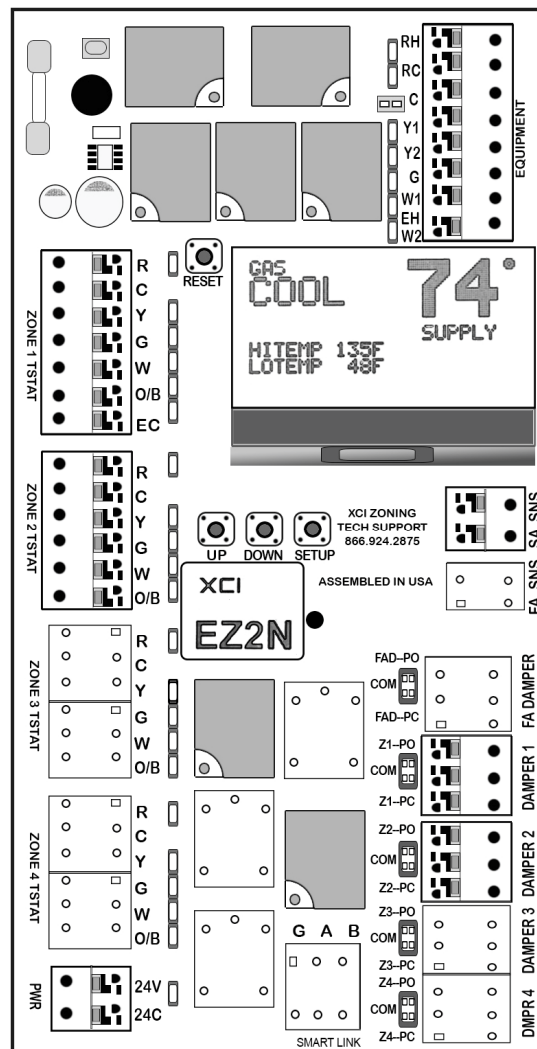


XCI

ZONING SYSTEMS

An ISO 9001:2015 Company

EZ2N 2-ZONE CONTROLLER



READ THIS INSTALL GUIDE COMPLETELY BEFORE INSTALLING CONTROLLER

Zone Controller Installation and Start-up Guide v20

MOUNTING

Mount the controller near the HVAC equipment. It can be mounted on a wall, stud, roof tress or the supply ductwork. It can be mounted in any orientation, including flat on top of the supply plenum. When mounting in a vertical position it should be leveled for a good appearance.

1. Remove the clear lid from the enclosure.
2. Place the controller in the desired position and use the base as a template to mark the hole locations.
3. Attach the controller to the surface with the appropriate screws (not included). If attaching the controller to drywall or ductboard, use hollow wall anchors to secure in place.

POWER

(SEE NOTE BELOW REGARDING A2L DISSIPATION)

The XCI System **REQUIRES A SEPARATE 24 VAC TRANSFORMER** (not included) for powering the EZ2N controller, zone thermostats and dampers. It is recommended to install a fuse on the 24 VAC output from the transformer.

TRANSFORMER SIZING

The 24 volt transformer must be sized and fused based on the controller, the total dampers and the thermostats.

XCI Device	Power
EZ2N Controller	10 VA
Power Open/Power Close Damper	3 VA
Spring Return Damper	10VA
Typical Thermostat	2 VA

EXAMPLE: Transformer Calculation:

1 EZ2N (10 VA)
 + 2 POC Dampers (3 VA X 2)
 + 2 Thermostats (2 VA X 2)
 = 20 VA Total

FUSE SIZING RULE OF THUMB

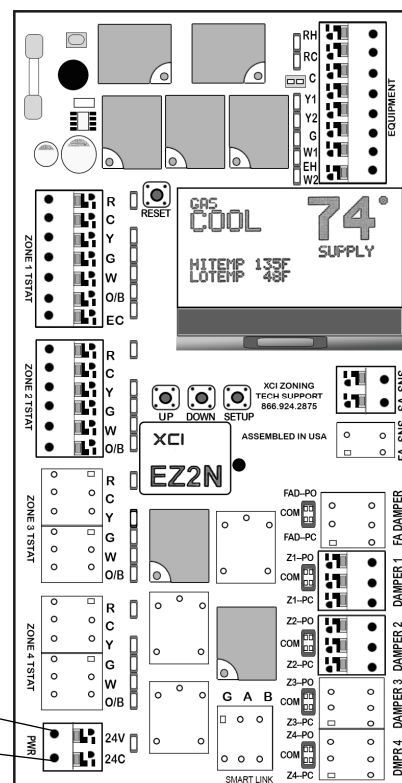
Transformer VA	Fuse Size
40	2 amp
75	3 amp
100	4 amp



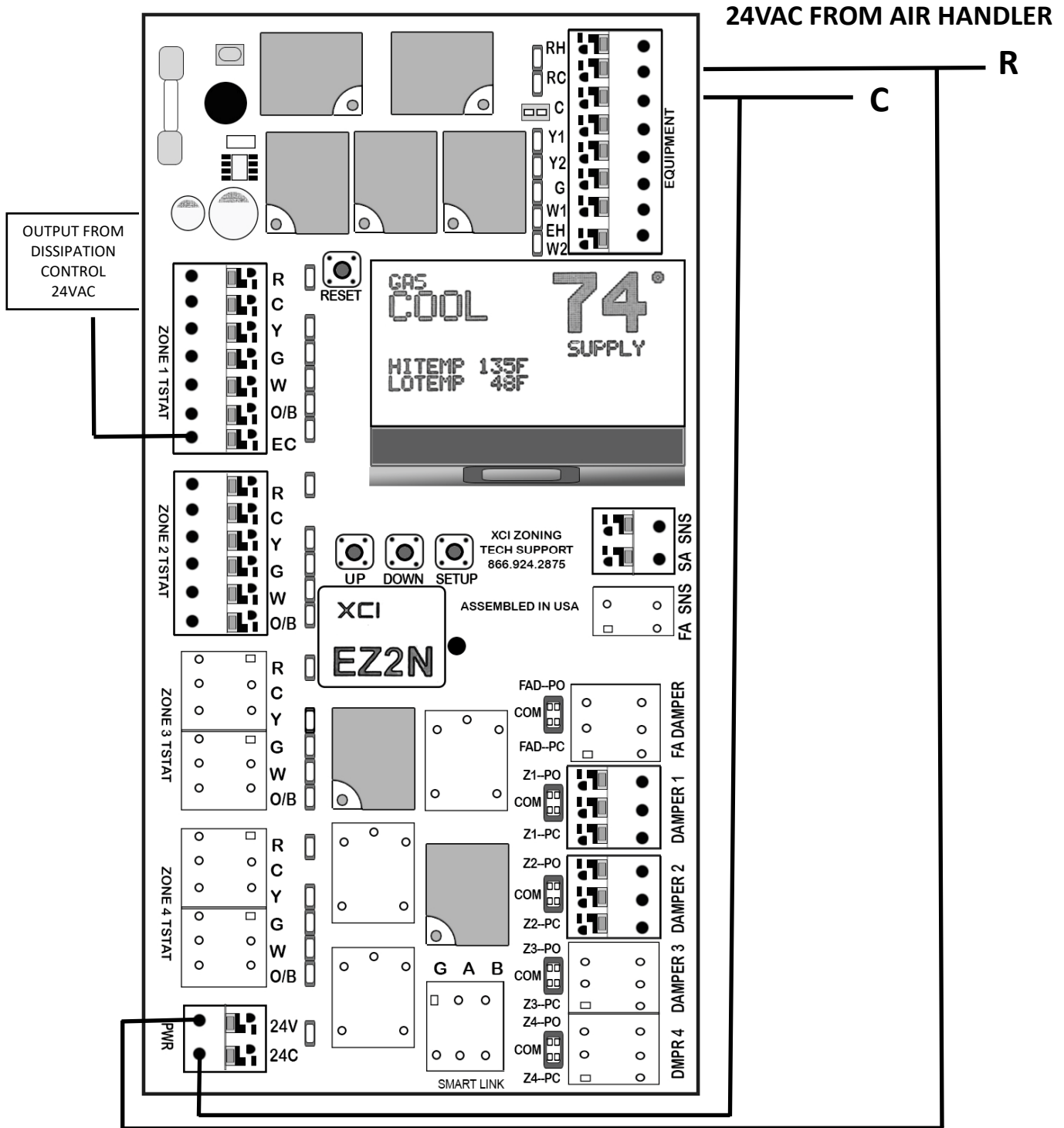
CAUTION: Voltage Hazard. Can cause electrical shock or equipment damage. Disconnect power before beginning installation. Wire entire zone panel before applying transformer power.

A2L DISSIPATION - If using this controller in an application requiring A2L Dissipation, it is recommended to install a larger transformer in the air handler and power **BOTH** the equipment and the zone control board from **ONE** transformer. The A2L Dissipation function **WILL NOT WORK** if using a separate transformer to power the zone control board.

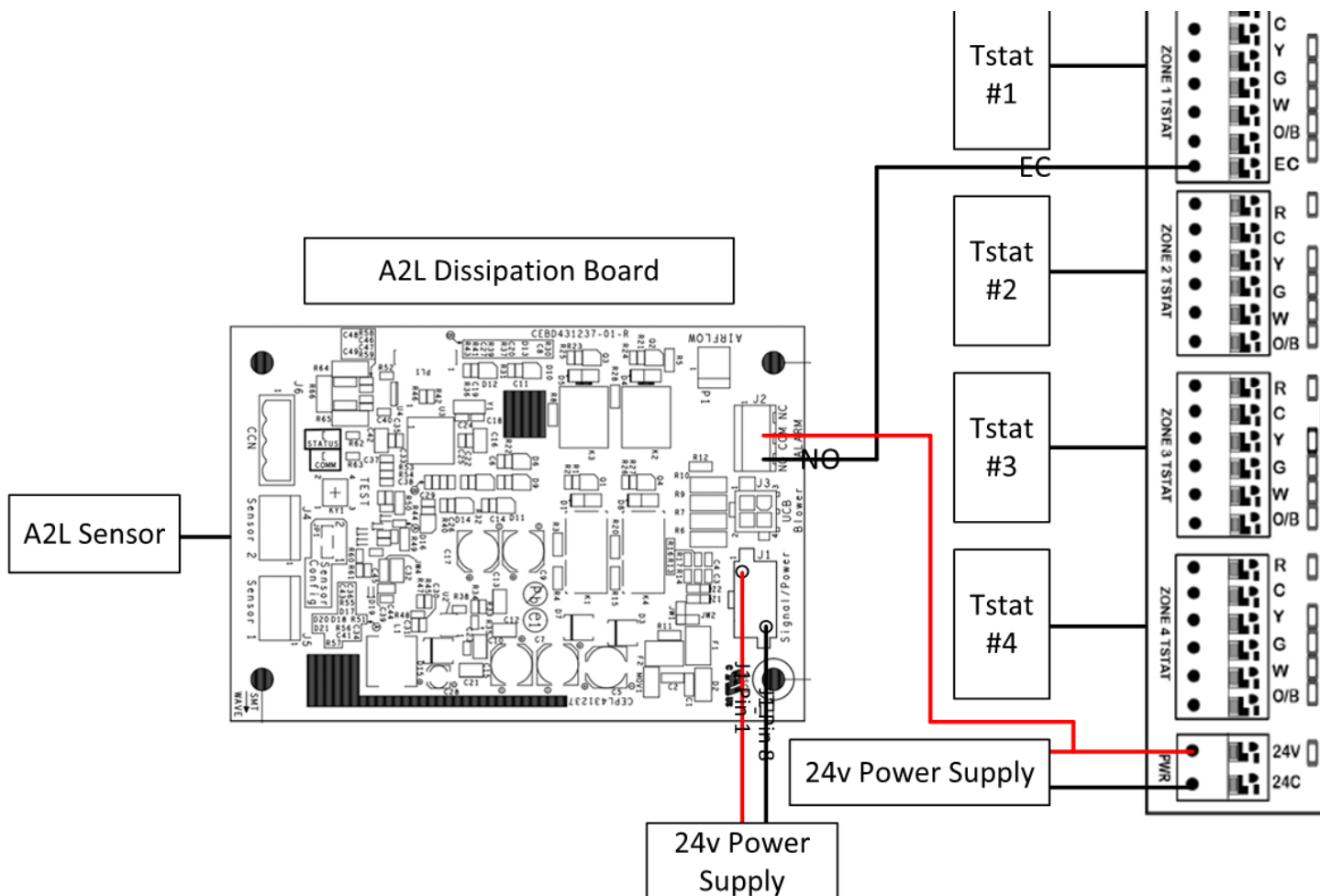
Connect the transformer to the 24V and 24C inputs on the zone control board.



WIRING FOR A2L DISSIPATION



OPTIONAL WIRING FOR A2L DISSIPATION



Wiring Example with Carrier A2L Dissipation Board

This example allows for a separate transformer for the control board.

BE SURE AND CONSULT THE WIRING DIAGRAM ON THE EQUIPMENT YOU ARE CONNECTING TO.

Wiring

Install thermostats using instructions provided with thermostats.

The EZ2N controller is compatible with most thermostats that have a common connection or are battery operated. The EZ2N will use time and supply air temperature, or time only to automatically manage staging. This eliminates the need for multi-stage thermostats.

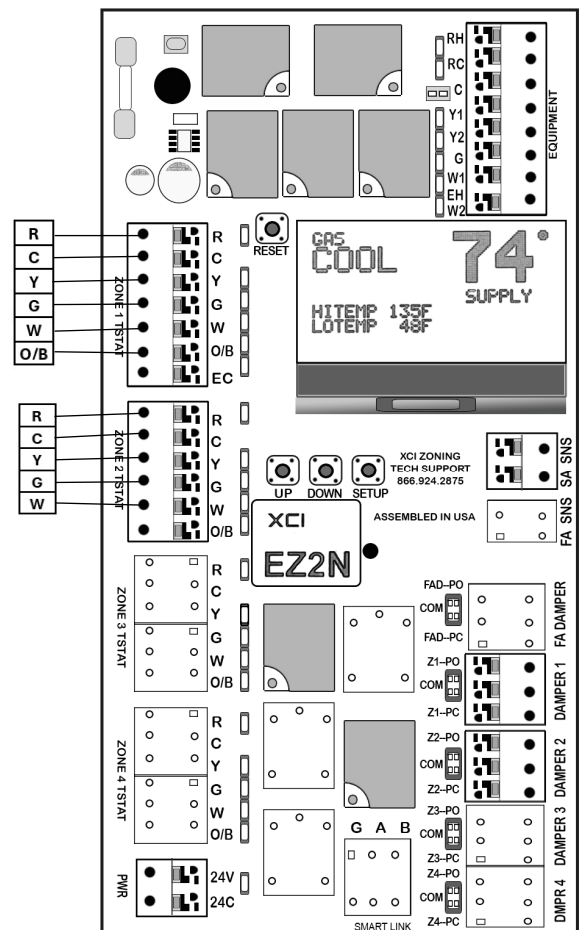
On **HEAT PUMP** equipment ONLY, either Gas/Electric or Heat Pump thermostats can be used. It is recommended to use a Heat Pump thermostat with an Emergency Heat switch on ALL ZONES for heat pump installations.

1. Connect either single stage gas/electric or heat pump thermostats to each terminal block labeled *Zone 1 TSTAT* and *Zone 2 TSTAT*.
2. The Zone 1 TSTAT will operate Damper 1. The Zone 2 TSTAT will operate Damper 2.
3. Using 18 Gauge Solid Thermostat Wire, strip 1/2 inch of insulation from each wire. Hold down the orange button and push the thermostat wire into the SCREWLESS terminals on the control board.
4. Connect the other end of the thermostat wire to the corresponding terminals on the thermostat.
5. To use the **EC** terminal on the Zone 1 TSTAT, a separate switch must be used to supply 24 VAC to this terminal. You may also use a 2-stage thermostat on Zone 1 ONLY if you want to control Zone 1 staging by connecting **Y2** from the thermostat to the **EC** terminal on the Zone 1 terminal block.

HEAT PUMP THERMOSTAT



GAS/ELECTRIC THERMOSTAT



Wiring

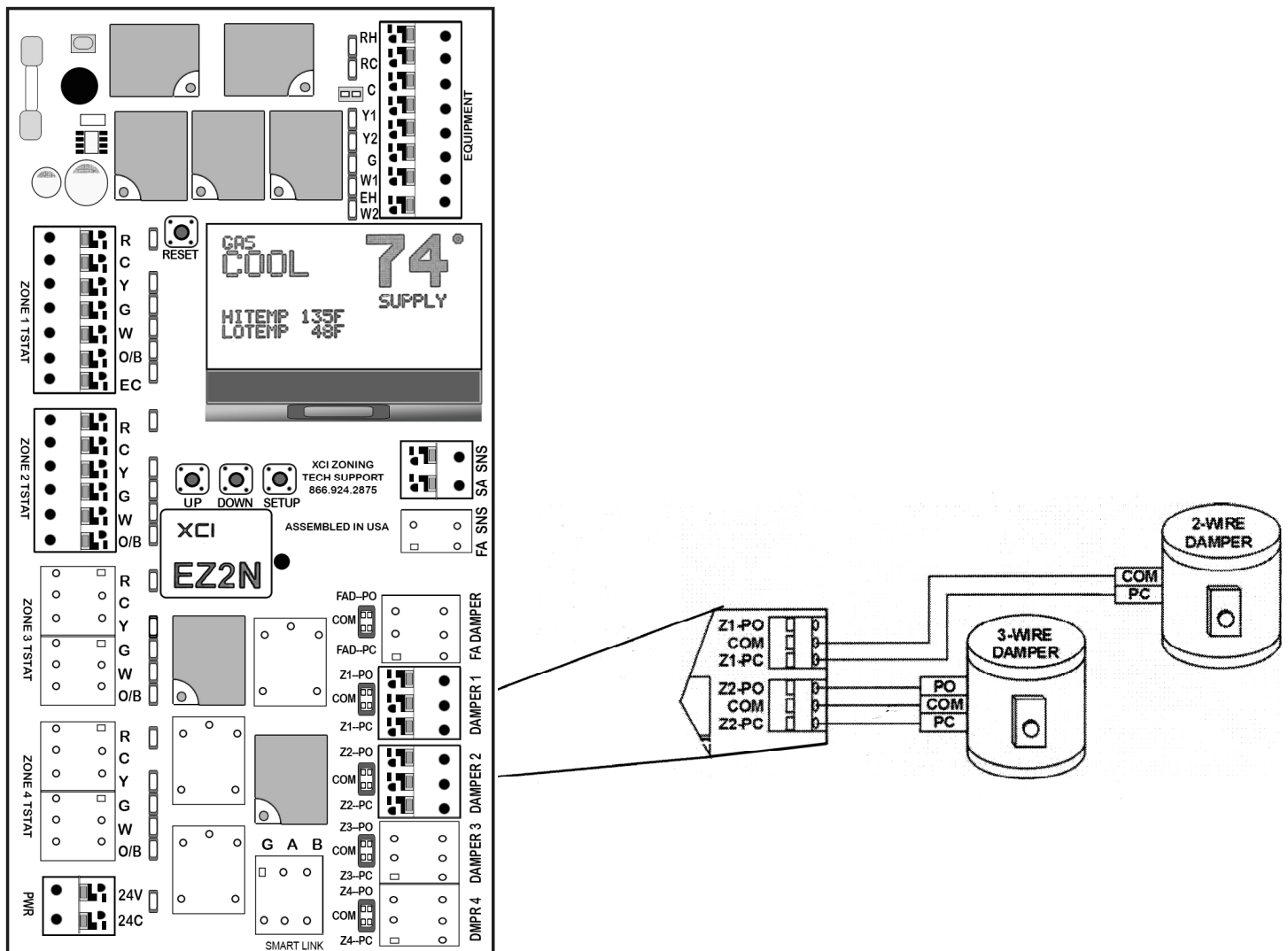
The EZ2N controller will operate either 2-Wire Power Close/Spring Open dampers, or 3-Wire Power Open/Power Close dampers.

Power Close/Spring Open 2-Wire Dampers

1. Use 18/2 or 18/3 solid core wire.
2. Strip 1/2 inch of insulation from each wire.
3. Hold down the orange button on the Damper 1 terminal block labeled **Z1-PC** and **COM** and push the two wires for the zone damper into the SCREWLESS terminals.
4. Connect the other end of the wires to the SCREWLESS terminals on the zone damper.
5. Repeat steps 3 and 4 for the Zone 2 damper.

Power Open/Power Close 3-Wire Dampers

1. Use 18/3 solid core wire
2. Strip 1/2 inch of insulation from each wire.
3. Hold down the orange button on the Damper 1 terminal block and push the three wires for the zone damper into the SCREWLESS terminals. Use **WHITE** for Common (C), **GREEN** for Power Open (PO) and **RED** for Power Close (PC).
4. Connect the other end of the wires to the terminals on the zone damper, using the same color code.
5. Repeat steps 3 and 4 for the Zone 2 damper.



Wiring

Supply Air Temperature Sensor (SAS)

Sensor Placement (Location)

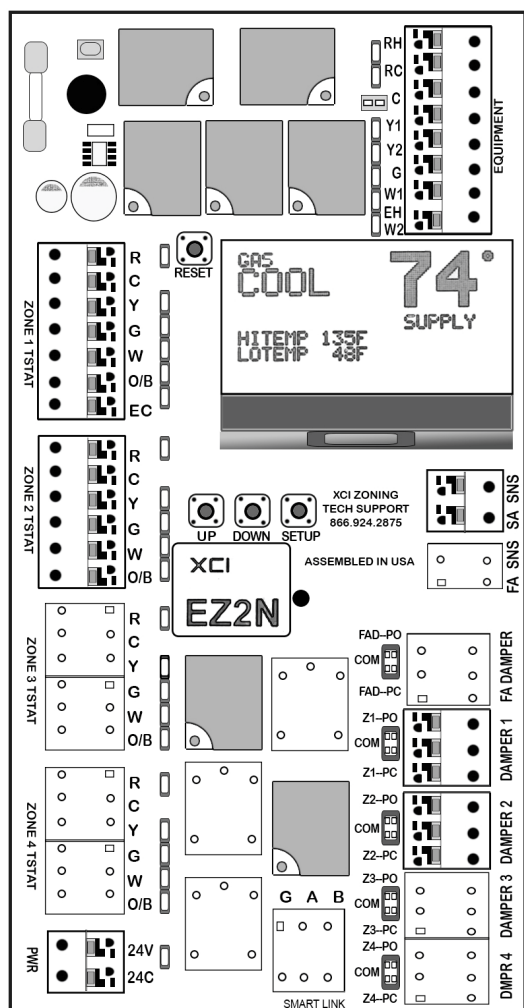
Gas/Electric - The SAS should be located in the Supply Air Plenum where it will sense AVERAGE air temperature within the Plenum. The ideal placement is 2 to 4 feet beyond the evaporator coil. Make sure the sensor is in the air stream and secured properly.

Heat Pump - The SAS should be located inside the air handler cabinet AFTER the evaporator coil but BEFORE the blower. Make sure the sensor is in the air stream and secured properly.

Sensor Wiring

Using the provided SAS, plug the two wires into the connector labeled SA SNS on the EZ2N control board.

NOTE: WITHOUT THE SENSOR, THE CONTROLLER WILL NOT OPERATE PROPERLY. ALL DAMPERS WILL REMAIN OPEN, AND THE CONTROLLER WILL ONLY ACCEPT EQUIPMENT CALLS FROM THE ZONE 1 THERMOSTAT.



PLUG IN SUPPLY AIR SENSOR

THE ZONING SYSTEM WILL NOT OPERATE PROPERLY WITHOUT THE SUPPLY AIR SENSOR PLUGGED IN!



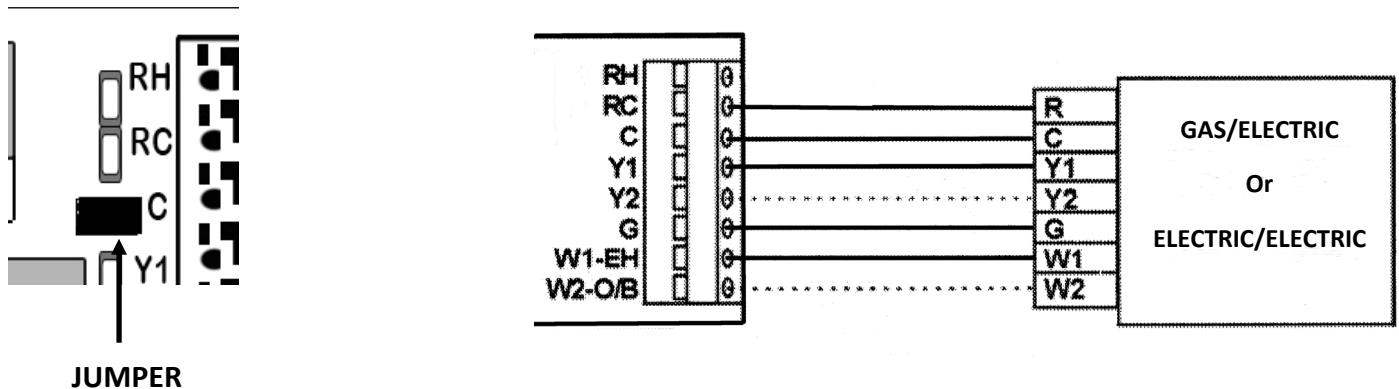
NOTE: IF THE SAS IS NOT PLUGGED INTO THE CONTROLLER, THE TEMPERATURE DISPLAY WILL SHOW TWO DASH LINES. THE CONTROLLER WILL ONLY ACCEPT CALLS FROM THE ZONE ONE THERMOSTAT. ALL DAMPERS WILL REMAIN OPEN.

Wiring

A/C - Gas Furnace and A/C - Electric Furnace

Using 18 gauge solid thermostat wire, connect the Equipment Control Wires from the Indoor Unit to the *EQUIPMENT* terminal block on the top right corner of the controller. Use the terminal labeled **W1/EH** for first stage heat. If using a two-stage furnace, connect **W2/OB** to **W2** on the indoor equipment. Connect **R** from the equipment to **RC** on the controller. Connect **C** from the equipment to **C** on the controller. THE **C** TERMINAL FROM THE EQUIPMENT MUST BE CONNECTED TO THE CONTROLLER FROM THE EQUIPMENT FOR THE **RC** AND **RH** LED'S TO ILLUMINATE. POWER FROM THE EQUIPMENT TRANSFORMER WILL ILLUMINATE THE **RC** AND **RH** TERMINAL LED'S, INDICATING THE EQUIPMENT TRANSFORMER IS CONNECTED.

NOTE: IF USING A TWO-TRANSFORMER SYSTEM, WITH SEPARATE COOLING AND HEATING TRANSFORMERS, CONNECT THE **R** FROM THE COOLING TRANSFORMER TO **RC** ON THE CONTROLLER. CONNECT THE **R** FROM THE HEATING TRANSFORMER TO **RH** ON THE CONTROLLER. REMOVE THE BLACK JUMPER LOCATED JUST BELOW THE RC/RH LED'S TO SEPARATE THE POWER INPUTS.



Electric Heat Pump

Using 18 gauge solid thermostat wire, connect the Equipment Control Wires from the Indoor Unit to the *EQUIPMENT* terminal block on the top right corner of the controller. Use the terminal labeled **W1/EH** for the auxiliary heat strips. Connect the **W2/OB** terminal to the **O/B** terminal on the equipment (REVERSING VALVE). Connect **R** from the equipment to **RC** on the controller. Connect **C** from the equipment to **C** on the controller. THE **C** TERMINAL FROM THE EQUIPMENT MUST BE CONNECTED TO THE CONTROLLER FROM THE EQUIPMENT FOR THE **RC** AND **RH** LED'S TO ILLUMINATE. POWER FROM THE EQUIPMENT TRANSFORMER WILL ILLUMINATE THE **RC** AND **RH** TERMINAL LED'S, INDICATING THE EQUIPMENT TRANSFORMER IS CONNECTED AND WORKING.

NOTE: IF USING A TWO-TRANSFORMER SYSTEM, WITH SEPARATE COOLING AND HEATING TRANSFORMERS, CONNECT THE **R** FROM THE COOLING TRANSFORMER TO **RC** ON THE CONTROLLER. CONNECT THE **R** FROM THE HEATING TRANSFORMER TO **RH** ON THE CONTROLLERS. REMOVE THE BLACK JUMPER LOCATED JUST BELOW THE RC/RH LED'S TO SEPARATE THE POWER INPUTS.

BYPASS ELIMINATION ON SINGLE SPEED SYSTEMS: When the board is set up for 1-speed outdoor unit, the board will energize **Y-2** to the equipment if more than one zone is calling. This allows the use of a 2-speed or multi-speed indoor unit with a **Y-1** and **Y-2** terminal. The indoor fan speeds can be set up to run on a lower speed on **Y-1**, and a higher speed on **Y-2**; eliminating the need for a bypass damper.

INSTALLER SETUP

Option #	Option Name	Options (factory default in bold)	NOT ALL OPTIONS ARE AVAILABLE ON THIS MODEL.
1	Set board function	MAIN EXPANSION	
2	Set expansion address	1 2-9	
3	Set system type	A/C-GAS HEAT A/C-ELECTRIC HEAT ELECTRIC HEAT PUMP DUAL FUEL HEAT PUMP	
4	Set temperature display	FAHRENHEIT CELSIUS	
5	Set outdoor unit speed	1-SPEED 2-SPEED	
6	Set thermostat type	HEAT PUMP GAS/ELECTRIC	
7	Set reversing valve actuation	REV-O REV-B	
9	Set gas high temp cut-out	135 (adjustable 125 to 150)	
10	Set low temp cut-out	40 (adjustable 40 to 52)	
11	Set heat pump high temp cut-out	120 (adjustable 110 to 125)	
12	Set aux heat cut-in temp	95 (adjustable 95 to 100)	
13	Set aux heat cut-in time	3 (adjustable 3 to 20)	
14	Set economizer mode	OFF ON	
15	Set economizer temperature setpoint	55 (adjustable 54 to 75)	
16	Set fresh air minutes per hour	0 (adjustable 0 to 60)	
17	Set fresh air sensor mode	OFF ON	
18	Set fresh air low temp lock-out	20 (adjustable 20 to 40)	
19	Set fresh air high temp lock-out	80 (adjustable 60 to 100)	
20	Set dual fuel HP outdoor low temp lock-out	30 (adjustable 20 to 50)	
21	Set second stage lock-out	OFF ON	
22	Set zone 1 priority	OFF ON	
23	Set auto changeover time	10 15	
24	Disable aux heat staging above 40 degrees	OFF ON	
25	Allow zone 1 thermostat staging	OFF ON	
26	Set 2nd stage cut-in time based on time only	OFF ON	
27	Set 2nd stage cut-in time (temp)	8 (adjustable 8 to 4)	
28	Set 2nd stage cut-in time (time-only)	15 (adjustable 10 to 20)	
29	Set A2L Dissipation Mode	OFF ON	

SEQUENCE OF OPERATION

BYPASS ELIMINATION ON SINGLE SPEED SYSTEMS: When the board is set up for 1-speed outdoor unit, the board will energize **Y-2** to the equipment if more than one zone is calling. This allows the use of a 2-speed or multi-speed indoor unit with a **Y-1** and **Y-2** terminal. The indoor fan speeds can be set up to run on a lower speed on **Y-1**, and a higher speed on **Y-2**; eliminating the need for a bypass damper.

SINGLE STAGE COOLING (A/C AND HEAT PUMP)

On any cooling call from one of the thermostats, the controller will energize the **Y1** and **G** outputs to the equipment. The damper for the zone calling will remain open, and the damper for the zone NOT calling will close. During this call, if the other zone makes a cooling call, the zone damper will open. When a thermostat becomes satisfied, and if a call exists from the other thermostat, the damper on the satisfied zone will close. Once the other thermostat becomes satisfied, the controller will de-energize the **Y1** and **G** outputs to the equipment, and both dampers will open. (system idle)

LOW TEMP CUT-OUT

During a cooling call, if the Supply Air Temperature falls BELOW the LOW TEMP CUT-OUT temperature, the controller will de-energize the **Y1** output to the equipment and will leave the **G** output energized. A 3-minute DELAY TIMER will be displayed. After the 3-minute delay, if the Supply Air Temperature has risen ABOVE the LOW TEMP CUT-OUT temperature, the controller will re-energize the **Y1** output to the equipment.

TWO STAGE COOLING (A/C AND HEAT PUMP)

The EZ2N Controller utilizes built in intelligent SmartStaging. This allows the use of single stage thermostats on both zones. The controller will energize and de-energize second stage based on elapsed run time and the supply air temperature, or elapsed time only. If set up for time and temperature, on an initial call for cooling, the controller will energize the **Y1** and **G** outputs to the equipment. After an initial run time of 8 MINUTES, (adjustable to 6 mins or 4 mins) if the supply air temperature has not fallen to at least **10 DEGREES F (6 DEGREES C)** above the low temp cut-out, the controller will energize **Y2** to the equipment. **Y2** will stay energized until the supply air temperature falls below **4 DEGREES F (1 DEGREE C)** above the low temp cut-out. The controller will then turn off **Y2**. This cycle will continue as the supply air temperature rises and falls. If set up for time only, the controller will energize **Y2** after an initial run time of **20 mins, 15 mins or 10 mins**.

SINGLE STAGE HEATING (GAS & ELECTRIC HEAT / NOT HEATPUMP)

On any heating call from one of the thermostats, the controller will energize the **W1** output to the equipment. After 60 SECONDS of initial run time, the controller will energize the **G** output to the equipment. If the supply air temperature rises above the HIGH TEMP CUT-OUT setting, the controller will de-energize the **W1** output to the equipment. After a 3-minute time delay, if a call still exists and the supply air temperature has fallen below the HIGH TEMP CUT-OUT, the controller will re-energize the **W1** output to the equipment.

TWO STAGE HEATING (GAS & ELECTRIC HEAT / NOT HEATPUMP)

On any heating call from one of the thermostats, the controller will energize the **W1** output to the equipment. After 60 SECONDS of initial run time, the controller will energize the **G** output to the equipment. After 8 MINUTES of initial run time, if the supply air temperature has not risen to at least 25 DEGREES (F°) BELOW the HIGH TEMP CUT-OUT, the controller will energize **W2** to the equipment. The system will run in second stage heating until the supply air temperature rises to 10 DEGREES (F°) below the HIGH TEMP CUT-OUT. The controller will then de-energize **W2**. If the supply air temperature falls to 25 DEGREES (F°) below the HIGH TEMP CUT-OUT, the controller will re-energize **W2**. This staging will continue until the thermostat is satisfied and the controller turns off the equipment.

SINGLE STAGE HEATING - HEATPUMP

On any heating call from one of the thermostats (**Y** if using heatpump thermostats, **W** if using gas/electric thermostats) the controller will energize the **Y1** and **G** outputs to the equipment. A 3-minute minimum run timer will be displayed. After **6 MINUTES** of initial run time (Factory default. Adjustable 3-6 minutes) if the supply air temperature has not reached **95° F (35° C)** (Factory default. Adjustable **95-100° F (32-37° C)**) the controller will energize the **W1** output to the equipment (Auxiliary Heat). The equipment will continue to run in **AUXILIARY HEAT** until the supply air temperature rises to **10° F (6° C)** above the **AUXILIARY HEAT CUT-IN TEMPERATURE**. (Adjusts with Aux. Heat Cut-In Setting). The controller will continue to stage auxiliary heat on and off based on supply air temperature. If the supply air temperature rises above the **HIGH TEMP CUT-OUT** temperature, the controller will de-energize the **Y1** output to the equipment and leave the **G** output energized. A 3-minute compressor delay timer will be displayed. After 3 minutes, if the supply air temperature has fallen below the **HIGH TEMP CUT-OUT** temperature, the controller will re-energize the **Y1** output to the equipment. See staging chart below.

TWO STAGE HEATING - HEATPUMP

On any heating call from one of the thermostats (**Y** if using heatpump thermostats, **W** if using gas/electric thermostats) the controller will energize the **Y1** and **G** outputs to the equipment. After 4 minutes of initial run time, if the supply air temperature has not reached **105° F (41° C)** (15° F (9° C) below the **HIGH TEMP CUT-OUT**), the controller will energize **Y2** to the equipment. **Y2** will remain energized until the supply air temperature reaches **115° F (46° C)** (5° F (1° C) below the **HIGH TEMP CUT-OUT**). The controller will then de-energize **Y2**. The controller will continue to stage **Y2** on and off based on the supply air temperature. After 6 MINUTES of initial run time, if the supply air has not reached at least **90°F (32° C)**, (adjustable 90° to 100°) the controller will energize **W1** to turn on auxiliary heat. **W1** will remain energized until the supply air temperature reached 20° F below the **HIGH TEMP CUT-OUT**. See staging chart below. **NOTE: AUX HEAT TIME AND TEMPERATURE STAGING IS ADJUSTABLE ON TWO-SPEED HEAT PUMP EQUIPMENT. THE SECOND STAGE AND AUX HEAT STAGING TEMPERATURES MOVE UP AND DOWN BASED ON THE HIGH TEMP CUT-OUT SETTING.**

TROUBLESHOOTING CALL TECH SUPPORT **BEFORE** REPLACING EZ2N CONTROLLER.

SYMPTOM	POSSIBLE CAUSE
DISPLAY IS BLANK	<ul style="list-style-type: none"> > VERIFY OUTPUT OF TRANSFORMER, INCLUDING CONNECTIONS TO PRIMARY, SECONDARY AND ZONE PANEL CONNECTOR > CHECK TRANSFORMER FUSE > CHECK FOR SHORT IN WIRING CONNECTED TO ZONE PANEL (REMOVE THERMOSTAT AND DAMPER WIRES) > REPLACE ZONE PANEL FUSE IF RED LED AT FUSE HOLDER IS ILLUMINATED
DISPLAY READS --	<ul style="list-style-type: none"> > SUPPLY AIR TEMPERATURE SENSOR IS NOT CONNECTED TO PANEL > SUPPLY AIR TEMPERATURE SENSOR HAS A LOOSE CONNECTION > SUPPLY AIR TEMPERATURE SENSOR IS DEFECTIVE <p>NOTE: ZONE PANEL WILL ONLY ACCEPT CALLS FROM THE ZONE 1 THERMOSTAT AND WILL NOT CONTROL DAMPERS WHEN NO SUPPLY AIR SENSOR IS DETECTED</p>
THERMOSTAT INDICATES CALL BUT EQUIPMENT TERMINALS NOT RESPONDING	<ul style="list-style-type: none"> > CONTROLLER IS IN "DELAY" OR "PURGE" - DISPLAY WILL SHOW TIMER COUNTING DOWN FROM 3 MINUTES > AN INCOMPATIBLE THERMOSTAT IS CONNECTED - THERMOSTATS WITH A "COMMON" TERMINAL SHOULD BE USED > WIRING FROM ZONE PANEL TO EQUIPMENT COULD BE LOOSE OR DAMAGED > TRANSFORMER POWERING ZONE PANEL COULD HAVE INSUFFICIENT VA RATING > PRIMARY CIRCUIT POWERING ZONE PANEL TRANSFORMER COULD BE BEYOND CAPACITY - USE DEDICATED CIRCUIT FROM BREAKER PANEL
EQUIPMENT OUTPUTS INDICATES CALL FOR HEAT/COOL BUT EQUIPMENT NOT ENERGIZING	<ul style="list-style-type: none"> > RC/RH JUMPER MISSING OR INSTALLED ON ONLY ONE PIN > EQUIPMENT TRANSFORMER NOT CONNECTED OR LOOSE CONNECTION - CHECK FOR 24 VOLT INPUT FROM EQUIPMENT > ECO MODE ENERGIZED: "EC" WILL BE DISPLAYED ON SCREEN AND "EC" LED ILLUMINATED ON ZONE 1 THERMOSTAT > ZONE PANEL HAS DEFECTIVE RELAY - CALL TECH SUPPORT FOR RMA VERIFICATION

Input Ratings:

Voltage: 18-40 VAC 50/60 HZ transformer of 40 VA or more

Current Draw:

Zone Controller: 10 VA

PO/PC Dampers: 3 VA

PC/SR Dampers: 10VA

PO/SR Dampers: 10 VA

Temperature Ratings:

Shipping: -20° to 150° F

Operating: -20° to 165° F

Humidity Ratings:

5% to 95% RH non-condensing

Wiring:

18-guage SOLID wire

Fuse:

5 x 20mm 1 amp Slo-Blo

CALL TECHNICAL SUPPORT BEFORE REPLACING CONTROL BOARD!