EcoNet ® 800 Series Zoning Installation Instructions

<u>These instructions apply to the 800 series Smart Thermostat Zoning system only.</u>

The EcoNet® Zoning System allows a single HVAC system the ability to maintain multiple desired space temperatures by managing capacity and airflows into different spaces in the home. While zoning is not a new concept, the equipment, how it operates, smart communications as well as changes to regulations may be. The EcoNet zoning system operates on different specific principals than many other zoning systems on the market today.

Only EcoNet® compatible HVAC equipment can be used. With limited exception, non-communicating, two stage outdoor units may be used but are limited to two zones. Ideal applications will use fully modulating equipment where there is more flexibility in system minimum airflow requirements, and those ideal applications will not generally need an Intelligent Bypass. To achieve this, regardless of equipment used, each of the individual zones should support the minimum airflow of the equipment selected and installed. Do not depend on Overconditioning or an Intelligent Bypass for large volumes of excess air as this may create system issues and customer complaints.

A Successful and satisfactory installation will start with a full understanding of the EcoNet Zoning System's capabilities, features and limitations as well as the skills and training of the installation crew. For best results…

- Attend up to date EcoNet Zoning training provided by a qualified Distributor Partner or a Factory District Technical Representative.
- Read and Understand the EcoNet 800 Series Application and Design Guide.
- Read and commit to following these Installation Instructions to insure a pleasing experience for your customer.

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EcoNet® Zoning Equipment and Components

Compatible Equipment

- EcoNet Communicating Furnace or Air Handler with variable ECM motor.
  - RHMVZ, RH3VZ or RH2VZ EcoNet Enabled Communicating Air Handler
  - (-)802V, (-)962V, (-)97MV, or (-)98MV Gas furnace
    - NOTE: Single Stage, EcoNet enabled Gas furnaces should not be zoned.
    - NOTE: Systems containing either a single stage outdoor unit or two stage heat gas furnaces should be limited to two zones.
    - NOTE: Recommend use of 13KW and higher Electric Heat Kits as they have three stages of heat when smaller zones are used.
- EcoNet Communicating outdoor multi-stage AC or Heat Pump.
  - (-)A15AZ, (-)A16AZ or (-)A18AZ Condenser
  - (-)P16AZ or (-)P18AZ, Heat Pumps
    - NOTE: Mid-Tier Outdoor units with inverters lower than 18 SEER2 are limited to two zones.
- EcoNet Smart Thermostat acting as Zone 1 Master Controller
  - (-)ETST800SYS
- EcoNet Zone Controller (2-5)
  - (-)ECTL800ZON
- EcoNet Zone Panel (1 or 2)
  - REPNL700ZON
- EWC® Brand Ultra-Zone® - Fully Modulating Dampers
  - URD Modulating Round Damper(s)
  - SID Slip in Modulating Round Damper(s)
  - Fully Modulating Rectangle Louvered Dampers
- Supply Air Sensors – Required when Intelligent Bypass is used.
  - RXHT-A02 For Air Handlers
  - 47-24225-01 for Gas Furnaces

EcoNet Communicating Furnace or Air Handler with Variable ECM Motor

Many EcoNet-enabled HVAC systems with ECM variable speed (constant CFM) blower motors are supported. EcoNet systems with a constant torque (X-13 or similar) blower motor or gas furnaces with only one stage of heat are NOT supported (E.G. RH2TZ series air handlers or (-)801V Gas Furnaces). Selection of a two-stage furnace over the modulating will impact how many and how zones can be designed because of a higher airflow requirement for lowest stage. We strongly encourage two stage furnaces be limited to two zones regardless of outdoor unit selected.

EcoNet Communicating Outdoor Multistage AC or Heat Pump

EcoNet-enabled outdoor units are compatible with EcoNet zoning and must be considered when determining system design. 18 SEER2 Inverter driven condensers and heat pumps will have a lower minimum airflow requirement than a mid-tier inverter condenser or heat pump. Remember a mid-tier outdoor unit, once staged up to run on the contactor (100%) cannot be commanded to stage

back down to the inverter. This means the lowest airflow considered for these systems is full rated CFM or at least very close to it with a plan on how to deal with the excess.

Components

EcoNet 800 Series Smart Thermostat Acting as Zone 1 Main System Controller

EcoNet (-)ETST800SYS Smart Thermostat

The EcoNet 800 Series Smart Thermostat, part number (-)EST800SYS, serves as the main control of the EcoNet zoning system and is used as the Zone 1 thermostat control. Only this control contains the necessary programming and algorithms needed to operate the EcoNet Zone System. It allows the user to configure the HVAC equipment, zoning settings and operate and monitor the system. Additionally, it provides a single interface for users to view the status of each zone.

EcoNet 800 Series Zone Controller

The secondary zone controls, part number (-)ECTL800ZON, must be used as the zone control/sensors in all other zones. The zone control displays the zone temperature and allows the user to adjust the zone set points, fan speed, schedule and other settings for each individual zone. These controls do not necessarily have to be wired back to the EcoNet zoning panel or main control, but rather they can be wired in series to any device on the EcoNet communicating bus. The zone controls look and are physically identical to the main (-)ETST800SYS Smart Thermostat but have very different control firmware.

EcoNet Zone Panel

The EcoNet zone panel, part number RPENL700ZON is compatible and used with both the previous EcoNet zone system that utilized the 700 Series Smart thermostat and zone controllers and the 800 Series zoning system. The zoning panel translates communicating commands from the thermostats to the modulating dampers. Each zone panel will accommodate up to 3 zones or 2 zones and an intelligent bypass. Two panels may be combined for a total of six 6 zones, or 5 zones with a bypass when fully modulating equipment is used. One dip switch on the panel identifies the panel position or number and the second dip switch identifies, when in a 3 or more zone system with an intelligent bypass, zone 6 can be either used as a zone or an intelligent bypass damper. There cannot be a 6-zone system with a bypass.

We have partnered with EWC® to provide the only approved dampers to the EcoNet zoning system. While the dampers are also used in EWC's own zoning systems and the (-)EPNL700ZON panels are manufactured by EWC, they are not compatible with EWC's own line of zoning panels and thermostats. Likewise, any EWC non-EcoNet branded panels or bypass options are not compatible with the EcoNet zoning system.

EWC® Brand Ultra Zone® – Fully Modulating Dampers

The EcoNet Zoning System is compatible only with EWC® Ultra-Zone® damper models URD (ducted round), ND (rectangular louvered), or SID (slip-in round). They are all 24VAC power open/power close allowing for full modulation to one of 35 positions. The dampers are wired to the zone panel, with each zone being able to support up to five (5) dampers. Depending on which zones require conditioning, and how much demand is in the individual spaces, the dampers automatically open and close to the appropriate various position. Do not attempt to use dampers other than those listed regardless of manufacture.

Images of damper types.

The EWC® URD (Ultra-zone® Round Damper and SID (Slip-in damper) are suitable for round duct applications. The Slip-in damper is used on round ridged duct and is not designed for use on flexible duct.

EWC® URD Round Damper

EWC® SID Round Damper

The EWC® ND Rectangular Dampers come in many standard sizes and customized sizes.

EWC® ND Rectangular Damper

Bypass Damper

When an EcoNet zoning system has a bypass damper, only the previously mentioned URD, SID, or ND rectangular Dampers may be used for the bypass. Do not attempt to use a barometric, fixed or even the EWC Non-EcoNet Smart Bypass. The EcoNet system needs to have full control of the bypass damper.

Bypass dampers are generally in a duct that connects the supply air trunk or plenum to the return air trunk or plenum. Bypass dampers may also be used as "dump" zones where local codes permit. Dump zones should still direct air into a conditioned space and should not be used to allow excess air to be sent to attics, crawl spaces or garages.

A bypass damper will connect to the EcoNet zone panel in either the Zone 3 location when on a two-zone system or for systems with 3-5 zones, it will be connected to the Zone 6 location on the second zone panel. If the damper is connected to the Zone 3 location on a single zone panel application, the dip switches should be left OFF, and the damper is set up in the 800 Series Smart thermostat. If, on the other hand, it is placed on the Zone 6 terminal when 2 panels are used, the dip switches will need to be set accordingly. See the section on zone panel installation on page 17 for dip switch settings.

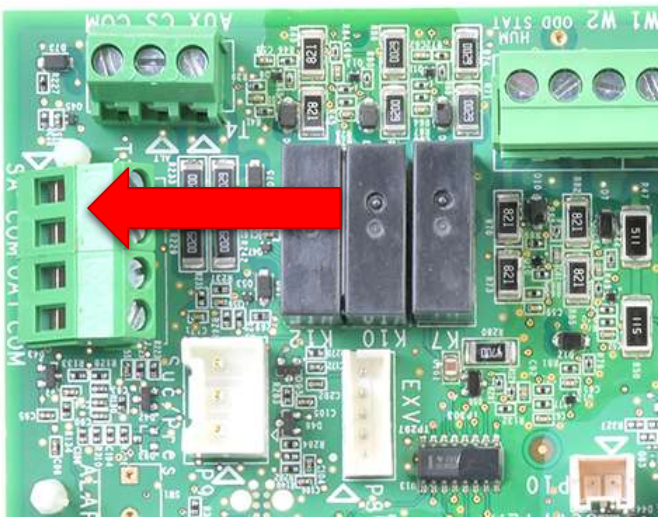
Supply and Return Sensors

Supply and return plenum sensors are not required unless you have a bypass but may still be used anyway. Furnaces will only require only a supply sensor when a bypass is installed because the return sensor is built into the control board which, of course, is in the blower section before the heat exchanger or any indoor coil. Air handlers will need both a supply and a return sensor.

Furnace Sensor

The recommended furnace supply air sensor is part number 47-24225-01 which comes with a lead long enough to reach the plenum beyond the coil. It is wired into the furnace control board on the SA and Com terminal. (See Image below).

The sensor should be installed in the plenum beyond the indoor coil. The coil will block most of the radiant heat from the heat exchanger although installing it into one of the main trunk take-offs at the plenum will ensure radiant heat does not impact the sensor operation. The sensor is a typical 10k ohm @ 77°F (25°C) sensor.



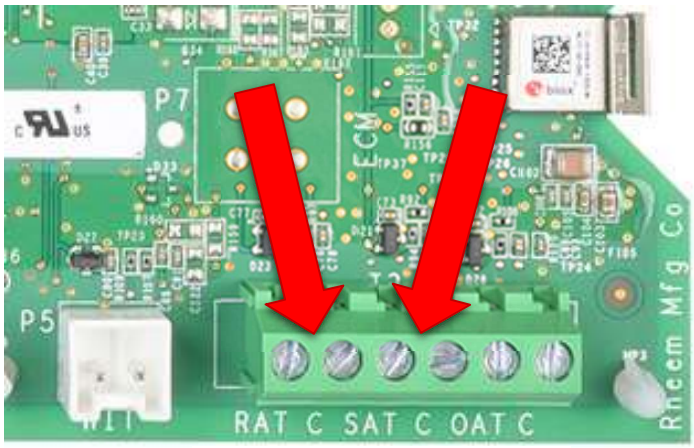
Furnace Control Board

47-24225-01 Furnace Supply Air Sensor

Air Handler Sensors

The RXHT-A02 Sensor kit is used for air handlers and includes two sensors. While these sensors are compatible with the last generation of equipment and come with 2 or 3 prong connectors, the connectors will need to be cut off, and the wires stripped at the end to be used in current equipment. The Sensors are connected to RAT (Return) and C and the SAT (Supply) and C respectively.

RXHT-A02 Sensor Kit.



Air Handler Control Board

It does not matter which sensor goes to which set of terminals as they are both 10k ohm @ 77°F (25°C). The different color wire leads make it easier for you to know which sensor was placed in which location.

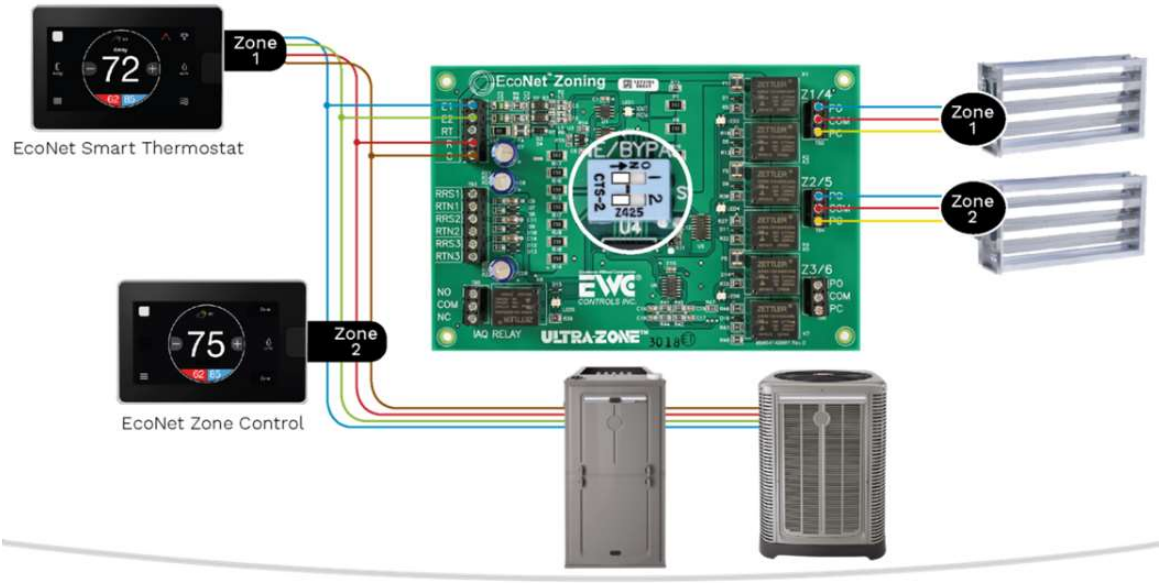
Zoning Considerations

Each home and each system is different and all these variables need to be considered when applying and designing the zoning system for the space. Forced Air zoning utilizes a single system and tries to do the work that multiple systems would normally be required to do.

It is never a good idea to attempt to zone single stage equipment unless each zone can handle the full capacity of the system. The challenge you may face when oversizing the ducts to accommodate such a design is then controlling how the air will be distributed with all zones open. In addition to single stage systems, we must also consider the inherent limitations of two stage equipment. In the case with our residential heating and cooling products, staged equipment is not 50% on low and 100%, but rather 70% for low and 100% whether it's a gas furnace or a heat pump. Gas furnaces will be the more difficult challenge in this case. it's best to not attempt to use more than two zones when any two-stage equipment is being used regardless whether it's a furnace or an outdoor unit.

Gas furnaces on low fire operate at 70% of full capacity and airflow, and if multiple zones are used it will be difficult to ensure enough airflow when only one smaller zone is calling to prevent the furnace from limit switch trips or long-term overheating of the heat exchanger. Unlike some off the shelf zoning systems, the EcoNet system is not only tasked with providing the best comfort but it also must protect the equipment. At face value, the simple solution may be to install a bypass but remember that heat is going back into the return and can cause supply air temperatures to be high enough to cause a limit switch trip, or long term damage to the heat exchanger and maybe even the coil in the supply plenum. There is a time and a place for a bypass but it's not unlimited. Its best to limit the bypass to no more than 15% of the smallest zone's maximum airflow, and this needs to be considered in the duct design and system selection.

To a lesser degree, when it comes to heat pumps, in heating mode, the high side pressure is directly related to indoor airflow and return air temperatures which when excessive will cause the high side pressure to be elevated to a point the high-pressure safety may open. In cooling, its lesser yet of an issue but we don't want to freeze an evaporator or cause a low-pressure event.



Ideally, the modulating zoning system, essentially a variable duct system, should use fully modulating equipment. This would include the modulating gas furnaces and the 18 SEER2 inverter systems. These systems work better than others in a zoning application.

It cannot be stressed enough that managing expectations is a big part of preventing problems or concerns after the system is installed.

Today, products such as the mid-tier inverters like the (-)A15AZ, (-)A16AZ, and (-)P16AZ series of condensers and heat pumps, while variable in capacity do create some challenges when it comes to zoning them. These models will jump past the variable capacity at 90°F (32.2°C) outdoor temperatures, and in the case of the heat pumps, below 32°F (0°C). Additionally, once the system has switched to line voltage (100%), it is incapable of syncing with the inverter drive and staging back down without shutting off. It can go to line voltage as a result of system demand or because outdoor ambient temperatures are above or below the smaller inverter's operating limits. During these occasions when it does stage to 100%, the system is effectively single stage for the sake of zoning. For this reason, the mid-tier inverter product is limited to two zones. If an attempt is made to install more than two zones, the system will shut down zoning all together and issue an alarm, but still run as an un-zoned system.

As previously mentioned, and to stress the point, any system with 3 or more zones must be the fully modulating equipment.

Zones should also be similar in load and even sizes when possible. Small zones of one bedroom with one or two supply grills can rarely offer enough airflow as a single zone to keep the equipment on-line unless those two supply outlets are significant in size or the equipment is very low capacity to start with. Homes that are zoned usually include having a zone downstairs and one for the upstairs in a multi-story residence. Single level spaces may be zoned east and west or north and south. Larger spaces may be built with multiple systems each having zones. Again, each application and combination of equipment is different, and its near impossible to include specific instructions for every one of those applications. It's up to the installing contractor to lay out what will work best based on his professional knowledge, training and experience.

Designing the Zones

As stated before, zoning a home with forced air, ducted systems can be tricky, and it doesn't necessarily mean every room can have its own thermostat. The challenge with that thinking is the zones will be too small to manage the minimum airflow required by the system. Its best to zone a home in a reasonable manner with a combination of systems and zoned systems. Again, manage expectations early. An average two-story home would ideally have the upper level as one zone and the lower level as another zone. If its large enough, it may be that two systems are installed, and the upstairs space is broken into two manageable zones and the downstairs is also split into two zones. For a single-story home, it may be east and west or north and south depending on the layout and orientation of the home. Maybe one of these examples could use 3, 4, or 5 zones but we need to be very careful that each zone must be able to handle the minimum airflow of the system.

To clarify minimum airflow, all zones must be designed to handle the highest minimum airflow of the system. The highest minimum airflow could be low-stage heating or cooling depending on the system combination. One example may be using a (-)A18 variable capacity outdoor unit but only a two stage furnace. Likely, the furnace running at 70% capacity, low stage will likely have a significantly higher minimum airflow than when the system is running in cooling mode driven by the 18 SEER2 outdoor unit. You must consider the whole system. If more than two zones are required in this example, a modulating furnace should be used.

On page 3 of this document, and in the EcoNet Zoning Application guide, it states the following.

- NOTE: Single Stage, EcoNet enabled Gas furnaces should not be zoned.
- NOTE: Systems containing either a single stage outdoor unit or two stage heat gas furnaces should be limited to two zones.

These boundaries are in place to ensure a properly operating, reliable system and are not written to make the installers job harder arbitrarily. Consult the tables beginning on page 30 of this manual to determine the smallest zone size. If expectations are managed up front, fewer problems or customer complaints will exist once the system is installed. Examples of a typical system and minimum system airflows from tables.

Equipment Selection:

(-)962V0855A21M4SCAP - 2 stage heat gas furnace.
(-)A18AZ36AJVCA - Variable capacity condenser.
(-)CFZ6021SEAAMC - Indoor Coil

According to the tables beginning on page 30, the furnace minimum airflow when running on low fire is 1475 but it can be adjusted to as low as 1162 using the installer set up screen in the EcoNet thermostat. When running in cooling mode, the minimum airflow is 580 CFM and if a 10% airflow reduction is applied in the installer settings, that will now be 464 CFM.

In this example, the difference is significant, but the zones must be designed around the highest of the minimums. In this case our smallest zone needs to be able to handle 1162 CFM if we don't expect to have a bypass. Remember a bypass, if used should be expected to relieve no more than 15% of that smallest zone's minimum. The math tells us that the smallest zone, with a bypass needs to be able to handle a minimum of 988 CFM. In the event, a zone, with a bypass cannot handle this volume, it may be wise to reconsider the furnace to either a modulating furnace (-)98MV085 which has a minimum airflow in heat of 925 with no airflow adjustment. If we increase the temperature rise by 7°F, that airflow will be reduced even more.

If a zone cannot supply these minimum airflows, it cannot command the system to operate if this smallest zone is the only zone calling. An alternate plan may be to overcondition another zone. Ideally this would be one that is least unoccupied or where exact temperature control is not critical. It may not be a bad idea to consolidate and reduce the number of zones if possible.

Designing the zones - continued

In another example, consider the following equipment.

(-)P18AZ48AJVCA – 2 ton variable capacity heat pump
(-)RHMVZ6021SEACAJ – variable capacity air handler
RXBH-1724?13J-B – 3 stage, 13KW heater kit

Checking the equipment against the tables, we find an un-adjusted minimum CFM of 550 in cooling and 600 in heat mode. If those are adjusted down by 10% in the thermostat, they can now be 450 and 495 respectively. (The 3, 4 and 5 ton heat pumps, when zoned by the EcoNet zoning systems are reduced to these values). The thermostat and zoning system control the outdoor unit's capacity and the air handler does what the outdoor unit tells it to, except when the electric heat is on as auxiliary or supplemental heat. Since we selected the 13kw heater, the lowest airflow on 1st stage electric heat is 350. Had we selected a 10kw heater that only has one stage our minimum airflow would be 600 when the electric auxiliary heat is on. The EcoNet zoning system manages the electric heat staging when staging is available. If the system is switched to emergency heat, the zoning is disabled, and all zones will be heated per the Zone 1 set point.

This example system without any bypass will need to be able to handle 495 CFM at each zone individually. This system may well be suitable to have 3,4 or even 5 zones since the airflow limits are so low as long as each of them can manage 495 CFM.

Damper Selection

Zones may be made up using one damper each or up to 5 dampers wired together to make up each zone. Again, we are using the damper models URD - round damper, the SID – slip in damper or the ND rectangle damper. All of these dampers use the same modulating actuators. Which are driven by the REPNL700ZON panel(s) in 35 discrete steps. Refer to the wiring section on how to wire dampers as single dampers or as a group for each zone. Each damper has three terminals designated as COM (common), PO (power open) and PC (power closed). The zone panel also uses these same designations.

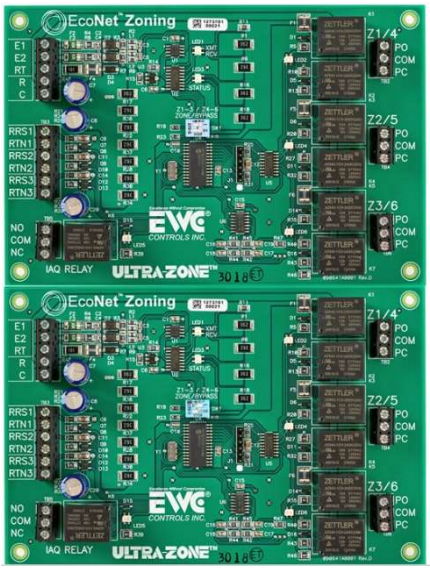
Zone panel damper connection terminals

35 Step Modulating Damper Actuator

Installing the Zone Panel(s)

The zone panels are to be installed on a wall or studs adjacent to the indoor air handler or furnace. Plywood will make a good backing board if needed. They should not be installed directly to the equipment or supply duct. The panel may be installed in an unconditioned attic, basement, or crawlspace if that is where the air handler is. Snap the protective clear dust cover over the housing when finished.

Part #: REPNL700ZON



To install the plastic housing, pictured above, use 4 screws and attach the housing directly to the mounting surface. Each zone panel comes with its own grey plastic housing, however you may install a second zone panel, if required, into one of the housing assemblies and discard the second housing.

In order to install two panels into one housing, remove the screws securing the panel to the housing and adjust the position in the panel along the railing mount channel so a second panel will fit below the first. Remove the second panel from its housing and install the second panel below the previously adjusted panel.

Installing the Dampers

The dampers should be installed as close to the plenum as possible. If retrofitting an existing duct system, the dampers may be installed at the individual supply branch take offs. They should not be installed at the far end near the supply registers.

URD round dampers are to be installed between round ridged ducts or may be used in a flexible duct system. Secure the duct to the damper just as you would a section of pipe with screws and your desired form of sealant although its best to hold off on the sealant until the system operation is verified in case the damper operation has to be observed. Be sure screws do not impede the rotation of the

damper and ensure the duct remains perfectly round and not squished into an oval shape as this will also prevent damper movement inside.

SID slip in dampers are used where existing ridged round duct is installed and you do not wish to disassemble the ductwork and insulation. A slot, using a template is cut into the ductwork large enough to receive the SID while still allowing the assembly to be attached to the duct with screws. Again, make sure not to allow screws to impede the rotation of the damper. Do not attempt to use SID dampers in flexible duct.

ND Rectangular dampers are intended to be slid into the rectangular duct system by cutting into the side duct system. Measure twice, cut once and slide the damper in and secure it with screws.

In all cases, make sure you have access to the actuator for wiring and future service. Do not mount the damper in a way the actuator will be at the bottom as condensation could cause premature failure of the actuator.

Wiring Overview

The EcoNet zoning system communicates on a 4-wire bus between all equipment, zone panels and thermostats. The 4 wires and terminals are all designated as E1, E2, R and C. The E1 and E2 is where the communication takes place. R and C are 24vac power. The E1 and E2 do have a direct relationship with C. Regardless, with few exceptions, there will be 4 wires to every device.

Dampers are wired directly back to the panel with 3 wires. The terminal designations are COM, which is common, PO which stands for Power Open, and PC which stands for Power Close. These are not communicating dampers, rather relays in the zone panel drive the dampers incrementally open or closed or to any of 35 positions between. Thermostats do not connect directly to the dampers.

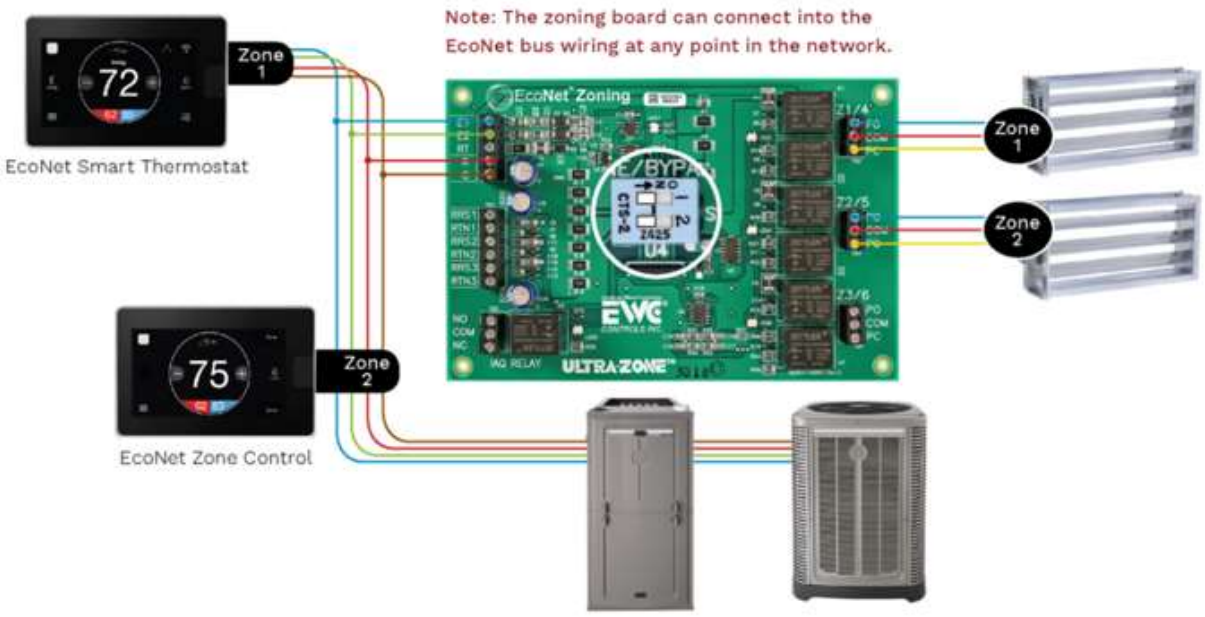
Wiring between components should be standard, 4 or more conductor, 18-gauge thermostat wire. In very few applications will shielded, stranded wire be required. Do not run wiring parallel to strapped to high voltage wires or conduit. Only in cases where this cannot be avoided would the shielded wire be required. In those few instances, the ground is only connected to one piece of equipment. Grounding at more than one location can cause current loops in the shield, reducing effectiveness.

The EcoNet Bus

The EcoNet bus is connected to the top left of the zone panel using the designations E1, E2, R and C. The other terminals along the left side of the panel are unused in all applications. The zone dampers are connected along the right side of the board and are designated as Z1/4, Z2/5 and Z3/6. Because a unit may have two panels, the designation Z1/4 can mean either Zone 1 or Zone 4 depending on which board is first.

The Low voltage terminals in the EcoNet systems will easily accommodate 2 18-gauge conductors. It is possible to get 3 in but its more difficult. The thermostat subbase will generally only handle one conductor per terminal. It's best to daisy chain the EcoNet bus rather than wiring in a star pattern with one device being a central hub. Daisy chain wiring will reduce the chance of data collisions on the bus. Sometimes a portion of the bus may have to be wired in a star pattern but limit this as much as possible. The overall, accumulative length of the EcoNet bus is limited to 250'

In the example on the next page, a simple two-zone system is wired.



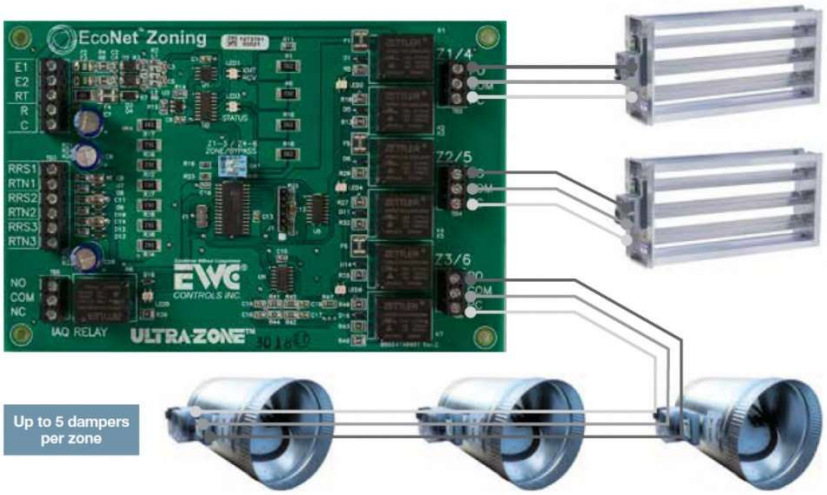
Wiring the Thermostats

The main thermostat and zone controls have the same subbase. The subbase has 6 terminals marked R – 24vac, C – Common, S1 – Remote Sensor, S2 – Remote Sensor, E1 – Communication, E2 – Communication. These connections and wires must be the same at all devices. S1 and S2 can be used to install a remote space temperature sensor if desired.

The order in which the devices are wired is not important although its best if the main thermostat is can be located at one end of the bus since it does most of the communication. This will also help reduce the chances of data collisions.

Wiring the Zone Panel & Dampers

On the right side of the image below, single dampers are used for Zone 1 and Zone 2. Zone 3 is made up of several dampers. These can be wired in parallel or in series. For this example, they are wired in series.



Dip Switches

Each zone panel has two dip switches located in the center. A two-zone system with or without a bypass will only use one zone panel and the dip switches will be set to the left (OFF). Any system with either 3 or more zones with a bypass or 4 or more zones without a bypass will require a second panel.

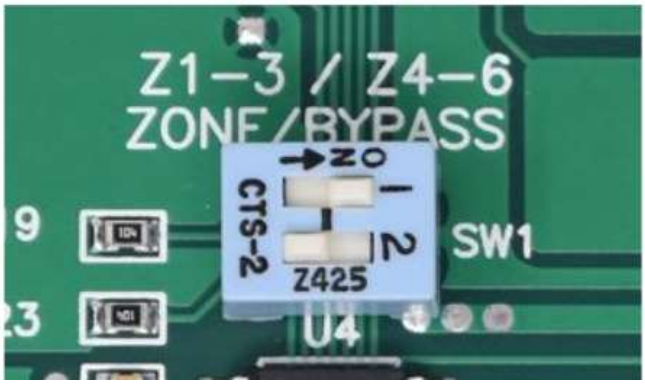
When two panels are used, the dip switches designate the role of each panel and whether Zone 6 is being used as a zone or a bypass. No system can have 6 zones AND a bypass.

As seen below, the dip switches are numbered 1 and 2. Dip switch 1 designates whether the panel is being used for zones 1-3 or zones 4-6. The first panel will have dip switch 1 moved to the left (Off) designating it as panel 1 or zones 1-3. The second panel will have dip switch 1 set to the right (On) designating it as panel 2, or rather zones 4-6.

Dip switch 2 is also set to the left (Off) on panel 1. On panel 2, this switch tells the system if the damper connected to Z3/6 is a zone damper or a bypass damper. If it is a zone damper, it will be switched to the left (Off), and if it is a bypass damper, it is switched to the right (On). The image below shows panel two is configured to have zone 6 an actual zone or otherwise unused but has no bypass.

Board 1 (zones 1 - 3)

Board 2 (zones 4 - 6)



Intelligent Bypass

The Intelligent Bypass is one of the EcoNet zoning system's method to shed excess air when a zone has a maximum airflow setting slightly lower than the minimum airflow required to allow the system to run. A simple example may be where a zone can only handle or be set to 700 CFM due to static, RPM or customer sensitivity to noise, but the system needs a minimum of 800 CFM to bring the equipment on in the lowest stage. The Intelligent Bypass would be

used in this case to allow 100 CFM from the supply plenum to be bypassed, most commonly, back into the return plenum by opening a damper that is mounted in a duct between the two. The intelligent bypass considers demand at other zones as well. If another zone has a small demand and the damper to that zone is enough to manage that 100 CFM, the bypass would remain closed until the demand changes enough to require it be opened again.

Its best to size all zones to be able to manage the minimum airflow of the equipment with no bypass would be required. If a bypass is used, it should be sized no larger than 15% of the smallest zone in order to protect the equipment from extreme return temperatures in either heating or cooling mode.

A bypass can also be mounted to "dump" the excess air into another space such as a large great room where the 100 CFM, in our example, would not have much impact to the space temperature in that large space.

If no bypass is desired, overconditioning in another space can be configured to open its damper slightly to accept that additional air. This is configured in the alternate zone controller, or in the case of Zone 1 at the main thermostat. This will be covered in the Zone settings section of this manual.

The bypass dampers are the same type of damper used for the zones; either a URD, SID, or ND damper. For a two-zone system, the bypass is wired into the Zone 3 terminals on the zone panel and configured in the Zone 1 thermostat zoning settings screen. If more than 2 zones are present, the bypass is wired into the Zone 6 terminals as shown below, on the second panel and the dip switches, previously mentioned will be used to configure Zone 6 as an Intelligent Bypass.

Board 1 (zones 1 - 3)

Z1/4
Zone 1 damper output

Z2/5
Zone 2 damper output

Z3/6
Zone 3 damper output

Board 2 (zones 4 - 6)

Z1/4
Zone 4 damper output

Z2/5
Zone 5 damper output

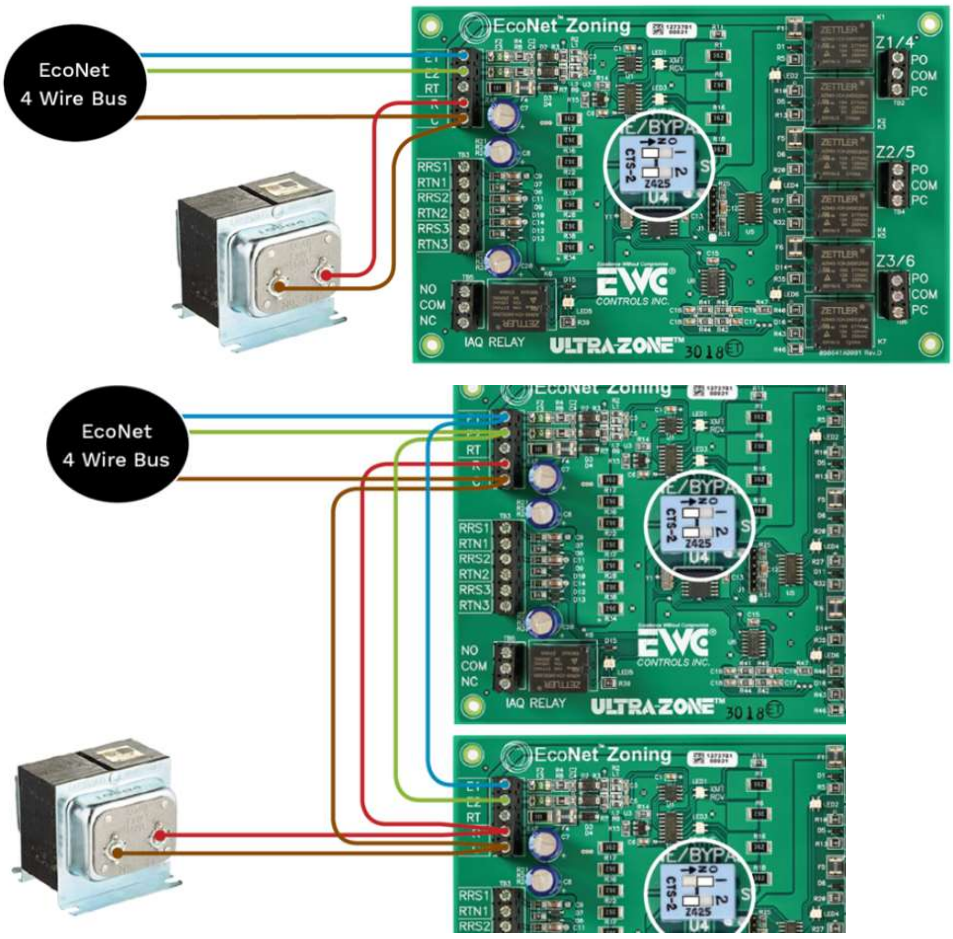
Z3/6
Zone 6 Intelligent Bypass

Adding a Transformer

The main transformer that powers the entire control system is located in the furnace or air handler. These 24VAC transformers are not designed to carry a large amount of additional control load but will handle a few accessories such as a zone panel and a few dampers. Each of the dampers on the system only use 1.5va which is low but they do add up, especially when multiple dampers are used for a single zone and all system operation is coming from the same transformer. This includes pulling in contactors, energizing a reversing valve, relays, gas valves, and signals to variable speed motors to name a few. For this reason, a secondary transformer may need to be added. The general rule is, if there are more than 5 dampers in the system, you must add a transformer.

The second transformer must be phased correctly. The 24vac / 40va transformer secondary is wired into the zone panel and the 24vac R from the main system transformer is removed from the zone panel. The Common however remains connected.

The primary voltage to the second transformer may come from the incoming power to the furnace or air handler without issue.



In the images above, note the red 24vac wire from the EcoNet bus (thermostats and equipment) is not connected to the zone panel but the common remains connected. This allows the second transformer to carry all the damper and zone panel load independently and

the common wire to maintain its relationship with E1 and E2. Check the phasing of the transformers to make sure voltage from R to R is 0vac. Many transformers are not marked so if voltage is measured between one of the wires from the second transformer to R on the EcoNet bus, that is the common wire on the second transformer.

Start-up and Commissioning

If you have been installing EcoNet zoning in the past using the (-)ETST700SYS thermostat, there are quite a few changes in the 800 series that you must pay close attention to.

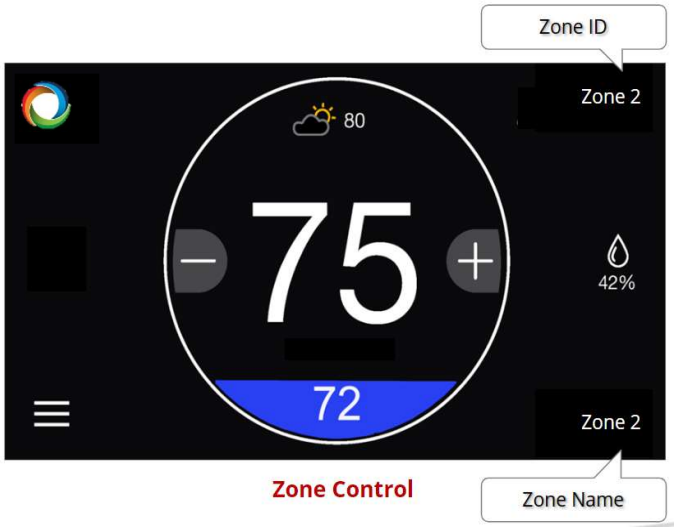
When the equipment is installed, and all the wiring and zone dampers are in place and you are ready to start commissioning, you will need to set aside some time to not only commission the equipment, but set the zoning system up to meet the customer's needs.

Filter Check

Upon powering the system up the thermostat will make sure all dampers are open and start the blower to conduct a filter test just as it would with an un-zoned system. The filter check drives the blower to a designated CFM and checks the static for a baseline. Automatic daily checks will test the system in the same manner and will compare it to the baseline. Once a change in static exceeds the calculated threshold the homeowner will be alterted to check his filter. If the filter is configured to EAC, the filter check routine will be turned off. The filter check is to be used with media filters only. If the customer would rather use the filter timer and has a media filter, you may select EAC to cancel the filter check.

Setting the Zone ID

If there are more than two zones, it is very likely an alert will be present shortly after powering the system because zone controls are by default set to Zone 2 and when multiple Zone 2's show up on the bus, the installer will need to address those additional zones. This is done at the individual Zone controllers. Before configuring the Zone ID's, you will need to verify that the Zone control is in the same area in which the dampers are wired to control.



The (-)ETST800SYS Smart Thermostat is always Zone 1 and there is no adjustment or setting for that. The Additional (-)ECTL800ZON controls will be used for subsequent zones and will be identified by zone number. Each zone can also be given a custom name as well, and this will be covered in "Naming the Zones", but individual ID's are most important first.

To change the zone ID number, go to the zone controls in order and set them by clicking on the 3 bar "hamburger" menu button in the bottom left of the zone control, then selecting settings. At the bottom of the resulting screen, you will see "Zone ID Assignment". This will be left at Zone 2 in the Zone 2 control but must be changed if there are 3 or more zones at the respective zone controller.

On the main screen you will see the Zone ID in the top right, the Zone name, that can be customized is in the bottom right. On a new installation the default value for both is Zone 2

Do not attempt to skip a zone when setting the zone ID's as the system will not function properly. For example, if there are three zones, they must be numbered Zone 1, Zone 2, and Zone 3. Do not not set them, for example, to Zone 1, Zone 2 and Zone 5. If a zone ID is skipped, and change screens before correcting this mistake, the system will be looking for those missing zones and issue a fault. The only way to remove a zone ID that was either mistakenly set or removed, is to reset the factory defaults in the thermostat.

If you must reset the factory defaults for any reason, all changes made to the thermostat to this point will be lost. This includes any duct measurement routine, schedules, airflow adjustments etc. that may have already been done. To reset the thermostat to factory default settings, click on the hamburger menu, click settings, click installer settings and hold it for about 5 seconds, and then when the screen changes, there will be one of the buttons that says "Defaults". Select that button and follow the prompts at the warning screen.

Naming the Zones

It is easier to remember custom zone names than remember which zone ID serves which area of the home. Examples of zone names may be "Living Room", "Den", "Bedrooms", "Upstairs", "Downstairs" and so on.

Unlike the Zone ID, the Zone names are edited in the Zone 1 thermostat. To change the names of each zone at the Zone 1 thermostat, click the 3 bar "hamburger" menu button in the bottom left of the home screen, then click the settings icon. In the settings screen click on zoning and then click "MORE" in the bottom right. You will see the listed zones and their names which match the Zone ID by default. Simply highlight the zone you wish to edit and make the changes. The subsequent zone names may also be edited by the homeowner in the customers EcoNet app, once connected to Wi-Fi.

Duct Measurement

The next task is going to be to conduct a duct measurement cycle and this is done at the Zone 1 control. This routine will be used to determine the zones basic airflow and provide insight to the proportions between the zones. Don't get too hung up on the percentages, especially if a bypass is installed. These numbers are used by the EcoNet system's formulas.

Before starting, set the thermostat to Off so no heating or cooling is not running and make sure there are no alarms in the system. Walk around the home and make sure all supply registers in the home are fully open and the supply and return grilles are unobstructed.

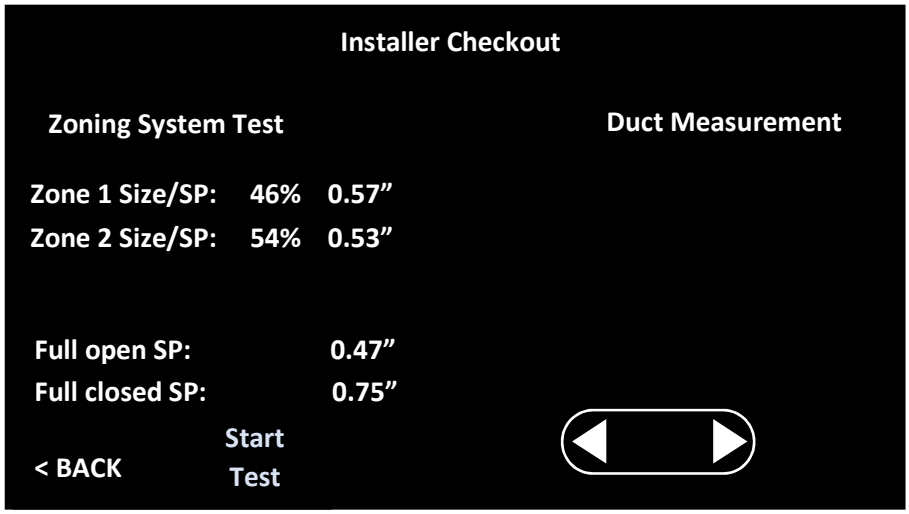
To start the duct measurement routine, go to the main thermostat (Zone 1) and from the home screen, touch the hamburger menu in the bottom left corner and select the Service icon then select zoning checkout. At this point you may highlight the word "Off" and select the test "duct measurement" using the arrows and then touch "start test".

The dampers will be driven open if they are not already open, and the blower will start at a predetermined CFM. This airflow will increase incrementally until there is enough static, which varies by the number of zones, to conduct the test and will stay at this fixed airflow volume for the duration of the test. Once this value is set, The EcoNet Zone system will record the all open system static value. IN about 1 minute, all zones except zone 1 will close. The system will operate like this for 1 more minute and will simultaneously close Zone 1 and open Zone 2. This will continue until all zones, the system will still maintain the fixed volume of air, All dampers will be closed to check for leakage. The system may be a little noisy and register a high static because the blower is pushing against all the closed dampers.

Assuming no faults occurred, the system will generate a report which includes a percentage of system airflow for each damper at that fixed airflow volume and will also show the static for each part of the test. IF a fault occurs during the duct measurement routine, it will have to be resolved and the test repeated until no faults occur.

During the test, the installer can click on the <BACK button and observe the damper operation in the Zoning Status screen. He or She may also look at the furnace or air handler status screens to see the airflow remains constant but the static pressure and motor RPM change as dampers modulate throughout the test.

A final test result will look something like this example:



A key take-away from this report is that when all dampers are open the resulting "Full open SP" should be a relatively low number (Static Pressure) because all dampers were open and

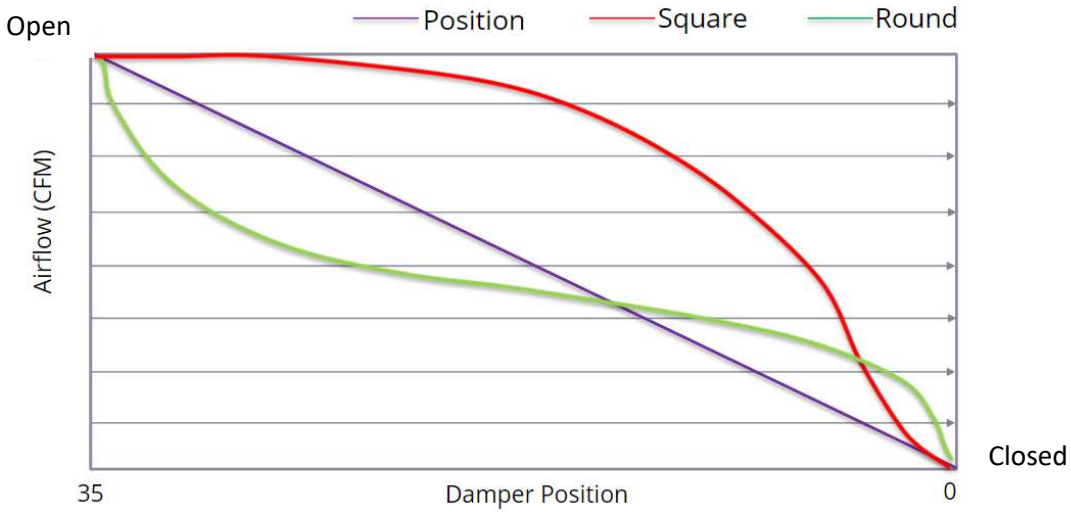
the airflow used was lower than full capacity air volume. Each zone tested will appear as "Zone X Size/SP" this static in all cases should be higher than the full open static pressure because some dampers were closed at this time. Finally, a full closed SP will be listed as a result of the portion of the test where all dampers are closed. In our example, each zone is very close to being equal in size. Remember its not just the damper size but size and length of duct, number, size and length of each supply branch circuit and registers.

If at the conclusion of this test, the Full open static pressure is more than any other part of the test, or the full closed is less than any other, an alarm will be set and will inform you that a damper may not be functioning or is wired or operating backwards.

Linearization

From the same screen in the Zoning System Test, use the right or left arrow to select "Linearize Dampers" and start the test. This test will take a little more time than the duct measurement, around 5 minutes per zone, and it optimizes the damper positions to the various airflows using proprietary and patented algorithms.

This test adjusts for the non-linear airflow to damper openness depending on damper type. In other words, just because a damper is 40% open, that does not mean its delivering 40% of the airflow. Different damper types have different curves. The process moves various airflow volumes through each damper and various openness to "map" the airflow characteristics of the dampers.



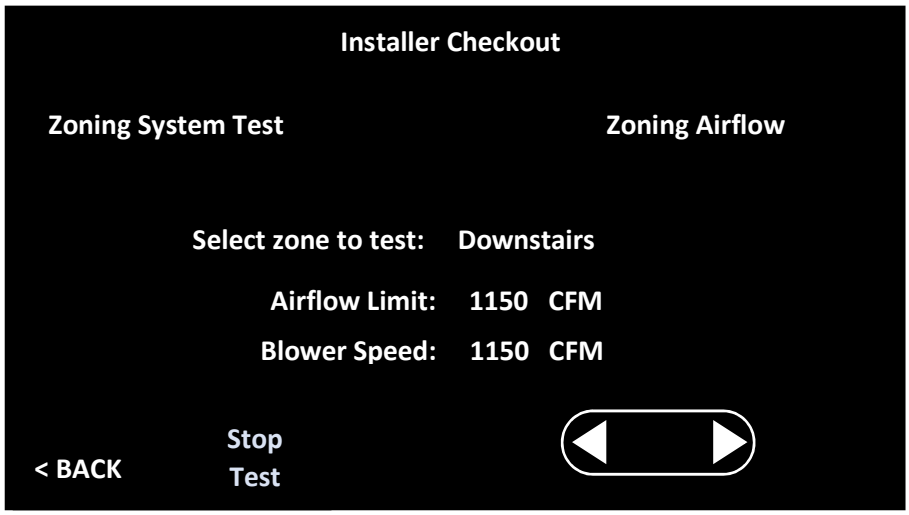
Round dampers for instance, when starting to close have a much faster reduction in airflow than a rectangle does. A round damper at 90% open may only allow 75% of the airflow where a rectangle damper may not see much airflow loss until it is nearly 50% closed. The graph below shows how each damper type is different.

Adjusting Airflow Limits

Airflow limits are set to adjust the maximum airflow values for each zone. These limits are meant to allow the installer, along with the homeowner, to control the airflow noise in each zone and to prevent the blower from cutting back and declaring a fault due to high static or blower motor RPM.

Each zone has a default value of 1700 CFM and will need adjusted by the installer through a series of tests and checks.

To adjust each zone's airflow limit, enter the service screen from the home screen by pressing the hamburger menu in the bottom left, then selecting the service icon, zoning check out. Select Zone Airflow. Select each zone, one at a time, and set the best estimated airflow limit and start the test. The blower will ramp up and attempt to deliver the desired CFM limit. Once met, its best to physically go to that room/zone and walk around and listen to the air noise levels. If they are unobjectionable, and if more is desired, increase the zone's airflow limit up in 25 CFM increments until the sound is objectionable, the static is below "Unknown" and the blower RPM is no higher than 1250 RPM.



If the noise is objectionable or the static reads unknown, or the motor RPM is above 1250, reduce the airflow limit the same way. Go into the air handler or furnace status screen by pressing the <BACK button and verify the static and blower motor RPM. Allow a few moments for the blower motor to accept and make the changes. Once comfortable with the limits, walk the homeowner through the space to allow them the opportunity to approve your selections.

If an asterisk appears and flashes, at your desired airflow limit, this means the set airflow limit is not enough to allow the system to run when only this zone is open. A bypass may be required or overconditioning of another space can be used. You may also consider setting a mechanical minimum to another zone to help out. If you do set a mechanical minimum,

or add a bypass at this point, you will have to repeat the duct measurement routine. You do not have to Linearize the dampers again unless you add or change dampers.

Do not skip this step! Failure to adjust the airflow limits will most certainly result in a call-back to the job due to noise or faults associated.

Damper Test

A damper test is used when you are trying to find a problem with the dampers themselves. A damper may be positioned using this test and then the technician can physically and visually check that it is in the correct position. A damper may not be able to be seen visually without opening the duct you can check it. When installing the dampers, it's a good idea to mark the end of the shaft with a line the direction of the dampers using a permanent marker. If the line is in a parallel orientation to the duct, it is open and if the line is perpendicular to the duct direction, this would indicate the damper is closed.

The damper test is also conducted from the Zoning Checkout screen.

Zoning Settings

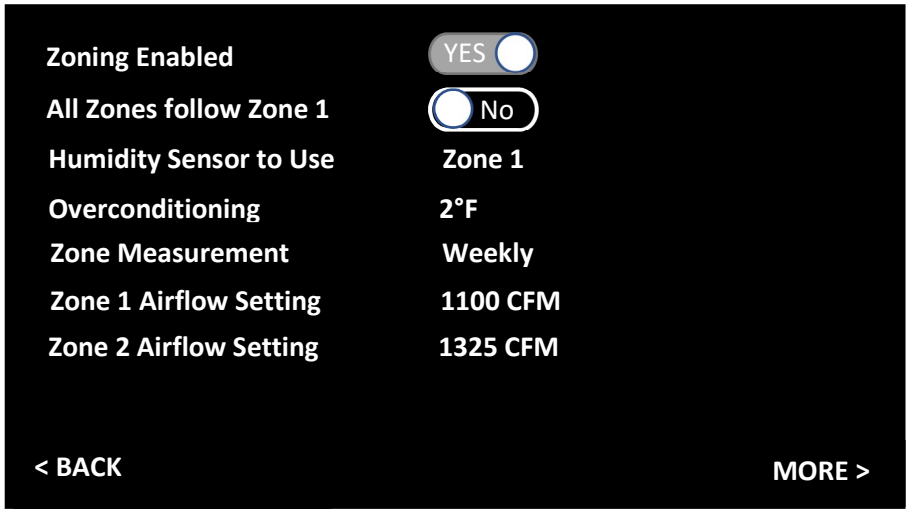
To make changes to the zoning settings, start from the main home screen and press the hamburger menu in the bottom left corner. Select Settings and then zoning a screen will appear with various settings and adjustments.

Enable Zoning:

This should be turned on to allow zoning to be functional. Turning it off will open the dampers and the system will run as un-zoned, controlled by the Zone 1 thermostat. This may be used if the system is experiencing difficulties with the zoning until a technician can properly diagnose and address the issues. All other zone controls will be disabled and ignored.

All Zones follow Zone 1:

When this is set to On, the setpoints and schedules at the remaining zones will be operated with settings exactly like zone 1. This is different than disabling the zoning altogether. Each zone will open or close based on the space temperature in the zones as normal, but the set point is controlled at the Zone 1 controller.



Humidity Sensor to Use:

For humidification and dehumidification, you may select which zone control's humidity sensor will be used. Selections are to use any desired zone or Average All zones.

Overconditioning:

Overconditioning on this screen of the main thermostat only sets the value for Zone 1. To set other zones, go to each zone controls settings screen, and unless yes is selected under All Zones follow Zone 1. The options are Auto, None and any value between 1°F to 10°F. Auto will allow the zone to be overconditioned as much as it needs to, to allow other zones to dump into this zone. None means this zone is not allowed to be overconditioned. If a temperature is selected, it will allow the zone to be the recipient of dumping until the space temperature is that many degrees above or below the zone set point. If a bypass is used or each zone can manage the minimum system airflow, this will typically be turned off. A bypass is first to react to an excess airflow.

Zone Measurement:

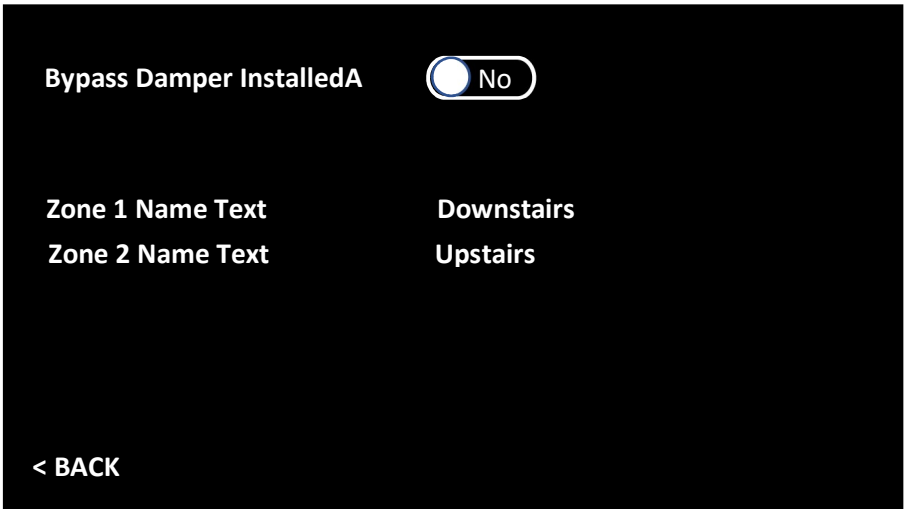
There is an automatic duct measurement routine and it will be performed regularly. It may be turned off by selecting None, or set to Weekly, Monthly, 2 months, or 3 months. The default value is set to Weekly.

Zone Airflow Settings:

This is where you set the airflow limits for each zone based on the testing you performed in the "Adjusting Airflow Testing" exercise. You may adjust these limits here. Keep in mind, if an asterisk appears, this means the setting is too low to bring the system on by itself when only that zone is calling.

MORE>:

Select more to move to another page of settings.



Bypass Damper Installed:

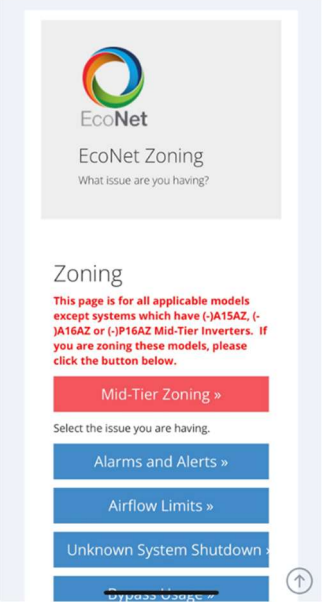
This selection will only appear when a two-zone system is installed. This is where the installer set the Zone 3 output terminals and configure the two-zone system to have a bypass. If the system has 3 or more zones this option will not be visible.

Zone Name Text:

Customize the zone names here. Simply touch the name of the zone and use the QWERTY keyboard that appears to make the edits.

Diagnostics and Troubleshooting

The EcoNet system is constantly monitoring the entire system. There are faults associated specifically to zoning that will appear. There may also be faults at the equipment level.



Each technician should have an account on Myrheem.com, Myruud.Com, Mysurecomfort.com or one of the branded web sites. Once logged in, either using the contractor app or web site, familiarize yourself with the EcoNet help pages.

These help pages can be found in the Contractor App by clicking on the service Icon and scrolling down to the service tools section and selecting EcoNet HVAC Technician. If not using the app and are connected to either the mobile or desktop version of the site, find the EcoNet help pages by either clicking on Products and selecting "EcoNet Product Help Pages" under the Product Tools heading or by entering Product Technical Support (PTS) and clicking the "At Your Fingertips" button and selecting "EcoNet Technician"

Once in the help pages, scroll down until you find a button marked Zoning. Within these pages, you may select alarms and alerts and get a full description of any zoning related fault that may appear. You may also select specific equipment to find other useful information to help you diagnose issues and be better equipped to install and adjust the EcoNet zoning system. These pages are constantly being updated. Bookmark, or add to favorites the EcoNet help pages for future use.

Zoning Related Alarms and Alerts

The following descriptions are brief summaries of the faults listed. A full description for each fault can be found in the EcoNet Help pages.

- A007_C and A008_C: Zone Panel 1 or 2 Communication Failure

These faults indicate a problem with communication to the zone panel(s). A007_C refers to a loss of communication with zone panel 1 and A008_C is for zone panel 2. This will happen

if there was communication with a panel established and has since gone away. Check wiring to respective zone panel

- A001_Z through A006_Z: Zone Control Room Sensor Fault

The room temperature sensor in the respective zone control has failed. If it's a remote sensor, replace the remote sensor. If the sensor has failed in the Zone Control thermostat, replace the thermostat.

- A007_Z and A008_Z: Zone Control Damper Overcurrent Fault

The One of the Zone panels detected a problem with the damper circuits. A007_Z refers to zone panel 1 and A008_Z refers to zone panel 2. This could be a shorted set of wires leading to a damper, a faulty actuator or an internal circuit within the zone panel itself. Check wiring for damage, disconnect the actuator to see if the actuator is problematic. If wiring is not shorted and system continues to issue this alarm, replace the zone panel.

- A009_Z Zone Control Bypass Dip Switch Error

Dip switches are incorrectly set. Refer to the section on dip switch settings on page 16.

- A010_Z through A014_Z: Zone "2-6" Control Comm Error

These faults are related to zones and zone controls. It may occur if there are two zones with the same zone ID, or it may occur if the zone panel loses communication with the zone control. A010_Z is Zone 2, A011_Z is Zone 3, A012_Z is Zone 4, A013_Z is Zone 5, and A014_Z is Zone 6.'

- A015_Z through A020_Z: Zone "1-6" Damper Not Moving

The system detected the static pressure for the zone is equal to the full open static. Check Damper Operation. A015_Z is Zone 1, A016_Z is Zone 2, A017_Z is for Zone 3, A018_Z is for Zone 4, A019_Z is for Zone 5 and A020_Z is for Zone 6.

- A021_Z to A026_Z: Zone "1-6" Damper Moving Backwards

The system determined the static pressure for the zone is more than when all dampers are closed in the duct measurement routine. Check damper operation. A021_Z is for Zone 1, A022_Z is for Zone 2, A023_Z if for Zone 3, A024_Z is for Zone 4, A025_Z is for Zone 5, and A026_Z is for Zone 6.

- T001_Z: through T006_Z: Zone (-) Airflow Alert – Caused Shutdown

The zone designated in the fault number is too small to sustain system operation by itself. This fault will occur if the system was running with other dampers open and they satisfied leaving the small zone the only one calling, and no bypass is installed or overconditioning is configured.

- T007_Z: Blower Cutback Caused Shutdown

If multiple zones are open, or a bypass is installed and is closed due to a supply air sensor measuring a temperature higher or lower than the system is set, and static is too high or

motor RPM's are at the limit with more airflow demand than the blower can provide, the system will shut down and reset. It is very similar to the previous faults T001_Z through T006_Z.

- T008_Z: Excessive Duct Leakage

During the original or subsequent duct measurement routines the system determined that there is excessive duct leakage before the dampers. This may be a result of non-zoned supply ducts; unapproved bypass is being used or other reasons that allow too much airflow when the system is in the duct measurement routine and more airflow than anticipated is able to move. This fault is not critical and is for information only.

- T024_Z: Supply Air Sensor Fault for Bypass

If the Zoning system is configured for a bypass, the EcoNet system expects to see a supply air sensor for the furnace or air handler. All systems with bypass are required to have a supply air sensor. Check to be sure one is installed and that it is reading correctly for a 10K ohm at 77°F (25°C) sensor.

- A025_Z: Zoning Not Compatible with Air Handler

This fault will occur when someone attempts to use a RH2T air handler with a constant torque motor. The RH2T communicating air handler may not be used with EcoNet zoning.

- T027_Z: Supply Temp Limit Exceeded to Bypass

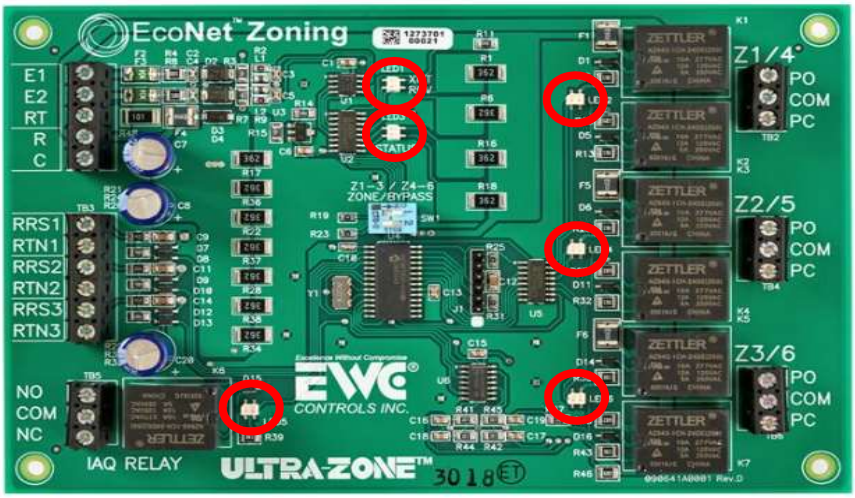
A bypass and supply air sensor are installed. If the limits are exceeded, generally as a result of trying to bypass too much conditioned air, the alert will be set and the bypass will close. Limits for furnace applications is adjustable between 120°F -160°F. Heat pumps have a fixed limit of 120°F in heating, 135°F with electric heat and 45°F in cooling.

- T030_Z: Too Many Zones for Outdoor Model

The Mid-tier inverter products [(-)A15AZ, (-)A16AZ and (-)P16AZ]have been tested extensively with regard to zoning and it has been determined, because of the smaller drive and contactor, staging back down once it is locked into line voltage (100%) is impossible. In ambient temperatures above 90°F and in the case of heat pumps, below 32°F, the unit will start and ramp to line voltage regardless of demand. Software limits these systems to two zones and any attempt to add additional zones will trigger this alert and will turn zoning off.

LED's ON Zone Panel

The Zone Panel has several LED lights that may be used to help the technician understand what is happening without standing at the main thermostat.



LED Locations

- Bottom Left: This LED is not used by the EcoNet Zoning system. It may be on or off.
- Upper Center: These two LED's Indicate that the board has power and will blink in what appears to be a random sequence when either transmitting or receiving data from the EcoNet system.
- Right Side LED's: These LED's indicate damper positioning. IF the LED is solid green, this means the damper is fully open or the zone is unused. IF the green LED is flashing, this indicates the damper is driving toward open. If the LED is solid red, the damper is completely closed. If the LED is flashing Red, it is driving toward close. If the LED is observed to be off, it means the damper is somewhere between fully open and fully closed. It will begin to flash green or red once the damper adjusts open or closed respectively.

Customer App

The customer may choose to connect his EcoNet system to Wi-Fi to get the most use out of his system. It may be found in the App Store for iOS or the Google Play Store for Android devices and searching for the keyword "EcoNet". This app is not to be confused with the Contractor App. The EcoNet app is for the homeowner's use only. Once downloaded and configured, the EcoNet App will allow the homeowner to operate the system remotely to change setpoints, schedules and the like for each zone independently.

Zone controls can have their own set points, schedules and off cycle fan options.

Getting Help

As an installer or technician in the field, at some point you may need technical help with the equipment or EcoNet zoning system. The Distributor Service Coordinator (DSC) is the first

point of contact. The DSC is factory trained and has access to the factory District Technical Representatives (DTR) and Product Support Specialists (PSS) who are well versed in all the products.

When calling for help, its only practical to call from the job site where you can get information needed by the DSC. He may need to have you perform a test or do something that cannot be done or seen remotely. His or her next step will be dependent on the results of such tests or your answers to the questions. Hypothetical scenarios do not allow the DSC, DTR or PSS to best provide support.

You may be asked to fill out a Zoning Job Site Information Sheet (JSIS). A sample JSIS can be found at the end of this manual. Electron versions of the JSIS can be found in PTS under the "At Your Fingertips" button.

Minimum Airflow Requirements

The tables below on pages 30-32 show minimum airflows for design and application of the zoning system.

Note your selected outdoor unit, indoor unit and if it applies your electric heat selection. The minimum airflow for design will be the highest of the components used.

Review the components in your system minimum airflows and use the highest to determine your smallest zone capability.

Furnaces (Heat Mode)

Model	40% Firing Rate Airflow		
Modulating (-)98MV			
(-)98MV0603A17	550		
(-)98MV0703A17	719		
(-)98MV0855A21	925		
(-)98MV1005A21	1125		
(-)98MV1155A24	1000		
Model	Low Heat		
Modulating (-)97MV			
(-)97MV0603A17	550		
(-)97MV0703A17	719		
(-)97MV0855A21	925		
(-)97MV1005A21	1125		
(-)97MV1155A24	1000		
Model	Low Heat	Lower Heat Airflow	Lowest Heat Airflow
2 Stage (-)962V			
(-)962V0403A17	870	783	722
(-)962V0603A17	990	872	802
(-)962V0703A17	1030	942	867
(-)962V0705A21	1200	1080	996
(-)962V0855A21	1475	1298	1195
(-)962V1005A21	1250	1162	1070
(-)962V1155A24	1400	1260	1162
Model	Low Heat	Lower Heat Airflow	Lowest Heat Airflow
2 Stage (-)802V UH			
(-)802V0503A14UH	750	660	608
(-)802V0754A17UH	1000	900	830
(-)802V0755A21UH	1100	990	913
(-)802V1005A21UH	1200	1080	996
(-)802V1255A24UH	1400	1260	1162
(-)802V1505A24UH	1500	1320	1215
Model	Low Heat	Lower Heat Airflow	Lowest Heat Airflow
2 Stage (-)802V DZ			
(-)802V0503A14DZ	695	626	577
(-)802V0754A17DZ	1000	900	830
(-)802V0755A21DZ	1176	1059	977
(-)802V1005A21DZ	1310	1179	1088
(-)802V1255A24DZ	1450	1305	1204

Furnaces w/ Non-Communicating 2 Stage OD Low Cool or Heat Pump Mode.

Model	OD Unit Size						
Modulating (-)98MV	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**5**
(-)98MV0603A17	394	525	656	788			
(-)98MV0703A17	394	525	656	788			
(-)98MV0855A21				788	919	1050	1313
(-)98MV1005A21				788	919	1050	1313
(-)98MV1155A24				788	919	1050	1313
Model	OD Unit Size						
Modulating (-)97MV	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**5**
(-)97MV0603A17	394	525	656	788			
(-)97MV0703A17	394	525	656	788			
(-)97MV0855A21				788	919	1050	1313
(-)97MV1005A21				788	919	1050	1313
(-)97MV1155A24				788	919	1050	1313
Model	OD Unit Size						
2 Stage (-)962V	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**5**
(-)962V0403A17	403	538	672	806			
(-)962V0603A17	403	538	672	806			
(-)962V0703A17	403	538	672	806			
(-)962V0705A21				772	901	1030	1287
(-)962V0855A21				772	901	1030	1287
(-)962V1005A21				772	901	1030	1287
(-)962V1155A24				772	901	1030	1287
Model	OD Unit Size						
2 Stage (-)802V Up	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**5**
(-)802V0503A14UHSC	403	538	672	806			
(-)802V0754A17UHSC			671	805	939	1073	
(-)802V0755A21UHSC				772	901	1030	1287
(-)802V1005A21UHSC				772	901	1030	1287
(-)802V1255A24UHSC				772	901	1030	1287
(-)802V1505A24UHSC				772	901	1030	1287
Model	OD Unit Size						
2 Stage (-)802V DZ	**1.5**	**2**	**2.5**	**3**	**3.5**	**4**	**5**
(-)802V0503A14DZ	403	538	672	806			
(-)802V0754A17DZ			671	805	939	1073	
(-)802V0755A21DZ				772	901	1030	1287
(-)802V1005A21DZ				772	901	1030	1287
(-)802V1255A24DZ				772	901	1030	1287

Outdoor Units

Model	Low Cool	Low Cool-10%	Low Heat	Low Heat – 10%
High Tier AC				
(-)A18AZ24	310	279	NA	NA
(-)A18AZ36	580	522	NA	NA
(-)A18AZ48	475	426	NA	NA
(-)A18AZ60	516	464	NA	NA
Model	Low Cool	Low Cool-10%	Low Heat	Low Heat – 10%
High Tier HP				
(-)P18AZ24	500	450	600	540
(-)P18AZ36	516	464	550[1]	495[1]
(-)P18AZ48	550	495	600[2]	540[2]
(-)P18AZ60	630[3]	567[3]	700[3]	630[3]
Model	High Cool	High Cool-10%	High Heat	High Heat – 10%
Mid-Tier AC				
(-)A15AZ24	750	675	NA	NA
(-)A15AZ36	1125	1013	NA	NA
(-)A15AZ48	1450	1305	NA	NA
(-)A15AZ60	1800	1620	NA	NA
(-)A16AZ24	750	675	NA	NA
(-)A16AZ36	1125	1013	NA	NA
(-)A16AZ48	1450	1305	NA	NA
(-)A16AZ60	1800	1620	NA	NA
Model	High Cool	High Cool-10%	High Heat	High Heat – 10%
Mid-Tier HP				
(-)P16AZ24	750	675	750	675
(-)P16AZ36	1125	1013	1125	1013
(-)P16AZ48	1450	1305	1450	1305
(-)P16AZ60	1800	1620	1800	1620

Note 1: (-)P2036B When is zoned with 800 Series Thermostat, low heat min airflow changes to 550 cfm from 960 un-zoned (Min Compressor Speed Changed 1300-1800 in Heat)
Note 2: (-)P2048B When is zoned with 800 Series Thermostat, low heat min airflow changes to 600 cfm from 950 un-zoned (Min Compressor Speed Changed 1400-1800 in Heat)
Note 3: (-)P2060B When is zoned with 800 Series Thermostat, low heat min airflow changes to 630 cfm from 1100 un-zoned (Min Compressor Speed Changed 1200-1500 in Cool)
Note 3: (-)P2060B When is zoned with 800 Series Thermostat, low heat min airflow changes to 700 cfm from 1100 un-zoned (Min Compressor Speed Changed 1200-1500 in Heat)

Air Handler Connected to Non-Communicating OD 2 Stage AC or HP

Model	2 Stage OD Low Airflow			
	Half Ton Cool	Full Ton Cool	Half Ton HP	Full Ton HP
RH2VZ2417STANNJ	435	580	435	580
RH2VZ3617STANNJ	605	727	605	727
RH2VZ3621STANNJ	605	727	605	727
RH2VZ3621MTANAJ	605	727	605	727
RH2VZ3621MTANNJ	605	727	605	727
RH2VZ4821STANNJ	896	1024	896	1024
RH2VZ4821STANAJ	896	1024	896	1024
RH2VZ4824STANNJ	896	1024	896	1024
RH2VZ6021STANAJ	NA	1140	NA	1140

Electric Heat

Heater Kit Size	Heater Kit Part Number	Number of Stages	Lowest Stage Airflow
3 KW	RXBH-1724?03J-B	1	400
5 KW	RXBH-1724?05J-B	1	400
7 KW	RXBH-1724?07J-B	1	450
10 KW	RXBH-1724?10J-B	1	600
13 KW	RXBH-1724?13J-B	3	350
15 KW	RXBH-1724?15J-B	3	350
18 KW	RXBH-1724?18J-B	3	400
20 KW	RXBH-1724?20J-B	3	600
25 KW	RXBH-24?25J-B	3	500
30 KW	RXBH-24?30J-B	3	600

EcoNet Zoning Job Site Information Sheet Page1

JSIS - EcoNet® Zoning

Job Details

Company Name: **Date:**

Customer Name:

Customer Address:

Address line 2:

Compatible Equipment Information

Installation Date:

FURNACE

Model Number: **Serial Number:**

Software Version*:

AIR HANDLER

Model Number: **Serial Number:**

Software Version*:

COIL

Model Number: **Serial Number:**

AIR CONDITIONER

Model Number: **Serial Number:**

Software Version*:

HEAT PUMP

Model Number: **Serial Number:**

Software Version*:

ECONET® SMART THERMOSTAT

Model Number: **Serial Number:**

Software Version*:

ZONE THERMOSTAT

Model Number: **Serial Number:**

Software Version*:

** Software versions for all equipment can be found in the EcoNet® Smart Thermostat Menu -> Service >*

FILTER

Size: **Type:**

Description of Problem (Be Specific and include EcoNet® Fault Codes):

EcoNet Zoning Job Site Information Sheet Page2

Zoning Application Details

What is the default minimum air flow required for this unit? Cooling _____ CFM Heating _____ CFM

Is each zone (ductwork) sized to handle the minimum air flow for heating and cooling? ☐ Yes ☐ No

How many zones? _____ How many dampers? _____ Size of dampers: _____

Intelligent Bypass installed? ☐ Yes ☐ No Size of bypass _____ Leaving/Supply Air Sensor _____

Bypass Connected to zone 3 or zone 6? _____

Over-conditioning enabled? ☐ Yes ☐ No

How much over-conditioning is set at each zone control? ☐ zone2 ☐ zone3 ☐ zone4 ☐ zone5 ☐ zone6

Zone Board #1 - Dip Switch 1 Position: _____ Dip Switch 2 Position: _____

Zone Board #2 - Dip Switch 1 Position: _____ Dip Switch 2 Position: _____

Secondary Transformer Installed? ☐ Yes ☐ No Transformers in phase should read 0 volts: _____

Startup & Commissioning

Enable zoning: ☐ Yes ☐ No Update zone ID assignments: ☐ Yes ☐ No

Zoning checkout duct measurement %: _____ _____ _____ _____ _____ _____

Linearize dampers: ☐ Yes ☐ No **Total static with all zones calling:** _____

Zone 1 Airflow Limit: _____ Blinking asterisks: ☐ Yes ☐ No

Airflow settings: ☐ Unlimited ☐ High ☐ Med-High ☐ Medium ☐ Med-Low ☐ Low

Static zone 1: _____

Zone 2 Airflow Limit: _____ Blinking asterisks: ☐ Yes ☐ No

Airflow settings: ☐ Unlimited ☐ High ☐ Med-High ☐ Medium ☐ Med-Low ☐ Low

Static zone 2: _____

Zone 3 Airflow Limit: _____ Blinking asterisks: ☐ Yes ☐ No

Airflow settings: ☐ Unlimited ☐ High ☐ Med-High ☐ Medium ☐ Med-Low ☐ Low

Static zone 3: _____

Zone 4 Airflow Limit: _____ Blinking asterisks: ☐ Yes ☐ No

Airflow settings: ☐ Unlimited ☐ High ☐ Med-High ☐ Medium ☐ Med-Low ☐ Low

Static zone 4: _____

Zone 5 Airflow Limit: _____ Blinking asterisks: ☐ Yes ☐ No

Airflow settings: ☐ Unlimited ☐ High ☐ Med-High ☐ Medium ☐ Med-Low ☐ Low

Static zone 5: _____

Zone 6 Airflow Limit: _____ Blinking asterisks: ☐ Yes ☐ No

Airflow settings: ☐ Unlimited ☐ High ☐ Med-High ☐ Medium ☐ Med-Low ☐ Low

Static zone 6: _____

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An electronic PDF version of the Zoning JSIS can be found in PTS.