panel as shown for either a 2-wire or 3-wire damper. The sum of all dampers powered by the zone panel should not exceed 100 VA at 24 VAC. Use a slave relay if additional damper power is required.

ALWAYS PROVIDE DISCONNECT AND OVERLOAD PROTECTION AS REQUIRED

Max. damper VA per Zone 50 VA @ 24 VAC



3.2 Thermostat Wiring

Install the system thermostats using the instructions provided by the manufacturer. Connect the thermostats to the zone panel as shown.

ALWAYS PROVIDE DISCONNECT AND OVERLOAD PROTECTION AS REQUIRED

CONVENTIONAL THERMOSTATS

1 HEAT / 1 COOL

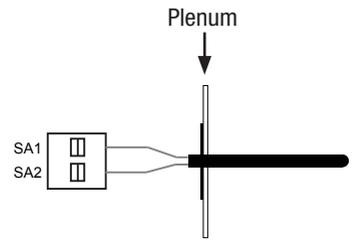
R	24 VAC Power
W	Heat Call
Y	Cooling Call
G	Fan Call
C	24 VAC Transformer Common [Note 1]

NOTES

[1] Wiring to the C terminal is required only for thermostat power.

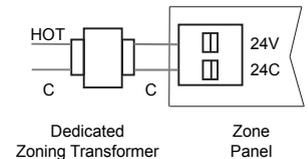
3.3 Optional Supply Air Sensor Wiring

To provide high/low limit protection, install the optional supply air sensor in the supply air plenum at least 2-3 feet after the heat exchanger and coil. Make sure there are no zone dampers before the supply air sensor. Connect the supply air sensor to the zone panel as shown.



3.4 Transformer Wiring

Install the transformer using the instructions provided by the manufacturer. Size the transformer to the damper requirements. The zone panel has built-in, self-resetting fuses. The maximum damper power per panel is 100 VA at 24 VAC. Connect the transformer to the zone panel as shown.



NOTE: Additional dampers or dampers with a higher current draw will require the use of a separate slave relay.

ALWAYS PROVIDE DISCONNECT AND OVERLOAD PROTECTION AS REQUIRED

3.5 Conventional Equipment Wiring

Connect a conventional heating system to the zone panel as shown. For a system using a dual transformer, remove jumper Rc to Rh (see Figure 3, page 4). Make sure the neutrals (common) are connected.

ALWAYS PROVIDE DISCONNECT AND OVERLOAD PROTECTION AS REQUIRED

1 HEAT / 1 COOL Equipment

Set Equipment Type to **SSC**

Rh	24 VAC Power (Heating Transformer) [Note 3]
Rc	Cooling Transformer [Note 3]
W	Heat Call
Y	Cooling Call
G	Fan Call
G2	Second Stage Fan Call [Note 4]
C	24 VAC Transformer Common

NOTES

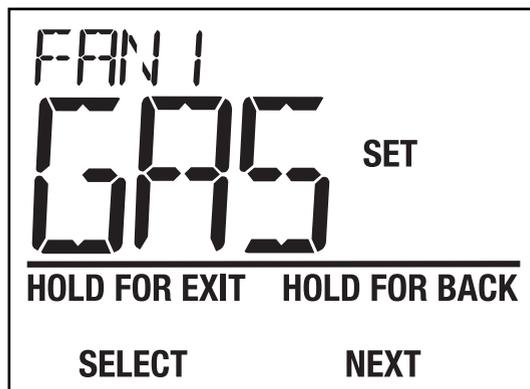
- [3]** Remove J1 jumper for dual transformer systems. Transformer common must come from cooling transformer.
- [4]** If required by system

4 Configuration

Use the following instructions to configure the zone panel.

To start configuration:

1. Press **SETUP** and hold for 3 seconds.
2. The panel backlight will turn on and the display will change.
3. Change setting if needed by pressing **SELECT**.
4. To save and advance to the next setting press the **NEXT** button.
5. Repeat steps 3-4 as necessary.
6. Press **HOLD FOR BACK** for 3 seconds to go back a step.
7. Press **HOLD FOR EXIT** for 3 seconds to exit setup menu.



4 Configuration

The configuration settings must be properly set in order for this zone panel to operate correctly. The Installer Settings will automatically adjust so that settings that do not apply to this installation will be skipped.

All settings are shown below with comments.

No.	Installer Setting (Notes follow table)	Display Indicator	Factory Default	Setting Options	Comments (More information follows this table)
1	Fan Control	FAN 1	GRS	GRS EL	Select for 1st Stage fan controlled by equipment Select for 1st Stage fan controlled by panel
2	Zone Fan Purge Time	PURGE	90	300 240 180 120 90 60 30 0	Select for 300 second purge into calling zone at call end Select for 240 second purge into calling zone at call end Select for 180 second purge into calling zone at call end Select for 120 second purge into calling zone at call end Select for 90 second purge into calling zone at call end Select for 60 second purge into calling zone at call end Select for 30 second purge into calling zone at call end Select for no purge into calling zone at call end
3	Supply Air Sensor Control	SR SENS	NO	YES NO	Select for Active Supply Air Sensor Select for Inactive Supply Air Sensor [Note 1, 2]
4	Temperature Scale*	DEG	DEG F	DEG F DEG C	Select for Fahrenheit display Select for Celsius display
5	Plenum High Limit Cutout	PLENUM SET HI LIMIT	135 (60°C)	100 to 180 (40 to 80°C)	Select the maximum Supply Air Temperature the system can reach before shutting off all heating stages [Note 2, 3]
6	Plenum Low Limit Cutout	PLENUM SET LO LIMIT	45 (8°C)	30 to 60 (0°C to 15°C)	Select the minimum Supply Air Temperature the system can reach before shutting off all cooling stages [Note 2, 3]
7	Short Cycle Protection	SCP	5	5 to 0	Selects a compressor short cycle protection delay of 5, 4, 3, 2, 1 or zero minutes after a compressor call
8	Second Stage Fan	G2 ZONES	2	2, 3	Select the number of zones that must call before the second stage fan will turn on
9	Priority Zone	PRIORITY	OFF	OFF 1 to 3	Select to have opposite calls answered in any zone Select zone 1 to 3 to limit calls so equipment will only service call matching last call of zone 1-3
10	Opposite Mode Timer	OP MODE	15	15 to 60	Select the number of minutes to delay system changeover when zones are calling for heat and others zones are calling for cooling

*Note: Changing #4 will reset settings 5 and 6.

NOTES - Configuration

- [1] Disable will not show plenum temperature.
- [2] Only available if optional supply air sensor is connected (Model 149156)
- [3] Only available if supply air sensor is enabled.

5 System Checkout

After the wiring and configuration is complete, built in automatic zone panel tests may be used to verify equipment, damper, and panel operation.

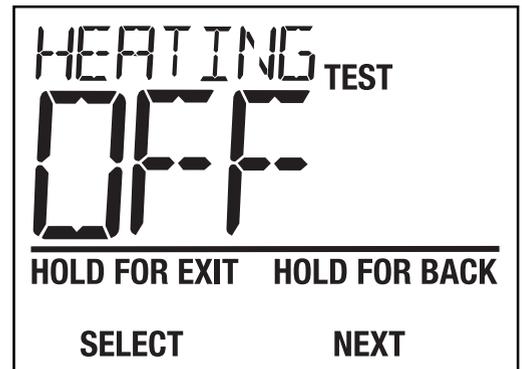
To start the panel Test Mode:

1. Ensure all wiring is complete and power has been applied to the main and expansion panels
2. Press **TEST** for 3 seconds and release
3. Press **SELECT** to turn the test on and off
4. Press **NEXT** to move on to the next test
5. Press **HOLD FOR EXIT** for 3 seconds to exit test mode

The following tests are available in Test Mode:

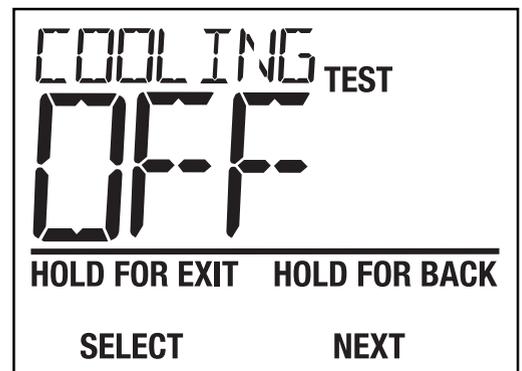
Heating Stage Test ON or OFF

This test turns on the heating stage, the system fan, and also commands all dampers to open. Press **SELECT** to Test or **NEXT** to advance to the next test.



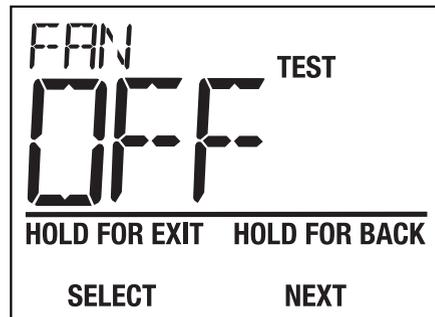
Cooling Stage Test ON or OFF

This test turns on the cooling stage, the system fan, and also commands all dampers to open. Press **SELECT** to Test or **NEXT** to advance to the next test.



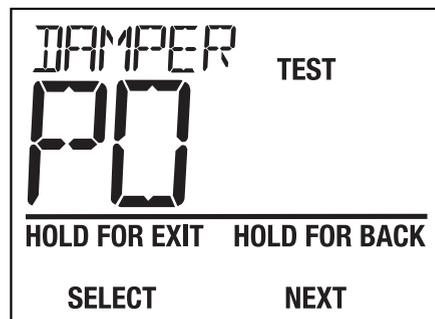
Fan Stage(s) Test ON or OFF

This test turns on all fan stages and commands all dampers to open. Press **SELECT** to test or **NEXT** to advance to the next test.



Damper Control Test PO or PC

This test powers all dampers open or closed. Press **SELECT** to test or **NEXT** to return to the first test.



6 Operation

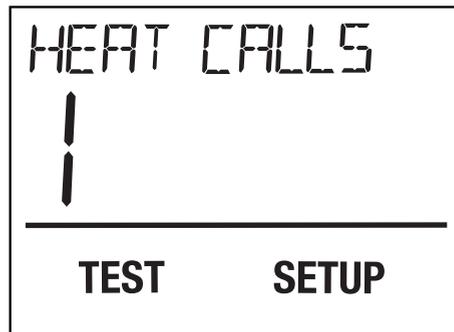
The Zone Panel has LED's and a built-in display to tell the installer and the system owner the current operating mode of the panel. Refer to the figure below and the following descriptions of the panel LED's for operation information.

LED	COLOR	INDICATION
Panel Status LED		
Panel Power	Green	Flashing Green When Normal
Equipment LED's		
Rh	Red	24 VAC at equipment Rh Terminal
Rc	Red	24 VAC at equipment Rc Terminal
Y	Yellow	Compressor Call Active
G	Green	First Stage Fan Call Active
G2	Green	Second Stage Fan Call Active
W	White	Heating Call Active
Thermostat LED's (3 Positions)		
R	Red	24 VAC available to Thermostat
Y	Yellow	Thermostat Compressor Call
W	White	Thermostat Heating Call
G	Green	Thermostat Fan Call
Damper LED's (3 Positions)		
Power Close / Power Open	Red / Green	Red On Damper Closed; Green on Damper Open No light when wiring short detected

In addition to LED's, the zone panel has a full function built-in backlit display panel that provides information on the current operations of the zone panel. When the zone panel is running in normal operation, the display is updated continuously to show the system operating parameters. The system will show the following status screens on the display.

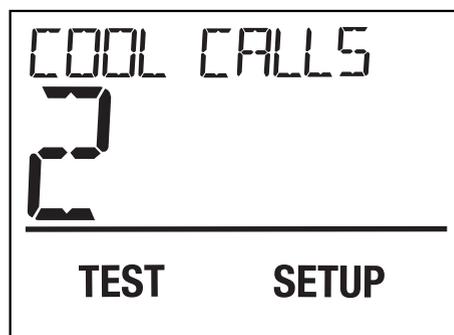
HEAT CALLS

Number of heat calls currently being serviced. Check the panel LED if it is necessary to determine exactly which zones are calling for heat operation.



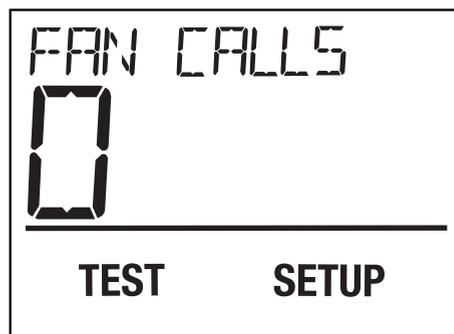
COOL CALLS

Number of cool calls currently being serviced. Check the panel LED if it is necessary to determine exactly which zones are calling for cooling operation.



FAN CALLS

Number of fan calls currently being serviced. Check the panel LED if it is necessary to determine exactly which zones are calling for fan operation.

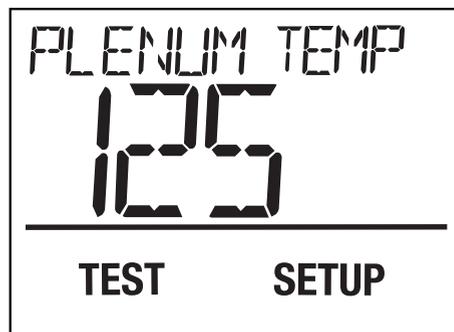


Equipment Plenum Temperature (PLENUM TEMP)

When the optional plenum air temperature sensor is installed and enabled, the zone panel will display the Plenum temperature in the range of 30 - 200° F (-1 - 93°C). Plenum Temperatures outside this range indicate an equipment error. See Section 7 Error Conditions for a further explanation.

NOTES: When no zones are calling, the panel will command all dampers to open.

- For maximum energy conservation, a purge will occur at the end of each call.
- No calls will be answered until the purge is complete.
- Dampers will not close if the plenum temperature sensor is enabled but not connected, or is not functioning properly.

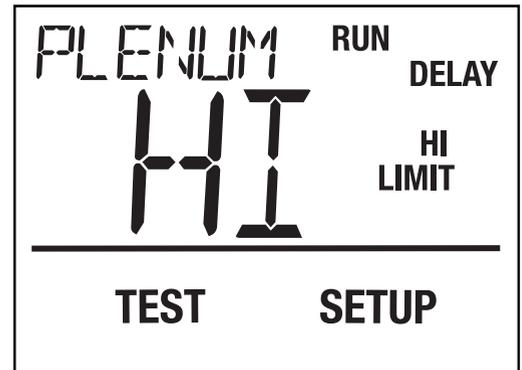


7 Error Conditions

The zone panel continually monitors various components of the zone system and will display a message when the following monitored conditions are detected.

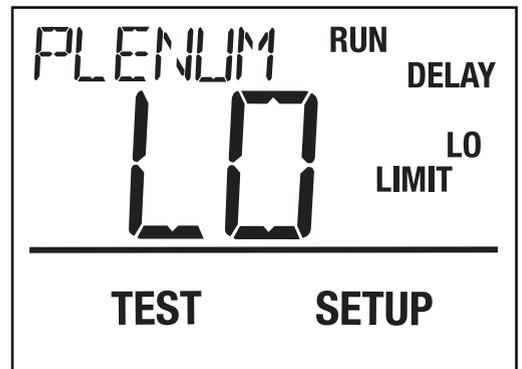
High Plenum Temperature (PLENUM HI)

Displayed when the Plenum Temperature is exceeded during equipment heating operation. The heating stage will be turned off and the fan will be turned on until the plenum temperature returns to the normal range. Service the system immediately to prevent potential damage.



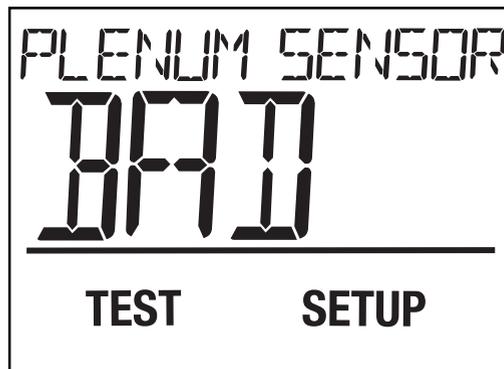
Low Plenum Temperature (PLENUM LO)

Displayed when the Plenum Temperature is too low during equipment cooling operation. The cooling stage will be turned off and the fan will be turned on until the plenum temperature returns to the normal range. Service the system immediately to prevent potential damage.



Plenum Sensor Bad

Displayed when an error has been detected with the plenum sensor. This error must be corrected by servicing the zone panel plenum sensor. If the sensor is not operating correctly, the zone panel will not call for additional stages of heating or cooling. You can also disable the plenum sensor (see section 4).



Limited Warranty

When installed by a professional contractor, this product is backed by a 5 year limited warranty. Limitations apply. For limitations, terms and conditions, you may obtain a full copy of this warranty:

- Visit us online: www.braeburnonline.com/warranty
- Phone us: 866.268.5599
- Write us: Braeburn Systems LLC
2215 Cornell Avenue
Montgomery, IL 60538



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