

MASTERZONE™ ZONE-ADDER™ - 2 Zones

Model MZA2



Installation and Operating Instructions



Controlling Your Comfort Room By Room

MASTERZONE™ ZONE-ADDER™ PANEL

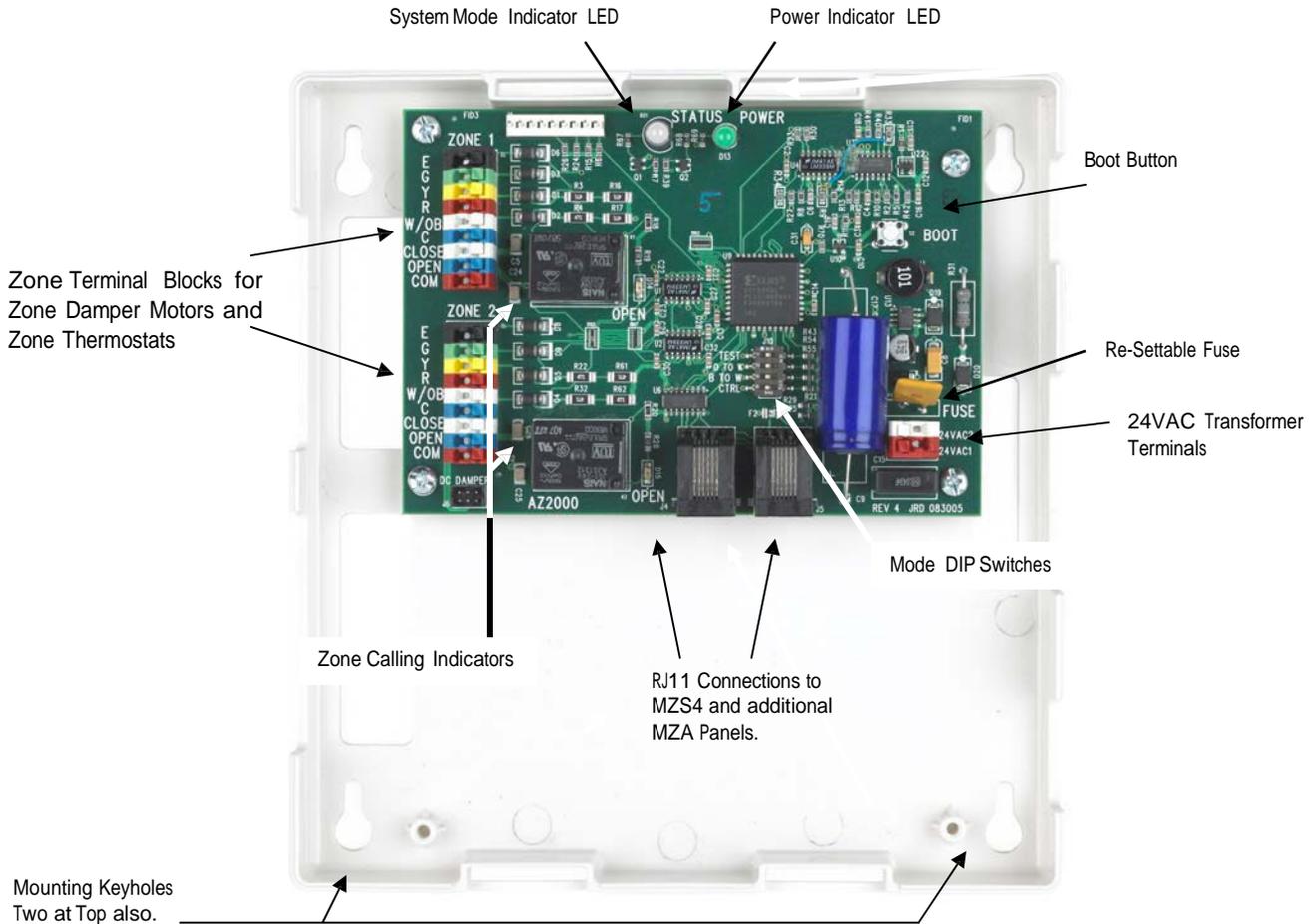


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When more zones are required, additional MZA panels are used to control up to 10 zones.

When installing the MZA2 panel it is important to pick a central location where it is most convenient to bring all the wires. Most often this is at the furnace or air handler. It is often the most convenient location and

closest to power, the HVAC unit controls and the zone dampers when typically located at or near the plenum. However this panel can be located remotely from the main panel and only requires a longer 6 conductor cable with RJ11 jacks on both ends in order to place remotely.

INSTALLATION

The MasterZone™ Adder is a two (2) zone control panel that is only used with the MZA2 zone panel to add one or two additional zones.

The MZA2 panel is made of sturdy ABS plastic and can be mounted to any flat surface. It is recommended that the panel be mounted to a wall or return plenum and NOT on the furnace or plenum where it will be in contact with the hot temperatures.. The panel can be located in an attic space or in an enclosed cabinet of a rooftop unit, in order for the panel to be in direct exposure to the elements.

The cover easily removes from the case by pulling firmly and separating the cover from the case exposing the circuit board. There are 4 key-hole mounting points in each corner of the case. The case has openings in the rear of the case as well as the side for all wiring. Wiring can come from the back as well as the side in order to make a neat installation.

OPERATION

The MZA2 is an extension of the MZS4 zone functions. The MZA2 must use the same thermostat wiring configuration as the zones on the MZS4. The MZA2 is not used as a stand alone panel.

On a call for heating or cooling, the panel will accept the first call from any zone, providing no other calls for heating or cooling exist in the system. Upon accepting this call the MZA2 will open its zone damper(s), if not open already, close the damper(s) to those zones not calling, activate the needed HVAC controls for heating or cooling, whichever is being called and not accept any calls for the opposite mode.

Any calls for the opposite mode will be locked out until the initial mode is either satisfied or a period of time has elapsed that is sufficient for the first mode to satisfy, a maximum of 20 minutes. A Patent Pending sequence determines the time the unit has been running or needs to continue to run in order to adequately provide conditioning for each mode. If a particular mode has already been calling for 20 minutes or longer and an opposite call comes in the MZA2 will immediately drop the mode, enter the purge mode in order to dissipate the conditioned air into the zones calling before switching over to provide the new conditioning call to its zones.

All other functions are identical to the MZS4 zone operation, see the MZS4 Installation Instructions for further details.

DIP Switch Settings

The MZA2 is factory set for conventional single heating and cooling thermostats. The panel only needs to be configured when using heat pump specific thermostats. These thermostats have a single output Y connection the call the compressor for both heating and cooling. The reversing valve terminal O or B is used to determine whether the Y call is for Heat or Cool. When using either terminal will determine whether DIP Switch 2 or 3 is placed ON. Never should both be set to ON. See below for other DIP Switch settings.



- TEST** – Placing this switch to ON accelerates all of the timing sequences for second stage and changeover, allowing the technician to check all operational functions in a shorter period of time.
- STAT O TO W** – Switch is placed to ON when using Heat Pump thermostats that use an O terminal to activate the reversing valve in COOLING. The O on the thermostat is wired to W on the zone terminal in order to determine if the call is for heating or cooling. All zone thermostats must operate and be wired the same way.
- STAT B TO W** – Switch is used when using Heat Pump thermostats that use a B terminal to activate the reversing valve in HEATING. The B terminal on the thermostat is wired to W on the zone terminal in order to determine if the call is for heating or cooling. All zone thermostats must operate and be wired the same way. **NOTE: Some OEMs use the B terminal as a transformer Common and not as the heating**

reversing valve. These thermostats will use the O terminal for the reversing valve and should be wired accordingly using DIP Switch #3. The B terminal will then be wired to the C terminal on the thermostat terminal block.

- CONTROL** – This switch is for future use.

One of the many features of the DIP switches is if at anytime the equipment is changed from single stage to heat pump or vice versa the thermostats do not need to be changed with the equipment change. Changing the DIP switch settings is all that is needed.

WIRING

The MZA2 is very simple to wire and requires only a minimum number of connections. The MZA2 terminal blocks are screw-less and all wires can easily be pushed into their respective terminal by de-pressing the button for each point and releasing once the wire is seated. To remove the wire, just press its button again and remove the wire.

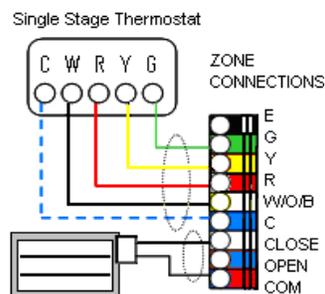
Zone Dampers – The MZA2 can power any 24VAC damper, either 2 wire or 3 wire. See specific wiring instructions with the damper or inside panel cover.

Zone Thermostats – The thermostats wiring will be for single stage (Y-G-R-W-C) or Heat Pump (Y-G-R-E-C and O or B). This wiring is shown on Diagrams 1 for single stage thermostats and 2 for heat pump thermostats.

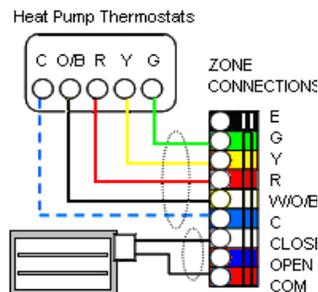
Transformer – A 24VAC, 40VA Transformer is required to power the panel. This transformer is wiring to the 24VAC1 and 24VAC2 terminals on the lower right corner of the circuit board. Before wiring to the MZA panel, check the phasing of this transformer with the transformer that powers the MZS4 panel. Ensure that both transformers are in phase with one another. See directions on page 4.

Zone Adder Connection – The MZA panel communicates with the MZS4 using a modular, six (6) conductor cord with RJ11 jacks on each end. A seven (7') foot cable is supplied with each MZA panel. This cord is connected to the modular plug on the bottom of the panel and the other end connected to the modular MZA connector on the MZS4 panel. Up to 3 additional MZA panels are connected in the same way in a daisy chain from one MZA panel to the next.

WIRING DIAGRAM 1 – Single Stage Thermostat



WIRING DIAGRAM 2 – Heat Pump Thermostats



CHECKOUT

The MZA2 has unique features that simplify the checkout of the system and has LED readouts that constantly indicate the system operation. Once 24 Volt Power is applied to the panel the Green Power LED will illuminate. This will stay illuminated constantly when power is applied.

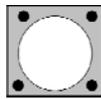
The System LED will provide several different indications based upon color and if it is flashing.

Heat ON – RED
 Heat Limit – RED Flashing
 Cool ON - GREEN
 Cool Limit - GREEN Flashing
 FAN ON/PURGE - AMBER

Each zone has its own small Green indicator LED next to each zone relay. This light is lit when the specific zoning is calling for the mode shown on the System LED. When this LED is GREEN this zone is calling and its damper must be Open. If the damper is not OPEN, check the motor terminals for 24V on COM and OPEN. When the damper is supposed to be CLOSED the Green LED will be off and power will be across motor terminals COM and CLOSE.

TROUBLESHOOTING

The MZA2 is a very simple control to troubleshoot, especially with the LED indicators. The only other device needed is a simple Volt/Ohm meter. Almost all problems can be traced to an external component or wiring to the MZA2. While the MZA2 has been designed to operate under extreme voltage conditions and is fuse protected, like any computer the micro-processor can hang up and not operate properly. For these instances a BOOT button has been installed that re-boots the micro-processor just like your computer. Pressing this button for a few seconds and then release it will allow the micro-processor to re-boot and in most all cases eliminate the problem. If not the following procedure can help isolate the problem.



BOOT

Zone(s) Not Calling

Each zone has a Green LED next to the zone relay when it is calling and that call is being recognized by the MZA2. Provided no other zone is calling for the opposite mode, check the zone that is supposed to be calling and the Zone's LED. If it is not on, check for 24VAC across the thermostat terminal C and the Y, if a Cool call, W if a Heat Call, or G if a Fan call. If there is no voltage here at the panel, the panel is not getting the signal from the thermostat. The problem is mis-wiring, a broken wire or a problem in the thermostat. To check the zone on the panel, place jumper from R to Y, R to W or R to G to see that the panel is operating properly.

Zone(s) Will Not Shut Off

If a zone will not stop calling, the Zone LED should still be on. Depending on the call disconnect the Y, W or G wire from the terminal strip. The zone will drop out. Check the thermostat wiring for a mis-wiring or short that keeps the zone calling. If the call remains and the thermostat is disconnected, replace panel.

Damper Motor Checkout

To checkout the dampers, the panel provides 24VAC to the COM and OPEN when the damper is to be open and 24VAC to COM and CLOSE when the damper is to be CLOSED. When any zone is calling and its Green LED is ON, there is 24VAC across COM and OPEN. The only time a damper will close is when another zone is calling and its zone is not calling. In this instance there will be 24VAC across COM and CLOSE.

Power Light Not On

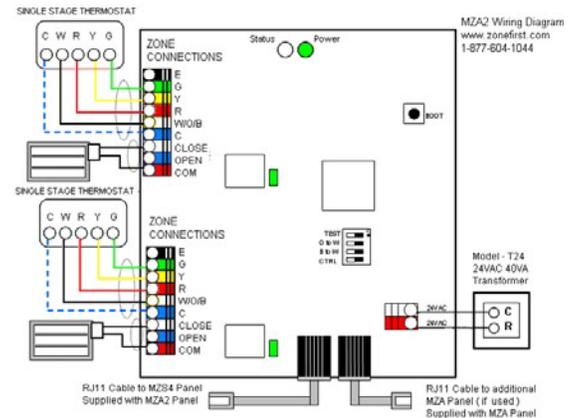
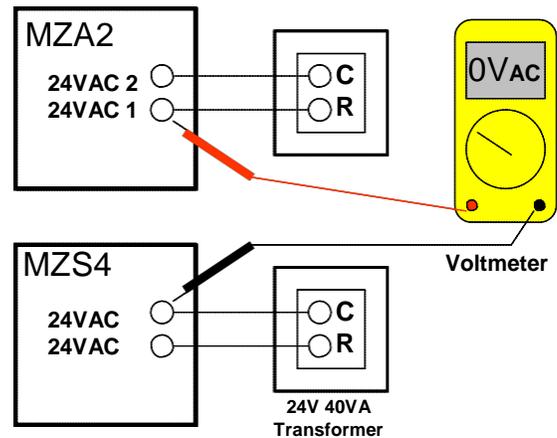
If the Power light is not on and there is 24VAC at the transformer terminals, the MZA2 fuse, (Yellow rectangle component above

transformer terminals) may be blown. To check, touch to see if component is hot. If it is hot, fuse is blown and must be reset. This is also indicative of a potential wiring short.

Remove all wires from the MZA2 panel and check fuse to make sure it is not hot. Place 24VAC wires back to transformer terminals on panel and power LED should come back on. If it does not, replace board. If it does light, begin adding the wires from each zone to the panel one by one checking the power LED at each point. If the power LED drops again check these wires for a potential short.

TRANSFORMER PHASING

When using separate transformers to power the MZA2 and MZA2 panels it is required that all transformers be in phase with one another. To check the transformer phasing use a voltmeter and check for voltage on one leg of the 24V transformer connection on the MZA2 panel to the opposite leg of the 24V transformer connection on the MZA2 panel. See the diagram below. The voltmeter should read zero (0) Volts. If the voltmeter reads 24V or 48V, reverse the leads of one of the transformer until the voltmeter reads zero (0) volts. Reading zero volts proves the transformers are in phase with one another.



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