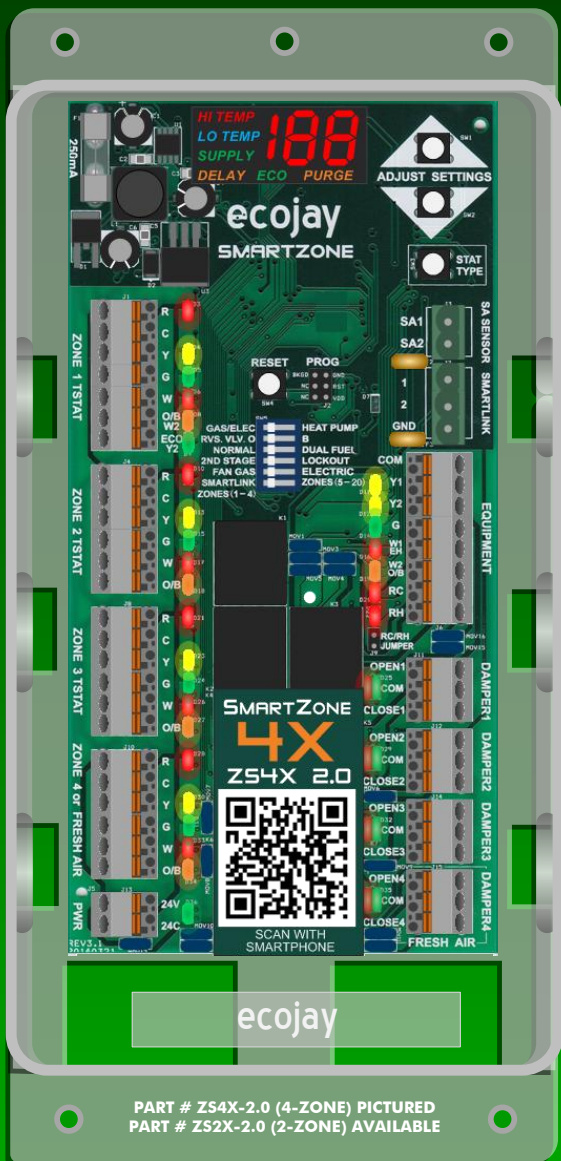


SMARTZONE[®]



PART # ZS4X-2.0 (4-ZONE) PICTURED
PART # ZS2X-2.0 (2-ZONE) AVAILABLE

**EASY-TO-READ
DISPLAY**

**SIMPLE SETUP AND
CONFIGURATION**

**SCREWLESS
WIRING TERMINALS**

**SUPPLY AIR TEMP
SENSOR INCLUDED**

**EXPANDABLE
TO 20 ZONES
(4X ONLY)**

**THERMOSTATS:
HEAT PUMP
OR
GAS/ELECTRIC**

**EQUIPMENT:
GAS/ELECTRIC or
HEAT PUMP
(Inc. DUAL FUEL)
2-STAGE Cooling
3-STAGE Heating**

**LEDs SHOW
HEAT & COOL
CALLS
(NO VOLTMETER
REQUIRED)**

**DAMPERS:
2-WIRE or 3-WIRE
LEDs SHOW
POSITION
RED = CLOSED
GREEN = OPEN**

**FRESH AIR CONTROL
(4X ONLY)**

INSTALLATION & OPERATION

FIRMWARE: 8E
© 2016



DISPLAY



(ON) HIGH TEMP LIMIT SENSED, SMARTZONE CONTROLLER DE-ENERGIZES EQUIPMENT HEAT OUTPUT FOR A MINIMUM OF 3 MINUTES (FAN [G] AND DAMPER OUTPUTS CONTINUES TO OPERATE)

(FLASH) SETTING HIGH TEMP LIMIT – PRESS UP ARROW BUTTON TO ADJUST THE HIGH TEMP LIMIT



(ON) LOW TEMP LIMIT SENSED, SMARTZONE CONTROLLER DE-ENERGIZES EQUIPMENT COOL OUTPUT FOR A MINIMUM OF 3 MINUTES (FAN [G] AND DAMPER OUTPUTS CONTINUE TO OPERATE)

(FLASH) SETTING LOW TEMP LIMIT – PRESS THE DOWN ARROW BUTTON TO ADJUST THE LOW TEMP LIMIT



SUPPLY AIR TEMPERATURE DISPLAYED NORMALLY



SAS DISCONNECTED



SMARTZONE CONTROLLER HAS SATISFIED ALL CALLS AND WILL DELAY 3 MIN BEFORE INITIATING ANY ADDITIONAL CALLS. COUNTDOWN TIMER ON DIGITS **180** SEC. IF CALL MADE.



SYSTEM IS IN PURGE MODE FOR EQUIPMENT CHANGEOVER (FAN [G] AND DAMPERS CONTINUE TO OPERATE, COUNTDOWN TIMER ON DIGITS **180** SEC.)



(ON) EC INPUT ON ZONE 1 IS ENERGIZED AND SYSTEM IS IN ECONOMY MODE. ONLY ZONE 1 CAN INITIATE EQUIPMENT CALLS, OTHER ZONES WILL ONLY OPEN AND CLOSE DAMPERS AS NEEDED.

(FLASH) IF ZONE 4 HAS BEEN CONFIGURED FOR FRESH AIR AND FRESH AIR IS BEING CURRENTLY SATISFIED. FAN SHOULD BE RUNNING AND ZONE 4 (FA DAMPER) ENERGIZED IN THE OPEN POSITION

ADJUST HI AND LO TEMP LIMITS

FOR PROTECTION, THE EQUIPMENT WILL NOT RUN ABOVE HI OR BELOW LO LIMITS. SEE MODES & STAGING FOR DETAILS. RECOMMENDED TO LEAVE AT DEFAULT SETTINGS UNLESS APPLICATION DEMANDS ADJUSTMENT.

HIGH TEMP LIMIT (CUT-OUT)

PRESS & RELEASE THE ▲ "UP" ARROW BUTTON WHEN THE DISPLAY IS SHOWING SUPPLY TEMPERATURE. THE "HI TEMP" INDICATOR WILL FLASH AND THE DIGITS WILL SHOW THE CURRENTLY SET TEMPERATURE. THIS HIGH LIMIT CUT-OUT CAN BE ADJUSTED UP OR DOWN USING THE ▲ ▼ BUTTONS.



LOW TEMP LIMIT (CUT-OUT)

PRESS & RELEASE THE ▼ "DOWN" ARROW BUTTON WHEN THE DISPLAY IS SHOWING SUPPLY TEMPERATURE. THE "LO TEMP" INDICATOR WILL FLASH AND THE DIGITS WILL SHOW THE CURRENTLY SET TEMPERATURE. THIS LOW LIMIT CUT-OUT CAN BE ADJUSTED UP OR DOWN USING THE ▲ ▼ BUTTONS. SEE "MODES & STAGING" FOR MORE DETAILS.

NOTE: CHANGING EITHER THE LOW OR HIGH TEMP LIMIT WILL ALSO AFFECT THE STAGING CUT-IN AND CUT-OUT TEMPERATURES SETTINGS. ADJUSTING THESE CAN CAUSE STAGING TO OCCUR SOONER OR LATER. SEE EQUIPMENT STAGING FOR MORE DETAILS.



AUX. HEAT LIMIT (CUT-IN)

HOLD PRESS & HOLD THE ▲ "UP" ARROW BUTTON FOR 5 SECONDS WHEN THE DISPLAY IS SHOWING SUPPLY TEMPERATURE. WHEN RELEASED THE "HI LIMIT" AND "DELAY" INDICATORS WILL FLASH AND THE DIGITS WILL SHOW THE CURRENTLY SET TEMPERATURE (DEFAULT = 90, 90 - 94 USE ▲ ▼ BUTTONS)



ECONOMIZER MODE LIMIT (CUT-OUT)

HOLD ONLY WHEN ZONE 4 SET TO FRESH AIR PRESS & HOLD THE ▼ "DOWN" ARROW BUTTON FOR 5 SECONDS WHEN THE DISPLAY IS SHOWING SUPPLY TEMPERATURE. WHEN RELEASED THE "HI LIMIT" AND "ECO" INDICATORS WILL FLASH AND THE DIGITS WILL SHOW THE CURRENTLY SET TEMPERATURE (DEFAULT = 60, ADJUSTABLE FROM 58 - 68 USE ▲ ▼ BUTTONS)



OPERATION

MODES & STAGING

BLUE TEXT APPLIES ONLY TO HEAT PUMP EQUIPMENT (DIP SWITCH #1)

FAN (ONLY)



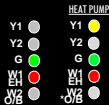
COOLING (1st STAGE)



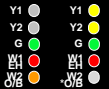
COOLING (2nd STAGE)



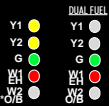
HEATING (1st STAGE)



HEATING (2nd STAGE)



AUXILIARY HEAT



EMERGENCY HEAT



PURGE / CHANGEOVER



DELAY

EQUIPMENT OUTPUT

G

Y1

G

O*

Y1

Y2

G

O*

GAS/ELECT

W1

G

HEAT PUMP

Y1

G

B**

GAS/ELECT

W1

W2

G

HEAT PUMP

Y1

Y2

G

B**

NORMAL

Y1

Y2

W1

G

B**

DUAL FUEL

W1

G

****NOTE: FOR DUAL FUEL "CUT OUT" WILL BE GAS/ELECTRIC HI TEMP

EH

G

STAGE TIMING

SMARTZONE USES BOTH TIME & TEMPERATURE TO STAGE UP AND DOWN

*NOTE: "O" WILL ENERGIZE FOR HEAT PUMP IF DIP SWITCH #2 IS SET TO "O"



8 min



8 min



4 min



2 min

AFTER 2ND STAGE

TEMP LIMITS

TO SET HI TEMP. & LO TEMP USE UP AND DOWN BUTTONS (SEE CONFIGURATION)

CUT OUT: SUPPLY TEMP < LOW TEMP

CUT IN: SUPPLY TEMP > LOW TEMP + 10°

CUT OUT: SUPPLY TEMP < LOW TEMP + 4°

CUT OUT: SUPPLY TEMP > HI TEMP

CUT IN: SUPPLY TEMP < HI TEMP - 25°

CUT OUT: SUPPLY TEMP > HI TEMP - 10°

CUT IN: SUPPLY TEMP < HI TEMP - 15°

CUT OUT: SUPPLY TEMP > HI TEMP - 5°

CUT IN: SUPPLY TEMP < 90°

CUT OUT**:** SUPPLY TEMP > 100°

- EMERGENCY HEAT CAN ONLY BE OPERATED BY A HEAT PUMP THERMOSTAT CONNECTED TO THE ZONE 1 THERMOSTAT "W" TERMINAL. WHEN ZONE 1 THERMOSTAT CALLS FOR EMER. HEAT, THE SMARTZONE SYSTEM WILL BE LOCKED INTO EMERGENCY HEAT.
- WHEN IN EMERGENCY HEAT, THE COMPRESSOR WILL NOT ENERGIZE. HEATING CALL FROM ZONE 2 WILL BE TREATED BY THE SMARTZONE SYSTEM AS EMER. HEAT TO THE EQUIPMENT (INCLUDING W OR Y CALL FROM ZONE 2) AND COOLING CALLS FROM ZONE 2 WILL BE IGNORED
- TO UNLOCK EMER. HEAT, MAKE A CALL FOR COMPRESSOR (NORMAL HEAT OR COOLING) CALL ON ZONE 1 THERMOSTAT

IF ZONE THERMOSTATS ARE CALLING FOR A DIFFERENT MODES (HEAT & COOL) AT THE SAME TIME, SMARTZONE WILL INITIATE A PURGE/CHANGEOVER AFTER 15 MINUTES OF RUN TIME IN ONE MODE. DURING PURGE (3 MINUTES), THE EQUIPMENT FAN (G) WILL RUN AND THE LAST-CALLING ZONE DAMPERS WILL REMAIN OPEN. AFTER THE PURGE, THE EQUIPMENT WILL ENERGIZE IN THE NEW MODE AND THE CORRECT DAMPERS WILL OPEN AND CLOSE. THIS WILL OCCUR EVERY 15 MINUTES UNTIL CALLS ARE SATISFIED. A 180 SECOND COUNTDOWN (3 MIN) WILL APPEAR ON THE DISPLAY.

3 MINUTE MINIMUM OFF TIME FOR EQUIPMENT. DURING DELAY ALL DAMPERS OPEN. COUNTDOWN TIMER ON DISPLAY WITH WORD DELAY. NO FAN (G) DURING DELAY



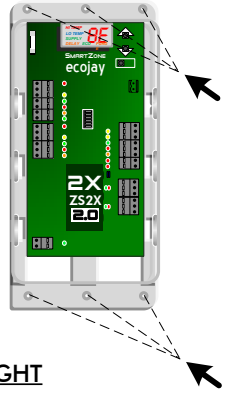
1

MOUNTING

ALSO MOUNT SECURELY BEFORE PROCEEDING WITH INSTALLATION:

- TRANSFORMER
- DAMPERS
- THERMOSTATS

MOUNT SMARTZONE TO ANY STABLE SURFACE USING AT LEAST 2 SCREWS.



2

DIP SWITCHES

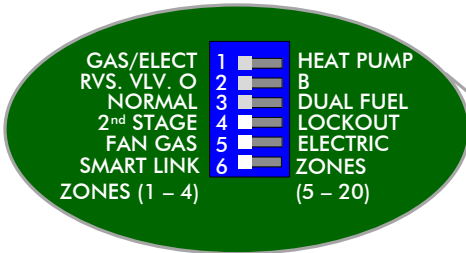
SET ACCORDING TO HVAC SYSTEM SPECS.

SWITCH

← LEFT

→ RIGHT

1. EQUIPMENT TYPE	← GAS/ELECTRIC (STANDARD)	→ HEAT PUMP (INC. DUAL FUEL)
2. REVERSING VALVE	← ON IN COOLING "O"	→ ON IN HEATING "B"
3. AUX. HEAT	← ELECTRIC (COMPRESSOR + W1)	→ GAS AUX [W1] (NO COMPRESSOR)
4. 2 ND STAGE	← ACTIVE (NORMAL)	→ 2 ND STAGE WITH 2+ ZONE CALLS
5. FAN DELAY	← GAS (90 SEC FAN DELAY IN HEAT)	→ ELECTRIC (NO FAN DELAY)
6. SMARTLINK	← ONLY USED FOR MORE THAN 4 ZONES	→ DON'T SET, EXCEPT FOR 5+ ZONES



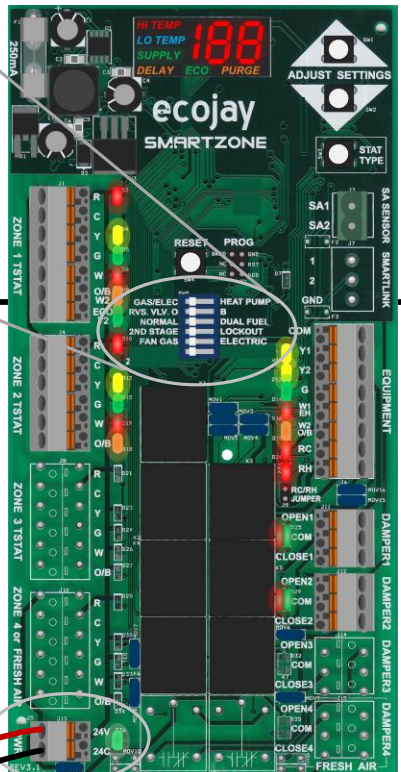
3

POWER

FUSE SIZE

FUSE SIZE SHOULD BE SELECTED BASED ON TRANSFORMER USED. BELOW IS A "RULE OF THUMB" FOR COMMON TRANSFORMER SIZES.

TRANSFORMER (24V)	FUSE SIZE
40 VA	2A
75 VA	3A
100 VA	4A



PRIMARY
DEDICATED
CIRCUIT
BREAKER
PREFERRED



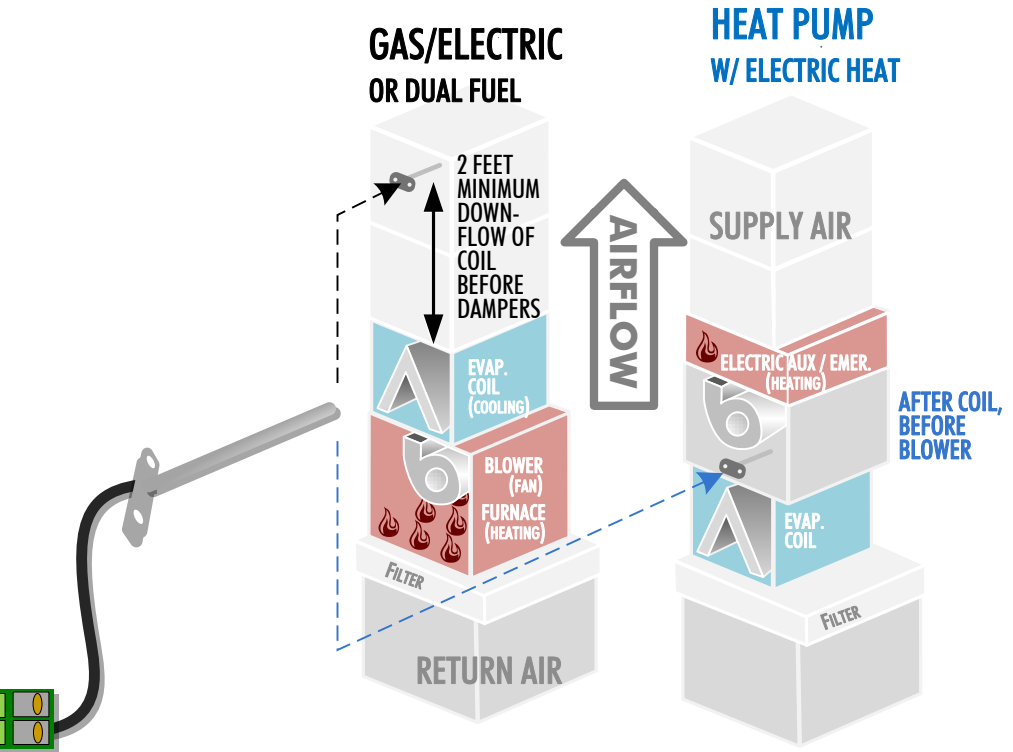
NOT INCLUDED

PART # ZS2X-2.0 (2-ZONE) PICTURED

4

TEMP SENSOR PLACEMENT

SUPPLY AIR TEMPERATURE SENSOR INCLUDED WITH SMARTZONE. DRILL 1/4" HOLE IN SUPPLY PLENUM WHERE SHOWN IN DIAGRAM. MOUNT AND SEAL TEMPERATURE SENSOR IN PLACE.



TRANSFORMER SIZE

(FIELD SUPPLIED) CAN BE CALCULATED USING THE SUM OF ALL ZONE SYSTEM DEVICES USING VALUES BELOW

Zone System DEVICE	POWER (MAX)
SmartZone-4X	12 VA
SmartZone-2X	12VA
Power Open/Close Damper	3 VA
Spring Return Damper	10 VA
Typical Thermostat	2 VA

IMPORTANT:
CONNECT TRANSFORMER TO PRIMARY & SMARTZONE ONLY AFTER ALL OTHER WIRING HAS BEEN COMPLETED

EXAMPLE 1 SMARTZONE-4X (12 VA)
 TRANSFORMER + 5 POC DAMPERS (3 VA X 5)
 CALCULATION: + 4 THERMOSTATS (2 VA X 4)
 = 35 VA

FOR THIS EXAMPLE OF A 4-ZONE SYSTEM, USE A 40VA TRANSFORMER & 2A FUSE.

WARNING:

DO NOT USE EQUIPMENT/SYSTEM TRANSFORMER TO POWER ZONE CONTROLLER. SMARTZONE SHOULD HAVE A DEDICATED TRANSFORMER

5

WIRING THERMOSTATS

USE ANY STANDARD 5 or 6 WIRE 24VAC THERMOSTAT

HEAT PUMP

TERMINAL	COLOR	
24VAC (HOT)	RED	R
24VAC (COMMON)	BLUE/BLK	C
COMPRESSOR (COOLING)	YELLOW	Y
FAN (BLOWER)	GREEN	G
EMERGENCY HEAT	WHITE	EH
O / B (REVERSING VLV)	ORANGE	OB

HI TEMP
LO TEMP
SUPPLY
DELAY ECO PURGE

18-20 AWG SOLID WIRE

ECO / AWAY MODE

← MAKES IT EASY TO CONTROL ENTIRE ZONING SYSTEM FROM ZONE 1 THERMOSTAT. SET ECO INPUT TO ON AND ONLY ZONE 1 WILL BE ABLE TO CONTROL EQUIPMENT. TURN ECO OFF AND ZONING WILL OPERATE NORMALLY. ACCESSORY AVAILABLE P# AESW SEE "EXCLUSIVE FEATURES"

GAS/ELECTRIC THERMOSTAT

TERMINAL	COLOR	
24VAC (HOT)	RED	R
24VAC (COMMON)	BLUE/BLK	C
COMPRESSOR (COOLING)	YELLOW	Y
FAN (BLOWER)	GREEN	G
HEAT (ELECT. OR GAS)	WHITE	W

HI TEMP
LO TEMP
SUPPLY
DELAY ECO PURGE

USE G/E TSTAT ONLY FOR G/E EQUIPMENT

SET THERMOSTAT TYPE

ONLY FOR HEAT PUMP, FRESH AIR, & ZONE 1 STAGING APPLICATIONS

➔ PRESS "STAT TYPE" BUTTON TO SELECT ZONE

➔ THEN PRESS THE UP ▲ TO SELECT



THERMOSTAT TYPES

RECOMMENDED

GE = GAS / ELECTRIC

HP = HEAT PUMP

G2 = 2 STAGE GAS/ELECTRIC

H2 = 2 STAGE HEAT PUMP

GE OR **HP**

GE OR **HP**

FA = FRESH AIR

H2 AND G2 ALLOW THERMOSTAT (ONLY ZONE 1) TO CONTROL STAGING. SEE "ZONE 1 STAGING" FOR DETAILS

PUSHBUTTON SETUP
SIMPLE AND EASY
– SEE “CONFIGURATION”

SUPPLY TEMP INCLUDED
– SEE “TEMP SENSOR PLACEMENT”

EXPAND TO 20 ZONES
(SEE “ADVANCED FEATURES”)

EQUIPMENT
HEAT PUMP OR GAS/ELECTRIC

UP TO 2-STAGE COOL & 3-STAGE HEAT

C	24VAC (COM) EQUIPMENT		
Y1	1 ST STAGE COMPRESSOR		
Y2	2 ND STAGE COMPRESSOR		
G	FAN (BLOWER)		
W1	1 ST STAGE HEAT	EH	[EMERGENCY HEAT]
W2	2 ND STAGE HEAT	O/B	[REVERSING VALVE]
Rc	24VAC (R-COOLING)		
Rh	24VAC (R-HEATING)		

● **RC / RH JUMPER (FACTORY INSTALLED) ONLY REMOVE IF THE EQUIPMENT REQUIRES SEPARATE TRANSFORMERS FOR HEAT AND COOL.**
NOTE: RELAYS: [Y1, Y2, & G] SEPARATE FROM RELAYS: [W1/EH & W2/OB]

DAMPERS

24VAC DAMPERS CAN BE USED INCLUDING TWO-WIRE OR THREE-WIRE DAMPERS. 40 VA PER ZONE MAX.

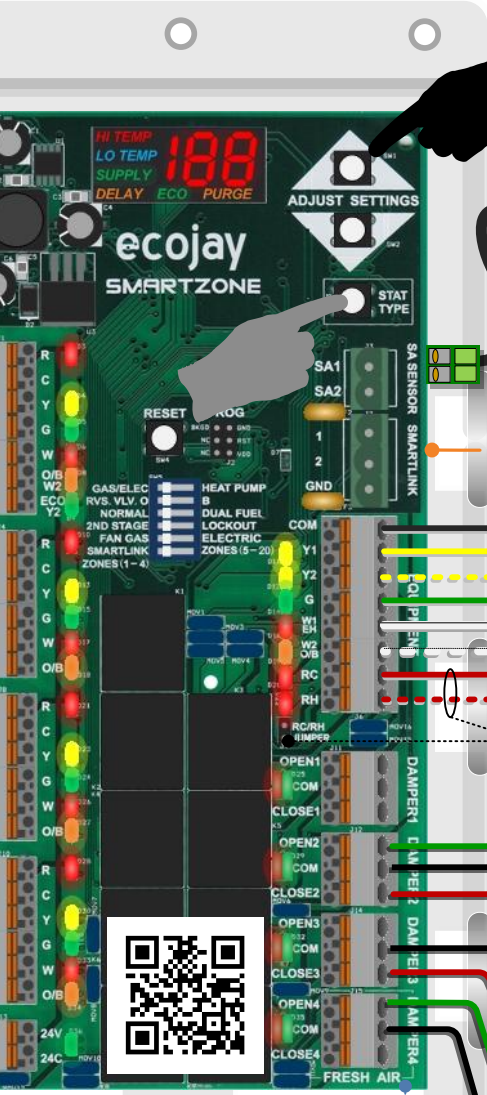
POWER



IF ZONE 4 USED FOR FRESH AIR A SPRING CLOSE DAMPER CAN BE USED TO “FAIL CLOSE”

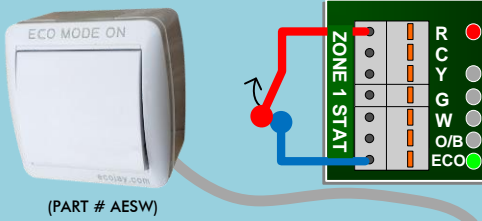
BUILT-IN FRESH AIR CONTROL & ECONOMIZER
SEE “ADVANCED FEATURES”

ecojay



EXCLUSIVE FEATURES

ECO / AWAY MODE



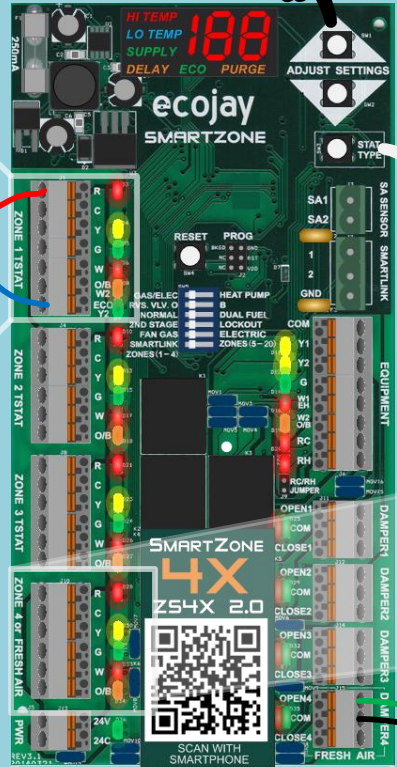
CLOSE SWITCH TO ACTIVATE ECO MODE. ANY STANDARD SWITCH OR DRY CONTACT CAN BE USED. (TEMP SENSOR, SECURITY SYSTEM OUTPUT, ETC) WHEN ECO MODE ACTIVATED, ONLY ZONE 1 THERMOSTAT WILL BE ABLE TO ENERGIZE THE EQUIPMENT. ZONES 2 - 4 WILL CONTINUE TO OPEN AND CLOSE DAMPERS WHEN THE THERMOSTATS IN THOSE ZONES CALL, BUT ONLY IF ZONE 1 IS RUNNING THE EQUIPMENT.

ECO/AWAY

ECO MODE ON ONLY ZONE 1 THERMOSTAT WILL BE ABLE TO ENERGIZE HEAT/COOL EQUIPMENT. OTHER ZONES (2 AND UP) WILL OPEN AND CLOSE TO RECEIVE OR RESTRICT AIRFLOW AS NEEDED, BUT ONLY IF ZONE 1 CAN ENERGIZE THE EQUIPMENT. USE ECO MODE FOR MAXIMUM ENERGY SAVINGS.

COMFORT

NORMAL ZONING MODE. (ECO OFF) EACH ZONE THERMOSTAT CAN ENERGIZE HEATING OR COOLING EQUIPMENT.



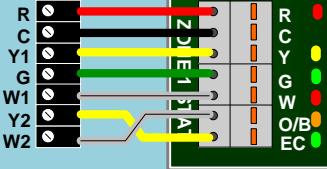
ZONE 1 STAGING

ZONE 1 STAGING CONTROL ALLOWS A MULTI-STAGE THERMOSTAT CONNECTED TO ZONE 1 TO CONTROL UP TO 2 COOL AND 3 HEAT STAGES.

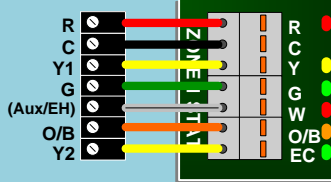
GAS/ELECTRIC MULTI-STAGE THERMOSTAT



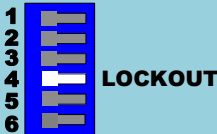
WIRING



OR HEAT PUMP MULTI-STAGE THERMOSTAT



WARNING:
USING THIS FEATURE REDUCES THE EFFECTIVENESS OF SMARTZONE'S ENERGY SAVING STAGING CONTROLS AND MAY INCREASE ENERGY USAGE.



WITH ZONE 1 "STAT TYPE" SET TO G2 OR H2, DIP # 4

- **OFF (DEFAULT)** – SMARTZONE'S ONBOARD STAGING CONTROL [TIME&TEMP] WILL CONTINUE TO OPERATE 2ND STAGE. ZONE 1 STAT WILL BE ABLE TO ENERGIZE 2ND STAGE EARLY BUT WILL NOT PREVENT 2ND STAGE FROM OCCURRING.
- **ON (LOCKOUT)** – SMARTZONE'S ONBOARD STAGING CONTROL DISABLED AND ZONE 1 THERMOSTAT WILL BE ABLE TO CONTROL STAGING. (THIS INCLUDES AUXILIARY HEAT FOR HEAT PUMP)

NOTE: SMARTZONE WILL DELAY 60 SECONDS BETWEEN 1ST STAGE START AND 2ND STAGE START. ALSO, A 3 MINUTE MINIMUM OFF TIME IS IMPLEMENTED FOR ALL EQUIPMENT CALLS. STAGING FROM ZONE 1 THERMOSTAT WILL NOT OVER-RIDE THESE TIME DELAYS.

NOTE 2: WHEN ZONE 1 STAT TYPE IS SET TO G2 OR H2, "ECO MODE" IS DISABLED. TO ENABLE ECO MODE, SET ZONE 1 STAT TYPE TO GE OR HP.

ADVANCED FEATURES

FRESH AIR CONTROL (IAQ) SMARTZONE-4X VERSION 8E FIRMWARE ONLY

SMARTZONE-4X CAN AUTOMATICALLY ENERGIZE FAN (G) AND OPEN THE FRESH AIR DAMPER (ZONE 4) FOR A CONFIGURABLE # MINUTES PER HOUR (FRESH AIR RUN TIME)

OPERATION

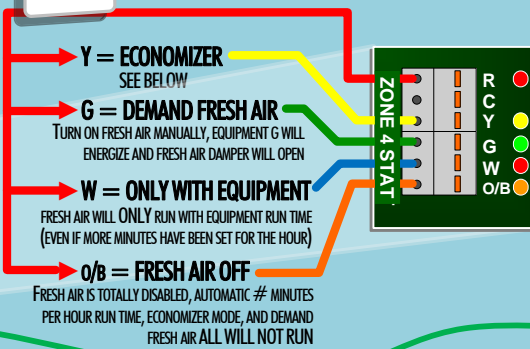
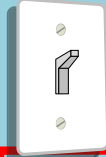
FRESH AIR RUN-TIME IS ATTEMPTED DURING EQUIPMENT CALLS BUT WILL BE COMPLETED AT THE END OF THE HOUR AUTOMATICALLY TO SATISFY THE FRESH AIR RUN-TIME SET BY USER EVEN IF EQUIPMENT HAS NOT RUN



WHEN ZONE 4 IS CONFIGURED AS FRESH AIR, CONNECTING A SWITCH OR SENSOR (24VAC) TO THE ZONE 4 THERMOSTAT TERMINALS WILL ACTIVATE ADVANCED FRESH AIR FEATURES.

CLOSED = **ENABLED**, OPEN = **DISABLED**

FOR BASIC FRESH AIR: DO NOT CONNECT TO THESE TERMINALS.



FRESH AIR CONFIGURATION

1. PRESS STAT TYPE BUTTON TO SELECT ZONE 4
2. PRESS UP ▲ BUTTON TO SELECT FA
3. PRESS STAT TYPE AGAIN
4. PRESS ▲ ▼ TO SELECT THE # OF MINUTES PER HOUR FOR FRESH AIR RUN TIME (IN 5 MINUTE INCREMENTS)
5. PRESS STAT TYPE AGAIN (OR WAIT 5 SECONDS) TO STORE SETTINGS

WIRING

FRESH AIR DAMPER

OPEN COM



ECONOMIZER

IF ZONE 4 SET TO "FRESH AIR MODE" (SEE ABOVE), THE Y TERMINAL ON ZONE 4 CAN BE ENERGIZED BY ANY 24V OR DRY CONTACT INPUT (OUTDOOR TEMP SENSOR) TO ACTIVATE "ECONOMIZER MODE". WHEN IN "ECONOMIZER MODE" COOLING CALLS FROM ZONES 1 - 3 WILL ACTIVATE ECONOMIZER RUN:

- FRESH AIR DAMPER (Z-4) WILL OPEN
- EQUIPMENT FAN (G) WILL ENERGIZE
- ZONE DAMPERS CALLING FOR COOLING WILL OPEN
- EQUIPMENT COMPRESSOR (Y1) WILL NOT ENERGIZE INITIALLY
- IF THE SUPPLY TEMPERATURE DROPS BELOW THE LOW TEMP LIMIT**, THE FRESH AIR DAMPER WILL CLOSE BUT G WILL CONTINUE TO RUN UNTIL THE SUPPLY TEMPERATURE RISES BACK ABOVE LOW TEMP LIMIT
- ECONOMIZER MODE WILL STOP (FA DAMPER CLOSES) AND NORMAL COOLING (Y1) WILL START IF THE SUPPLY TEMPERATURE RISES ABOVE THE ECONOMIZER MODE LIMIT FOR 3 MINUTES.

ECONOMIZER MODE LIMIT

TO SET SEE "HI & LO TEMP LIMITS"

- AFTER 3 MINUTES, IF THE SUPPLY TEMPERATURE RISES HIGHER THAN THE ECONOMIZER MODE LIMIT SETTING, ECONOMIZER WILL TURN OFF AND COMPRESSOR WILL ENERGIZE. (FRESH AIR DAMPER WILL CLOSE)

FOR MORE INFORMATION ABOUT SMARTZONE APPLICATIONS & FEATURES GO TO ECOJAY.COM

ASHRAE 62.2 NOTES

1. DETERMINE THE **FRESH AIR CFM** TO COMPLY WITH ASHRAE 62.2 USING THE TABLE BELOW OR THIS FORMULA:
$$[(\text{TOTAL SQ. FT.})/100] + [(\text{\# OF BEDROOMS} + 1) \times 7.5]$$

FRESH AIR CFM

Floor Area	BEDROOMS				
	0-1	2-3	4-5	6-7	>7
< 1500	30	45	60	75	90
1501- 3000	45	60	75	90	105
3001- 4500	60	75	90	105	120
4501- 6000	75	90	105	120	135
6001- 7500	90	105	120	135	150
>7500	105	120	135	150	165

2. MEASURE THE CFM PROVIDED BY THE FRESH AIR DAMPER WITH AN ANEMOMETER
3. CALCULATE **FRESH AIR RUN TIME** AND SET THIS # AS DESCRIBED ABOVE IN STEP 4

FRESH AIR RUN TIME Min Per Hour

$$= 60 \times \left(\frac{\text{FRESH AIR CFM}}{\text{MEASURED-CFM}} \right)$$

ADVANCED FEATURES

20 ZONES - SMARTLINK

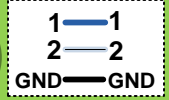
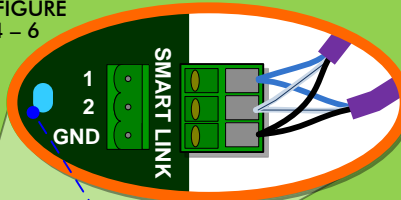
SMARTZONE-4X VERSION 8E FIRMWARE ONLY
 FIRMWARE VERSION SHOWN ON
 DISPLAY AFTER RESET OR POWER UP

CONNECT UP TO FIVE SMARTZONE-4X BOARDS FOR 8, 12, 16, OR 20 ZONES

FIRMWARE VERSION MUST MATCH ON ALL BOARDS FOR SMARTLINK FEATURE

ON ZONES 5 THRU 20 BOARDS, CONFIGURE DIP SWITCHES #1 - 3 NORMALLY & #4 - 6 AS SHOWN BELOW

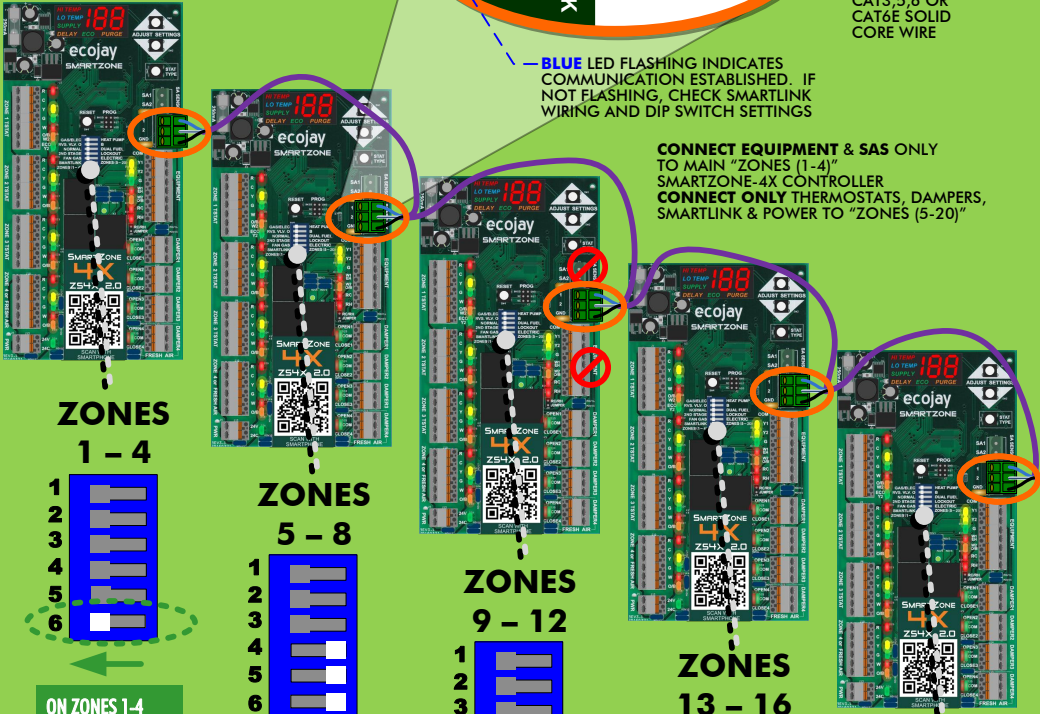
ON ZONES 1-4, CONFIGURE DIP SWITCHES #1-5 NORMALLY. SEE **DIP SWITCHES**



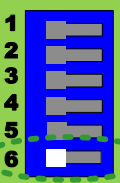
CAT3, 5, 6 OR CAT6E SOLID CORE WIRE

— BLUE LED FLASHING INDICATES COMMUNICATION ESTABLISHED. IF NOT FLASHING, CHECK SMARTLINK WIRING AND DIP SWITCH SETTINGS

CONNECT EQUIPMENT & SAS ONLY TO MAIN "ZONES (1-4)" SMARTZONE-4X CONTROLLER. CONNECT ONLY THERMOSTATS, DAMPERS, SMARTLINK & POWER TO "ZONES (5-20)"



ZONES 1 - 4



ON ZONES 1-4 MAKE SURE DIP SWITCH #6 IS TO THE LEFT

CONNECT EQUIPMENT & SAS "ZONES (1-4)" SMARTZONE-4X CONTROLLER

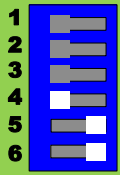
ZONES 5 - 8



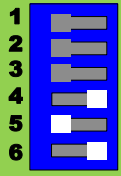
ZONES 9 - 12



ZONES 13 - 16



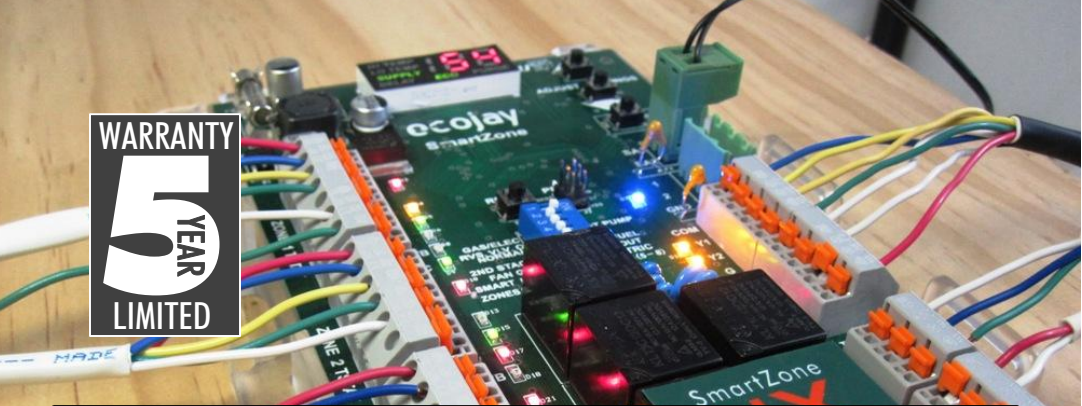
ZONES 17 - 20



NOTE: FRESH AIR & ZONE 1 STAGING CONTROLLED THROUGH THE ZONES 1-4 SMARTZONE BOARD. CONNECT EQUIPMENT & SUPPLY TEMP SENSOR ONLY TO ZONES 1-4 SMARTZONE BOARD.



NOTE: IF MULTIPLE TRANSFORMERS ARE USED FOR A SMARTLINK APPLICATION, THE PRIMARY AND SECONDARY POLARITY MUST BE THE SAME ON ALL SMARTZONE-4X BOARDS.



POWER	SmartZone-2X SmartZone-4X	12VA MAX (375 mA @ 24VAC) [2X = 12VA, 8X = 24VA, etc] If multiple transformers are used in 5+ Zone systems (see SmartLINK, the primary and secondary polarities must be the same for both transformers and on both ZS4X boards.																	
	SYSTEM	12VA + Thermostat (3VA) + Damper (3 to 10 VA) = Total Transformer Size																	
	PROTECTION	Integrated 5X20mm 250mA Fuse – One replacement also included. (Field supplied transformer should also be fused)																	
OUTPUTS	EQUIPMENT	10 AMP @ 24VAC Contact Rating RH – 24VAC HOT from Heating Transformer on Equipment (RED LED) RC – 24VAC HOT from Cooling Transformer on Equipment (RED LED) C – 24VAC COMMON from Transformer on Equipment (none) Y1 – 1 st Stage Compressor (YELLOW LED) Y2 – 2 nd Stage Compressor (YELLOW LED) G – Fan (GREEN LED) W1/EH – 1 st Stage Heat OR Emergency Heat (RED LED) W2/OB – 2 nd Stage Heat OR Reversing Valve (RED LED)																	
	DAMPERS	10 AMP @ 24VAC Contact Rating (40VA) Power-Close / Spring-Open Dampers (10VA) Power-Open / Spring-Close Dampers (10VA) Power-Open / Power-Close Dampers (3VA)																	
	SmartLINK (4X ONLY)	COMM – 3 Wire Communications to SmartLINK (BLUE LED) [Use CAT5 wire]																	
INPUTS	THERMOSTAT	<u>LABEL – DESCRIPTION (LED COLOR)</u> R – 24VAC HOT (RED LED) C – Common Y – Compressor (YELLOW LED) G – Fan (GREEN LED) W – Heat OR Emergency Heat (RED LED) O/B – Reversing Valve (ORANGE LED) EC – Economy Input (GREEN LED) ← Zone ONE only																	
	TEMPERATURE	10K Type III Thermistor SA Sensor – 4" Supply Air Temperature Sensor Stainless Steel Probe (Provided with each SmartZone)																	
CONFIG & SETUP	DIP SWITCHES	DISPLAY MENU																	
	<p>Gas/Electric or Heat Pump Reversing Valve O or B for Heat Pump Normal or Dual Fuel for Heat Pump Allow 2nd Stage ALWAYS or ONLY with more than 1 Zone Fan Electric or Fan Gas SmartLINK Equipment (Zones 1-4) or Adder Zones (Zones 5-20)</p> <table border="0"> <tr> <td>GASELECT</td> <td><input type="checkbox"/></td> <td>HEAT PUMP</td> </tr> <tr> <td>RVS. VLV. O</td> <td><input type="checkbox"/></td> <td>B</td> </tr> <tr> <td>NORMAL</td> <td><input type="checkbox"/></td> <td>DUAL FUEL</td> </tr> <tr> <td>2ND STAGE</td> <td><input type="checkbox"/></td> <td>LOCKOUT</td> </tr> <tr> <td>FAN GAS</td> <td><input type="checkbox"/></td> <td>ELECTRIC</td> </tr> <tr> <td>SMART LINK</td> <td><input type="checkbox"/></td> <td>ZONES (5 – 20)</td> </tr> </table> <p>4X ONLY SMART LINK ZONES (1 - 4)</p>	GASELECT	<input type="checkbox"/>	HEAT PUMP	RVS. VLV. O	<input type="checkbox"/>	B	NORMAL	<input type="checkbox"/>	DUAL FUEL	2ND STAGE	<input type="checkbox"/>	LOCKOUT	FAN GAS	<input type="checkbox"/>	ELECTRIC	SMART LINK	<input type="checkbox"/>	ZONES (5 – 20)
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FAN GAS	<input type="checkbox"/>	ELECTRIC																	
SMART LINK	<input type="checkbox"/>	ZONES (5 – 20)																	

SMARTZONE SPECIFICATIONS

SET USING BUTTONS

- ▼ **LO TEMP** Cut-Out
- ▲ **HI TEMP** Cut-Out
 - GAS/ELECTRIC
 - HEAT PUMP
- ▲ **AUX HEAT** Cut-In

Default (°F) [Range]

- 48** [41 – 52]
- 135** [125 – 150]
- 120** [110 – 125]
- 90** [90 – 94]

ADJUST SETTINGS



TROUBLESHOOTING

SYMPTOM

- [2, 5, 6] EQUIPMENT CALLS DON'T MATCH THERMOSTAT CALLS (STAT CALLS FOR HEAT, EQUIPMENT CALLS FOR COOL AND VICA VERSA)
- [5, 6, 7] NO TEMPERATURE ON DISPLAY
- [5, 6, 7] NO DISPLAY
- [5, 7] NO GREEN POWER LED
- [1, 2, 5, 6, 7] STATS ARE CALLING BUT EQUIPMENT IS NOT
- [1, 2, 6, 7] EQUIPMENT IS CALLING BUT STATS ARE NOT
- [1, 3, 4] NOISE AT AIR REGISTER
- [1, 3, 4, 6C] SHORT CYCLING EQUIPMENT
- [1, 3, 4, 6C] CONDENSATION ON PLENUM
- [1, 5, 6, 7] NOT STAGING PROPERLY
- [2, 6, 7] THERMOSTATS NOT CALLING
- [1, 2, 5, 6, 7] EQUIPMENT NOT RUNNING
- [3, 5, 6, 7] DAMPERS NOT OPENING/CLOSING
- [3, 5, 6, 7] DAMPER LEDS NOT CORRECTLY SHOWING OPERATION
- [2, 6, 7] STAT LEDS DO NOT MATCH STAT CALLS
- [1, 3, 4, 6, 7] PLENUM TEMPERATURE NOT READING CORRECTLY
- [1, 3, 4] NOT ENOUGH AIRFLOW IN THE LOAD SPACE
- [1, 3, 4] NOT PROPERLY HEATING OR COOLING SPACE WHEN ALL ZONES CALLING
- [3, 4] NOT PROPERLY HEATING OR COOLING WHEN CERTAIN ZONES CALL
- [6, 7] NOT CHANGING-EQUIPMENT MODES PROPERLY OR AT ALL
- [1, 2, 3, 4, 6] EMERGENCY HEAT NEVER ENERGIZES / AUX. HEAT ENERGIZES TOO SOON

POSSIBLE CAUSE

- 1 HVAC EQUIPMENT**
REFRIGERANT CHARGE, FAN SPEED, WIRING, POWER, ETC (ANY PROBLEM ASSOCIATED WITH THE EQUIPMENT)
- 2 THERMOSTATS**
 - A. INCOMPATIBLE (POWER STEALING/NO COMMON)
 - B. DEFECTIVE THERMOSTAT
 - C. WIRING DEFECT
 - D. "STAT TYPE" SETUP (HEAT PUMP ONLY)
- 3 ZONE DAMPERS/DUCT**
 - A. ACTUATOR FAILURE
 - B. MECHANICAL FAILURE (INCLUDING INSULATION)
 - C. DUCT SIZING (NOT ENOUGH OR TOO MUCH CFM)
 - D. WIRING DEFECT
- 4 PRESSURE BYPASS/RELIEF**
 - A. ACTUATOR FAILURE
 - B. SENSOR (STATIC PRESSURE SENSOR DEFECT)
 - C. MECHANICAL FAILURE
 - D. SETUP (MODULATING CALIBRATION OR WEIGHT ARM SETTING)
 - E. ORIENTATION OF INSTALLATION (SPC OR BAROMETRIC BYPASS)
 - F. IMPROPER SIZING (NOT ENOUGH CFM CAPACITY)
 - G. WIRING DEFECT
- 5 POWER**
 - A. TRANSFORMER FUSE
 - B. WIRING DEFECT
 - C. PRIMARY CIRCUIT PROBLEM (SHARED/CAPACITY, BREAKER)
 - D. IMPROPERLY SIZED TRANSFORMER (NOT ENOUGH VA)
 - E. DEFECTIVE TRANSFORMER
- 6 SMARTZONE SETUP/CONFIG**
 - A. DIP SWITCHES SET INCORRECTLY
 - B. THERMOSTAT "TYPE" (FOR HP MUST MATCH THERMOSTATS)
 - C. TEMPERATURE LIMIT SETTINGS (HI & LO LIMITS SHOULD BE SET TO MATCH APPLICATION)
 - D. TEMPERATURE SENSOR LOCATED INCORRECTLY OR NOT PLUGGED IN
 - E. ECO MODE SETTING
 - F. FRESH AIR SETTINGS
- 7 SMARTZONE CONTROL PANEL**
 - A. WIRING (ENSURE WIRED STRIPPED AT LEAST 1/3")
 - B. FUSE (FIELD REPLACABLE 300 MA, SPARE INCLUDED)
 - C. DEFECTIVE COMPONENT (REPLACE BOARD ONLY IN THIS CASE)



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