Excellence Without Compromise

EWC CONTROLS INC.

# TECHNICAL BULLETIN

## TB-205 Model UZC3C

*LEAVE THIS BULLETIN ON THE JOB SITE FOR FUTURE REFERENCE*

The **UZC3C** is a universal HVAC control panel that provides intelligent control of forced air zoning systems up to 29 zones using motorized dampers. Controls 3-stage heat and 2-stage cool, gas,oil / HVAC or heat pump systems. Compatible with virtually any off the shelf thermostats. With such features as supply air limit control, auto- changeover, watch dog system monitor, and remote zone override. Other features include mild weather inhibit feature, humidifier, combustion damper or fresh air control. The **UZC3C** provides the highest level of zone control performance yet released by *EWC Controls.*

**Zone Capacity**

Main panel controls 3 zones and may be expanded to 29 zones, using the **UEX-22**, 2 zone expansion panels.

**Compatible HVAC Systems**

Controls up to three stages of heating and two stages of cooling using gas/oil fired furnaces with electric air conditioning or heat pumps.

**Compatible Thermostats**

Compatible with any mechanical or electronic thermostat that operates on 24VAC, battery powered, or power robbing type that draw less than 25 ma of current. Single or two-stage heat/cool, or heat pump type thermostats can be used. All thermostats must have a switching subbase.

**Automatic Heat/Cool Changeover**

The UZC panel features automatic changeover from any thermostat allowing for individual zone comfort of the HVAC system.

**LED Indicators**

The UZC3 has a number of LEDs that indicate the status of the HVAC system and the UZC3 panel. The function of each system LED is described in the Service Guide.

**Damper LEDs**

LEDs indicate which zone dampers should be open.

**Operating Power**

Operates on 24VAC power supplied from a *separate transformer*. A single 40VA class 2 transformer can power five zones, or a total of 5 dampers. 8VA draw per damper.

**Indoor Fan Control**

The fan can be activated from any zone or from zone 1 only. (Optional)

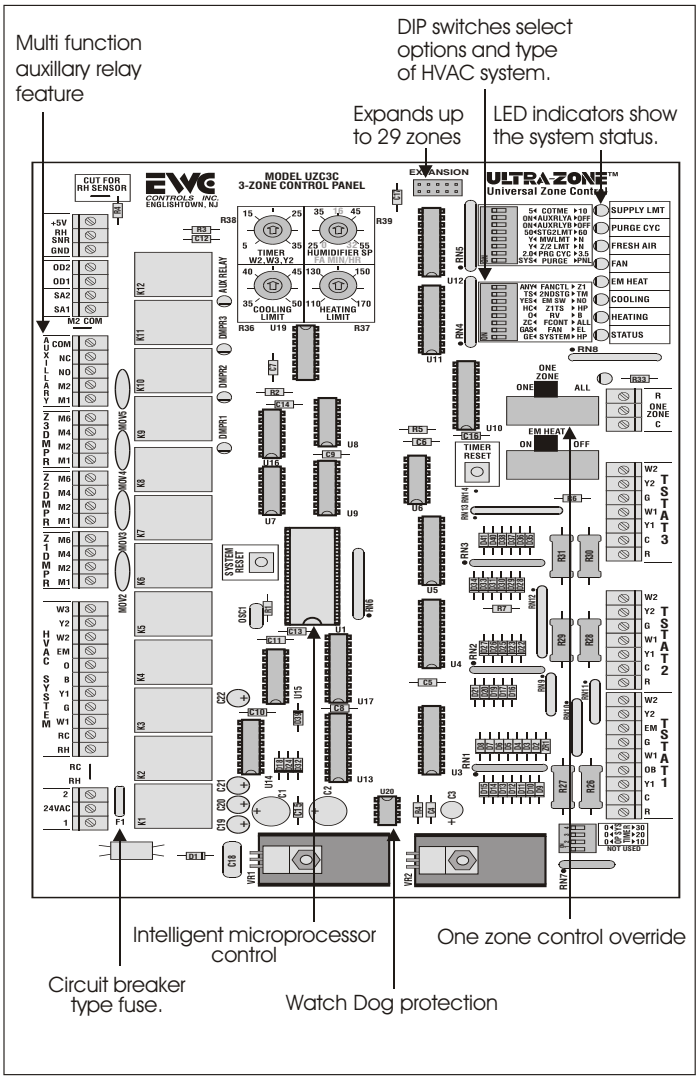



Figure 1. UZC3 panel features.

**Thermal Breaker**

The UZC3 has a thermal circuit breaker in place of a fuse which protects the panel from shorts in the thermostat and damper field wiring. It does not protect against shorts in the system field wiring.

*Caution:* *When the circuit breaker is tripped it will get quite hot. To reset the breaker, remove the 24VAC power for approximately 30 seconds.*

**Watch Dog Circuit**

The panel has a built-in circuit that monitors the computers performance and resets the panel if an error occurs in operation or due to power failures.

EWC Controls Inc.• 385 Highway 33 • Englishtown, NJ 07726 • 800-446-3110 • FAX 732-635-8646 • E-Mail-info@ewccontrols.com
P/N 090375A0205 REV. H

## DIP SWITCH SETTINGS/OPTIONS

There are two 8-position DIP switch banks, and one 4-position DIP switch bank that selects the options on the UZC3. For the purpose of clarity we will call them Dip Switch Bank “A”, “B”, and “C”.

DIP SWITCH BANK “A”

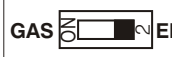
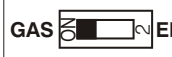
**Selecting the HVAC System**

DIP switch 1 selects a gas/electric or heat pump HVAC system.

| | |
|---|---|
|   | Set the switch to the ON position for gas/electric systems. |
|   | Set the switch to the OFF position for heat pump systems. |

**Indoor Fan Control During Heating**

DIP switch 2 selects whether or not the indoor fan is activated by the panel during heating calls, as well as cooling calls.

| | |
|---|---|
|   | Set the switch to the EL position to activate the fan during a heating or cooling call. ( Electric Heat, Hydronic) |
|   | Set the switch to the GAS position to activate the fan during a cooling call only. (Gas/Electric, Heat Pumps) |

**Dampers Opened During Continuous Fan Operation**

DIP switch 3 selects whether all zone dampers open during a continuous fan call or, only the zones calling for continuous fan will open.

| | |
|---|---|
|   | Set the switch to the ZC position to open only the zones calling for continuous fan operation. |
|   | Set the switch to the ALL position to open all dampers during continuous fan operation. |

**Heat Pump Reversing Valve**

DIP switch 4 selects O or B type reversing valve.

| | |
|---|---|
|   | Set the switch to the ON position to enable for O type reversing valve . |
|   | Set the switch to the OFF position to enable for B type reversing valve. |

**Selecting Zone1 Thermostat**

DIP switch 5 selects a standard Heat/Cool or Heat Pump type thermostat for Zone1.

| | |
|---|---|
|   | Set the switch to the HC position for heat/cool type thermostat. |
|   | Set the switch to the HP position for heat pump type thermostat. |

**Enable/Disable Panel Emergency Heat Switch**

DIP switch 6 enables (YES) or disables (NO), the panel's on board emergency heat switch. <u>The switch should always be disabled if a heat pump thermostat is used in Zone1.</u>

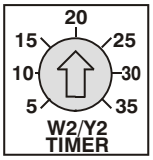
| | |
|---|---|
|   | Set the switch to the YES position to enable the panel EM HEAT switch. |
|   | Set the switch to the NO position to disable the panel EM HEAT switch. |

**Selecting Stage Two and Three Control**

DIP switch 7 selects whether stage 2 heating and cooling is controlled by 2 stage thermostats, or the W2/Y2 timer.

| | |
|---|---|
|   | Set the switch to the TS position to control stage 2 with thermostats. |
|   | Set the switch to the TM position to control stage 2 with the timer. |

**Setting the Stage Two Timer**




Second stage heating and cooling is controlled by the amount of time stage one has been continuously calling. The potentiometer on the board sets the amount of time first stage must call before, second stage heating or cooling is activated.

<u>Stage 3 heating is always controlled by the Timer and will be activated after stage 2 has been calling for the time set on the Timer.</u>

**Selecting Which Zones Can Call for Continuous Fan Operation**

DIP switch 8 selects whether any zone thermostat can call for continuous fan operation or, only Zone1 thermostat.

| | |
|---|---|
|   | Set the switch to the ANY position to allow any zone thermostat to call for continuous fan operation. |
|   | Set the switch to the Z1 position to allow only Zone1 thermostat to call for continuous fan operation. |

## DIP SWITCH BANK "B"

**System or Panel Purge Control**

DIP switch 1 selects either system controlled or panel controlled purge, at the end of a heating or cooling cycle.

| | |
|---|---|
| SYS ON 1 PNL | Set the switch to the SYS position allows system controlled purge cycle. |
| SYS ON 1 PNL | Set the switch to the PNL position allows panel controlled purge cycle. |

**2 or 3.5 Minute Panel Purge Time**

DIP switch 2 selects either 2.0 or 3.5 minute panel controlled purge time at the end of a heating or cooling cycle.

| | |
|---|---|
| 2.0 ON 2 3.5 | Set the switch to the 2.0 position selects 2-minute purge cycle. |
| 2.0 ON 2 3.5 | Set the switch to the 3.5 position selects 3.5-minute purge cycle. |

**Limits Stage2 & 3 by Number of Zones Calling**

DIP switch 3 inhibits stage 2 heat/cool and stage 3 heat, when fewer than 1/2 of the total zones are calling.

| | |
|---|---|
| YES ON 3 NO | Set the switch to the (YES,ON) position to limit stage 2 & 3 calls. |
| YES ON 3 NO | Set the switch to the (NO,OFF) position to allow stage 2 & 3 calls, with any number of zones calling. |

**Limits Stage2 & 3 Heating Calls In Moderate Weather**

DIP switch 4 inhibits (YES) stage 2 & 3 heating calls when the outdoor temperature is above 50 or 60°F. Requires optional Outdoor Temperature Sensor.

| | |
|---|---|
| YES ON 4 NO | Set the switch to the YES position to limit stage 2 & 3 heating. |
| YES ON 4 NO | Set the switch to the NO position to allow stage 2 & 3 heating calls at any outdoor temperature. |

**Moderate Weather Temperature Setting**

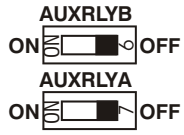
DIP switch 5 selects an outdoor temperature of 50 or 60°F for the moderate weather limit setpoint.

| | |
|---|---|
| 50 ON 5 60 | Set the switch to ON to select 50°F. |
| 50 ON 5 60 | Set the switch to OFF to select 60°F. |

## Selecting the Auxillary Relay Function

DIP switch 6 and 7 selects one of the following functions of the Auxillary Relay. The Auxillary Relay can be set to control a combustion air damper, fresh air damper or a humidifier.

**Selecting Humidifier Control**



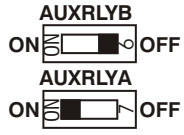

When the Auxillary Relay is selected to control a humidifier (DIP switch 6 and 7 OFF), the panel monitors either a humidistat or a humidity sensor with a 0 to 5VDC output.

When using a humidistat, the humidifier will be activated (only during a heating call) when the humidity drops below the humidistat setpoint. The humidifier will run a minimum of 10 minutes or until the heating call is satisfied. After the minimum 10 minute run time, the panel again checks the humidistat and will turn the humidifier off when ever the humidistat is satisfied.


*When using an RH sensor be sure to cut the jumper wire.*

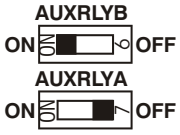
When using a humidity sensor, the humidifier will be activated (only during a heating call) when the humidity drops below the setpoint on the HUMIDIFIER potentiometer. After a 10-minute minimum operating time, the panel checks to see if the humidity level has risen above the humidity setpoint. If not, the humidifier will continue to run until the setpoint is reached, or the call for heat is satisfied.

**Combustion Damper Control**

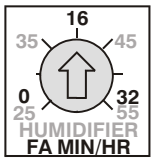



If the Auxillary Relay is selected to control a combustion air damper the Auxillary Relay will be activated whenever there is a heating call.

**Fresh Air Control**

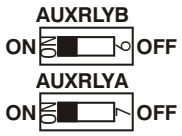



If the Auxillary Relay is selected to control a fresh air damper, it will activate the Auxillary Relay and the indoor fan for the number of minutes per hour set on the FRESH AIR potentiometer. Because this potentiometer is used for both fresh air and humidity, use the numbers in yellow for setting the minutes of fresh air per hour required.




The panel will attempt to satisfy the number of fresh air minutes per hour during heating or cooling calls, to minimize the effect of unconditioned air flowing into the occupied space. If it cannot satisfy the minutes of fresh air during heating or cooling calls, it will open the fresh air damper and activate the indoor fan at the end of the hour, for the time remaining.

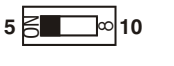
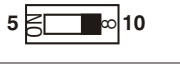
**Auxillary Relay Not Used**




When both DIP switches are set to ON, the Auxillary Relay is not being used.

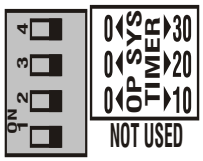
**Selecting the Changeover Time Delay**

DIP switch 8 selects either a 5 or 10-minute delay before the opposite system can be activated to prevent rapid cycling between heating and cooling.

| | |
|---|---|
|   | Set the switch to the ON position for a 5-minute changeover delay. |
|   | Set the switch to the OFF position for a 10-minute changeover delay. |

DIP SWITCH BANK "C"

**Setting Opposite System Service Timing**




Switches 2, 3 and 4 on the OP SYS TMR bank, set the maximum call time before the UZC3 switches to service zones calling for the opposing system, even though there may be more calls for the active system. Setting all the switches to 0 (ON) turns the opposing system feature OFF. The panel will service zones based on whether there are more zones calling for heating or cooling. It will not switch to opposing calls. You can select 10 to 60 minutes by setting one or more of the switches to OFF. If all the switches are set to OFF, the opposite system timer is one hour.

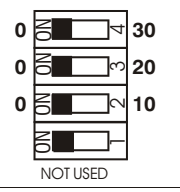
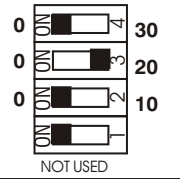
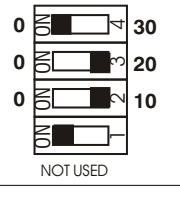
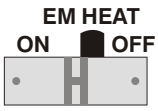
| | |
|---|---|
|   | Setting switches 2, 3 and 4 to the ON positions, disables the opposite system service. The panel will service zones based on whether there are more heating or cooling calls only. |
|   | Setting switch 3 to OFF and switches 2 and 4 to ON, would set the opposite system timer to 20 minutes of continuous call before it would switch to the opposite mode. |
|   | Setting switch 2 and 3 to OFF and switch 4 to ON, would set the opposite system timer to 30 minutes. |

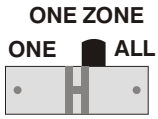
Figure 2. DIP switches 2, 3 and 4 set the opposite system timer. NOTE: DIP switch 1 , on this bank is not used.

**Emergency Heat Switch**




The on board Emergency Heat switch disables the heat pump compressor during heating calls(cooling calls are not affected) and activates emergency heat, second stage heat (W2), and third stage heat (W3), when the switch is set to the ON position. **Should only be used if a heat/cool thermostat is used in Zone1 with a heat pump or dual fuel system.**

**One Zone Switch**

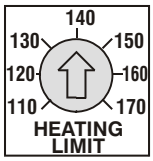



The One Zone switch allows you to operate the system using only the Zone1 thermostat. This can be useful during vacation or during long unoccupied periods. All zones will respond to zone 1 thermostat only. It can also be initiated by a remote switch or timer.

**Supply air Sensor**

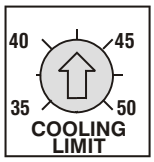
A factory supplied 10K ohm resistor is installed in the SA1/SA2 terminals. An optional Supply air Sensor can be connected to monitor the supply air temperatures. Remove the resistor when using the supply air sensor.

**Setting the Heating Limit**




When the supply air sensor is used, the heating potentiometer sets the highest temperature the supply air can reach, before the heating is cycled off to prevent the equipment safety sensors from tripping.

**Setting the Cooling Limit**




When the supply air sensor is used, the cooling potentiometer sets the lowest temperature the supply air can reach, before the cooling is cycled off to prevent indoor coil freeze-up. This gives you additional equipment protection.

**Timer Reset BUTTON**


Momentarily pressing the TIMER RESET button clears the built-in timers controlling the minimum run timer, short cycle timer, and changeover timer. This enables you to test and certify the installation faster.

**System Reset BUTTON**


Momentarily pressing the SYSTEM RESET button resets the computer and initiates a new start up.

**Built-In Timer Settings**

The panel has built-in timers that insure reliable operation.

| | |
|---|---|
| Short Cycle Timer | 2 minutes, fixed |
| Minimum Call Timer | 2 minutes, fixed |
| Changeover Timer | 5 to10 minutes adjustable |
| Opposing System Service Timer | Off to 60 minutes, adjustable |
| Second Stage Timer | 5 to 35 minutes adjustable |

**Minimum Run Timer**

When a call is activated the panel will run the system in that mode for a minimum of 2 minutes.

**Short Cycle Timer**

When the system is satisfied the panel will not resume the same call for a minimum of 2 minutes.

**Changeover Timer**

A built-in timer prevents the system from rapidly switching between heating and cooling. At the end of a call, a five or 10 minute timer is started and the panel will not switch to the opposing system until the time out is complete.

# INSTALLATION INSTRUCTIONS

*All wiring should be done to local and national codes and ordinances. Use color-coded, multi-conductor wire. Wire number to number or letter to letter on each control.*

*WARNING: THESE PANELS ARE DESIGNED FOR USE WITH 24VAC. DO NOT USE OTHER VOLTAGES! USE CAUTION TO AVOID ELECTRIC SHOCK OR EQUIPMENT DAMAGE.*

**Thermostat Wiring for Zone1**

Practically any single or two-stage heat/cool or heat pump thermostat can be used in Zone1. Typical Zone 1 thermostat installations are shown in Fig. 3 & 4 & 5.

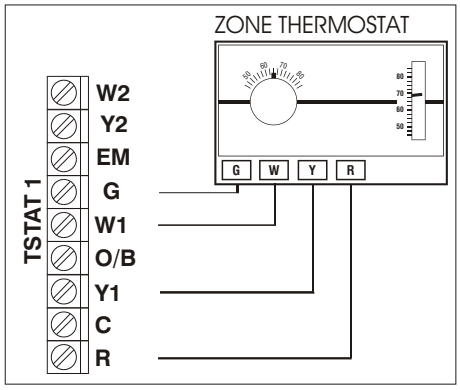



Figure 3. Typical single-stage heat-cool thermostat

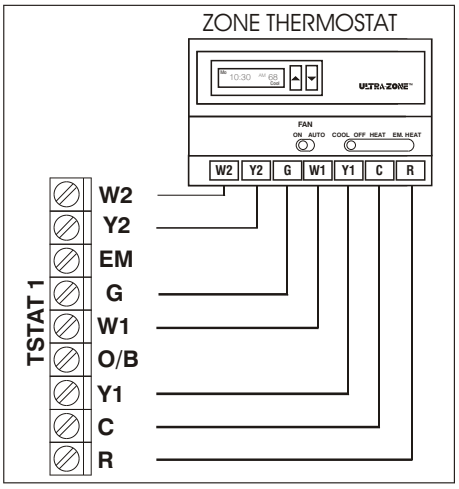



Figure 4. Typical two-stage heat-cool thermostat wiring.

*Be sure to set the O/B DIP switch to correspond with the O/B output of the thermostat.*

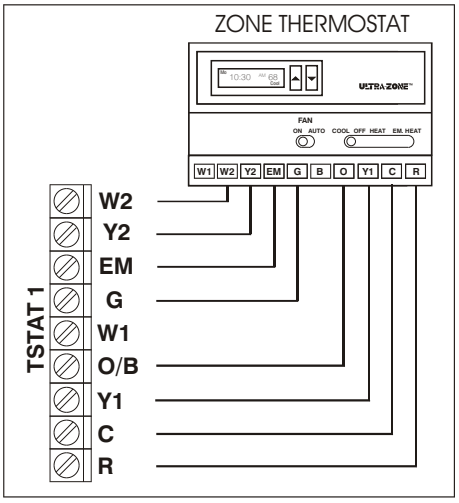



Figure 5. Typical heat pump thermostat wiring.

**Thermostat Wiring for Zone 2 thru 29**

Practically any single or two-stage heat/cool thermostat can be used in Zones 2 through 29. Typical Zone 2-29 thermostat installations are shown in Fig. 6 and 7.

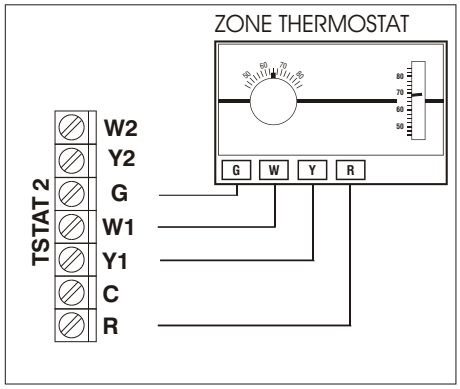



Figure 6. Typical single-stage heat-cool thermostat

*NOTE: All thermostats must have subbases!*

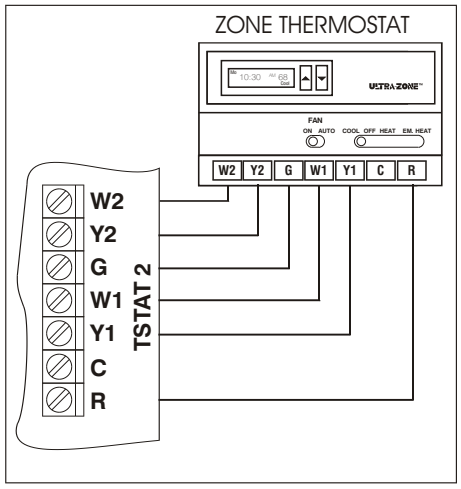



Figure 7. Typical two-stage heat-cool thermostat wiring.

**HVAC System Wiring**

On the UZC3 panel, the fan (G), the compressor (Y1) and the reversing valve (O/B) are powered by the RC terminal. The heating (W1) is powered by the RH terminal.

**Single Transformer Systems**

Typical gas/electric system wiring using a single transformer is shown below. A jumper wire is provided that connects RC to RH.

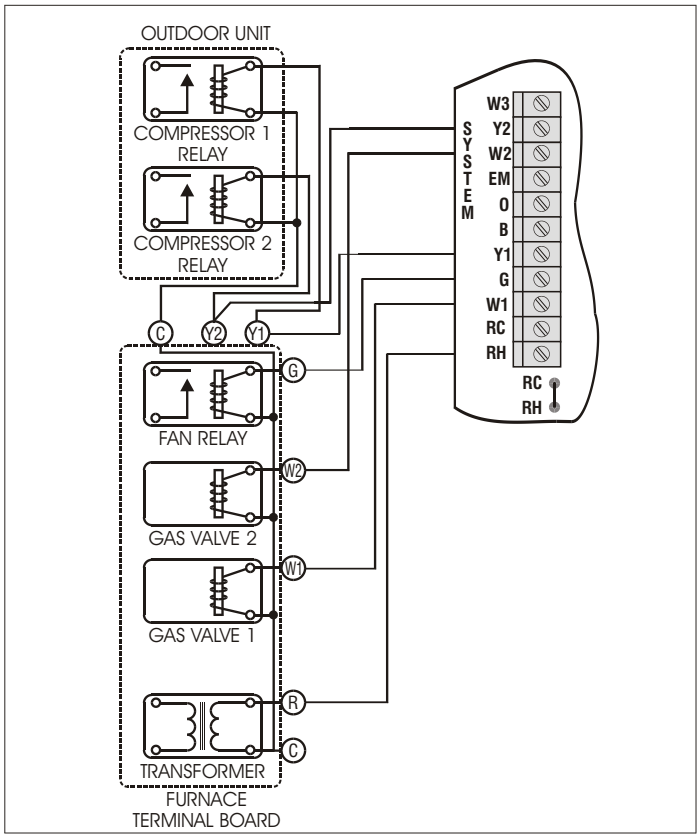



Figure 8. Single transformer, 2-stage, gas/electric system.

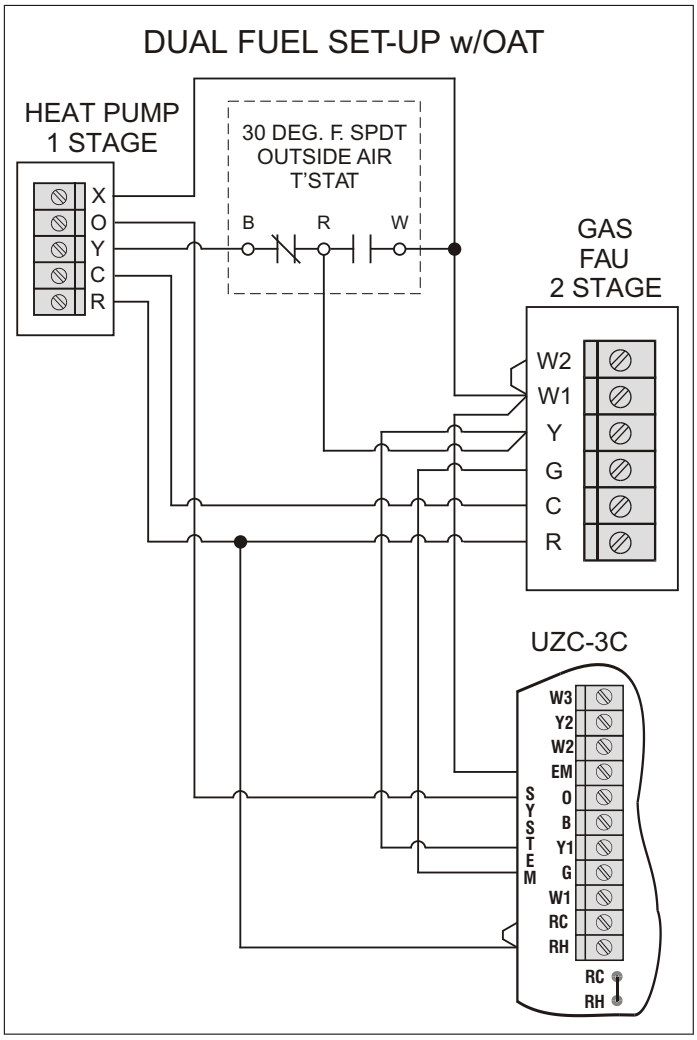



Figure 9. Dual Fuel Heat Pump w/Outside Air lock-out.

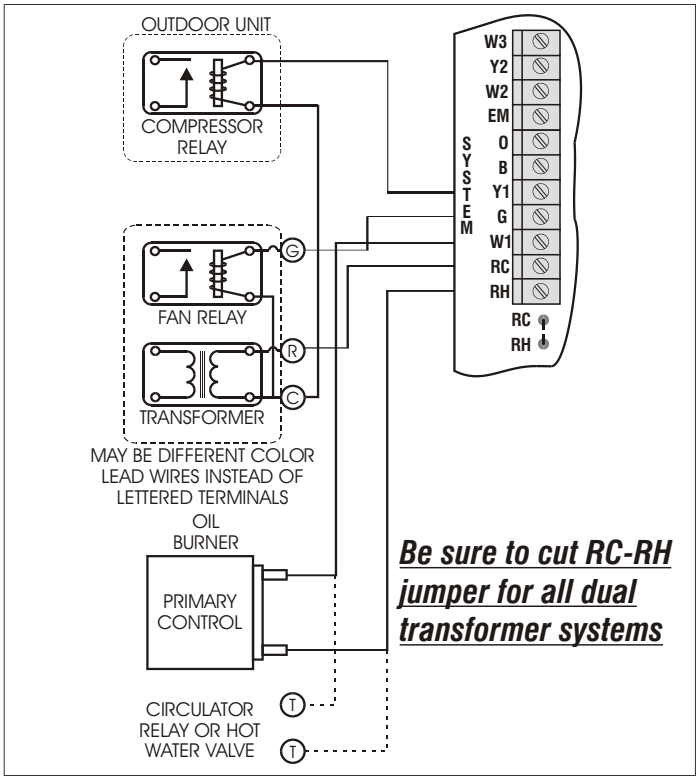



Figure 10. Two-transformer oil burner with electric cooling.

## Setting the Expansion Panel DIP Switches

Each expansion panel has a 5-position DIP switch that must be set correctly to insure proper operation of the system. Figure 11 shows the settings for a 9-zone configuration and figure 12 shows the settings for up to 29 zones using 13 expansion panels.

| Expansion Panel No. | DIP Switch Settings |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |

Figure 12. DIP switch settings for 13 expansion panels.

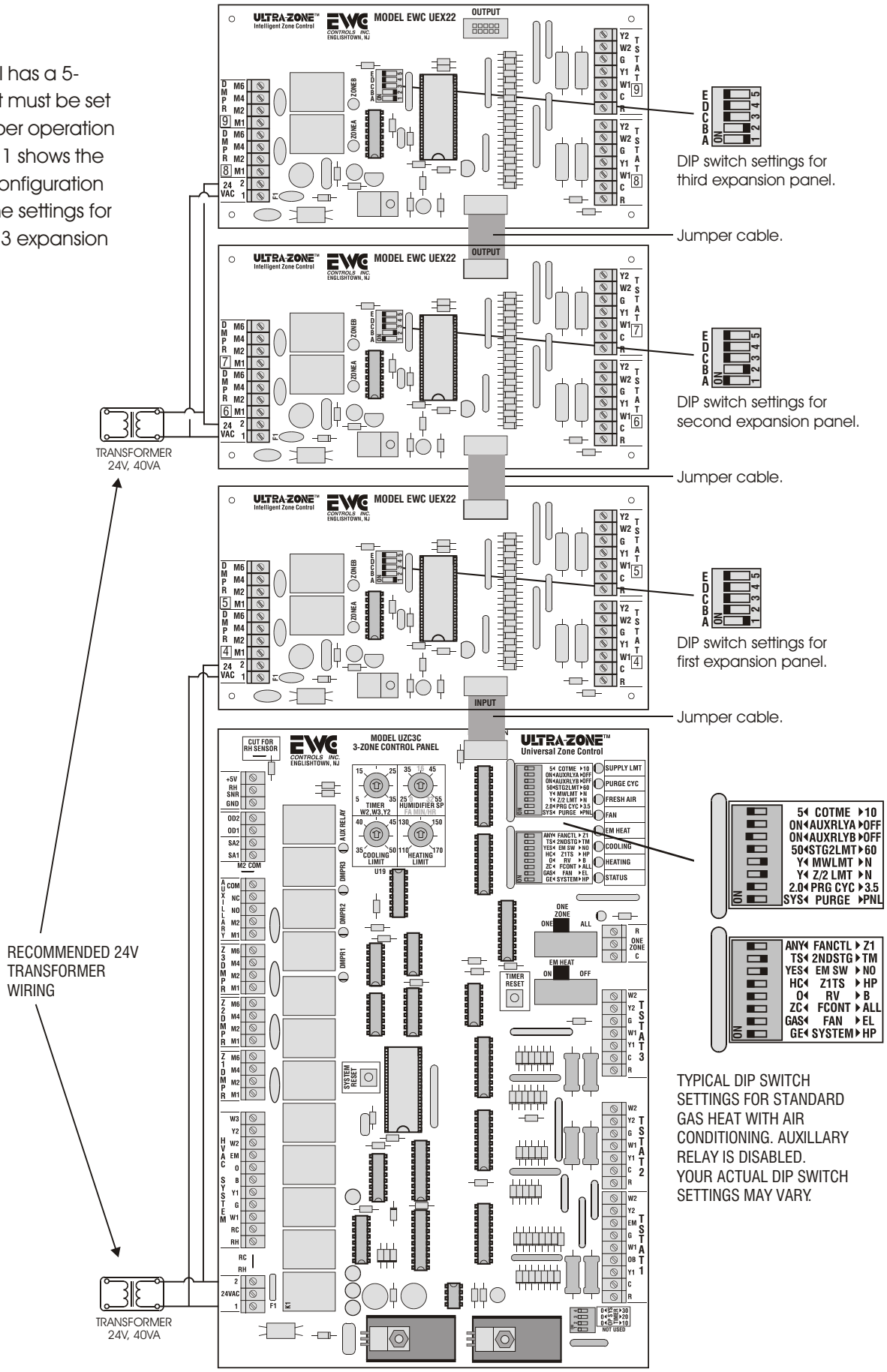



Figure 11. A nine-zone UZC3 system with correct DIP switch settings.

## Damper Wiring

The damper motor terminals (M1, M2, M4 and M6) will accommodate practically any 24VAC motorized damper. Damper motor selection should be limited to motors with less than .5 amp current draw.

**Terminal M1 - Common**

**Terminal M2 - Constant 24 VAC**

**Terminal M4 - 24 VAC to open damper**

**Terminal M6 - 24 VAC to close damper**

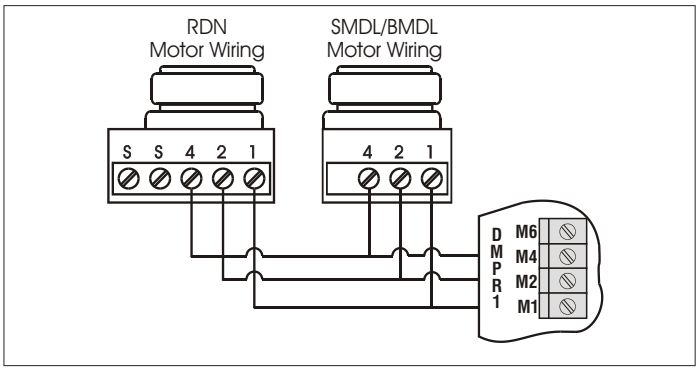



Figure 13. A zone controlling two dampers.

## Controlling 3 or More SMD/BMD Dampers From One Zone

A relay can be added to the system to control more than two dampers per zone. Figure14 shows a relay used to control four dampers using the "R4" relay which has four sets of contacts (4-pole) with both normally open and normally closed contacts. If more than four dampers are required on a single zone, a second R4 relay must be used.

## Spring Return Motor Wiring

Figure 15 shows how to wire a spring return damper. A normally open style damper is wired to M1 & M6. Normally closed style damper is wired to M1 & M4.

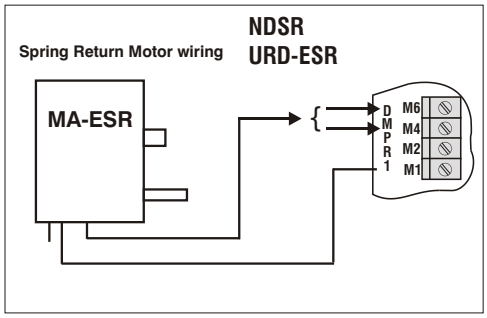



Figure 15. Wiring spring return damper.

## 24VAC Power Wiring

**IMPORTANT:** *If the auxillary relay is used, the UZC3C must not share the first transformer!*

A single 24VAC, 40VA transformer can power the UZC3 panel and one UEX-22 expansion panel with one damper on each zone only. It is important that the 24VAC terminals 1 and 2 be wired the same as shown in figure 16.

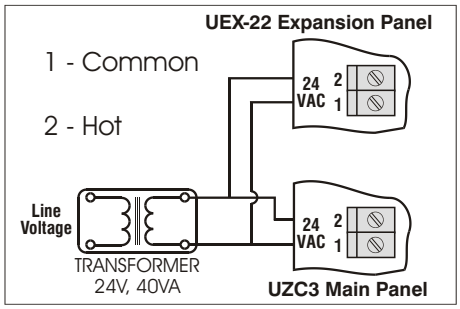



Figure 16. 24VAC power wiring.

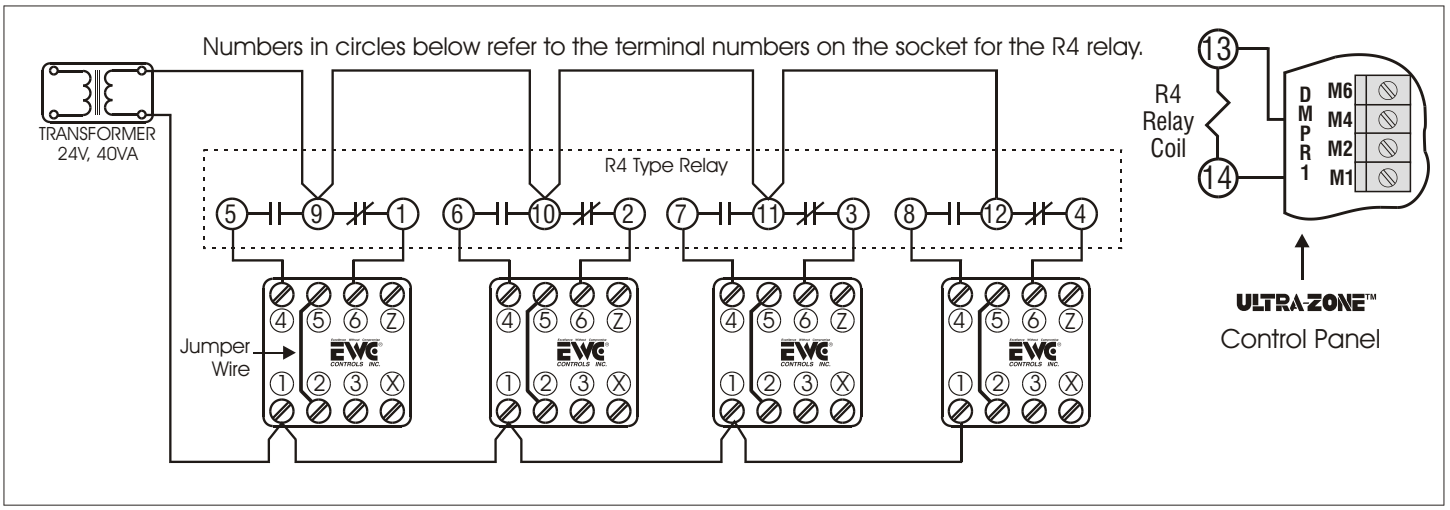
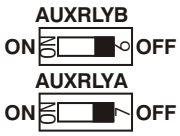



Figure 14. A zone controlling four SMD/BMD dampers using the R4 relay.

## Wiring the Auxiliary Relay

The Auxiliary relay can be used to control a combustion damper, fresh air damper or humidifier depending on the DIP switch settings.

## Selecting Humidifier Control




The auxiliary relay contacts can be used to activate a humidifier using either a humidistat or a humidity sensor. In either case the humidifier will be connected to the COM and NO terminals. The M2-COM jumper on the panel should be cut to isolate the panel voltage from the humidifier

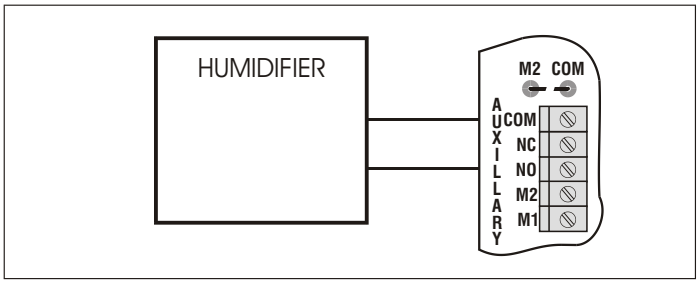



Figure 17. Humidifier wiring diagram.

If a humidistat is used for monitoring relative humidity, it should be wired as shown in figure 18. The panel will activate the humidifier whenever the humidistat contacts close indicating humidification is required. The humidifier will operate a minimum of 10 minutes or until the humidistat has been satisfied. The potentiometer on the panel has no effect.

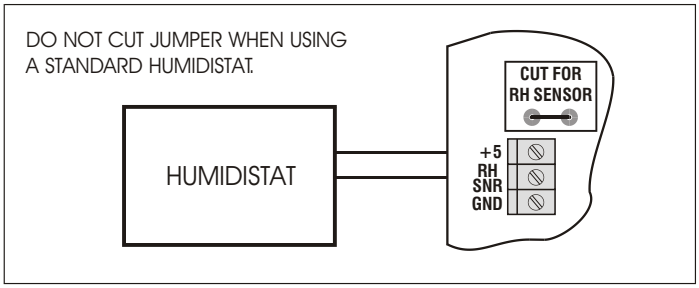



Figure 18. Humidistat wiring diagram.

If a humidity sensor is used for monitoring relative humidity, it should be wired as shown in figure 19. The panel will activate the humidifier whenever the relative humidity rises above the level set on the potentiometer on the panel. The humidifier will operate a minimum of 10 minutes or until the relative humidity drops below the level set on the potentiometer. Cut the RH SENSOR jumper on the panel.

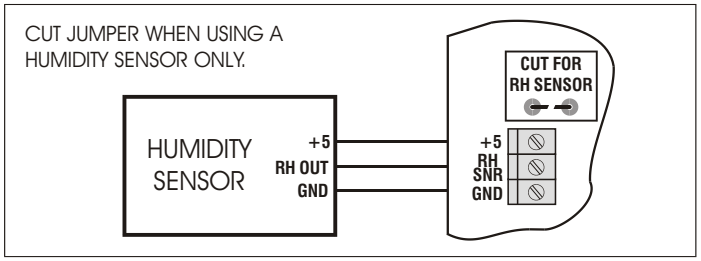
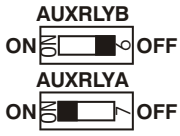



Figure 19. Humidity sensor wiring diagram.

## Selecting Combustion Damper Control




The auxiliary relay contacts can be used to activate a combustion damper that opens whenever there is a call for heating. Figure 20 illustrates an ND damper used as a combustion air damper.

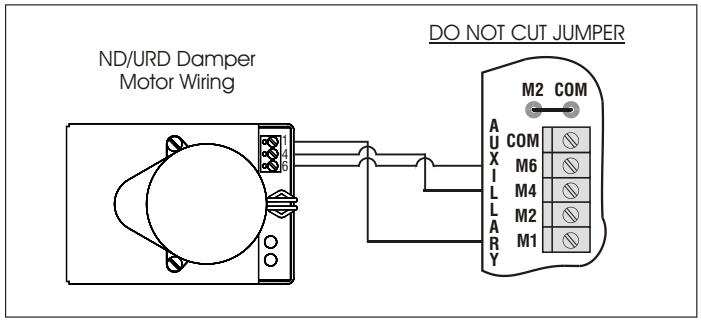
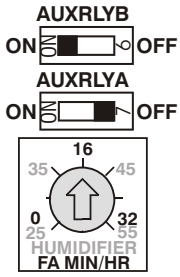



Figure 20. A combustion air damper.

## Selecting Fresh Air Control




The auxiliary relay contacts can be used to activate a fresh air damper that opens for 0 to 32 minutes every hour. The fresh air control will attempt to fulfil the fresh air requirement during heating or cooling calls. It will activate the fan and open the damper at the end of the hour only if the total fresh air minutes have not been satisfied.

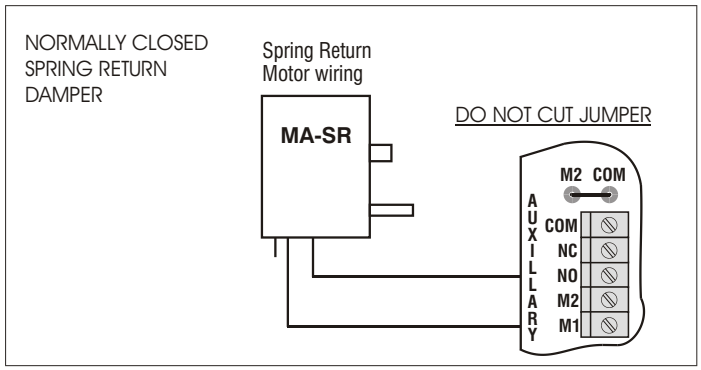



Figure 21. A fresh air damper.

## One Zone Control

The One Zone feature allows the occupant to control all the zones from a single thermostat by setting the switch on the panel to ONE or using an external switch connected to the One Zone terminals shown in figure 22.

A homeowner can switch to One Zone control when they leave for vacation, and the Zone 1 thermostat will control all zones. All zone dampers will respond to the Zone 1 thermostat. One Zone can also be used in commercial applications with a programmable thermostat in Zone 1 and mechanical thermostats in all other zones. A timer can be used to initiate the One Zone function (figure 23) and meet the requirements of California Title 24.

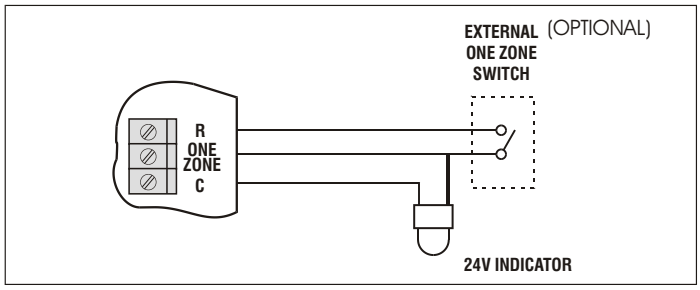



Figure 22. External One Zone switch.

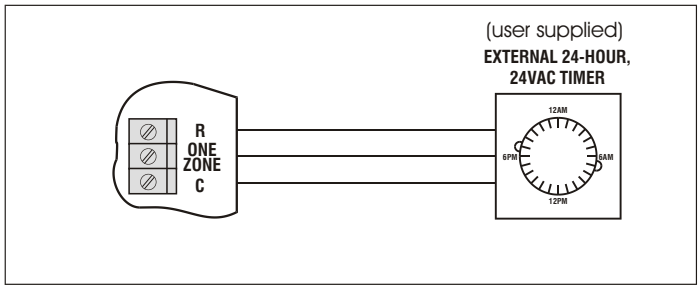



Figure 23. External One Zone control using a 24-hour timer.

## Supply Air Temperature Sensor

An optional temperature sensor can be used to limit supply air temperature and prevent overheating of the system during heating or coil freeze-up during cooling. The sensor is wired as shown.

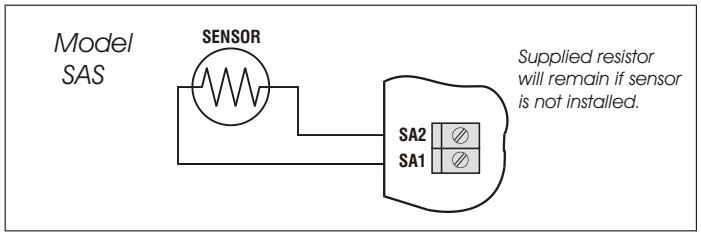



Figure 24. Supply air temperaure sensor.

## Outdoor Air Temperature Sensor

A temperature sensor can be used to monitor outdoor air temperature. This sensor is required for the Moderate weather option. If used with the humidification option and an RH sensor, the humidity set point will be automatically adjusted to compensate for changing outdoor temperatures. Frequent set point changes are no longer required and condensation on the windows is reduced.

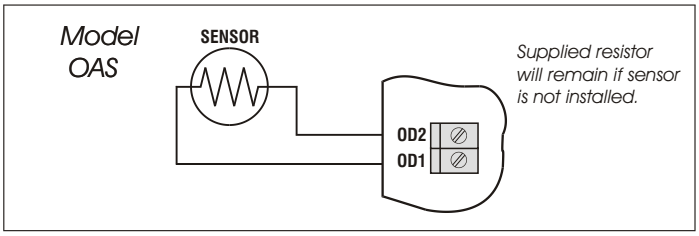



Figure 25. Outdoor air temperature sensor.

## LED Indicators

The UZC3 has a number of LED indicators that show the status of the dampers, HVAC system and the panel mode.

**STATUS** The STATUS LED blinks to indicate the system is operating properly.

**HEATING** The HEATING LED is on continuosly to indicate the panel is calling for stage1 heating and blinks when the panel calls for stage 2 and stage 3 heating.

**COOLING** The COOLING LED is on continuosly to indicate the panel is calling for stage 1 cooling and blinks when the panel calls for stage 2 cooling.

**EM HEAT** The EMERGENCY HEAT LED indicates when the panel is in emergency heat mode in a heat pump system.

**FAN** The FAN LED indicates when the panel is activating the indoor fan.

**FRESH AIR** The FRESH AIR LED indicates when the panel is activating the indoor fan with the outdoor air damper to bring in fresh air.

**PURGE CYC** The PURGE CYCLE LED indicates when the panel is activating a purge cycle by operating the indoor fan at the end of a heating or cooling cycle.

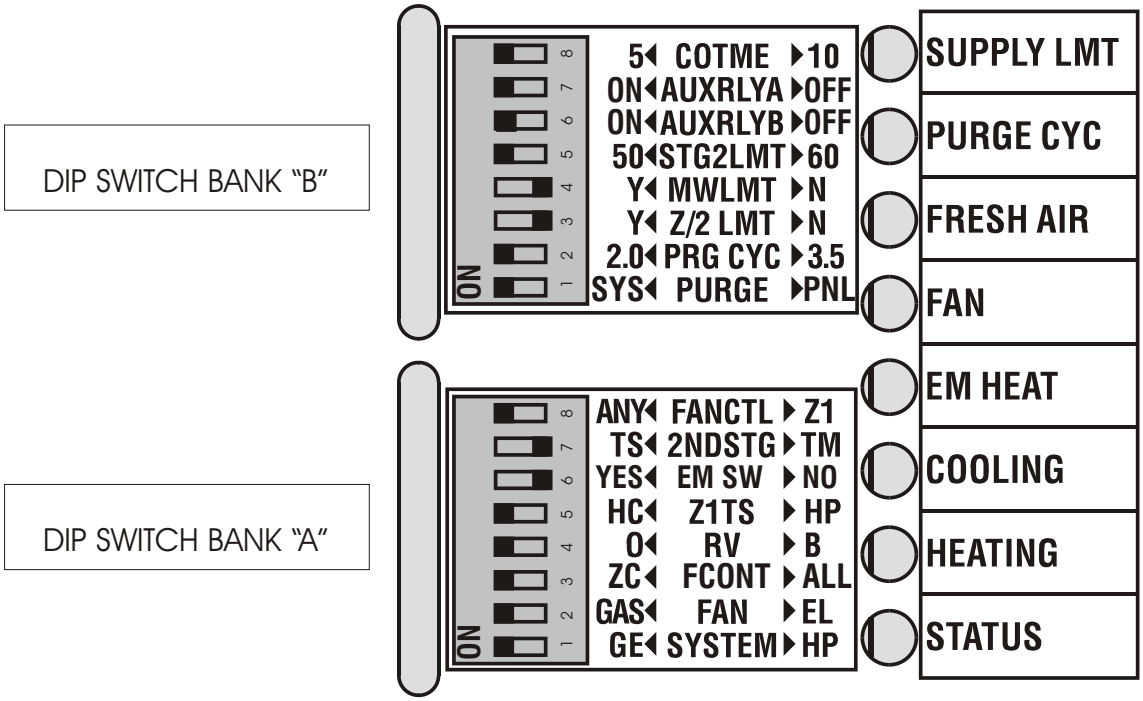
**SUPPLY LMT** The SUPPLY LIMIT LED is on continuously when the supply air temperature has exceeded the high or low temperature limits. The LED will blink if the panels detects an open or missing sensor or a shorted sensor.

**ONE ZONE** The ONE ZONE LED indicates when the panel is in "One Zone Control" mode.

**DMPR1**
**DMPR2**
**DMPR3** The DMPR LEDs indicate when the panel has activated the relays controlling the damper motors.

**AUX RELAY** The AUXILLARY RELAY LED indicates when the auxillary relay has been activated to control a fresh air damper, combustion damper or humidifier.

*NOTES:*




**BLOW-UP VIEW OF DIP SWITCH BANKS SHOWING FACTORY DIP SWITCH SETTINGS**

# SERVICE GUIDE

**Some Helpful Guidelines**

Voltage measurements on the panel at the damper terminals and thermostat terminals, should be made with the ground lead of your meter on terminal 1 of the 24VAC input terminals.

All VAC measurements at the HVAC system terminals should be made with the meter ground lead on the HVAC system's C or common terminal at the HVAC system.

*Caution! The thermal fuse (F1) gets very hot when a short occurs in the 24VAC wiring on the panel. Always use caution when checking the fuse.*

**Using the LED Indicators**

There are a number of LED indicators that indicate the status of the panel and HVAC system.

**STATUS** The STATUS LED blinks slowly to indicate the microcomputer is operating properly. If the LED is continuously off it could indicate that the panel does not have power or the microcomputer needs to be reset.

**HEATING** The HEATING LED is on continuously during stage1 heating and blinks during stage 2 and 3 heating calls.

**COOLING** The COOLING LED is on continuously during stage1 cooling and blinks during stage 2 cooling calls.

**EM HT** The EM HT LED indicates that the emergency heat mode is active.

**FAN** The FAN LED indicates that the panel has turned the indoor fan on.

**FRESH AIR** The FRESH AIR LED indicates that the panel has activated the auxiliary relay to open the fresh air damper.

**PURGE** The PURGE LED indicates that the panel is in a purge cycle.

**SA LMT** The supply air limit LED indicates that the supply air temperature has exceeded the high or low supply air temperature limit. The LED blinks if the sensor is open or shorted.

**Damper LED** The DMPR1, 2 and 3 LEDs indicate that the relay controlling the damper motor is activated.

**Aux Relay LED** The AUX RELAY LED indicates that the fresh air damper, combustion air damper or humidifier has been activated.

**Check 24VAC Power**

You should measure 24VAC at all damper M1& M2 terminals, and all thermostat R & C terminals.

*See Table 1 if any of these voltages are not present.*

**Dampers Not Responding Properly**

If the Damper LED indicators are responding properly, but the dampers appear to be malfunctioning, check that the dampers are wired correctly.

If the Damper LEDs are not responding properly, check the calls on each zone thermostat. If the calls indicate a damper should be activated and is not, press the TMR RESET switch to reset any timers that might be inhibiting a call.

*Check that the DIP switch options have been properly selected.*

**HVAC System Not Responding Properly**

If the HEAT, COOL and FAN LED indicators are responding properly, but the system appears to be malfunctioning, check that the HVAC system is wired correctly.

If the HEAT, COOL or FAN LED is not responding properly, check the calls on each zone thermostat. If the calls indicate an HVAC call should be activated and is not, press the TMR RESET switch to reset the timers that might be inhibiting a call.

*Check that the option DIP switches have been set properly.*

*If the problem persists, see Table 3.*

| Table 1. Detecting 24VAC Shorts and Loss of +5VDC or +24VDC | |
|---|---|
| **Detecting 24VAC Short** | The STATUS LED will be off, you will measure 24VAC at the transformer terminal 1& 2, but not at any damper M1& M2 terminals or any zone thermostat R & C terminals. The thermal fuse will be very hot. |
| **Isolating 24VAC Shorts Panel or Wiring** | Remove the wire at each zone thermostat R terminal on the panel and test, if the short still persists. If the short disappears, check the zone thermostat field wiring for shorts. |
| **Isolating 24VAC Shorts UZC3 or UEX-22 Panels** | Remove the power to the panel and all expansion panels (if present) and allow the fuse to cool. Disconnect the jumper cable between the main panel and the first expansion panel. Re-power the panel. *If the short persists, call Technical Support.* |
| | Disconnect all the wires at each damper terminal block (M1, M2, M4 & M6). If the short disappears, check the damper field wiring and the damper motors for shorts to ground. *If the short still persists, call Technical Support.* |
| **Detecting Loss of +24VDC or +5VDC** | The +5VDC and +24VDC can be measured at the test points. If either voltage is not correct, disconnect the jumper cable connecting the main panel and the first expansion panel.<br>If the voltage problem disappears, check that the 24VAC power is wired to the correct terminals (terminal 1 to 1 and terminal 2 to 2 as shown in figure 20). *If the problem still persists, call Technical Support.* |

| Table 2. Detecting Damper Problems | |
|---|---|
| **Damper LED On But Damper Not Responding** | Check the damper wiring to insure it is correctly wired. Be sure the wires are secured in the terminals. Test the damper motor to insure it is properly operating. *If the problem still persists, call Technical Support.* |
| **UZC3 Damper LED Not Responding** | Check that the STATUS LED is blinking. If it is not, press the SYSTEM RESET switch.<br>Press the TMR RESET switch to clear any timers that may be keeping the call off and the damper from not responding.<br>Check the voltage at each zone thermostat terminals to insure the damper should be activated.<br>*Check that the dip switch options are properly configured.*<br>*If the problem still persists. Call Technical Support.* |
| **UEX-22 Damper LED & Damper Not Responding** | If the damper is on an expansion panel, check the DIP switch settings on each expansion panel to insure they are properly set. Check the 24 VAC power to insure the expansion panel is powered.<br>Check that the jumper cables are installed properly.<br>Check the voltage at each zone thermostat terminal to insure the damper should be activated.<br>*If the problem still persists, call Technical Support.* |
| **Testing a Damper Motor** | For an **RDN**/**SMDL**/**BMDL** type damper, connect 24VAC common to terminal 1 and 24VAC to terminals 2 and 4. The damper should open. Remove 24VAC from terminal 4 and the damper should close.<br>For an **SMD**/**BMD**/**IMD** typedamper, connect 24VAC common to terminal 1 and 24VAC to terminal 4 and the damper should open. Remove 24VAC from terminal 4 and apply 24VAC to terminal 6 and the damper should close. Be sure there is a jumper between terminals 2 and 5.<br>For a **URD**/**ND** type damper, connect 24 VAC common to terminal 1 and 24 VAC to terminal 4. The damper should open. Remove 24 VAC from terminal 4 and apply 24 VAC to terminal 6 and the damper should close. |

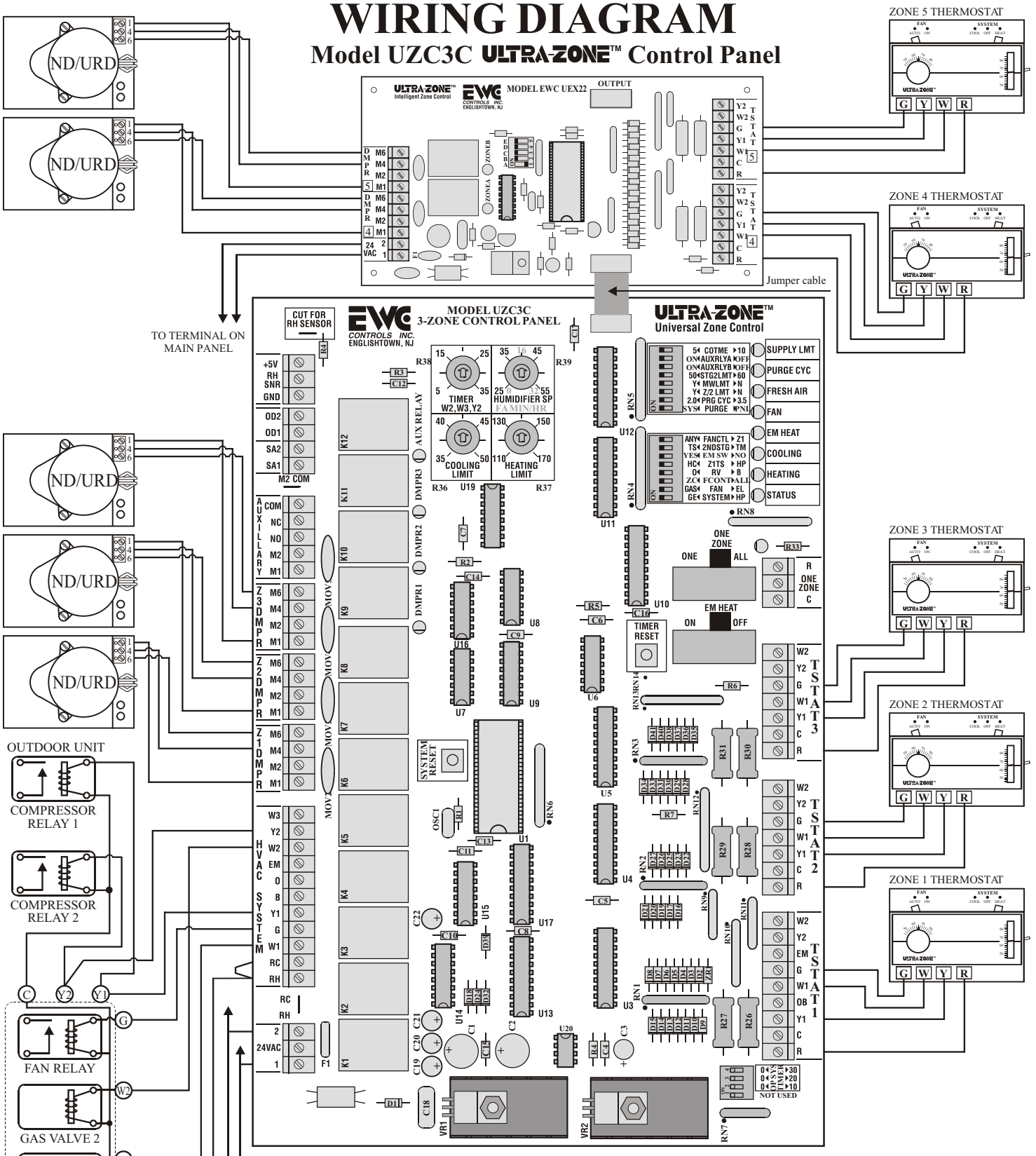
Call Technical Support @ 1-800-526-4048

| Table 3. Trouble Shooting Heating, Cooling and Fan Problems | | | |
|---|---|---|---|
| **LEDs On But System Not Responding** | Check the HVAC field wiring to insure it is correct. Be sure all wires are secured in the terminals. Check that there is 24VAC at the RC and RH terminals. Use the HVAC system common (C) as the ground lead of your meter. A jumper is provided near the system terminal block, to isolate for dual transformer systems.<br><br>You can test the HVAC system by shorting terminals R and W together to activate the heater, RC to Y to activate the compressor and RC to G to activate the fan. | **Measuring Thermostat Voltages** | Heat/Cool thermostats will apply 24VAC to the W1 terminal during a stage 1 heating call and W1 and W2 during a stage 2 heating call.<br><br>During a stage 1 cooling call, 24VAC is applied to both Y1 and G, and to Y2 during a stage 2 cooling call.<br><br>During a continuous fan call, 24VAC is applied to the G terminal.<br><br>Be sure the RC and RH terminals at the thermostats are jumpered together.<br><br>Heat Pump thermostats will apply 24VAC to the Y1, B and G terminal during a stage 1 heating call and W2 during a stage 2 heating call.<br><br>During a stage 1 cooling call, 24VAC is applied to Y1, O and G and to Y2 during a stage 2 cooling call.<br><br>During a continuous fan call, 24VAC is applied to the G terminal.<br><br>During an emergency heat call the thermostat will normally apply 24VAC to the EM and G terminals.<br><br>Be sure the RC and RH terminals at the thermostats are jumpered together. |
| **LEDs and System Not Responding** | Check that the STATUS LED is blinking to insure the computer is operating properly. Press the SYSTEM RESET switch if it is not.<br><br>Press the TMR RESET switch to clear the timers that may be preventing the call, changeover delay or short cycle timers.<br><br>If the system still does not respond, measure the voltage at each zone thermostat terminal to insure they are correct and a call is in order. | | |

NOTES:

# WIRING DIAGRAM

## Model UZC3C ULTRA-ZONE™ Control Panel




# 2 stage heat / 2 stage cool

Figure 26 UZC3C wiring diagram


Technical. . . . . 1-800-526-4048
Sales. . . . . .1-800-446-3110
Fax. . . . . 1-732-635-8646
e-mail - ultrazone@ewccontrols.com
**385 Highway 33, Englishtown, NJ 07726**


All wiring should be done to local and national codes and ordinances. Use color-coded multi-conductor wire. Wire number to number or letter to letter on each control.

WARNING: **THIS PANEL IS DESIGNED FOR USE WITH 24 VOLTS. DO NOT USE ANY OTHER VOLTAGE!**

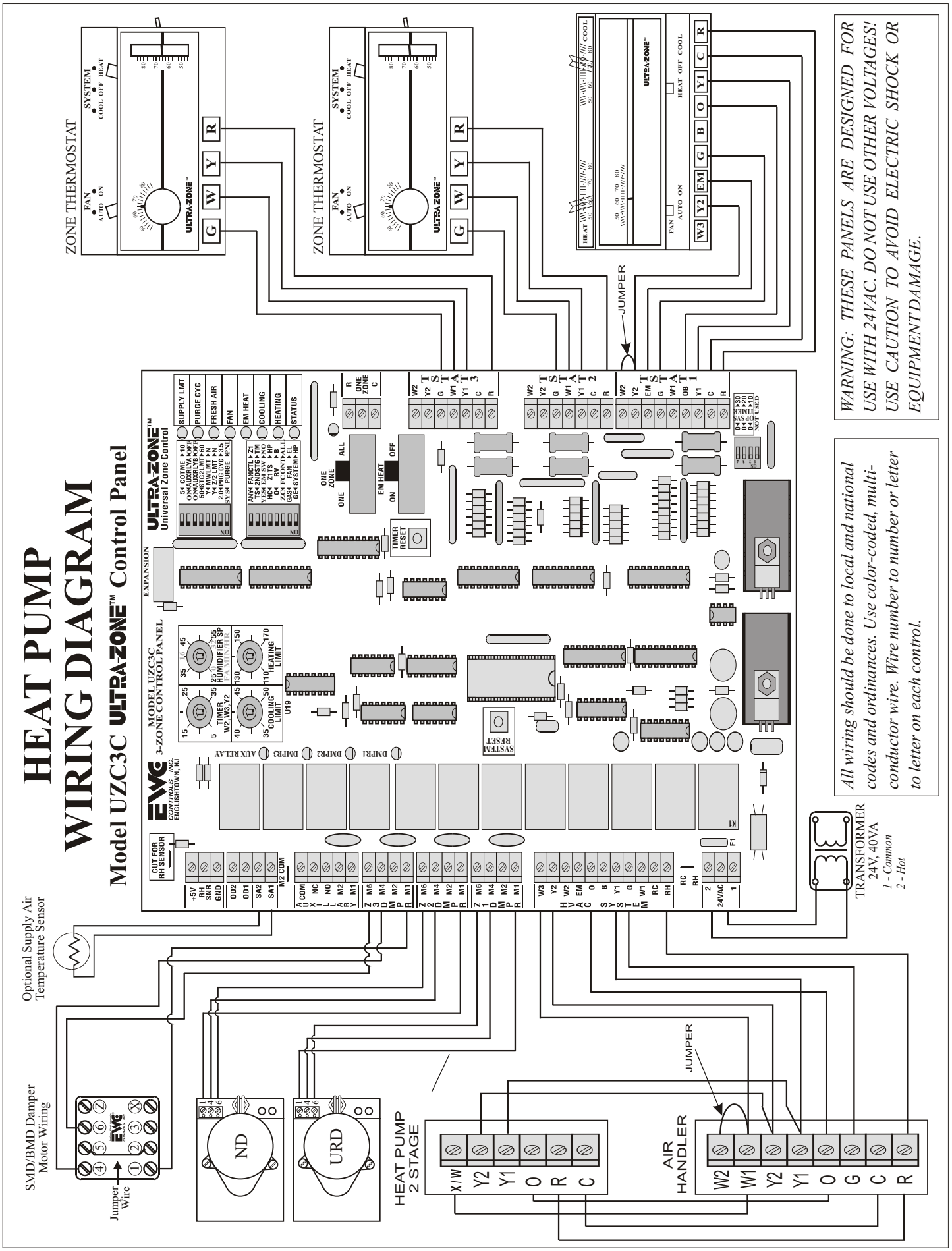



Figure 27 UZC3C wiring diagram