



NETWORK ALL YOUR HVAC EQUIPMENT

Monitor, update and control System Information from the mobile app

Centralized DDC Communications for
Stand-Alone HVAC and Zoned Modulating Systems

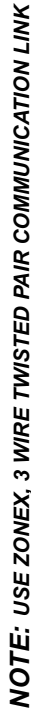


INSTALLATION AND APPLICATIONS MANUAL

USING WIRED THERMOSTATS

GEN X

NETWORK AND CONTROL VVT SYSTEMS



* FOR THE 24V POWER, SIZE THE WIRE BASED ON LENGTH OF RUN

GEN X is a commercial modulating bypass VAV system controlling 2-20 independent zones per RTU or split system utilizing Zonex wired thermostats that communicate remotely over the Internet with our App and a phone or mobile device from ANYWHERE. GEN X RM controllers are available and used to expand your system to control multiple zoned or stand alone units remotely. GEN X can support up to 20 RM expansion controllers providing control of up to 400 units, zone dampers or other control points in your system.

The GEN X controller is designed for Auto Changeover, bypass VAV operation for multi-stage Heat Pump (2C/3H) or Gas Electric (2C/2H) applications. The GEN X supports and also operates with VAV boxes and VFD type systems.

The GEN X mobile App allows for a wide range of system control and changeover strategies, allowing the contractor to tailor the GEN X system to a specific application.

Additional features include LED status indication of all system functions, digital leaving air temperature, return air temperature and outside air temperature display, fully adjustable capacity control with on-board limit settings and optional staging strategies. Morning warm up, priority votes, and air balance features are included. An integrated clock allows for setup, night setback and vacation scheduling, globally or individually for each zone thermostat, with selectable 2 to 8 hour override, along with a feature to remotely lock each thermostat independently in the system. A unique system tool provides the installing contractor with a simple startup diagnostic to quickly alert and identify any system wiring errors, all from the palm of your hand using the GEN X mobile App.

GEN X is recognized as the industry's easiest commercial zone control system to install and wire. The GEN X system operates over a plenum rated three wire data link, along with two 24vac power wires all daisy chained from thermostat to thermostat with no home run wiring required. Communication and configuration is all done through the GEN X mobile App. GEN X will control zoned systems along with standalone units. Zonex stand alone thermostats are utilized to control stand-alone (non-zoned) HVAC equipment.

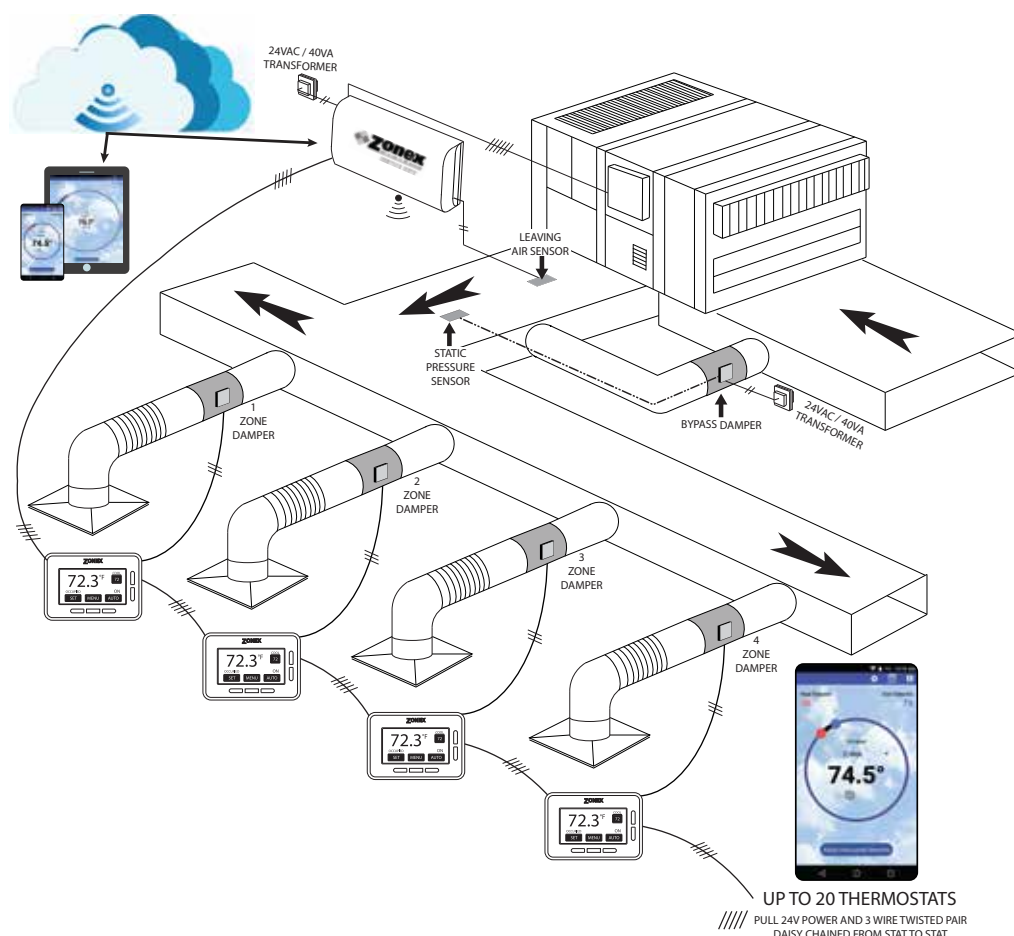
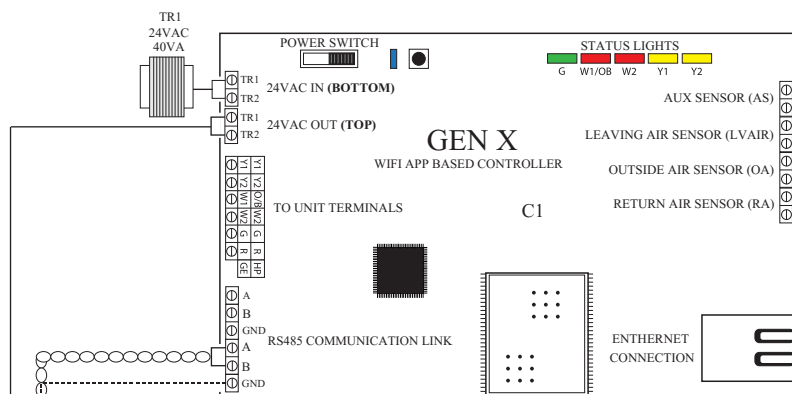


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Wiring and Installation

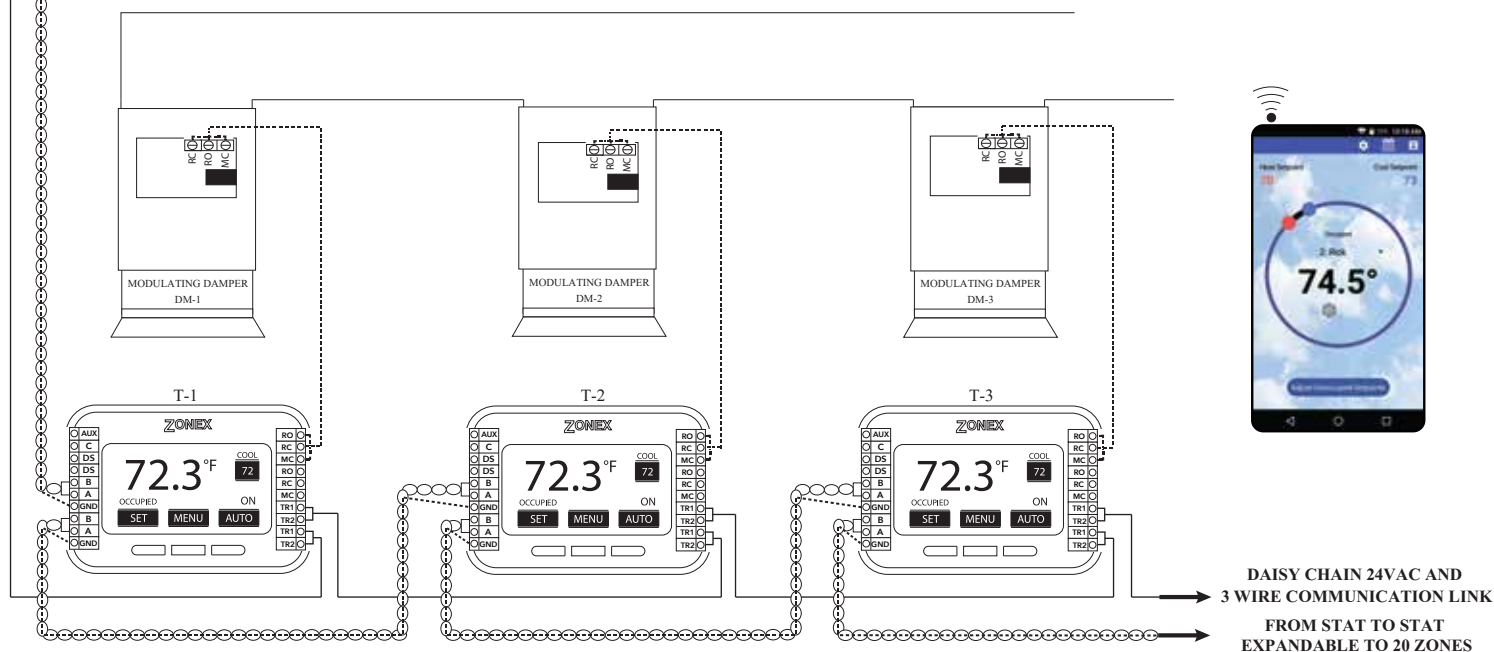
1. Install GEN X controller in a space that is easily accessible.
2. Install an Independent 24v 40va transformer, wire the secondary 24v output to the TR1 and TR2 (IN) bottom terminal on the GEN X controller.
3. Install the Leaving air sensor (LV Air) in the supply duct, prior to the bypass. Wire the Leaving air sensor to the LV Air terminals on the GEN X controller. Install Return air sensor (RA) in the return duct, after the bypass. Wire Return air sensor to the RA terminals. (May extend sensor wire using 18/2 thermostat wiring.) (See page 17)
4. Install Supply Dampers and Bypass Dampers. (See page 55)
5. Wire TR1 and TR2 (OUT) top terminal from the GEN X controller to the first zone thermostat (ZSTAT) TR1 and TR2 using 18/2 thermostat wire. (See page 16.) Continue daisy chaining TR1 and TR2 on the ZSTAT to the next ZSTAT until you terminate at the last ZSTAT or Standalone thermostat (SA STAT) in the system. Make sure TR1 and TR2 polarity is consistent throughout the system.
6. Wire A, B and GND from the GEN X controller using Zonex 3 wire Plenum rated twisted pair wire (Part #3TWP) to the first zone thermostat (ZSTAT). (See page 16.) Continue daisy chaining from A, B, and GND on the ZSTAT to the next ZSTAT until you terminate at the last ZSTATboard or SA STAT in the system. Make sure A, B, and GND polarity is consistent throughout the system.
7. Turn ON the GEN X controller; confirm that the GEN X, ZSTAT's, and SA STAT's if applicable are powered. A Blue Light on the GEN X controller indicates they are powered. If you don't have blue power lights. Confirm power at the transformer and check TR1 and TR2 wiring.



Wiring to Communication Terminals

Red-A
White-B
Black-GND

Communication wiring is polarity sensitive. Double check that the communication wiring is connected to the right terminals.





Configuring Thermostat ID's

8. Configuring thermostat ID's. *(Every thermostat in the system needs a unique ID)*
Press **Menu** and **Auto/OFF** on the zone thermostat to access the Thermostat Configuration Menu. (See page 22)
Select **Set Stat ID**, set stat ID to 001; Press save.
(Repeat the steps above, All stats are ID'ed as 001 to 020, maximum of 20 zones on each GEN X / GEN X RM system.)
9. If GEN X RM's are being installed to support additional HVAC units see page 20. If not skip this step.

Connecting to the GEN X controller via the Mobile App

10. Connect the GEN X to the building's Local Area Network (LAN)(Router or Switch) with an Ethernet cable.
If no Wi-Fi network is available in the building use the supplied pocket router. Connect the pocket router with the cables provided and power it up.
11. Download the GEN X mobile App. (Call Tech support if you don't have the Mobile App at 800-228-2966.)
12. Once connected to the LAN via the Wi-Fi network or pocket router, Select and connect to that Wi-Fi network on your Android Device. (See page 23.)
13. Open the GEN X mobile App and Tap **Scan LAN for GEN X**. Once the scan is complete, **Tap Select Local GEN X** at the top of the screen. A drop down will appear showing the GEN X controller. If more than one, Tap the system you want to connect to.

System Configuration

14. Tap  for System Configuration Menu; scroll down to **Configure # of Dampers / Thermostats** and indicate how many Dampers / Zones are wired to the GEN X controller.(See page 24.)
15. Tap **System Diagnostic**, confirm that the Leaving Air, Return Air, and Outdoor Air are reading temperatures.
Also confirm under Thermostats Status that all Zones are Active.
16. While still in System Configuration, choose **Unit Type**. Select **Gas, Electric or Heat pump**.
17. See System Configuration Menu on page 34 to further configure the GEN X controller.
18. Scroll to Zone Overview and select, All zones should be showing room temperatures. Tap any zone to change set point for Heating and Cooling. See page 7 on how to use the App. Adjust your cool set point and Tap  at the top of the App. This will take you back to the zone overview screen. The zone room temperature should show in blue and the GEN X controller should be energized G (Green) and Y1 (Yellow) lights confirming cool call operation. Satisfy all zones calling for cooling and repeat the steps above for a heat call and confirm W1 (Red) light or Y1 (Yellow) and G (Green) lights for Heat pump operation.
19. Wire the GEN X controller to the RTU or split system.(See page 18.)
20. Make a cool call from each zone thermostat and check register to be sure each damper opens and closes as you make and satisfy calls.

For Advanced Feature Configuration or additional operating information, review the attached GEN X Manual.

MOBILE APP OVERVIEW

This App gives you direct access and control to every thermostat connected to the GEN X system.

These Menu shortcuts at the top of the screen allow you to quickly navigate the GEN X App.

- ☰ - Overview Screen
- ⚙️ - System Configuration Menu
- 📅 - Schedule/Calendar
- ⋮ - Extended Menu Options

The Overview Screen provides a quick look at all temperatures in your system, current calls for heat or cool along with listing the occupied and unoccupied set points.

Tap the ☰ icon to access the Overview screen which displays the following:

1. Zone number
2. Zone name
3. Current room temperature of each thermostat

Note: Room temperatures are displayed in Blue if the zone is calling for cooling or Red if the zone is calling for heat. A flashing room temperature indicates a call that has not yet been addressed. Room temperatures in black are zones that have been satisfied.

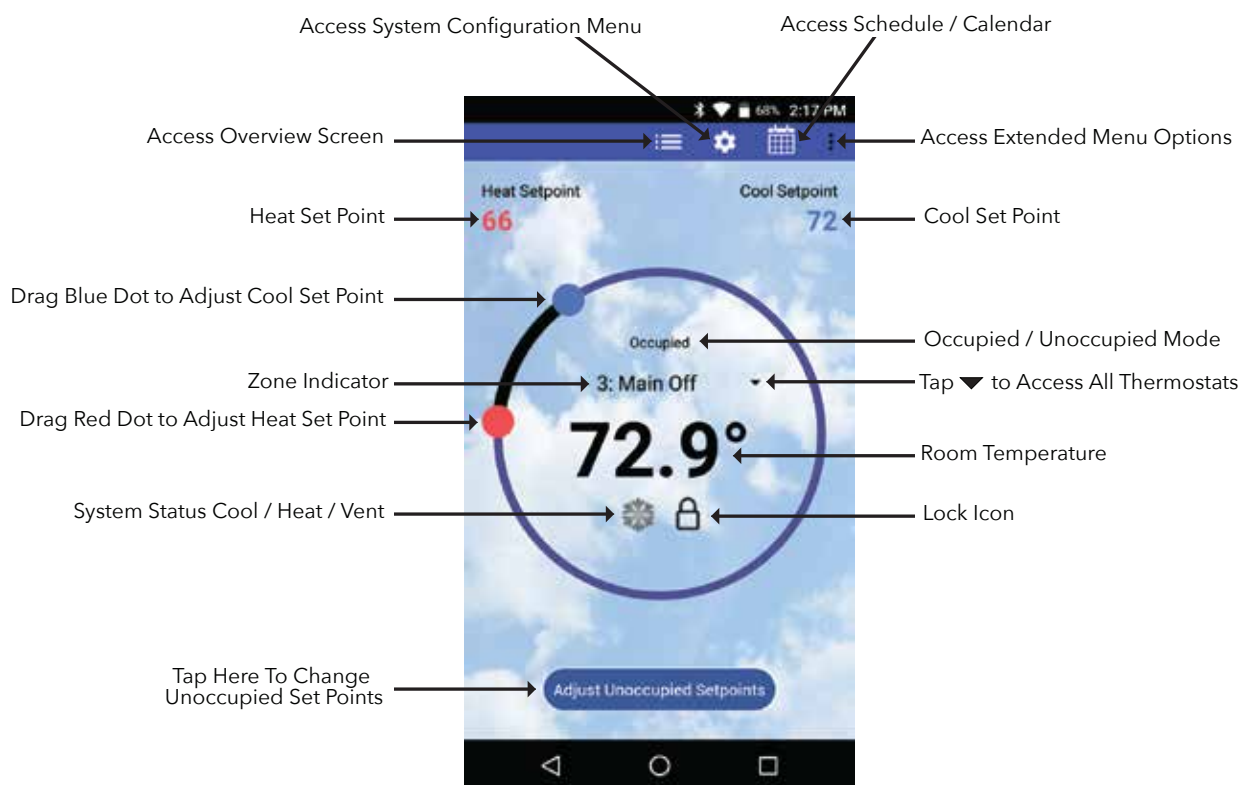
4. Occupied Heat / Cool set points.
5. Unoccupied Heat / Cool set points.


Tap any thermostat to make an individual or global temperature set point change.



Zone	Temp	Occupied Heat/Cool	Unocc Heat/Cool
1: Gene	72.3°	66/73	66/85
2: Marcos	72.6°	66/74	60/95
3: Main Off	72.9°	66/72	60/95
4: Joe	70.7°	66/72	60/95
5: Cheryl	73.0°	69/74	60/95
6: Ellie	74.6°	67/74	60/95
7: Jeff	72.2°	66/72	60/95
8: Charlotte	72.7°	67/72	60/95
9: Conf	73.0°	68/73	60/95

Familiarize yourself with the thermostat features and simple operation:



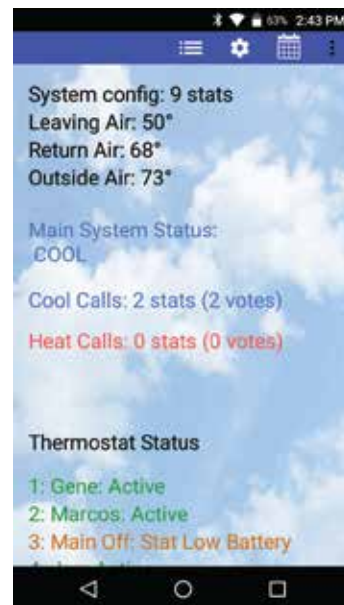
System Diagnostic screen provides an overview of the system's current conditions. Tap the  icon and then locate and tap **System Diagnostic** to view the following information:

1. The number of thermostats in the system
2. Leaving, Return and Outside air temperatures
3. Main system status: displays current operation, either Cool, Heat, Vent mode or Changeover
4. Number of heating and/or cooling calls.

Note: GEN X is a vote based auto changeover system that polls each thermostat every 60 seconds to determine if a zone requires cooling, heating or is satisfied. System operates on a first call, first served majority wins on changeover strategy. If the system counts more heating than cooling votes then the system will operate in the heating mode, until it detects a majority of cooling votes, at which time it will initiate a changeover cycle, energize the compressor and cooling. Dampers drive closed in the heating zones and modulate to the open position in zones calling for cooling.

5. Thermostat status: indicates if each thermostat is active (wired and communicating properly with the system), battery status and reports any wiring errors in the system.


This app is a great tool to diagnose and / or avoid potential problems with your system.



Schedule/Calendar is used to schedule occupied or unoccupied periods individually or globally for each thermostat and vacation days.

Tap the  icon to configure the following:

1. Set Daily schedule
2. Select 5-1-1 (Mon - Fri, Sat - Sun) or 7 day operation
3. Set vacation schedules
4. Enable vacation schedules

The **Extended Menu** provides shortcut access to the following, by tapping on the  icon:

1. System diagnostics
2. Account set up information
3. Access to other GENX/RM units
4. Exit the App

This App provides direct system access, either on-site or remotely, putting control right in the palm of your hand. For more detailed information and operating instructions explore this GEN X manual.

GEN X

Wi-Fi APP Based Controller

Part # - **GEN X**
Includes Mobile APP

1 - Per RTU or Split System
Supports 2 - 20 Fully Modulating Zones

Add Part # **GEN X-RM** to expand your GEN X system by adding a GEN X-RM controller for each additional zoned unit.
(Each GEN X-RM supports 2-20 fully modulating Zones or thermostats)

Daisy Chain: Zonex communications wire and 24VAC from Damper to Damper with wireless stats or Stat to Stat with wired stats
1-24VAC / 40VA Transformer Powers the GEN X and All the Dampers in the System
Each GEN X-RM expansion controller requires an additional transformer to support up to 20 dampers per GEN X-RM

Wireless Thermostat

Part # - **WSTATX**



1-Thermostat per Damper
Slave Up to 3 Zone Dampers per Stat
or use Remote Sensor Part # **WRSX**

Wired Thermostat

Part # - **ZSTAT**

1-Thermostat per Damper
Slave Up to 3 Zone Dampers per Stat
For Remote Sensor operation Part # **ZSTATRS**

Modulating Zone Dampers*

Part #

WSTX + Damper Size - Round Dampers (up to 1.75 S.P)
WCDX + Damper Size - Rectangular Dampers (up to 1.75 S.P)

*Includes Communication Damper Board (CDBX)

Modulating Zone Dampers

Part #

STMPD + Damper Size - Round Dampers (up to 1.75 S.P)
STCD + Damper Size - Rectangular Dampers (up to 1.75 S.P)

Wireless Unit Control for Standalone Units

Part # - **WUC***

*Includes Unit Controller and Wireless Thermostat

Controls and Networks Standalone RTU or Split systems
With SA / RA reporting from the mobile app

Wired Thermostat to Control Standalone Units

Part # - **SASTAT**

Controls and Networks Standalone RTU or Split systems
With SA / RA / RH reporting from the mobile app
For Remote Sensor operation Part # **SASTATRS**

Electronic By-Pass Damper

Part #

STBP + Damper Size Round By-Pass Dampers
STCDBP + Damper Size Rectangular By-Pass Dampers
(Includes Integrated Static Pressure Control)
1-24VAC / 40VA Transformer to Power By-Pass Damper

THIS COMPLETES YOUR GEN X SYSTEM

For assistance, contact Zonex at (800) 228-2966
or visit zonexproducts.com for more information

Vote Based Auto Changeover Bypass VAV with Programmable Thermostats Accessed Remotely or On-site from a Phone or Mobile Device

GEN X controller wires to the HVAC unit with legacy style connections Y1, Y2, W1, W2, OB, G, R, and C. Every minute the controller communicates to each zone thermostat via RS485 connection daisy chained along with 24v of power wired thermostat to thermostat. Each zone thermostat is given a unique ID that communicates back to the GEN X controller.

The GEN X is an auto changeover, vote based VVT system. As thermostats call for heating or cooling, votes are tallied by the GEN X controller and based on the majority of votes received. The HVAC unit operates in the mode of majority votes. If majority changes, the system controller will automatically initiate a changeover sequence with built in time delays to protect the equipment before changing over to the new mode of operation.

When the last calling zone is satisfied (in either heat or cool mode), the GEN X controller will terminate outputs to the HVAC unit after the next "poll"; and the blower output will de-energize (unless controller is configured for constant fan) after a 3-minute purge cycle. During the purge cycle no heat or cool calls are recognized.

The zone thermostats control and modulate the zone dampers on variance from set point to a position that will match the supply load to the demand requirement. When the HVAC unit is running, if a zone thermostat is not calling or is calling for the opposite mode, its corresponding damper fully closes. When the HVAC unit is not running, the thermostats open to the Vent mode to provide ventilation if the indoor blower fan is running continuously. When configured for Reheat operation and the zone temperature drops 2° below thermostat set point, the damper modulates to approximately 40% open providing airflow over electric heat strips or other supplemental heat source, the AUX terminal will energize and strip heat will energize.

While the HVAC unit is running, the capacity control LAT (leaving air temperature sensor) monitors the leaving air temperature from the HVAC unit and will cycle the HVAC unit to maintain the air temperature with a preset range to eliminate coil freeze-up and premature heat exchanger failure. When the system is in the heating mode and a majority vote changes to cooling, a changeover timer begins and will run heating for 4 minutes or until heat call is satisfied and then cycle into a changeover purge. After a 3-minute purge cycle, cooling is energized until the cool call is satisfied or there is a majority vote for heat received by the GEN X controller. If all calls have been satisfied, after the 3-minute off delay, dampers will modulate to approximately 40% open position for ventilation mode.

The system fan/blower operation can be configured for ON or intermittent AUTO operation.

All Zone thermostats are wired to their respective modulating zone damper. Thermostats, scheduling and diagnostic reports to streamline system troubleshooting, are generated from a mobile App that interacts with all thermostats every minute and initiates control decisions for the system. The mobile App shall establish global or individual schedules for the system, lock thermostats individually and provide local adjustment, on site or remotely over internal Wi-Fi or the Internet. Air balance shortcuts, along with password protection, are also enabled from the App. Sleep and energy saving modes are available to extend battery life and enhance operation of the thermostats.

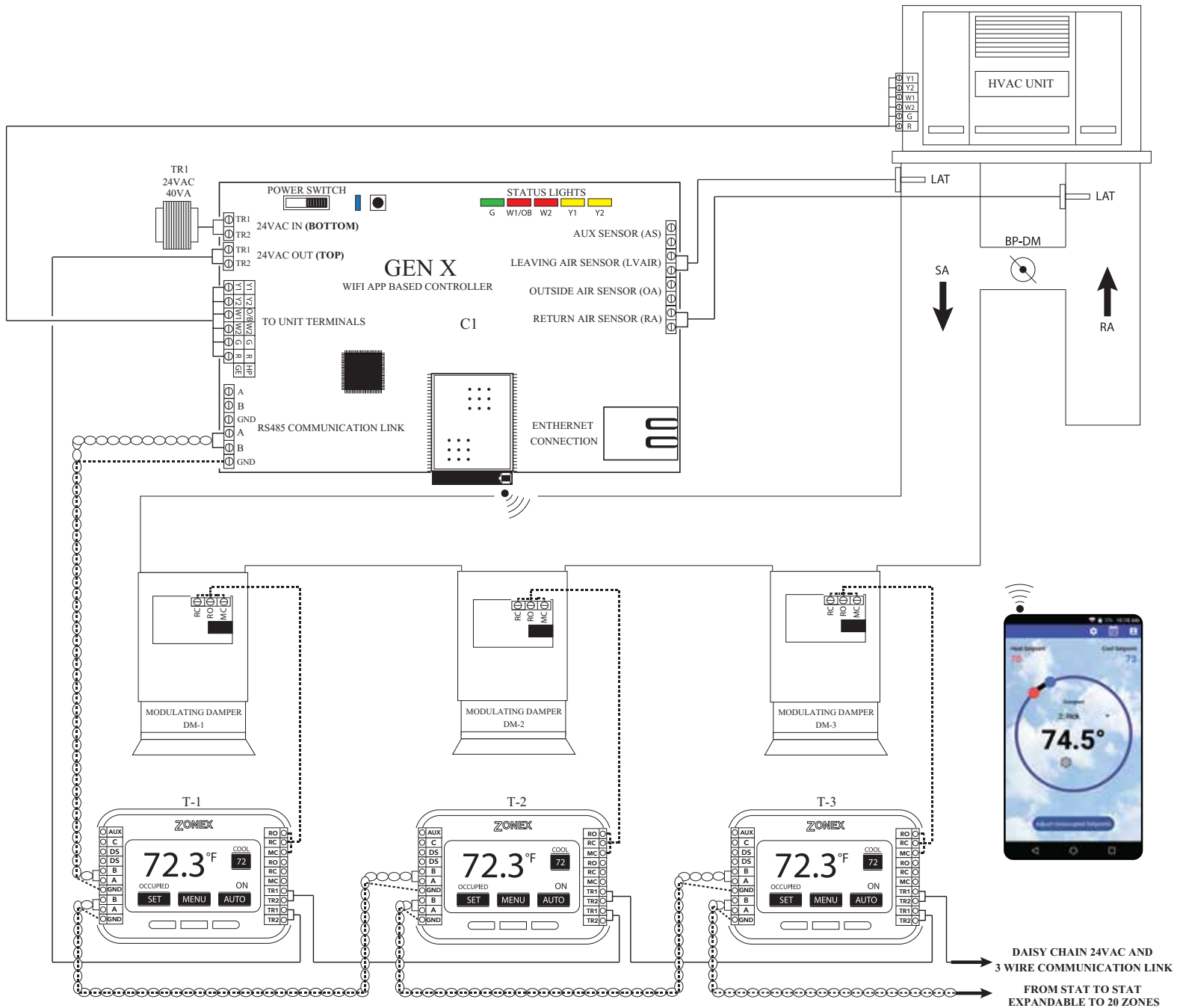
Voting demand strategy can be enhanced by adding Priority votes or by giving a NULL vote to individual thermostats in the system, thereby weighting certain zones more than others. Priority votes allow you to select 0, 1, 2, or 3 additional votes for a thermostat that has unusual loads, such as a conference room. A change to 0 for priority in that zone stat configuration will create a NULL vote for the HEAT/COOL and will not allow the stat to place a call for heat or cool, but will allow damper operation based on system mode of operation, HEAT/COOL/VENT.

The GEN X provides effective temperature control and minimizes wiring issues. Additional zoned systems, along with stand alone units, may be controlled with the GEN X RM that supports and networks additional units. Mobile Wi-Fi or web based App streamlines installation, commissioning or servicing the system.

GEN X

with WIRED ZONE THERMOSTATS

Schematic Overview



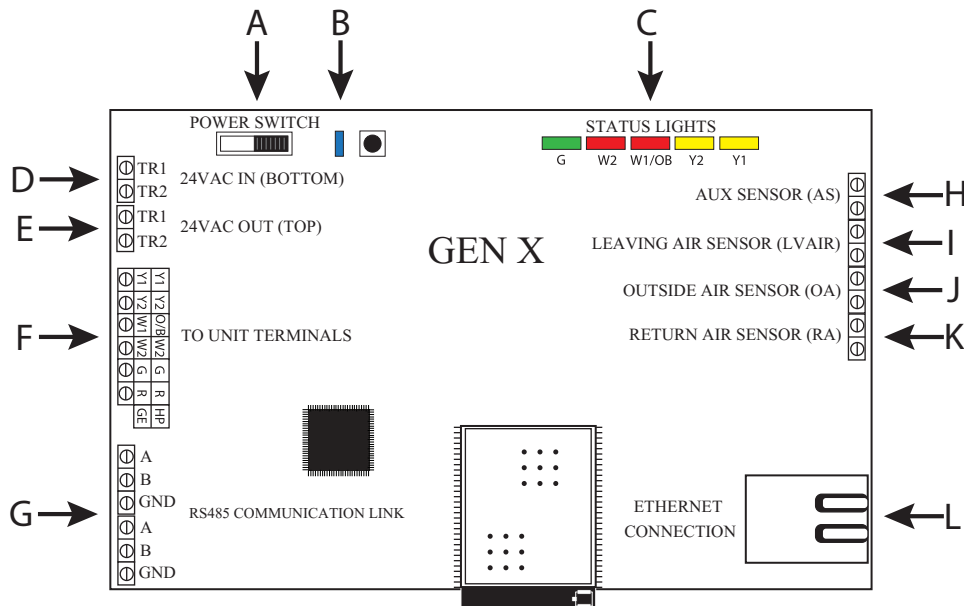
DEVICE	ID	DESCRIPTION	DEVICE	ID	DESCRIPTION
MOBILE APP, Wi-Fi BASED CONTROL BOARD	C1	GEN X CONTROLLER CONTROLS 2-20 MODULATING DAMPERS ONLY 1 24VAC 40VA TRANSFORMER POWERS ALL SUPPLY DAMPERS	SUPPLY / RETURN AIR LAT DISCHARGE SENSORS	LAT	SUPPLY LAT LOCATED BEFORE THE BYPASS. RETURN LAT LOCATED AFTER THE BYPASS
THERMOSTAT	T1-T20	ZONE THERMOSTAT	INTEGRATED STATIC PRESSURE CONTROL	IPC	SUPPLIED WITH THE BYPASS DAMPER (FACTORY PRE-WIRED)
ZONE DAMPER ACTUATOR	DM	SUPPLIED WITH ZONE DAMPER	STATIC PRESSURE TUBE	SPT	LOCATED AFTER THE BYPASS BEFORE THE FIRST SUPPLY TAKEOFF
SYSTEM TRANSFORMER	TR1	24VAC/40VA TRANSFORMER (SIZED @ 2VA PER ZONE DAMPER) DAISY CHAIN STAT TO STAT	BYPASS DAMPER ACTUATOR	BP-DM	SUPPLIED WITH BYPASS DAMPER (FACTORY PRE-WIRED)
BYPASS TRANSFORMER	TR2	IND. 24VAC/40VA TRANSFORMER TO POWER THE BYPASS DAMPER	24VOLT WIRING TO ZSTATS	—	USE 18GA THERMOSTAT WIRE TO DAISY CHAIN THE 24VOLTS FROM STAT TO STAT
			RS485 COMMUNICATION LINK	∞	3 WIRE TWISTED PAIR

VISIT OUR ON-LINE CATALOG AT ZONEXPRODUCTS.COM
FOR APPLICATIONS ASSISTANCE CALL 800-228-2966



The GEN X is a micro-controller based, auto changeover Universal Gas/Electric or Heat Pump system controller (Part # **GEN X**). The **GEN X** controls a zoned 2H/2C Gas/Electric HVAC unit or 3H/2C zoned Heat Pump unit and communicates with and supports up to 20 zones, utilizing pressure dependent, modulating dampers and zone thermostats. The **GEN X** gathers information every 60 seconds from each thermostat and communicates

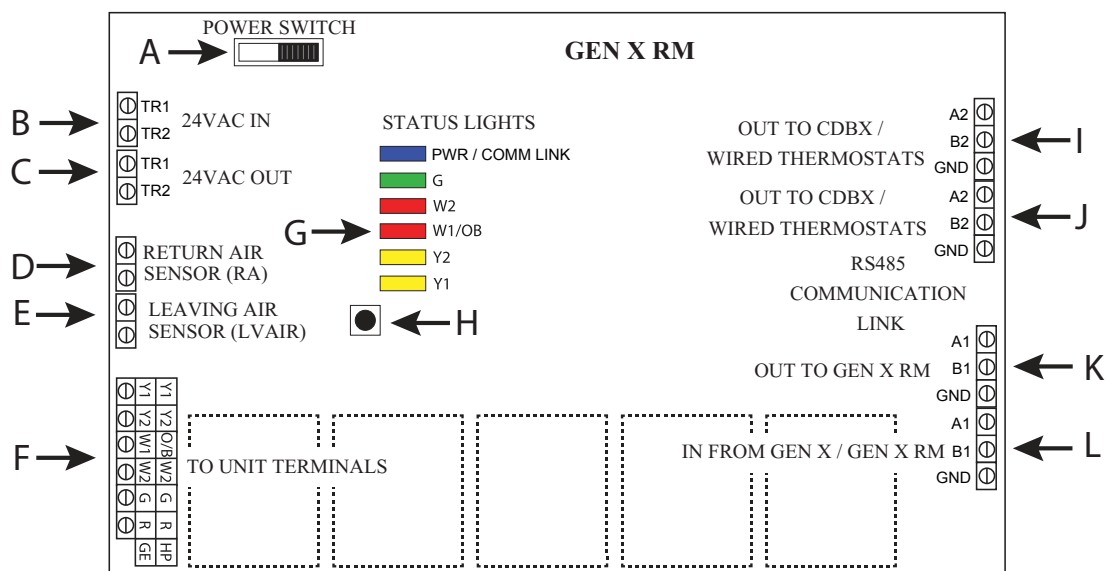
with the system over a 3-wire plenum rated twisted pair data link directing control based decisions to the HVAC equipment. The **GEN X** is powered with one 24 V 40VA transformer, which also powers all thermostats and dampers in the system. Power from the controller, along with a 3-wire communications loop, is daisy chained thermostat to thermostat to streamline installation and system communications. The **GEN X** is equipped with integrated capacity control and High and Low temperature limits to protect the compressor and heat exchanger. Outside air and return air sensors are also provided. The HVAC unit is staged based on leaving air temperature and time. Auto changeover operation is vote based, predicated on a first call, first served majority wins on changeover algorithm. Additional control strategies are established with your mobile device using the GEN X mobile App which initiates control decisions remotely or on-site with the **GEN X** system controller. **Review controller terminal connections below:**



- A. On /Off Power Switch
- B. Communication link LED
- C. Unit Status Lights
- D. 24vac IN (Bottom Terminal) to power the GEN X board (Independent 24vac /40va Transformer)
- E. 24vac OUT (Top Terminal) daisy chained out to zone thermostats
- F. Unit Terminals
- G. A/B/GND 3 wire communication link, daisy chained OUT to zone thermostats and GEN X RM (if utilized)
- H. Aux Sensor (AS) / Not Used
- I. Leaving Air Sensor (LVAIR)
- J. Outside Air Sensor (OA)
- K. Return Air Sensor (RA)
- L. Network Connection



The GEN X RM is a micro-controller based, auto changeover Universal Gas/Electric or Heat Pump system controller (Part # **GEN X RM**), designed to work with the GEN X controller to provide expansion capability to support additional zoned or stand alone units. The **GEN X RM** controls a zoned 2H/2C Gas/Electric HVAC unit or 3H/2C zoned Heat Pump unit and communicates with and supports up to 20 zones, utilizing pressure dependent, modulating dampers and zone thermostats. The **GEN X RM** gathers information every 60 seconds from each thermostat and communicates with the system over a 3-wire data link directing control based decisions to the HVAC equipment. The **GEN X RM** is powered with one 24 V 40VA transformer, which also powers all thermostats and dampers in the system. Power from the controller, along with a plenum rated 3-wire twisted pair communications loop, is daisy chained thermostat to thermostat to streamline installation and system communications. The **GEN X RM** is equipped with integrated capacity control and High and Low temperature limits to protect the compressor and heat exchanger. Return air sensor is also provided. The HVAC unit is staged based on leaving air temperature and time. Auto changeover operation is vote based, predicated on a first call, first served majority wins on changeover algorithm. Additional control strategies are established with your mobile device using the GEN X mobile app which initiates control decisions with the **GEN X RM** controller. Review controller terminal connections below:



- A On /Off Switch
- B 24vac IN to power the GEN X board
(Independent 24vac /40va Transformer)
- C 24vac OUT daisy chained out to zone thermostat
- D Return Air Sensor (RA)
- E Leaving Air Sensor (LVAIR)
- F Unit Terminals
- G Communication link LED / Unit Status Lights
- H Sync Button
- I A / B / GND 3 wire communication link, daisy chained OUT to zone thermostats
- J A / B / GND 3 wire communication link, daisy chained OUT to zone thermostats
- K A / B / GND 3 wire communication link, daisy chained OUT from GEN X RM or GEN X RM
- L A / B / GND 3 wire communication link, daisy chained IN from GEN X to GEN X RM

ZONE THERMOSTAT

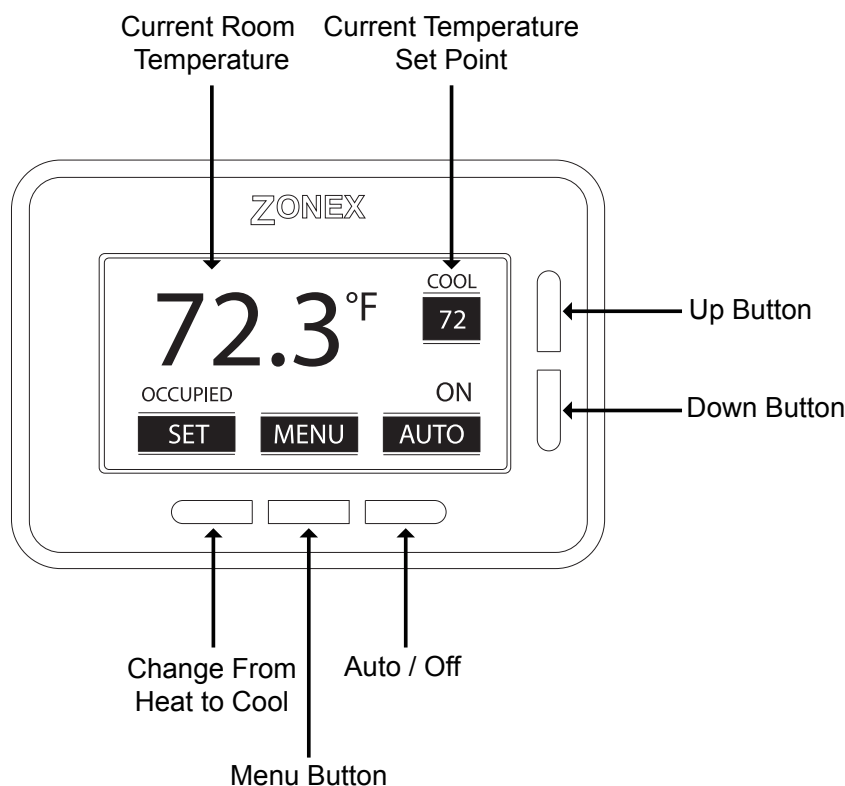


DESCRIPTION

The zone thermostat part# ZSTAT is a microprocessor based, auto changeover, programmable communicating zone thermostat. The zone thermostat controls modulating round or rectangular commercial modulating dampers. The communicating zone thermostat is used with the GEN X-VVT zoning system and communicates over 3- wire communication bus.

The zone thermostats control and modulate zone dampers based on variance from set point to a position that will match the supply load to the demand requirement. When the HVAC unit is running, if a zone thermostat is not calling or is calling for the opposite mode, its corresponding damper fully closes. When the HVAC unit is not running, the thermostats open to the Vent mode to provide ventilation, if the indoor blower fan is running continuously.

All zone thermostats are ID'ed and communicate back to the GEN X controller. The GEN X mobile app interacts with the GEN X controller, via the Wi-Fi network and initiates control decisions for the system. Through the GEN X mobile app you can coordinate global or individual schedules for the system, lock thermostats individually and provide a user interface to make adjustments and establish master temperature settings individually or globally for the system. This user interface provides diagnostic functions to streamline system troubleshooting along with air balance shortcuts, password protection and many more functions. Sleep and Energy Saving modes are available to extend battery life and enhance operation.



ZSTAT - GEN X Modulating Thermostat

To turn the zone stat on, press and hold the AUTO/OFF button for 15 seconds. When OFF is displayed, press and hold OFF button for 15 seconds until AUTO is displayed, release button, stat is in AUTO mode. If AUTO is displayed press AUTO button for 15 seconds until OFF is displayed, release button, stat is in OFF mode.

Sequence of operation

COOL CALL

When zone temperature rises 1 or more degrees above COOL set point, thermostat transmits COOL call to the GEN X controller. GEN X controller evaluates calls for HEAT and COOL for majority vote. If there is a majority vote for COOL, GEN X controller initiates a call for cooling and the damper modulates open. **ON will be displayed** and will flash until system is operating in the COOL mode. Once system is in COOL mode, ON will remain constant. As zone cools, thermostat will communicate with the zone damper and modulate to maintain zone comfort. When zone temperature reaches set point, damper is closed or at minimum position and ZSTAT releases call for COOL.

HEAT CALL

When the zone temperature falls greater than 1 degree below HEAT set point, thermostat will initiate a call for HEAT. GEN X controller will evaluate all calls for HEAT and COOL in the system and if there is a majority of calls for HEAT, GEN X controller will initiate heat call and **ON** icon will appear below the set point. ON icon will flash until system is operating in the HEAT mode. Once system is in the HEAT mode, ON will remain constant. Damper will modulate open and warm air will heat zone. As zone warms, thermostat will communicate with the zone damper and modulate to maintain zone comfort. When zone temperature rises to set point, damper is closed or at minimum position and ZSTAT releases call for HEAT.

Baseboard / Supplemental HEAT

When zone thermostat is configured for BASEBOARD heat and zone temperature falls greater than 2 degrees below HEAT set point, the thermostat will energize AUX heat and BASEBOARD heat is now operating, **ON will be displayed**. When zone temperature rises to HEAT set point, thermostat will satisfy call for AUX operations.

REHEAT

When zone thermostat is configured for REHEAT operation, and the zone temperature falls greater than 2 degrees below HEAT set point, thermostat transmits a call for REHEAT. The communicating damper board modulates the damper to 40% open and energizes AUX output REHEAT, **ON will be displayed**. When zone temperature rises to HEAT set point, thermostat satisfies, releases call for AUX REHEAT and closes damper.

VENT

When all calls for HEAT or COOL are satisfied, dampers will modulate to approx. 40% open and VENT will be displayed on thermostat indicating system is in ventilation mode.

INSTALLATION INSTRUCTIONS

Zone Damper Installation

Install dampers into HVAC duct so damper actuators are easily accessible. Damper may be mounted in an area where the ambient temperature is between 32 and 140 degrees Fahrenheit. Round dampers should be mounted with damper actuators between 9 and 3 O'clock position.

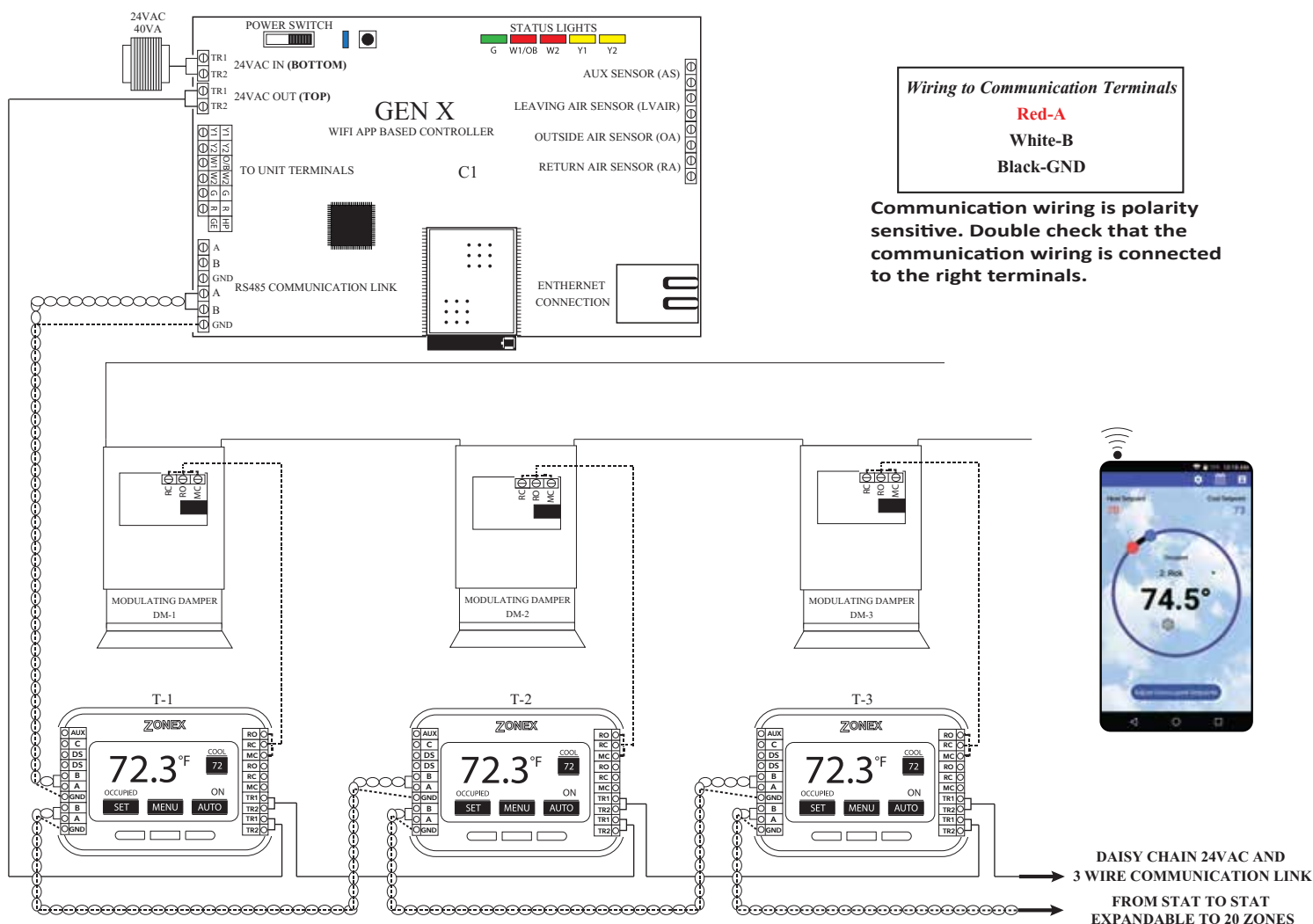
Installing 24 volt wiring

Once GEN X controller and supply dampers are installed, install one 24vac 40va transformer, and wire secondary 24 volts to the TR1 / TR2 (IN - **D**) terminals on GEN X controller. Using 18 ga. thermostat wire, wire TR1 / TR2 (OUT - **E**) terminals and daisy chain power wires to the first zone thermostat. Continue daisy chain wiring from first thermostat to second, third, etc., until all zone thermostats are wired with power.

Note: Maintain TR1 and TR2 wiring polarity throughout the system to improve communications.

Installing Communication Wire RS485

Once power wiring is daisy chained to all zone thermostats in the system, use 3 wire plenum rated twisted pair communications wire to install communications loop. Install communications wire using the A, B and GND (**G**) terminals on GEN X controller and daisy chain to the first zone thermostat in the system and wire to A, B and GND terminals. Continue daisy chain to the next thermostat using A, B and GND terminals to the A, B and GND of the next thermostat, repeating this process until all zone thermostats are wired into the communications loop. Communications wiring is polarity specific, if RED communications wire is on A at the GEN X controller, then RED wire is connected to A throughout the system.

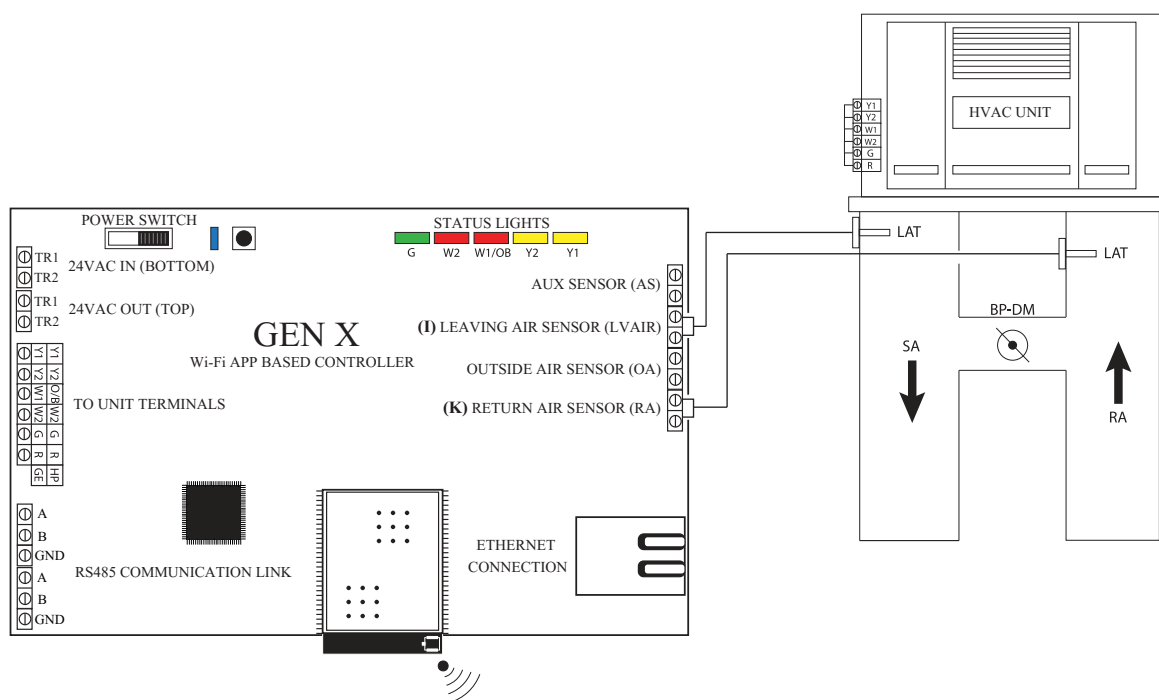


Wiring in the Leaving and Return Air Sensors

The LAT Capacity Controller protects both the air conditioner and furnace. It constantly monitors the leaving air temperature. If the air gets too cold (drops below the cool cut-out set point), it breaks the "Y" connection, disengaging the compressor. If the air gets too warm (rises above the heat cut-out set point), it breaks the "W" connection, de-energizing the furnace. To prevent short cycling, the compressor or furnace cannot re-energize for at least 4 minutes after cut-out. The heating and cooling cut-out set points can be changed by the installer from the App.

Install Leaving Air Temperature Sensor (LAT) (i) to the LVAIR terminals on the GEN X controller and place the sensor in the supply duct prior to the bypass takeoff. Install Return Air Temperature Sensor (LAT) (κ) to the RA terminals on the GEN X controller and place the sensor in the return duct after the bypass takeoff.

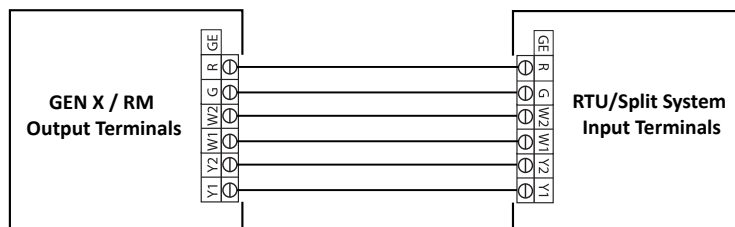
(Note: If extension of wire is needed, 18 ga. thermostat wire may be used).



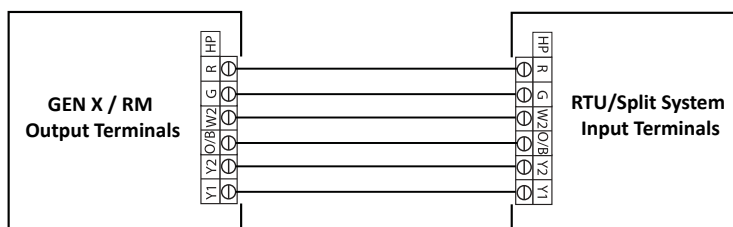
Wire Unit to GEN X Controller

Using standard 18 ga. thermostat wire, connect GEN X unit outputs to HVAC unit. Standard HVAC control terminal designations are used, R Y1 Y2 W1(O/B) W2 G, and energize HVAC unit.

1. Gas/Electric Wiring



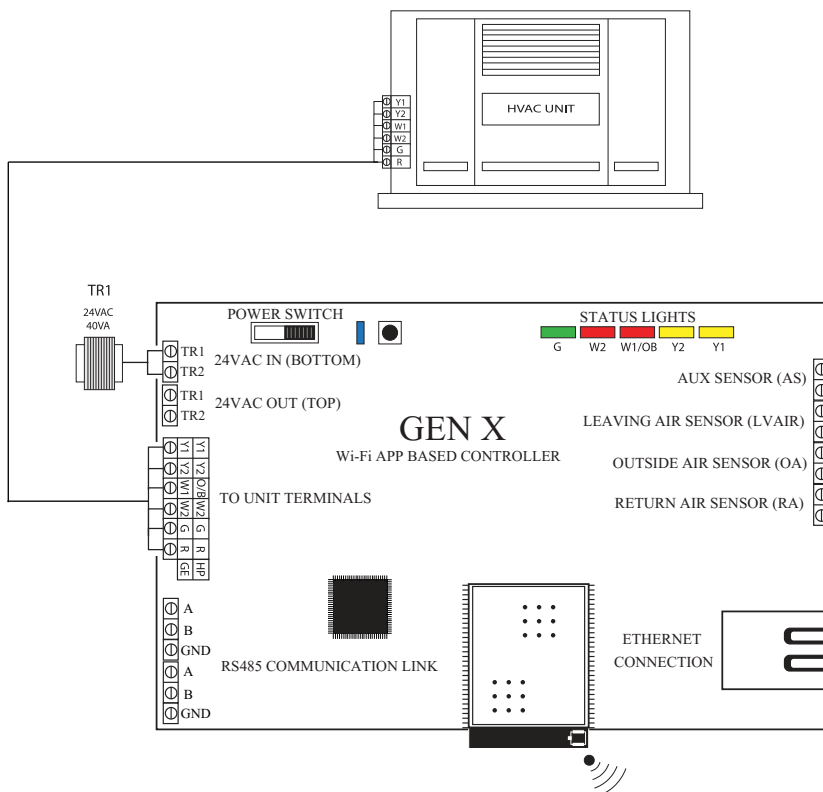
2. Heat Pump Wiring– O/B operation



Note: 1. Single stage systems will not use Y2 or W2 terminals for operation.

Please confirm your system operation to ensure proper wiring.

2. For Heat Pump applications with Gas/Electric inputs, set system for gas operation and reset high limit on the App to 115 degrees.

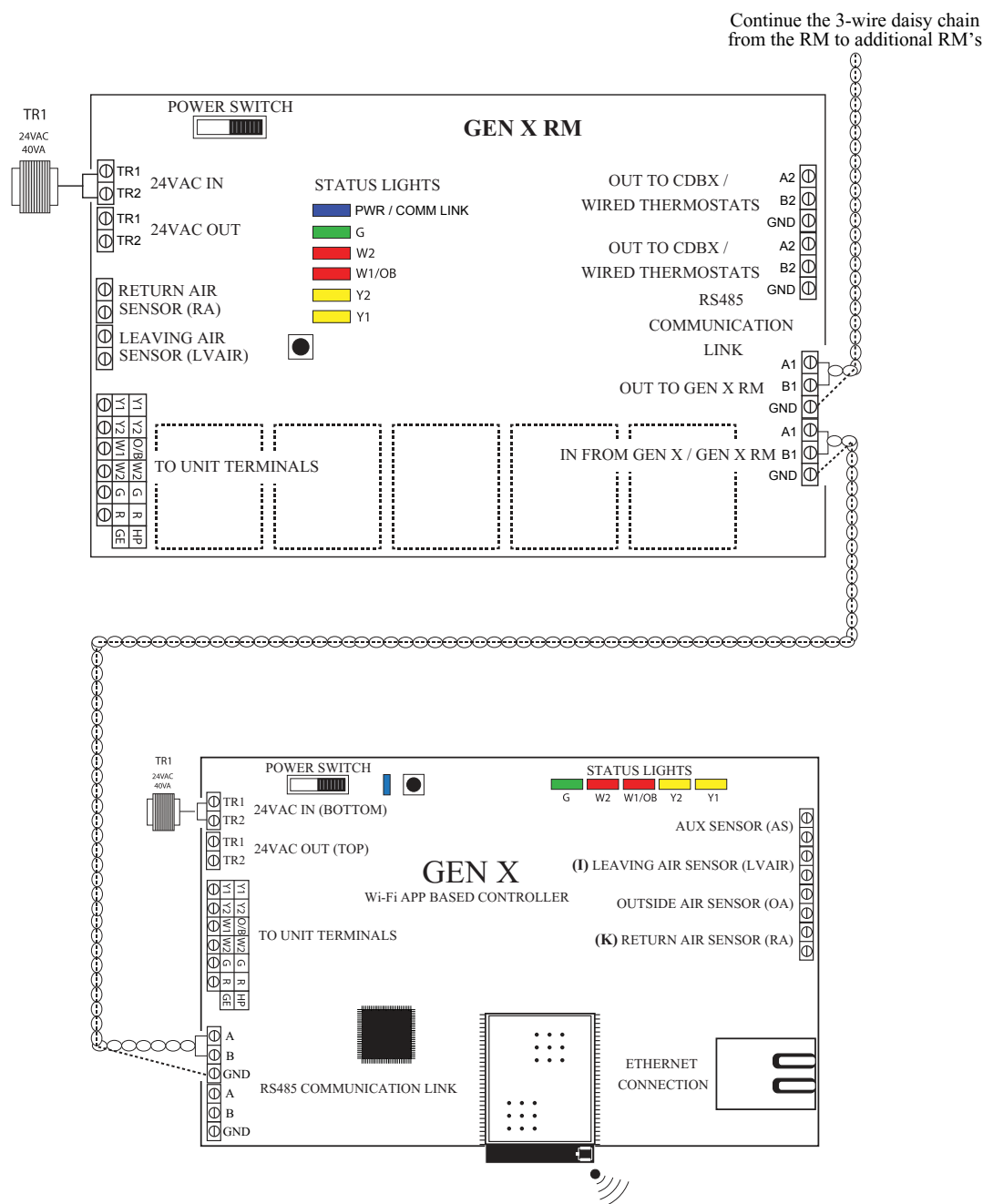


INSTALLATION INSTRUCTIONS

Wiring the GEN X to the GEN X RM

With the GEN X controller installed, if you have additional zoned RTU's or Split systems, install the RM controller using the 3 wire twisted pair communication wire. Wire from the Gen X A, B, and GND out to the RM A, B, and GND (IN) on the RM controller as shown below. If there are multiple RM's in the system, continue the 3 wire twisted pair in a daisy chain fashion from the RM to the next RM.

Note: Up to 20 RM's may be daisy chained to the Gen X controller.



Zone Damper Installation

Install dampers into HVAC duct so damper actuators are easily accessible. Damper may be mounted in an area where the ambient temperature is between 32 and 140 degrees Fahrenheit. Round dampers should be mounted with damper actuators between 9 and 3 O'clock position.

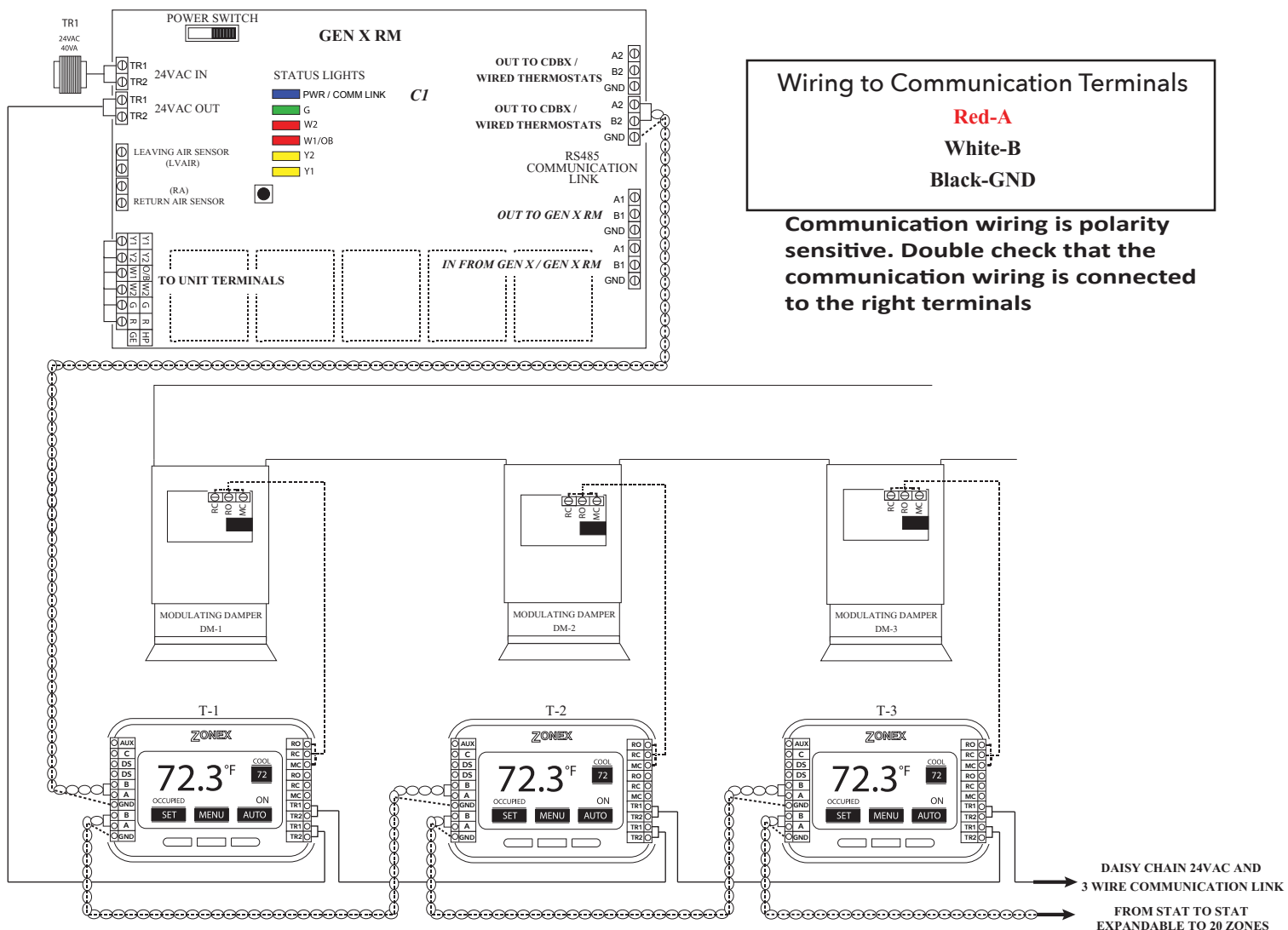
Installing 24 volt wiring

Once RM controller and supply dampers are installed, install one 24vac 40va transformer and wire secondary 24 volts to the TR1 / TR2 (IN - **B**) terminals on RM controller. Using 18 ga. thermostat wire, wire TR1/ TR2 24vac (OUT - **C**) terminals and daisy chain power wires to the first zone thermostat land on TR1 and TR2 (IN) terminals. Continue daisy chain wiring from TR1 and TR2 on first thermostat to TR1 and TR2 on second zone thermostat. Continue daisy chaining the wire to the third thermostat, and on until all zone thermostats are wired with power.

Note: Maintain TR1 and TR2 wiring polarity throughout the system to ensure effective communications.

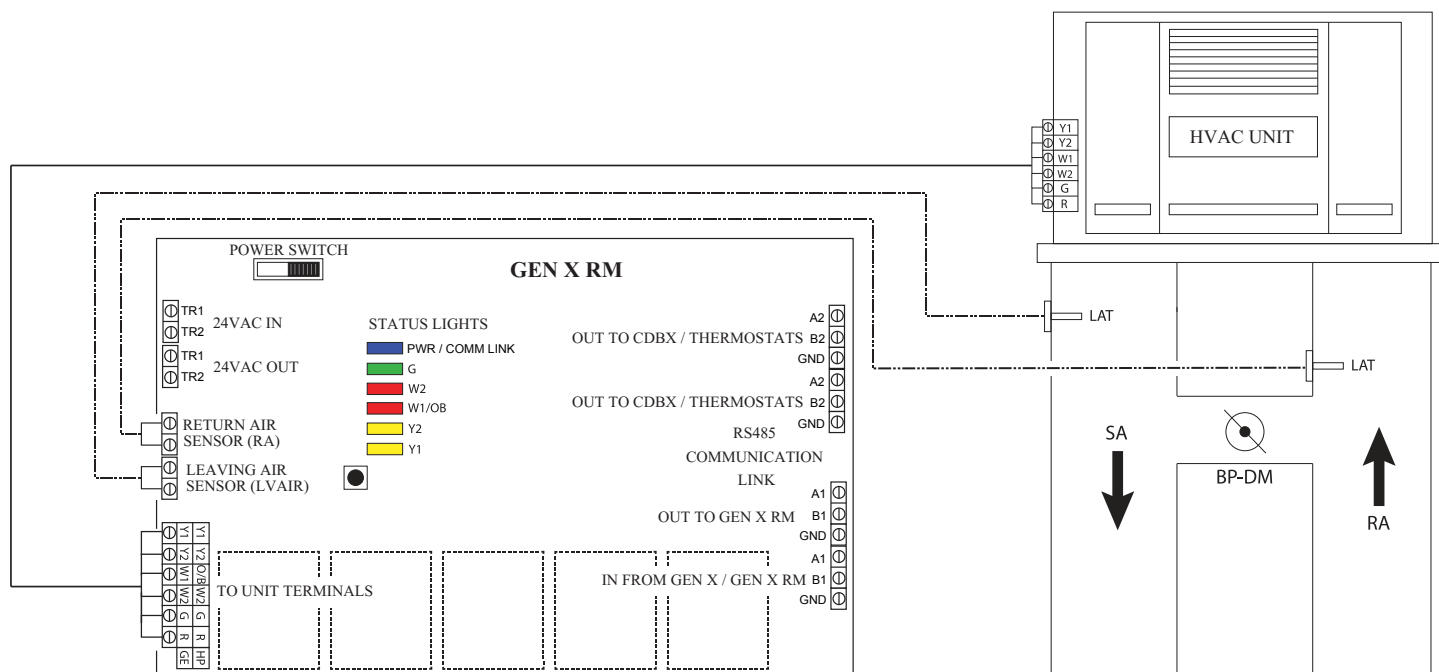
Installing Communication Wire RS485

Once power wiring is daisy chained to all zone thermostats in the system, use 3 wire twisted pair communications wire to install communications loop. Install communications wire using the A, B and GND (**J**) terminals on RM controller and daisy chain to the first zone thermostat in the system wiring to A, B and GND terminals. Continue daisy chain to the next thermostat using A, B and GND terminals to the A, B and GND of the next zone thermostat, repeating this process until all zone thermostats are wired into the communications loop. Communications wiring is polarity specific, if RED communications wire is on A at the RM controller, then RED wire is connected to A throughout each damper board in the system.



Wiring in the Leaving and Return Air Sensors

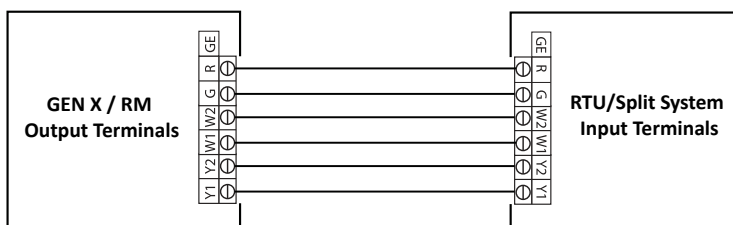
Install Leaving Air Temperature Sensor (LAT) to the LVAIR terminals on the RM controller and place the sensor in the supply duct prior to the bypass takeoff. Install Return Air Temperature Sensor (LAT) to the RA terminals on the RM controller and place the sensor in the return duct after the bypass takeoff.
(Note: If extension of wire is needed, 18 ga. thermostat wire may be used).



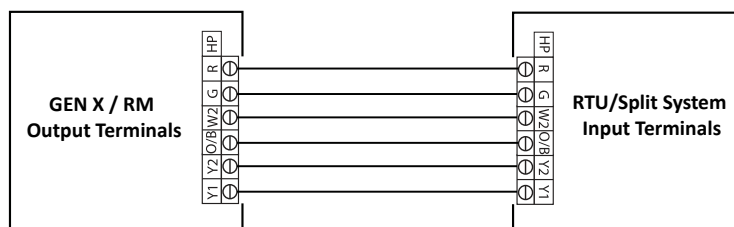
Wire Unit to GEN X RM Controller

Using standard 18 ga. thermostat wire, connect RM unit outputs to HVAC unit. Standard HVAC control terminal designations are used, R Y1 Y2 W1(O/B) W2 G, and energize HVAC unit.

1. Gas/Electric Wiring



2. Heat Pump Wiring– O/B operation



Note: 1. Many systems are single stage and will not use Y2 or W2 terminals for operations.

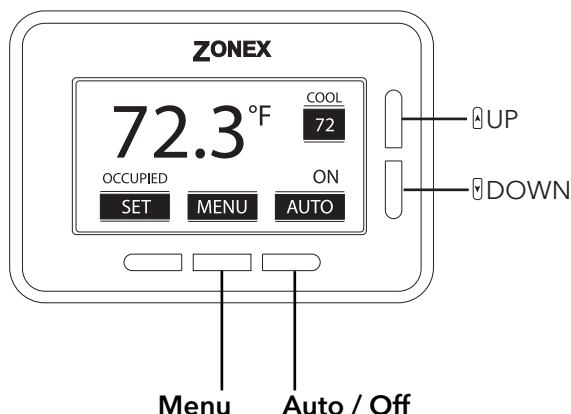
Please confirm your system operation to ensure proper wiring.

2. For Heat Pump applications with Gas/Electric inputs, set system for gas operation and reset high limit on the app to 115 degrees.

Setting ID on the ZSTAT Thermostat

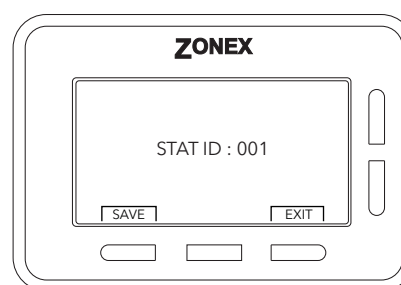
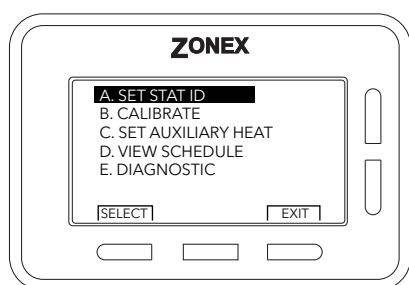
Each thermostat will need to be ID'd. Beginning with the first thermostat in the daisy chain closest to the GEN X controller, place provided white label #1 on the damper. Locate associated zone thermostat and confirm display appears on stat. If not, turn ON the GEN X and GEN X RM controllers at the ON/OFF switch located on the left hand corner of the controllers. If no display is seen, check that you have 24v at TR1 and TR2 on the GEN X controller.

On the zone thermostat, press and hold the **MENU** button followed by the **OFF/AUTO** button, release when display reads **ZONE SETUP**.



Setting STAT ID for the Zone Thermostat

While still in the Zone Setup screen, use the UP or DOWN buttons to highlight item **(A) SET STAT ID** menu item and then press SELECT. Set STAT ID for the first stat to 001, Once Stat ID is set, press SAVE. Place provided yellow label #1 on the inside of the thermostat sub-base (All thermostats receive a unique ID 001 to 020, maximum of 20 zones per GEN X and GEN X RM controllers.)



The GEN X mobile App provides local or remote access to your system, providing direct access to zoned systems or stand alone units.

Download and install the GEN X App on your Android phone or mobile device from the link that was emailed to you. Please contact technical support for the most current App or if you were not sent a link. (IOS version under development)

Connect an Ethernet cable from the customer's network into the GEN X's Ethernet connection (this should be provided by the customer). (Skip the step below if you were able to connect to the customer's network.)

If you are unable to access the customer's network use the stand alone router provided by Zonex. Plug the stand alone router into power with the power supply provided, plug one end of the Ethernet cable (also provided) into the LAN port of the router and the other end into the GEN X. This will allow you to communicate with the GEN X so that the startup and configuration changes can be made to the system.

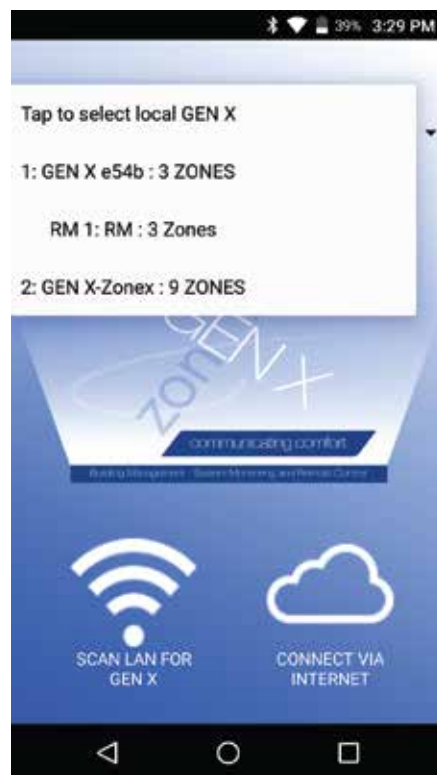
Ensure that your phone is connected to the same network as the GEN X via a Wi-Fi connection. If you are connecting to the customer's network then you must obtain the network name /SSID and password (you may need to contact your customer's IT personnel). If you are connecting through the standalone router provided by Zonex the network name/SSID and password is located on the bottom of the router.

Open the Zonex App and press the "SCAN LAN FOR GEN X" icon at the bottom of the screen.

Allow the App time to scan the network for the GEN X control board (this could take up to 60 seconds).

You will then see the message "Tap to select your local GEN X system" at the top of the App. Tap the down arrow on the right and a drop down menu will appear indicating the GEN X or RM system(s) connected to the network. If no GEN X is listed power off the GEN X for a few moments, power it back on and reopen the Zonex App so the scan process can be restarted. **Note:** You only need to scan once, after you have successfully scanned and found the GEN X controller. The GEN X app will remember the IP address and load it the next time you log in.


Select the GEN X or RM you wish to access by tapping on it.

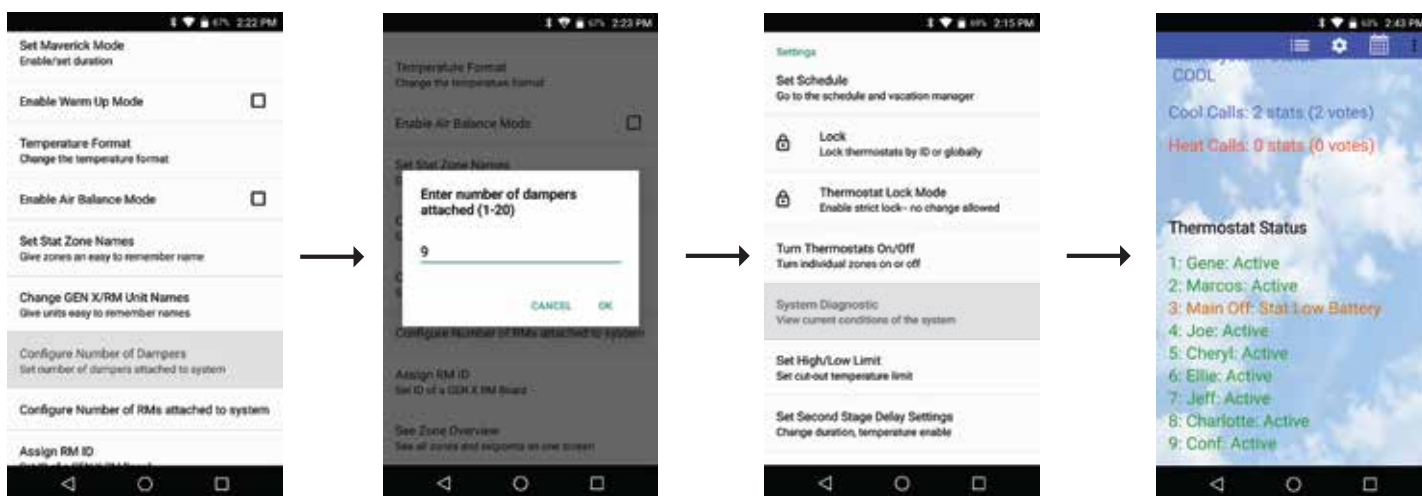


COMMISSIONING AND STARTUP

Once GEN X controller is mounted, and zone stats are ID'd. system is ready to be commissioned and started up. Turn on the GEN X controller and confirm the blue power light is ON.

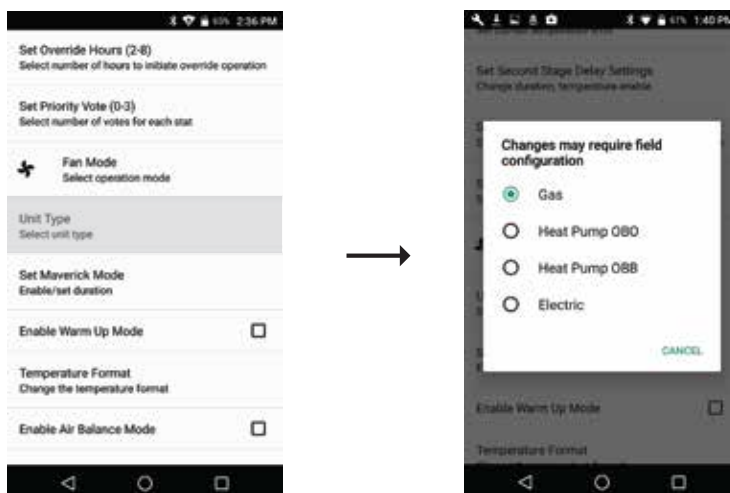
Confirm Thermostat Communications

Open the Gen X app, tap the  for System Configuration Menu and choose Configure Number of Thermostats / Dampers. Enter the number of zones that are in the system. While still in the Configuration menu select System Diagnostic and confirm that all the zones are showing Active under the thermostat status. If it shows Err: Check wiring / Stat ID confirm wiring is correct and check Stat ID.



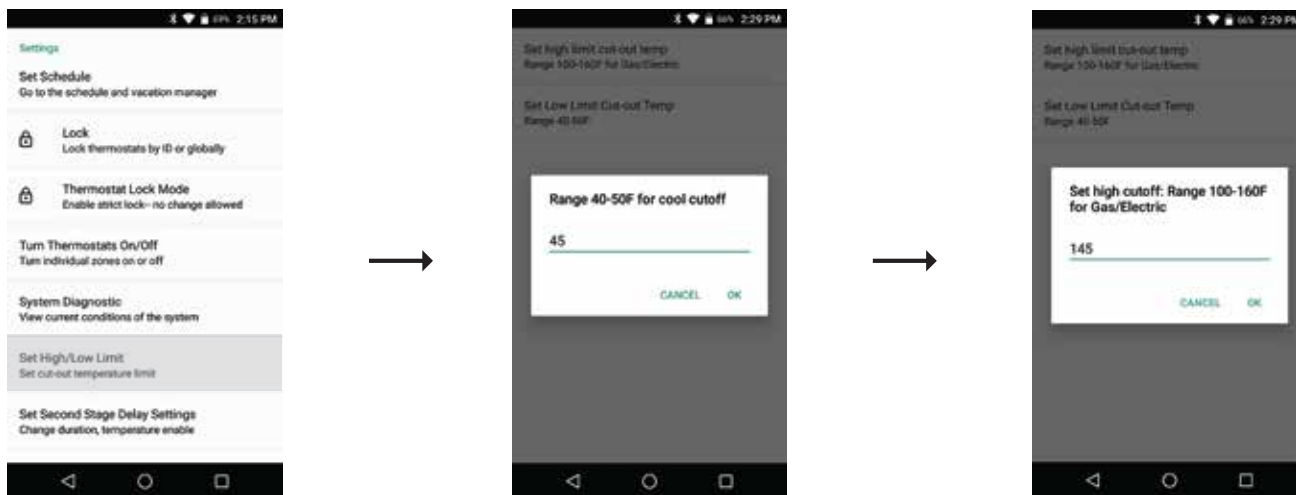
Set Type of Unit

Confirm the type of unit the GEN X is controlling: GAS, ELECTRIC, HEAT PUMP (O), or HEAT PUMP (B). Factory default for UNIT TYPE is GAS, if application is ELECTRIC or HEAT PUMP, you will need to adjust this through the mobile App. Select Unit Type in the configuration menu, choose Heat Pump O/B or Electric.



Confirm High/Low Limits

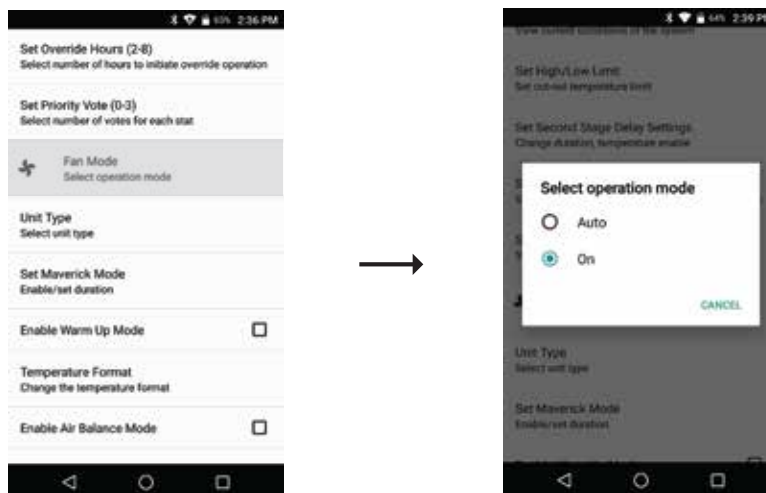
Factory defaults for GAS/ELECTRIC units are set for 45 degrees Low Limit and 145 degrees High Limit. Heat Pump O and B machines are set for 45 degrees Low Limit and 115 degrees High Limit. These may be adjusted in the field to meet unit specification. To confirm or adjust, use the mobile app to access the configuration menu. Select High/ Low Limits, choose High or Low limit and confirm limit set point.





*Check the RTU / Split System's High / Low Limits and adjust them on the GEN X / GEN X-RM below the units cut out limit.

Set Fan Operation

Configuration of FAN is set at the factory for AUTO operation. When there is a call for HEAT or COOL, fan will run. If continuous fan is required, fan will need to be configured for fan ON and will run anytime during Occupied time, and AUTO during unoccupied. To set fan mode, using the Mobile App access the configuration menu. Select FAN mode, choose AUTO or ON.



Confirm Cool Call and Damper Operation

Open the Gen X app and go to the Zone overview screen  , select Zone 1 by tapping on that zone. The Ring of Comfort screen should appear. Tap on  in the middle of the ring and choose All Zones. Slide or Drag the Blue circle counter clockwise to drop the temperature below the current room temperature. Tap back on the phone to return to zone overview screen. All zones should have a current room temperature that is blinking blue, indicating a cool call. Within 2 minutes, a call for cooling will be made from GEN X controller. Confirm Y1 and G lights are on at the GEN X controller. Go to each zone and confirm damper is open and "ON" appears on thermostat display indicating an active COOL CALL. Once all dampers are confirmed open, satisfy cooling calls at each zone thermostat. At each zone stat, raise COOL set point by using the UP button to raise the set point. Confirm "ON" disappeared and damper closes once call is satisfied. Continue to satisfy all cool calls one at a time until all calls are satisfied and dampers are closed. If damper does not close confirm power and communication wiring installation. Within 1 minute of all calls satisfying Y1 will de-energize, and a 3 minute purge follows, no calls are allowed during this time.

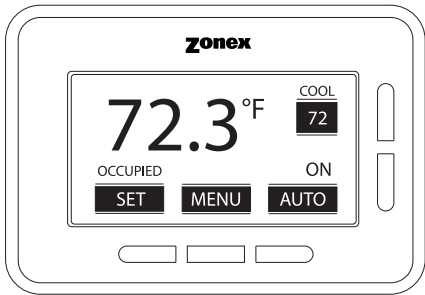
OVERVIEW SCREEN





RING OF COMFORT

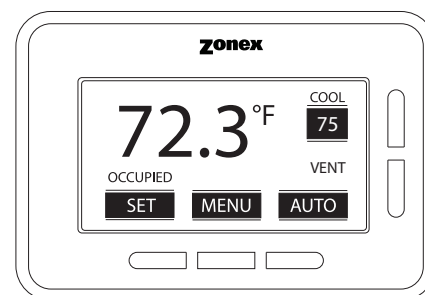
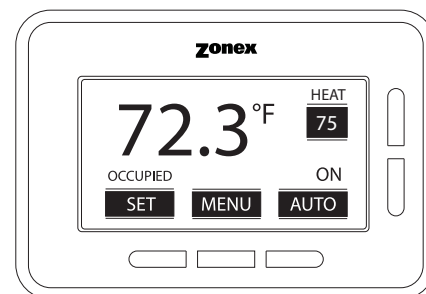
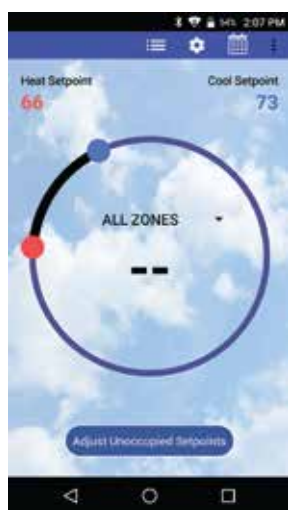
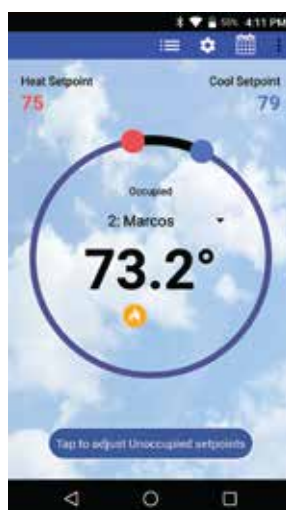


▼ ACCESS ALL THERMOSTATS



Confirm Heat Call and Damper Operation

Open the Gen X app and go to the Zone overview screen , select Zone 1 by tapping on that zone. The Ring of Comfort screen should appear. Tap on  in the middle of the ring and choose All Zones. Slide or Drag the Red circle clockwise to raise the temperature above the current room temperature. Tap back on the phone to return to zone overview screen. All zones should have a current room temperature that is blinking Red indicating a heat call. Within 2 minutes a call for heating will be made from GEN X controller and confirm W1(Y1 for HP) light is on at the GEN X controller. Go to each zone and confirm damper is open. Once all dampers are confirmed open, satisfy heating calls at each zone thermostat. At each zone stat, lower heat set point by using the DOWN button to lower the set point. Confirm "ON" disappears and damper closes once call is satisfied. Continue to satisfy all heat calls one at a time until all calls are satisfied and dampers are closed. If damper does not close confirm power and communication wiring installation. Within 1 minute of all calls satisfying W1 (Y1 for HP) will de-energize, and a 3 minute purge follows, no calls are allowed during this time.



Vent

With all calls satisfied all dampers modulate to VENT position, approximately 40% open, confirm stat display indicates "VENT".

Syncing the GEN X RM to the GEN X Controller

Each RM controller communicates to the GEN X over an RS 485 communications buss. GEN X is the communications hub for the system providing time clock functions along with interpreting any calls or system updates at the RM level and communicates that information to the cloud. Each RM controller must be synced with the GEN X controller to communicate and transmit information to and from the mobile App.

Connect to the GEN X via the mobile app. Go into the "System Configuration Menu" and select "Configure Number of RM's Attached to System". Enter the number of GEN X RM's wired to the GEN X controller.

While still in the "System Configuration Menu", select "Assign RM ID". Enter 1 for the first GEN X RM in the system and press "OK". When the Blue light starts flashing on the GEN X RM controller, press and hold the sync button on the GEN X RM board for 15 seconds. When the light stops flashing the sync has been completed.

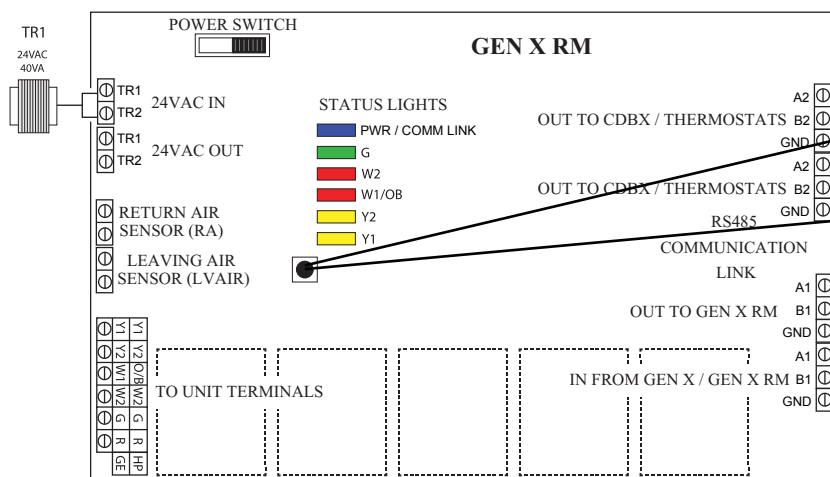
Repeat the "Assign RM ID" for each additional GEN X RM in the system, making sure to increase the RM ID for each GEN X RM. For example, if you have 7 GEN X RM's in the system they will be ID'd 1-7 in the order of how the communication wire is daisy chained.



Enter number of RMs attached to the system (1-20)



Each RM needs to be assigned its own ID



After assigning the RM with its ID wait for the Blue communication light to start blinking rapidly and then press and hold the sync button for 15 seconds.

THERMOSTAT OPERATION

How to make a call for HEAT or COOL

Toggle **SET** to access Heating or Cooling mode

Cool Call

If cooling is desired, set COOL set point 1 or more degrees below room temperature. Once desired temperature is set, ON icon will appear below set point. ON icon will flash until system is operating in COOL mode. Once system is in cooling mode, ON will remain constant.

Heat Call

If heating is desired, set HEAT set point 1 or more degrees above room temperature. Once desired temperature is set, ON icon will appear below set point. ON icon will flash until system is operating in HEAT mode. Once system is in heating mode, ON will remain constant.

Vent Mode

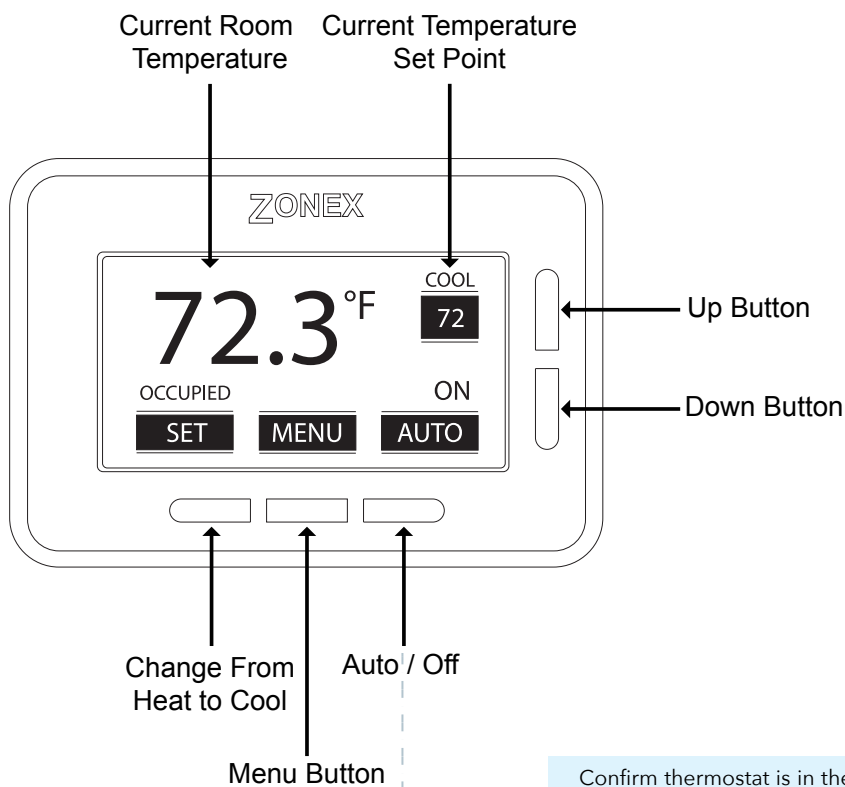
When all calls for heating and cooling are satisfied, damper controller will set the damper into VENT position and will be indicated by the word VENT below set point. During this time if GEN X controller is configured for FAN ON, air will be circulated to all zones.

Lock / Unlock Thermostats

This is done through the GEN X mobile app. Contact building manager for advanced configuration.

Override

To override thermostat operations when in the Unoccupied mode, press the AUTO button once and system will run in the Occupied mode for configured override time. The word OVERRIDE will be displayed below the room temperature when in this mode. System will terminate override after configured run time, if scheduled changeover occurs, or if AUTO button is pressed again.



Confirm thermostat is in the Auto Mode. If OFF is displayed, hold OFF button for 15 seconds, OFF icon will change to AUTO, then release button for AUTO operation.

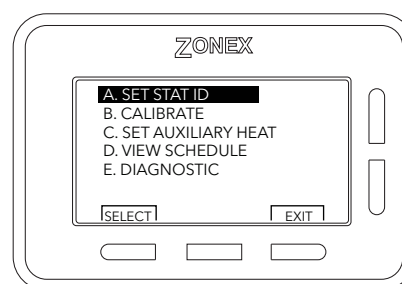
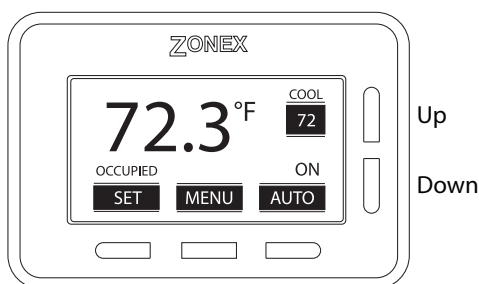
ZONE SETUP MENU AND OPERATION

THERMOSTAT CONFIGURATION MENU

To access the Thermostat Configuration Menu, hold "MENU" button followed by the "AUTO" button.

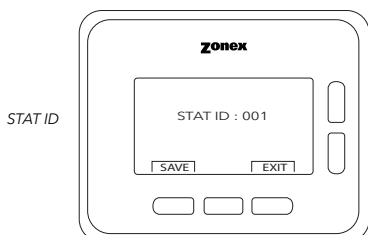
The **THERMOSTAT CONFIGURATION MENU** allows you to:

- A. Set stat ID
- B. Calibrate
- C. Set Auxiliary Heat
- D. View Schedule
- E. Diagnostic



A SET STAT ID

Every thermostat in the system needs a unique ID. They must be in numerical order the way the communication wire is daisy chained. Confirm no duplicate addresses.



While in the Thermostat Configuration Menu, press **Select** on (A) **SET STAT ID**.

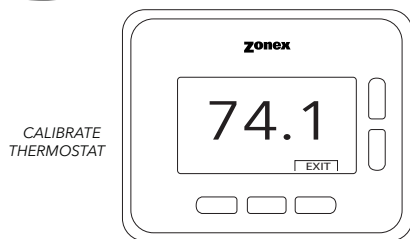
Use the **Up** and **Down** buttons to give the thermostat an ID ranging from 1-20.

Press **Exit** to return to the Thermostat Configuration Menu.

Press **Save** to save settings.

B CALIBRATE

Thermostat is equipped with an accurate temperature sensor. If you require field calibration, follow the steps below.



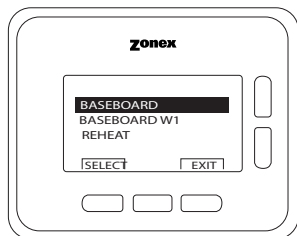
While in the Thermostat Configuration Menu, press **Down** and press **Select** on (B) **CALIBRATE**

Use the **Up** and **Down** buttons to calibrate the temperature display with your external thermostat; press **EXIT** to save changes.

Confirm temperature display now reports the updated room temperature you provided.

C SET AUXILIARY HEAT

SET AUXILIARY HEAT

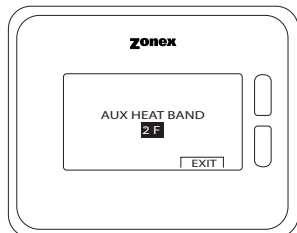


Access the **Zone Setup Menu** select item (C) **SET AUXILIARY HEAT** press **Select**. Select **BASEBOARD**, **BASEBOARD W1** or **REHEAT** using the **Up** and **Down** buttons.

Then press **Select** and enter the temperature range you would like to energize base board or reheat.

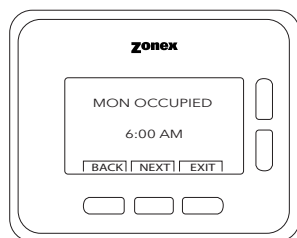
Default settings initiate supplemental heat 2 degrees below the heat set point. You can select 2,3,or 4 degrees using the **Up** and **Down** buttons.

AUX HEAT BAND



D VIEW SCHEDULE

VIEW SCHEDULE



You can only review the schedule given to the thermostat. To change the schedule you will need to log in to the GEN X controller via the mobile app.

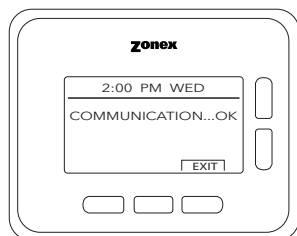
While in the Thermostat Configuration Menu, press **Down** and press **Select** on (D) **VIEW SCHEDULE**

You can review the schedule by pushing **Next**, to scroll through it.

Press **Exit** to return to the Thermostat Configuration Menu.

E DIAGNOSTIC

DIAGNOSTIC



The ZSTAT Diagnostic screen will allow you to view the current time and day and confirm communication with the GEN X / RM controller.

While in Thermostat Configuration Menu, press **Down** and press **Select** on (E) **DIAGNOSTIC** menu item.

Press **Exit** to return to the Thermostat Configuration Menu.

AUXILIARY HEAT/REHEAT

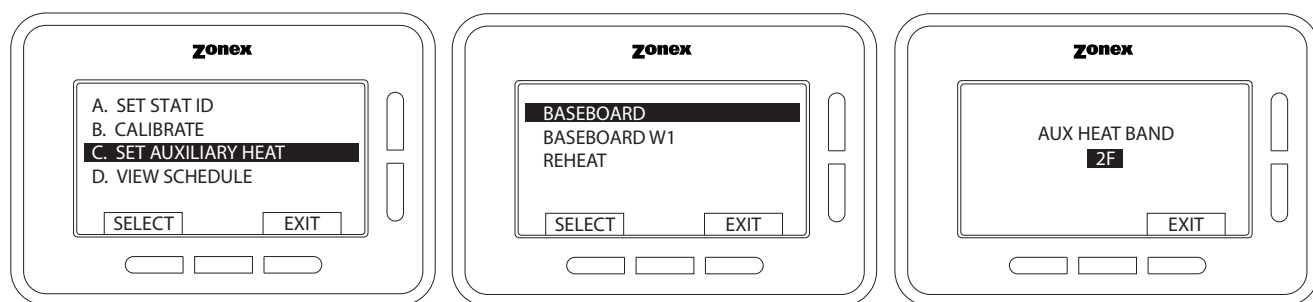
The zone thermostat provides Auxiliary Heat options; Baseboard, Baseboard W1 and Reheat options are configured using the menu screen on the thermostat. When zone temperature drops 2 degrees below heat set point, auxiliary heat operations are energized. If configured for Reheat operation when zone temperature drops 2 degrees below thermostat set point, damper will modulate to approximately 40% open providing air flow over electric heat strips, the AUX terminal will energize and strip heat will provide reheat.

Note: When using electric strip heater, an airflow switch is required to prove airflow for safe operation.

If the Thermostat is configured for Baseboard heat operation, auxiliary output will energize at 2 degrees below heat set point. Auxiliary operations will remain energized until heat call is satisfied.

If you desire the Auxiliary heat to energize before the unit heat, you will want to configure the thermostat for Baseboard W1 heat operation auxiliary output energizes first at 1 degree below set point and at 2 degrees below set point, the unit heater will energize and remain energized until the heat call is satisfied.

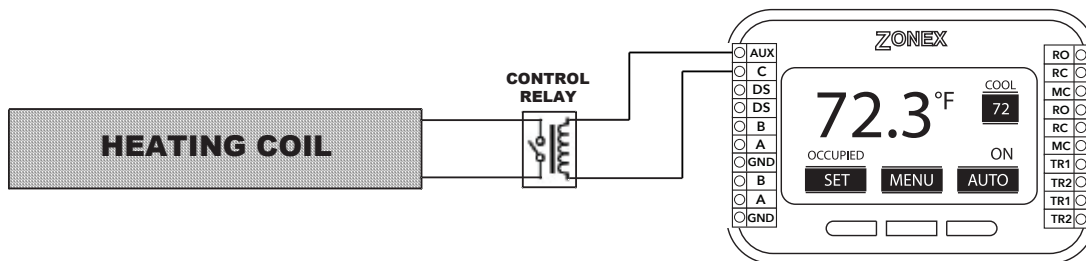
Configuration of Auxiliary Heat/Reheat is accomplished by selecting the "SET AUXILIARY HEAT" function in **ZONE SETUP** Menu. To do this press MENU and AUTO buttons and scroll down to (C) SET AUXILIARY HEAT. When SET AUXILIARY HEAT option is highlighted, press select. Three options are offered, BASEBOARD, BASEBOARD W1 or REHEAT. If **BASEBOARD** is desired press select, display will provide an option for heat deadband setup. Auxiliary heat can be set up for 2, 3, or 4 degrees, use UP/DOWN buttons to select desired temperature deadband, when selection is highlighted, press EXIT to return to previous menu, EXIT again to get back to main menu. If **BASEBOARD W1** is desired press SELECT, display will provide an option for heat deadband setup. Auxiliary heat can be set up for 2, 3, or 4 degrees, use UP/DOWN buttons to select desired temperature deadband, when selection is highlighted, press EXIT to return to previous menu, EXIT again to get back to main menu. If **REHEAT** operations are desired, press the MENU button and scroll through menu options until SET AUX HEAT is highlighted, press SELECT. Use UP/DOWN button to highlight REHEAT and press SELECT button, display will provide an option for auxiliary heat deadband setup. Reheat can be set up for 2, 3, or 4 degrees, use UP/DOWN buttons to set deadband. Once desired HEAT DEADBAND is set, press EXIT to return to previous menu, EXIT again to return to main menu.



SUPPLEMENTAL HEAT APPLICATIONS

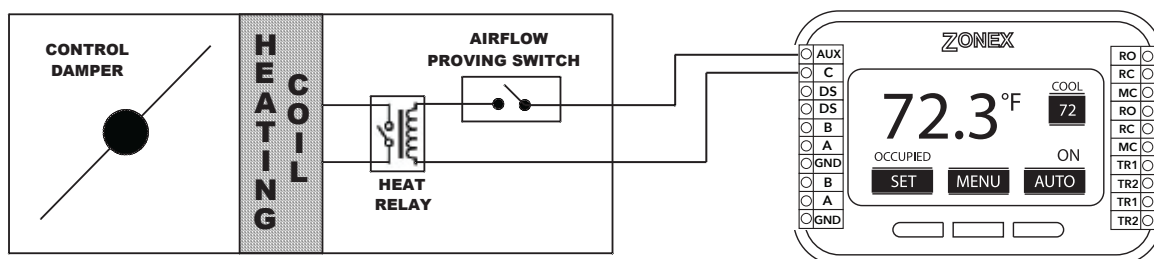
BASEBOARD ELECTRIC HEAT

Wire from AUX/C terminals to the 24v coil on a field supplied SPDT relay.
Wire baseboard heat to the load side of the relay to the baseboard heater.



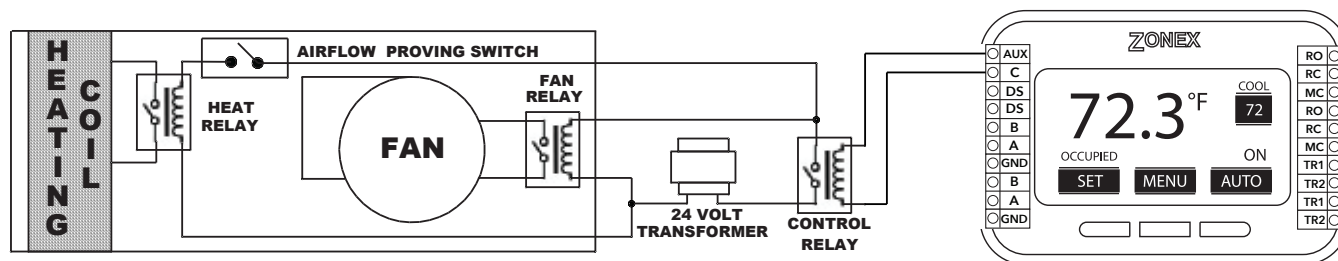
VAV DUCT REHEAT

Wire one AUX terminal to the air proving switch from the air proving switch complete wiring to the terminal on the 24v coil relay. Wire the C terminal to the 24v coil on the relay.
Isolated control power should be provided to power baseboard heater.



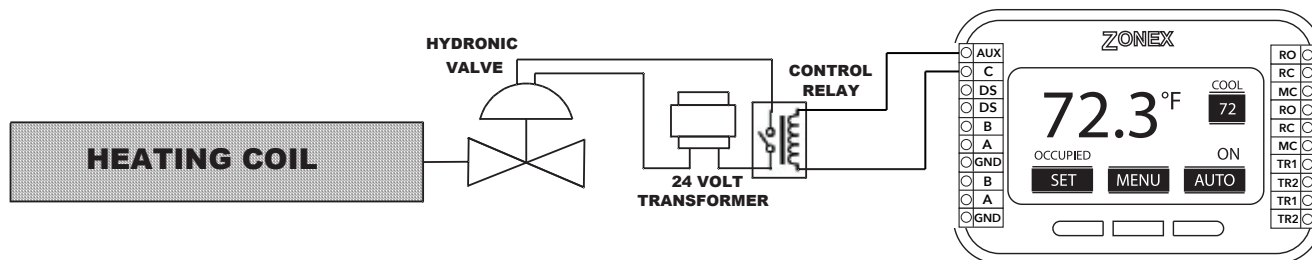
DUCT FAN REHEAT

Wire from the AUX/C to the 24v coil on a field supplied SPDT relay.
Wire from one contact terminal to the 24v coil of the fan relay and to the air proving switch then wire the leaving side of the air proving switch to the 24v coil relay on the Elect. Strip heater.
Now wire the other contact to the transformer. Wire the other transformer leg to the fan and and Elect. Strip heater 24v coil terminals to complete the circuit. Isolated control power should be provided to power the fan and Elect. Strip heater.



BASEBOARD HYDRONIC HEAT

Wire from AUX/C to 24v coil on SPDT relay then wire from one contact terminal to the transformer and from the other transformer leg to the valve. On the other relay contact terminal wire to the valve to complete the circuit. Isolated control power should be provided to power the valve.

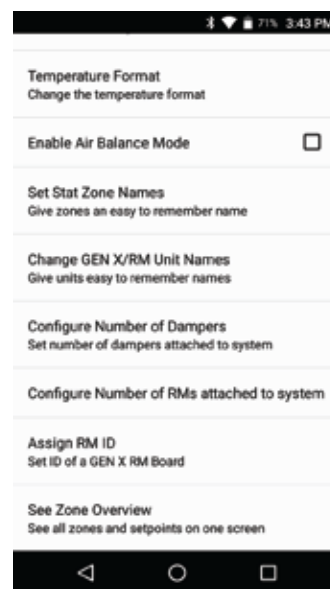
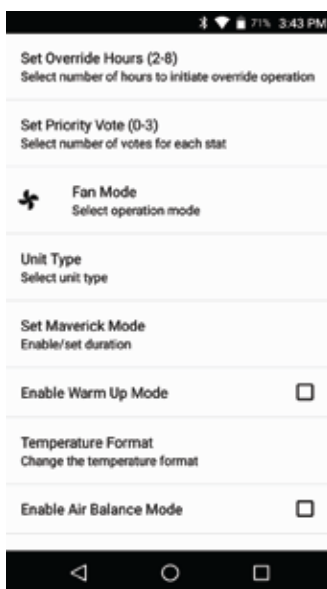
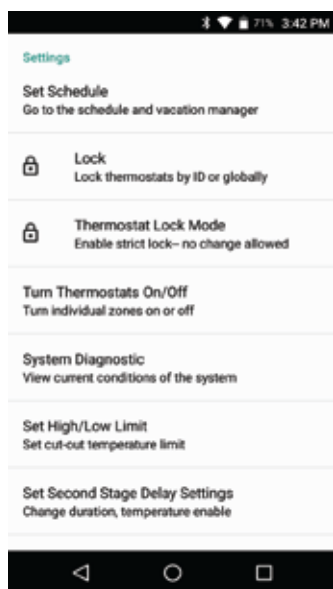


The mobile app interacts with the GEN X controller, via the Wi-Fi network and initiates control decisions for the system. Through the GEN X mobile app you can coordinate global or individual schedules for the system, lock thermostats individually and provide a user interface to make adjustments and establish master temperature settings individually or globally for the system. This user interface provides diagnostic functions to streamline system troubleshooting along with air balance shortcuts, password protection and many additional functions.

You will find outlined below the 23 unique functions that the GEN X offers:

System Configuration Menus

System feature changes are configured through the GEN X Mobile App for all zone stats and the GEN X System controller, along with additional RTU or Split systems controlled by their RM board.

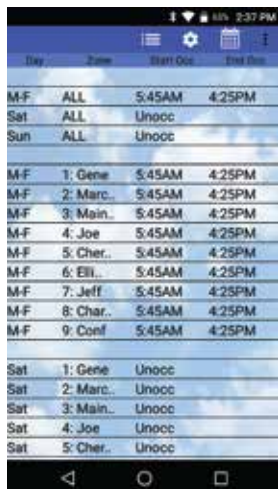



MENU FEATURES:

- 01 SET SCHEDULE / VACATION SCHEDULE
- 02 LOCK
- 03 THERMOSTAT LOCK MODE
- 04 TURN THERMOSTATS ON/OFF
- 05 SYSTEM DIAGNOSTIC
- 06 SET HIGH / LOW LIMITS
- 07 SET SECOND STAGE DELAY TIME
- 08 SET OVERRIDE HOURS
- 09 SET PRIORITY MODE
- 10 FAN MODE
- 11 UNIT TYPE

- 12 SET MAVERICK MODE
- 13 ENABLE WARM UP MODE
- 14 TEMPERATURE FORMAT F° / C°
- 15 ENABLE AIR BALANCE MODE
- 16 SET STAT ZONE NAMES
- 17 CHANGE GEN X / RM UNIT NAME
- 18 CONFIGURE NUMBER OF DAMPERS / THERMOSTATS
- 19 CONFIGURE NUMBER OF RM'S ATTACHED TO SYSTEM
- 20 ASSIGN RM ID
- 21 SEE ZONE OVERVIEW
- 22 CHANGE ALARM SETTINGS
- 23 CHANGE SYSTEM TIME

01 SCHEDULE / VACATION



Select **Set Schedule** or Tap on 

Select **Change Daily Schedule** format

Choose your format **5-1-1** or **Daily Schedule**

Select **Set Daily Schedule**

Select **M-F ALL**

Choose **Set Occupied Time** or **Set Unoccupied**

Set **Occupied Start Time**, Press **Ok**

Set **Occupied End Time**, Press **Ok**

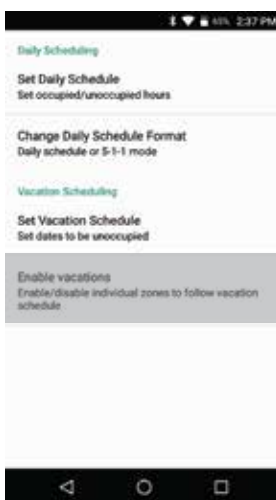


Select **Sat** or **Sun ALL**

Choose **Set Occupied Time** or **Set Unoccupied**

Set **Occupied Start Time**, Press **Ok**

Set **Occupied End Time**, Press **Ok**



VACATION SCHEDULE

Select **Set Schedule**

Choose **Set Vacation Schedule**

Press **Add Vacation**

Select a **Date** on the **Calendar** to **Start Vacation** and another to **End Vacation**, Press **Ok**

Select **Enable Vacations**

Choose **Individual zones** or **All Zones** to follow vacation schedule

TO NAME A VACATION SCHEDULE

Select the **Vacation** schedule that you want to name

Select **Change name** and enter the new name, Press **Ok**

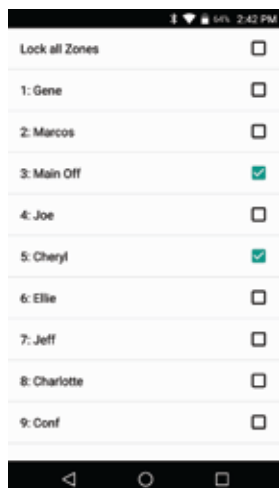
TO DELETE OR EDIT A VACATION SCHEDULE

Select the current **Vacation** Schedule you want to **Delete** or **Edit**

Select **Delete** or **Edit**

02 LOCK

Thermostats can be locked independently or globally through your Mobile Device, when a thermostat is locked the end user will have limited operation of the thermostat, with adjustment of +/- 2° from heating or cooling set points.



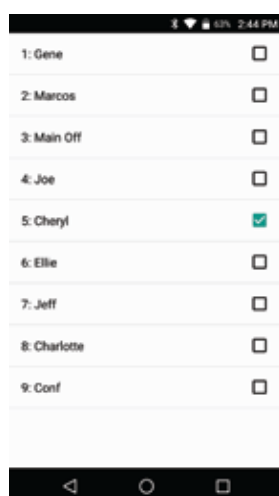
Press **Lock**

Select **Zone Stat** or **Lock All Zones** to globally lock all of the zones

☒ Confirms zone thermostat is locked.

03 THERMOSTAT LOCK MODE

This function will restrict a zone or zones from being able to make temperature changes from set point at the thermostat.



Press **Thermostat Lock Mode**

Select **the Zone or Zones that will have a strict lock.**

☒ Confirms zone thermostat is locked with a 0° variance.

Note: Thermostats must be locked for 0° variance to operate.

04 TURN THERMOSTAT ON / OFF

The thermostat On and Off function will allow you to turn individual thermostats On and Off.



Press **Turn Thermostat On/Off**

Select **the zone or zones you want to turn Off or On**


☒ To turn OFF the thermostat uncheck the box

Note: Off is displayed on the thermostat.

05 SYSTEM DIAGNOSTIC



Allows the user to review the current conditions for the GEN X system. Number of Active thermostats in the system, How many zones are communicating, low battery, Thermostats that are off, Unit Status, Leaving Air Temperature, Return Air Temperature and Outside Air Temperature all from your Mobile Device

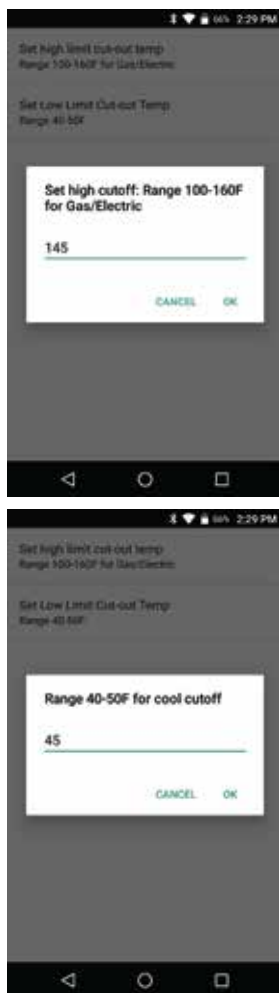
Tap **System Diagnostic** or access from  **Extended feature menu**.

Scroll **Down** to view **Active Zones** and unit conditions

By tapping on a zone thermostat, under **Thermostat Status** it will take you to that zone's set points and current room temperature.

Troubleshooting Note: System Diagnostic is a great tool to use to confirm communications with thermostats and detect communication errors or wiring errors in the system.

06 HIGH/LOW LIMIT



For system protection the GEN X has High and Low limit set point built into the Mobile Device configurations. Factory defaults for Gas/Electric operations are High Limit of 145° F and Low Limit of 45 °F, for Heat Pump operations factory defaults are High Limit 115° F and Low Limit of 45° F. These can be field configured as required.

Tap **Set High/Low Limit**

Select **Set High Limit, Confirm or Change High Limit (Range 100° F - 160° F)**

Select **OK** when done

Tap **Set High/Low Limit**

Select **Set Low Limit, Confirm or Change Low Limit (Range 40 ° F- 50 ° F)**

Select **OK** when done

07 SECOND STAGE DELAY



The GEN X controller can be configured for TIME/TEMP or TIME ONLY second stage operation. TIME/TEMP strategy uses both run time and leaving air temperature to determine when to initiate second stage heat or cool. TIME ONLY strategy uses run time to stage second stage heat/cool operation. Factory default is TIME/TEMP, the run time is preset to 3 minutes; however this can be reset up to 30 minutes.

Time / Temp Configuration

Tap **Set Second Stage Delay Settings**

☒ **Enable Second Stage Delay**

Select **Set Second Stage Delay Time**

Choose **3-30 minutes**, Press **OK**



Time only Configuration

Tap **Set Second Stage Delay Settings**

Select **Set Second Stage Delay Time**

Choose **3-30 minutes**, Press **OK**

☐ **Disable Second Stage Delay by tapping the checked box.**

08 OVERRIDE HOURS



Select the number of hours to initiate override operation. Select 2-8 hours in the setback mode. Tap the AUTO button once on the thermostat to initiate override operation. The AUTO button can be tapped again to terminate override operation.

Select **Set Override Hours**

Enter **2-8 hours for override operation**, Press **OK**

This is a global function, all thermostats on this unit will operate with the override time selected.

09 PRIORITY VOTE



This function allows system configuration to determine the weight of the vote sent from each thermostat. Factory default is set to 1, or 1 vote per thermostat. When needed, a thermostat can be configured for higher weight by adding up to 2 additional votes for a total of 3 votes, granting priority to that zone. Additionally, if there is a desire for a thermostat to not place a call for heat or cool, a null vote may be configured by using a value of 0 in the priority Vote menu, when null vote is selected the thermostat is a slave to the GEN X system.

Select **Set Priority Vote**

Select **Zone Stat of Choice**

Enter **0-3 Votes for Zone Stat, Press OK**

10 FAN MODE



Fan operation for either Fan ON or AUTO. When system is configured for ON operation, the Fan will run during Occupied Schedule and will revert to Auto operations during unoccupied schedule. When system is configured for Auto operation, Fan will only run when there is a call for heating or cooling,

Select **Operation Mode (ON or AUTO)**

Select **Fan Mode**

Choose **AUTO or ON**

11 UNIT TYPE



The Gen X is designed as a universal GAS/ELECTRIC/HEAT PUMP Controller. Factory default is set for GAS operations, and may require field configuration when applying this product to Electric or Heat Pump applications.

Select **Unit Type**

Choose **Unit Type (Gas, Heat Pump O/B, Electric)**

12 SET MAVERICK

Maverick operations allow the system to recognize an outlier call in the system. When most zones in a system are calling for heat and 1 zone is calling for cooling, the system will initiate a MAVERICK CALL protocol by starting a time clock. Logic in the controller will provide a time period for first calls to satisfy, and then run a purge cycle and energize the maverick call. Maverick call will remain on until zone satisfied, then run purge and return to majority operations.

Select **Set Maverick Mode**

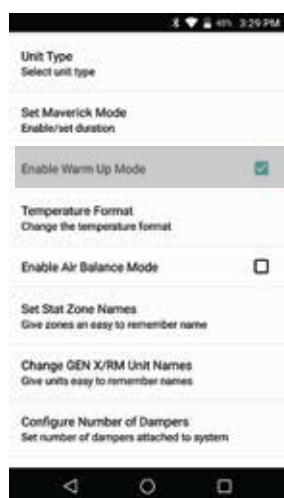
☒ **Enable Maverick Mode (Enabled when box is checked)**

Select **3-30 minutes**, Press **OK**



13 ENABLE WARM UP MODE

In cold climates a MORNING WARM UP sequence will assist in preheating the building prior to occupancy. The GEN X system provides a strategy for morning warm up based on a sophisticated algorithm built into the system controller. When enabled, the system will switch from Unoccupied to Occupied two hours prior to system start time and run heating for 20 minutes to evaluate time needed to raise building temperature, after 20 minutes system will return to Unoccupied mode. Using the information gathered from the 20 minute warm up evaluation, thermostats will reset individual occupied start times to provide morning warm up for each zone in the building.



☒ **Enable Warm up Mode (Enabled when box is checked)**

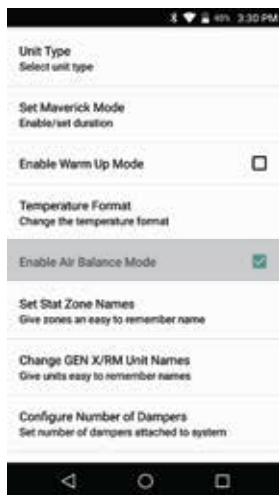
14 TEMPERATURE FORMAT



Gen X may be configured for F° or C° operations.

Press **Temperature Format**
Select **F°** or **C°**

15 AIR BALANCE MODE



During the start up and commissioning of the system, an air balance may be required. Enable the air balance mode to Start, this will drive all dampers to the open position, energize the fan and lock out compressor or heat function. When air balance is complete, press the Enable Air Balance mode to STOP air balance mode and place the system back to normal operation.

☒ **Enable Air Balance Mode (Enabled when box is checked)**

16 SET STAT ZONE NAMES



This allows you to give each zone a specific name.

Select **Set Stat Zone Names**
Select **Zone stat** that you want to name
Enter name of zone, Press OK
Repeat for all additional zones that need to be named

17 CHANGE GEN X / RM UNIT NAMES

This allows you to give the GEN X and GEN X RM's a specific name.



Select **Change GEN X / RM Unit Names**

Select **Unit you want to name**

Enter name for that unit, Press OK

Repeat for all additional units that need to be named.

18 CONFIGURE NUMBER OF DAMPERS



Installer should set the number of dampers in the system. This reduces the need for the GEN X controller to poll and review each zone's needs. Installer can set the number of zones from 1-20.

Select **Number of Dampers**

Indicate how many zones in this system 1-20, Press OK

19 CONFIGURE NUMBER OF RM'S ATTACHED TO SYSTEM



Configuring the number of RM's attached to system allows the GEN X to know how many RM's it will be working with. It also needs to know how many RM's there are to be able to sync properly.

Select **Configure Number of RM's Attached to System.**
Indicate how many RM's are in the building.

Note: Each RM can support up to 20 thermostats or zones

20 ASSIGN RM ID



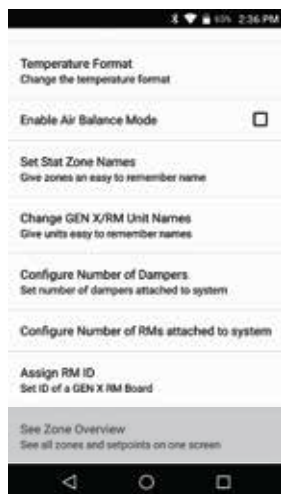
Each GEN X RM receives an ID number ranging from 1-20. This allows the GEN X mobile app the ability to communicate to the RM's through the GEN X controller. The RM's need to be ID'd and synced in the order of the daisy chain.

Select **Assign RM ID**

Enter the ID of the first RM in the system, press OK

When the RM blue light starts flashing rapidly, Tap the sync button on the RM controller that you wish to sync. When the light stops flashing, sync is complete.

21 SEE ZONE OVERVIEW



Zone overview will let you review all the zones, current room temperatures, active cooling calls in blue, active heating calls in red along with Occupied and Unoccupied set points.

Select **Zone Overview** to see all zone set points and current room temperatures



22 ALARM SETTINGS

Once enabled this allows email/text notifications of faults in the system such as low battery, temperature out of range and communication issues with thermostats.



Select **Change Alarm Settings**

☒ Enable zone out of range alarm

Select **Set time out of range for alarm (5-90 minutes)**

Enter the time to wait before alarming; Press Ok

Select **Set temperature out of range for alarm (3-10°)**

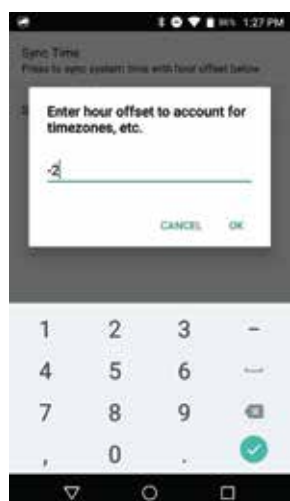
Enter temperature threshold for alarming; Press Ok

* For alarming to function, account set up is required.



23 SYSTEM TIME

Change System Time allows you to time stamp the Gen X controller if there is no WiFi connection allowed but are networked into the controller. When syncing the time with your device it will time stamp the Gen X with the current time on that device. If the time needs to be adjusted due to a time zone difference, add or subtract 1-3 hours from your device to match the time zone that the Gen X is operating in.



Select **Change System Time**

Choose **Set hour offset for time sync**

Enter hour offset to account +/- 1,2,3 hours; Press Ok

Tap **Sync Time** to apply the hour offset desired.

Manufacturer's System Defaults

- | | |
|---|--|
| <p>1 SET SCHEDULE / VACATION
ON : 6:00 A.M. – Set back 6:00 P.M.
M-F operating schedule
Saturday and Sunday will follow Unoccupied schedule.</p> <p>2 LOCK
UNLOCKED</p> <p>3 THERMOSTAT LOCK MODE</p> <p>4 TURN THERMOSTATS ON/OFF</p> <p>5 SYSTEM DIAGNOSTIC
No factory default required</p> <p>6 HIGH LOW LIMIT
LOW limit 45 degrees
High limit Gas or Electric 145 degrees</p> <p>7 SECOND STAGE DELAY
Enable, 3 Minutes</p> <p>8 OVERRIDE HOURS
2 hours</p> <p>9 PRIORITY
1</p> <p>10 FAN MODE
AUTO</p> <p>11 UNIT TYPE
Gas / Electric</p> | <p>12 MAVERICK
Disable</p> <p>13 MORNING WARM UP
Disable</p> <p>14 SYSTEM AIR BALANCE
No action required</p> <p>15 TEMP FORMAT
Fahrenheit</p> <p>16 SET STAT ZONE NAMES</p> <p>17 CHANGE GEN X / RM UNIT NAMES</p> <p>18 CONFIGURE NUMBER OF DAMPERS
2</p> <p>19 CONFIGURE NUMBER OF RM'S ATTACHED TO SYSTEM</p> <p>20 ASSIGN RM ID</p> <p>21 SEE ZONE OVERVIEW</p> <p>22 CHANGE ALARM SETTINGS</p> <p>23 CHANGE SYSTEM TIME</p> |
|---|--|

If assistance is needed, call Tech Support at (800) 228-2966

SA STAT UNIVERSAL THERMOSTAT

DESCRIPTION

The SA STAT (Part# SASTAT) is a universal programmable G/E or H/P thermostat, microprocessor based, auto changeover, stand alone thermostat used to control stand alone units in the GEN X system. The SA STAT is configured for Gas/Electric (2H, 2C) or Heat Pump (3H, 2C) with selectable fan operation. The SA STAT reports the supply and return air temperatures and has a large, easy to read LCD display.

The SA STAT is very easy to configure through the mobile App or by manually adjusting settings at the thermostat.

The SA STAT features an on board thermistor for precise temperature measurement. In the event of power loss, the Heat and Cool set points are stored in non-volatile memory, without the need for battery backup.

Space ambient temperature is continually displayed with large, easy-to-read numbers. SA STAT temperature display range is 47° - 95°F. Heat and Cool set points and operation modes are all indicated on the display.

Programmed set points can be manually adjusted at the thermostat or electronically locked through the mobile app to provide limited manual set point adjustment. During unoccupied hours, temporary operation can be overridden with a touch of a button.

INSTALLATION

Thermostat and Terminal base

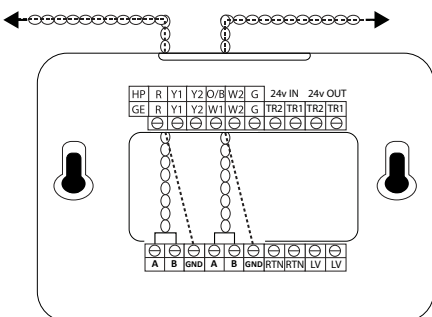
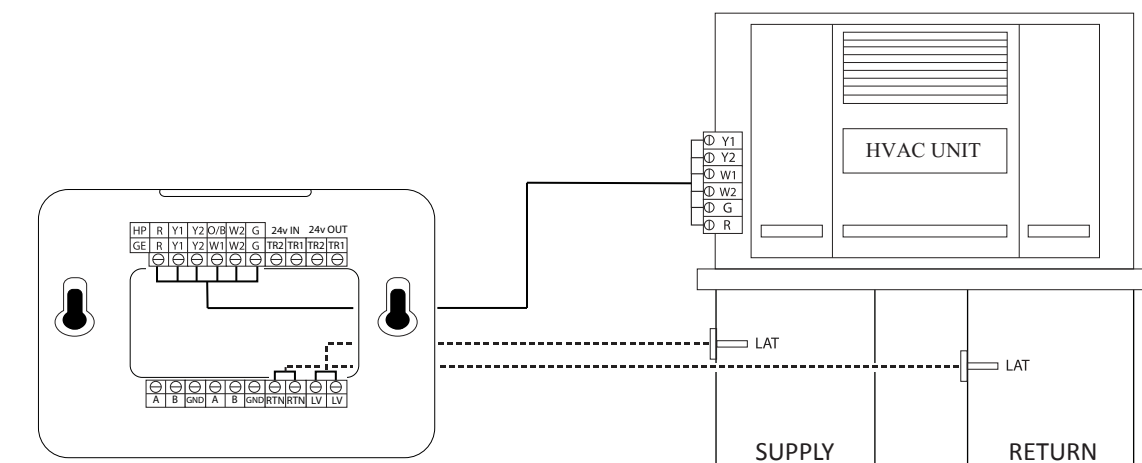
1. Install the thermostat on an interior wall, away from drafts, supply air currents and direct sunlight or any heat generating source.
2. To remove the thermostat from its sub-base, grasp the cover at the top and bottom and pull straight off; do not pivot the cover from the base.
3. Install the thermostat sub-base to the wall using the provided anchors and screws.

INSTALLATION INSTRUCTIONS

WIRING THE UNIT, SUPPLY AND RETURN AIR SENSORS TO THE SA STAT

Using 18/6 thermostat wire, wire from RTU to SA STAT. Make sure to match up unit terminals R, Y1, Y2, W1/O/B, W2, G to the SA STAT terminals R, Y1, Y2, W1/O/B, W2, G. Wire in the Supply and Return air sensors using 18/4 thermostat wire.

Install the Supply and Return air sensors 18 to 24" downstream of the unit.

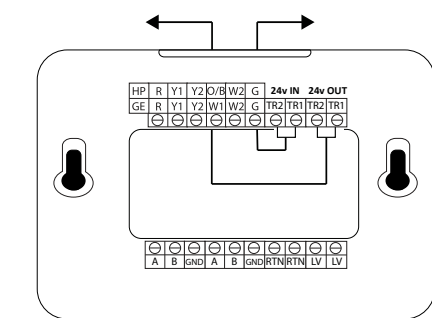


DAISY CHAIN THE COMMUNICATION WIRE

Using Zonex 3 wire communication wire. Wire to A, B, GND **IN** and A, B, GND **OUT**, to and from SA STAT's in a daisy chain configuration.

Wiring to Communication Terminals

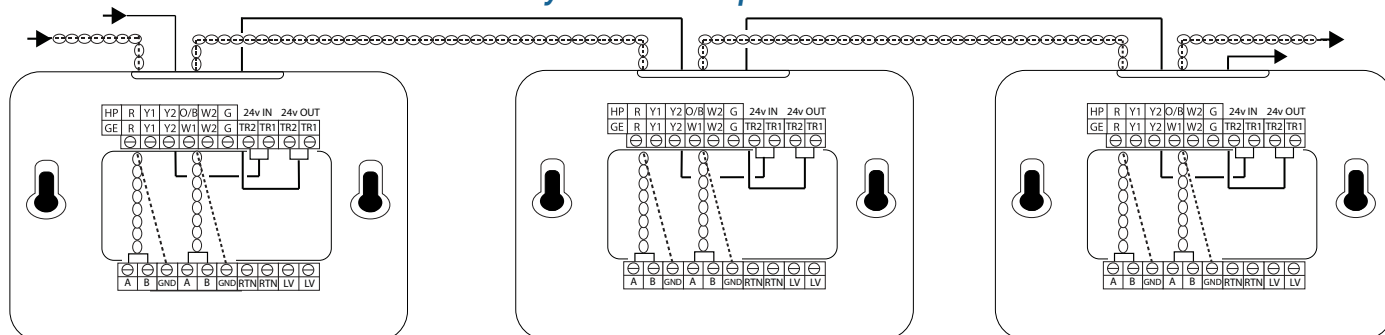
Red-A
White-B
Black-GND



DAISY CHAIN 24V POWER FROM GEN X, GEN UC or CDBX

SA STAT is powered by the independent transformer connected to the GEN X or GEN UC. Using 18/2 wire for the 24vac power, daisy chain from TR1, TR2 **IN** and **OUT** to and from the SA STAT's.

Daisy Chain Multiple SA STAT's



Thermostat Configuration

1. Set a unique ID for each thermostat ranging from 01-20
(See Thermostat Configuration Menu on the next page on how to set)
2. Configure the thermostat for the type of unit operation you would like. Gas, Heat Pump or Electric. (Factory set for Gas)
3. Configure Fan mode for Auto or On operation. (Factory set for Auto)
4. Configure 2nd stage delay. Temperature range is 2° - 8°F. (Factory set 2°F)

Manual Adjustments

Heat and Cool set point Display

Press the "SET" button to toggle between the Heat or Cool set points.

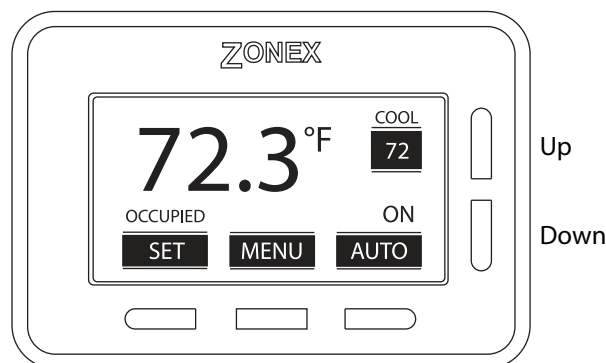
Temperature Set Points

COOL SET POINT

1. Press the "SET" button to display the Cool set point in the upper right.
2. Press the "UP or DN" buttons to change the Cool set points.

HEAT SET POINT

1. Press the "SET" button to display the Heat set point in the upper right.
2. Press the "UP or DN" buttons to change the Heat set points.



Thermostat Operation

COOL - The thermostat will make a Y1 cool call when the space temperature rises 1° above set point. Y2 will energize when the space temperature rises 2° above the cool set point or whatever the 2nd stage temperature is set for. When the room temperature reaches set point Y1 and Y2 will de-energize. O or B energize for the reversing valve circuit, depending on configuration. The G circuit is energized for fan.

HEAT - Gas / Electric - The thermostat will make a W1 heat call when the space temperature is 1° below the heat set point. W2 will energize when the space temperature is 2° below the heat set point or whatever the 2nd stage temperature is set for. When the room temperature reaches set point W1 and W2 will de-energize.

Note: When the thermostat is configured for GAS operation the fan circuit is not energized in heat mode.

Note: When the thermostat is configured for ELECTRIC operation the fan circuit is energized in heat mode.

HEAT - Heat Pump - The thermostat will make a Y1 heat call when the space temperature is 1° below the heat set point. Y2 will energize when the space temperature is 2° below the heat set point or whatever the 2nd stage temperature is set for. W2 (Aux Heat) will energize when the space temperature is 1° below what the 2nd stage temperature is set for. When the room temperature reaches set point Y1,Y2 and W2 will de-energize.

EMERGENCY HEAT - When Emergency Heat is selected in the configuration menu on the thermostat on a call for heat, there is an output signal on "W2" for backup heat and "G" for the fan. The compressor circuits Y1 and Y2 are locked out during heat calls, until the emergency heat function has been turned off in the configuration menu.

FAN MODE - Is factory set for "AUTO", to configure the thermostat to run the fan constant "ON" you will need to go into the configuration menu and select fan mode and change it from "AUTO" to "ON".

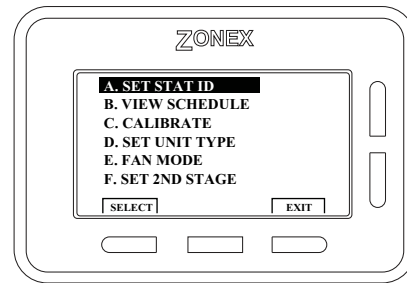
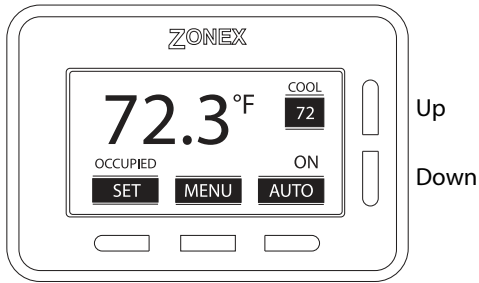
OVERRIDE - When the system is in the Unoccupied mode, the thermostat provides an adjustable override ranging from 2 to 8 hours for after-hours system operation. To select the override function, press the Auto button and note "Override" is indicated on the display. When additional override is required, press the Auto button again. (Override is factory set for 2 hours.) To disable override push AUTO button again to return to unoccupied mode.

THERMOSTAT CONFIGURATION MENU

To access the System Configuration Menu, Hold "MENU" and "AUTO" at the same time.

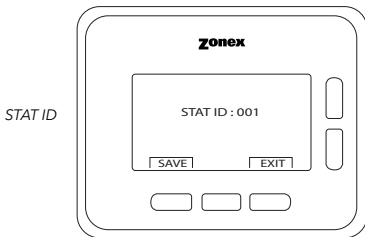
The **THERMOSTAT CONFIGURATION MENU** allows you to:

- | | | |
|------------------|------------------|-------------------|
| A. Set stat ID | D. Set Unit Type | G. Emergency Heat |
| B. View Schedule | E. Fan Mode | |
| C. Calibrate | F. Set 2nd Stage | |



A SET STAT ID

Every thermostat in the system needs a unique ID. Must be in numerical order the way the communication wire is daisy chained. Confirm no duplicate addresses.



While in the Thermostat Configuration Menu, press **Select** on (A) Set Stat ID.

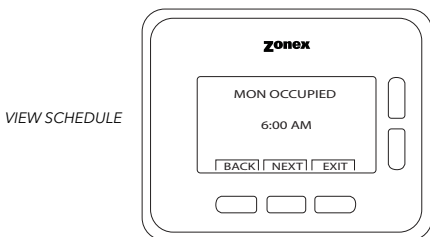
Use the **Up** and **Down** buttons to give the thermostat an ID ranging from 1-20.

Press **Exit** to return to the Thermostat Configuration Menu.

Press **Save** to save settings.

B VIEW SCHEDULE

You can only review the schedule given to the thermostat. To change the schedule you will need to log in to the GEN X controller via the mobile app.



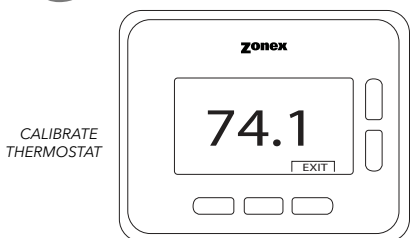
While in the Thermostat Configuration Menu, press **Down** and press **Select** on (B) View Schedule

You can review the schedule by pushing **Next**, to scroll through it.

Press **Exit** to return to the Thermostat Configuration Menu.

C CALIBRATE

Thermostat is equipped with an accurate temperature sensor. If you require field calibration follow the steps below.



While in the Thermostat Configuration Menu, press **Down** and press **Select** on (C) Calibrate

Use the **Up** and **Down** buttons to calibrate the temperature display with your external thermostat, press **EXIT** to save changes.

Confirm temperature display now reports the updated room temperature you provided.

D SET UNIT TYPE

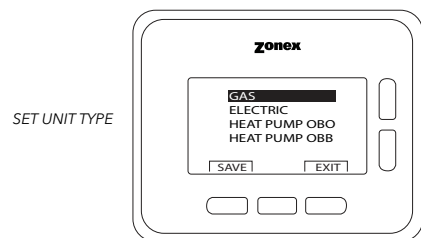
The SA STAT is designed as a universal GAS/ELECTRIC/HEAT PUMP thermostat. Factory default is set for GAS operations, and may require field configuration when applying this product to Electric or Heat Pump applications.

While in Thermostat Configuration Menu, press **Down** and press **Select** on (D) Unit Type menu item.

Use the **Up** or **Down** to set the desired Unit Type for each thermostat. Select Gas, Heat Pump OBO, Heat Pump OBB, Electric.

Press **Exit** to return to the Thermostat Configuration Menu.
Press **Save** to save settings.

Note: Some heat pump units use GAS/ELECTRIC inputs - confirm your unit's operation to ensure proper configuration.



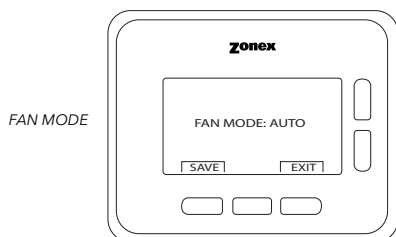
E FAN MODE

Fan operation is configured for either Fan ON or AUTO. When system is configured for ON operation, the Fan will run during Occupied schedule and will revert to Auto operations during Unoccupied schedule. When thermostat is configured for Auto operation, Fan will only run when there is a call for heating or cooling.

While in Thermostat Configuration Menu, press **Down** and press **Select** on (E) FAN MODE menu item.

Use the **Up** or **Down** to set the Fan mode to AUTO or ON.

Press **Exit** to return to the Thermostat Configuration Menu.
Press **Save** to save settings.



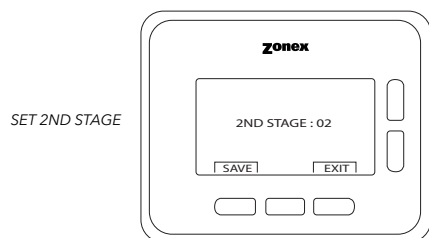
F SET 2ND STAGE

The SA STAT's 2nd stage operation is based on room temperature. Staging is adjustable from 2°- 8° from thermostat room temperature.

While in Thermostat Configuration Menu, press **Down** and press **Select** on (F) Set 2nd Stage menu item.

Use the **Up** and **Down** buttons to select the desired staging temperature range.

Press **Exit** to return to the Thermostat Configuration Menu.
Press **Save** to save settings.



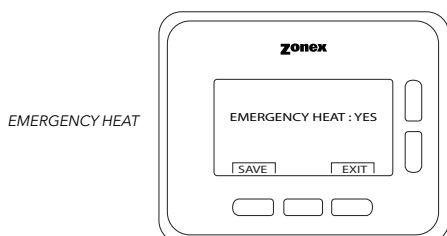
G EMERGENCY HEAT

The SA STAT has an emergency heat function that will lock out the compressor, and energize the Aux heat in the unit.

While in Thermostat Configuration Menu, press **Down** and press **Select** on (G) Emergency Heat menu item.

Use the **Up** and **Down** buttons to select Yes or No for Emergency Heat operation.

Press **Exit** to return to the Thermostat Configuration Menu.
Press **Save** to save settings.



GEN X modulating zone dampers are used in cooling/heating systems to provide room by room zone control. The damper is provided with a factory mounted actuator and communicating damper board. Each zone damper is controlled by a zone thermostat. More than one damper can be controlled by one zone thermostat. Use this table to determine which zone dampers to use.

DAMPER MODEL	DIFFERENTIAL PRESSURE	MAXIMUM SYSTEM SIZE	MAXIMUM DUCT SIZE
STMPD Round Med. Pressure	1.75"	Any Size	18"
STMRTD Rect. Med. Pressure	1"	6.0 Tons	24"W x 20"H
STCD Rect. Heavy Duty	1.75"	Any Size	48"W x 48"H
STRD Round Heavy Duty	1.75"	Any Size	24"
D-FUSER	0.1"	Any Size	10"

Maximum Differential Pressure refers to the maximum static pressure drop in inches of water column between the input (upstream) of the zone damper and the output (downstream) when the damper is closed.

Round Medium Pressure Zone Dampers

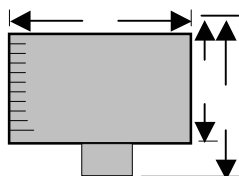
Zonex Systems round (part # STMPD size) medium pressure zone dampers are recommended for systems with a maximum differential static pressure up to 1.75". This modulating power open/power close damper is manufactured from 20-22 gauge galvanized steel with rolled-in stiffening beads for superior rigidity. Mechanical minimum and maximum set stops are provided and are easily adjustable. The damper is elliptical, which allows the airflow to be tracked linearly. The damper pipe is furnished with one crimped end and one straight end for easy installation. Do not install damper in an inverted position. A hat section supports a reversing 24vac, 60Hz, 2 VA motor. A magnetic clutch allows for continuous power to the motor and longer motor life. Motor drive time from full open to full close is 90 seconds.



MEDIUM PRESSURE (STMPD)

Round Medium Pressure Damper

PART NUMBERS AND SIZES



PART#	SIZE	D	L	W
STMPD06	6	6"	10"	9"
STMPD08	8	8"	10"	11"
STMPD10	10	10"	12"	13"
STMPD12	12	12"	14"	15"
STMPD14	14	14"	16"	17"
STMPD16	16	16"	18"	19"
STMPD18	18	18"	20"	21"
STRD20	20	20"	24"	27"
STRD22	22	22"	24"	27"
STRD24	24	24"	24"	27"

Note: Round dampers over 18" will be heavy duty style STRD dampers. Part # STRD size

Typical Round Capacities

These air quantities were derived from a duct sizing chart 0.1" friction loss per 100' of duct. All CFMs

DUCT DIAMETER	NOMINAL CFM	DUCT VELOCITY FPM	DAMPER ΔP " WC
6"	110	540	.014
8"	250	700	.015
10"	410	750	.015
12"	660	850	.022
14"	1000	925	.035
16"	1450	1070	.036
18"	2000	1100	.036
20"	2600	1200	.039
22"	3250	1250	.039
24"	4100	1325	.041

The rectangular zone dampers are available in either medium pressure or heavy duty. For systems under 6 tons, use medium pressure dampers, (part # STMRTD size). For systems 6 tons or over, use heavy duty dampers, (part # STCD size). Motor drive time open and close is 90 seconds.

Rectangular Medium Pressure Zone Dampers (STMRTD)

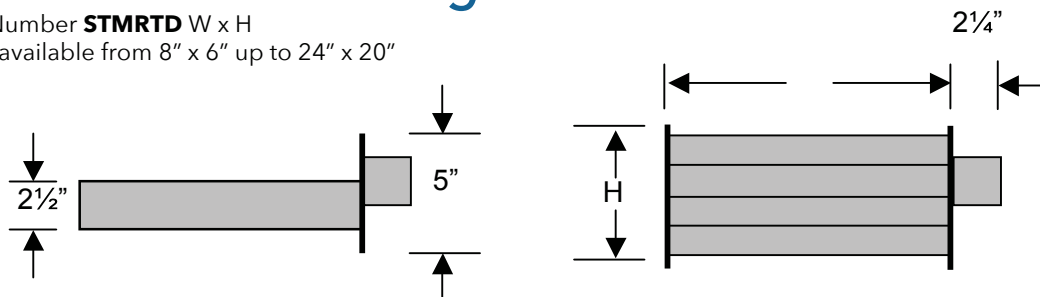
Zonex Systems rectangular medium pressure dampers are recommended for systems under 6 tons with a maximum differential static pressure of 1". These are fully modulating, power open, power close dampers. They are constructed from heavy duty aluminum and stainless steel. The damper is an opposed blade type that slips into a 3 1/4 - inch wide cutout in the existing duct and attaches with screws via a duct mounting plate. The duct mounting plate is 5 inches wide. A hat section supports a reversing 24vac, 60Hz, 2 VA motor. A magnetic clutch allows for continuous power to the motor and longer motor life. Two set screws connect the motor to the damper shaft, allowing quick motor replacement if necessary. Motor drive time from full open to full close is 90 seconds.



Medium Pressure Rectangular Dimensional Data

Part Number **STMRTD** W x H

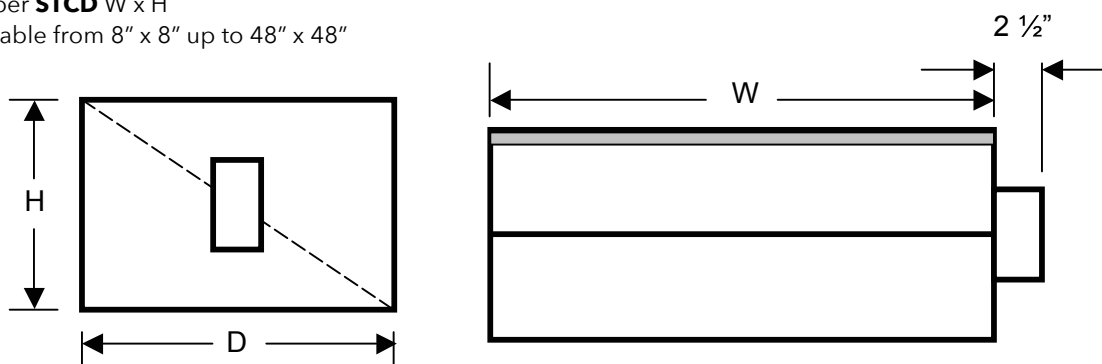
Sizes available from 8" x 6" up to 24" x 20"



Heavy Duty Rectangular Dimensional Data

Part Number **STCD** W x H

Sizes available from 8" x 8" up to 48" x 48"



Rectangular Heavy Duty Zone Dampers (STCD)

Zonex Systems rectangular heavy duty dampers are recommended for systems 6 tons or larger with a maximum differential static pressure of 1.75". These are fully modulating, power open / power close dampers made of 20 gauge "snap lock" steel frame with S & Drive duct connections. Allow a 16" gap in the duct for the damper. Formed steel blade stops incorporate a gasket for quiet operation and improved structural rigidity. Rectangular dampers under 10" in height incorporate a single blade design. Dampers 10" or over use opposed blade design. A full stall motor, drawing 2 VA, drives the motor from full open to full close in 90 seconds.



Rectangular Damper Capacities*

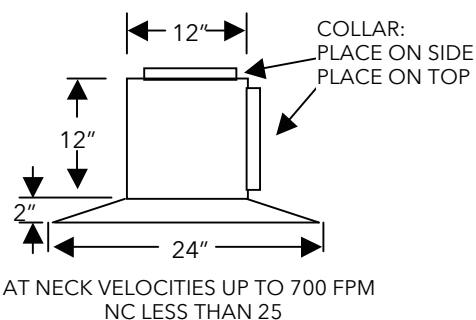
		WIDTH IN INCHES																				
HEIGHT IN INCHES		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
	8	300	400	500	610	710	820	925	1050	1175	1250	1400	1500	1600	1725	1825	2000	2100	2200	2275	2400	2525
	10	400	540	680	825	975	1125	1300	1400	1590	1750	1975	2100	2175	2400	2600	2775	2900	3000	3200	3400	3600
	12	500	680	850	1000	1200	1400	1600	1850	2000	2300	2550	2700	2850	3100	3400	3600	3800	3975	4200	4450	5775
	14	610	825	1000	1250	1500	1750	2000	2250	2500	2900	3150	3425	3625	3825	4200	4600	4800	5000	5300	5750	6000
	16	710	975	1200	1500	1800	2100	2450	2700	3000	3600	3950	4200	4425	4650	5100	5600	5780	6025	6500	7000	7400
	18	820	1125	1400	1750	2100	2500	2850	3080	3600	4400	4600	4950	5100	5600	6000	6500	7000	7150	7600	8100	8600
	20	925	1300	1600	2000	2450	2850	3400	3775	4000	4800	5500	5700	6000	6600	7100	7900	8025	8500	9000	9600	10075
	22	1050	1400	1850	2250	2700	3080	3775	4300	4800	5100	6000	6350	6800	7200	7800	8600	9000	9600	10000	11500	12500
	24	1175	1590	2000	2500	3000	3600	4000	4800	5400	6100	7000	7150	7600	8600	9100	10000	10700	11500	12000	13050	14700
	26	1250	1750	2300	2900	3600	4400	4800	5100	6100	6700	7800	8400	8900	10000	10900	11075	12050	13000	14000	15000	15900
	28	1400	1975	2550	3150	3950	4600	5500	6000	7000	7800	8400	9150	10000	10700	11900	13000	13800	14900	15200	16500	17500
	30	1500	2100	2700	3425	4200	4950	5700	6350	7150	8400	9150	10000	11000	11800	12400	13800	14200	15000	16000	17400	18500
	32	1600	2175	2850	3625	4425	5100	6000	6800	7600	8900	10000	11000	11250	12700	13900	14900	15200	16900	17300	19000	20500
	34	1725	2400	3100	3825	4650	5600	6600	7200	8600	10000	10700	11800	12700	14100	15000	16500	17200	18100	19200	20500	21900
	36	1825	2600	3400	4200	5100	6000	7100	7800	9100	10900	11900	12400	13900	15000	16100	17400	18500	20000	21500	22900	24200
	38	2000	2775	3600	4600	5600	6500	7900	8600	10000	11075	13000	13800	14900	16500	17400	17800	20000	21900	22600	24000	25100
	40	2100	2900	3800	4800	5780	7000	8025	9000	10700	12050	13800	14200	15200	17200	18500	20000	21000	22200	24900	25000	27000
	42	2200	3000	3975	5000	6025	7150	8500	9600	11500	13000	14900	15000	16900	18100	20000	21900	22200	22800	25100	26900	30000
	44	2275	3200	4200	5300	6500	7600	9000	10000	12000	14000	15200	16000	17300	19200	21500	22600	24900	25100	26500	30000	32000
	46	2400	3400	4450	5750	7000	8100	9600	11500	13050	15000	16500	17400	19000	20500	22900	24000	25000	26900	30000	30500	32800
	48	2525	3600	5775	6000	7400	8600	1075	12500	14700	15900	17500	18500	20500	21900	24200	25100	27000	30000	32000	32800	35600

* These air quantities were derived from duct sizing chart .1" friction loss per 100' of duct. All CFMs listed are approximate.
For accurate selection use duct sizing table or

D-Fuser Zone Damper



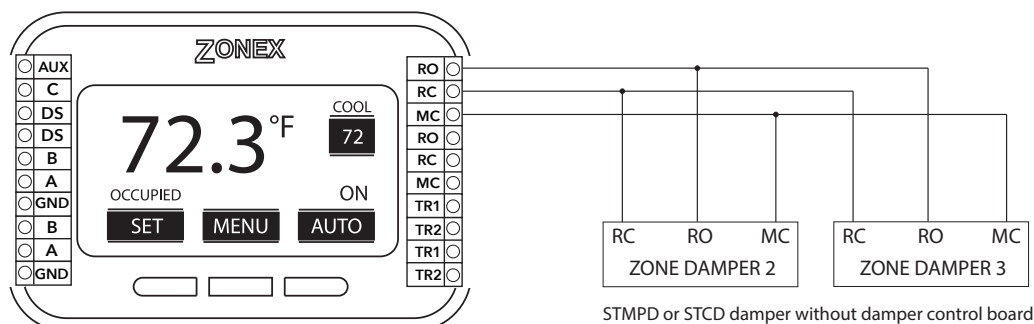
Zonex Systems D-Fuser is a combination zone damper and diffuser. It mounts in a standard 2' x 2' T-bar ceiling opening, providing for simple installation and easy maintenance access. The D-Fuser is a cone shaped fluidic nozzle with a platen that modulates up and down to control air flow. As the platen moves up, the air volume is reduced; but the air velocity and throw remain constant. This keeps the air hugging the ceiling, which maximizes room air mixing and minimizes the "waterfall" effect. The D-Fuser is a fully modulating power open / power close damper using a 24vac 60Hz 2 VA motor. Motor drive time from full open to full close is 90 seconds. The D-Fuser connects to round duct either on the side or top. Collars are available for 6", 7", 8", 9" and 10" duct.



6"	Neck Vel	400	500	600	700	800	900
	ΔP	0.011	0.016	0.023	0.035	0.04	0.055
	CFM	80	98	120	135	157	176
	Throw 50 FPM	4'	4'	5'	6'	6'	7'
8"	Neck Vel	400	500	600	700	800	900
	ΔP	0.019	0.03	0.045	0.056	0.041	0.093
	CFM	140	170	207	247	280	315
	Throw 50 PM	5'	6'	7'	8'	9'	10'
10"	Neck Vel	400	500	600	700	800	900
	ΔP	0.029	0.045	0.066	0.09	0.12	0.146
	CFM	218	273	330	382	438	497
	Throw 50 FPM	6'	8'	9'	10'	11'	12'

Slaving Up To Three Zone Dampers

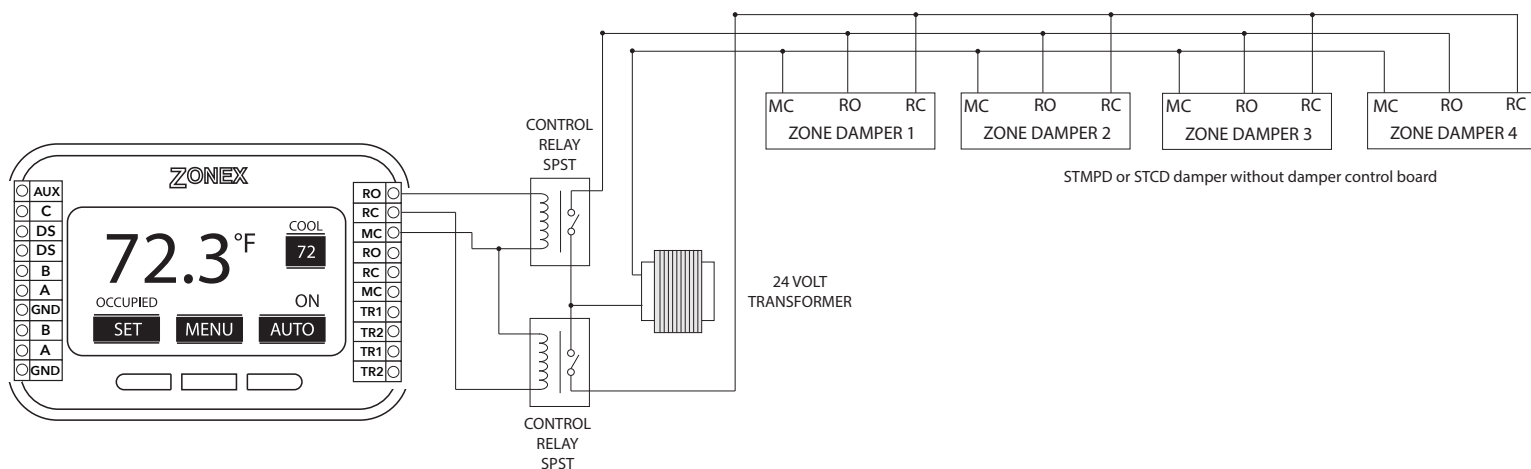
Up to three dampers can be directly controlled by one ZSTAT. To wire two or three dampers for a zone, use the following wiring diagram. Remember to size the power transformer for the total number of zone dampers in the system, 2VA per damper.



Slaving More Than Three Zone Dampers

When slaving more than three zone dampers, use the following diagram. An additional 24-volt transformer and control relays are needed for these applications.

Note: All slave dampers need to be model STMPD / STCD



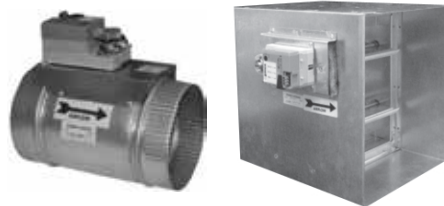
BYPASS DAMPERS – ELECTRONIC

with integrated static pressure control

Electronic Bypass Dampers

Modulating Bypass dampers are used to provide constant air delivery through the air handling unit. This is done by bypassing excess air from the supply duct back to the return duct. As a zone is satisfied, its zone damper closes. When this happens, the bypass damper modulates just enough to bypass the excess air. This will control static pressure and noise at the diffusers.

The Electronic Bypass Damper is used on any size system over 5 tons. The damper can be round (**STBP**) or rectangular (**STCDBP**) with integrated static pressure control; and multiple dampers can be slaved together.



Sizing Electronic Bypass Dampers

The bypass damper is to be sized for the total system CFM @ 1500 FPM. System CFM should be calculated at 400 CFM per ton.

Example: A 5-ton system is rated at 2000 CFM ($5 \times 400 = 2000$). When calculated at 1500 FPM, the bypass damper should be 16". Never undersize the bypass damper.

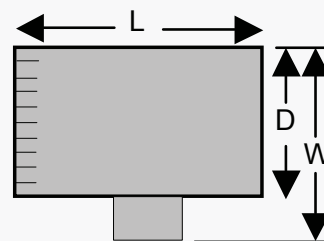
ROUND BYPASS SELECTION

DIAMETER	CFM	PART #	SIZE	D	L	W
8"	560	STBP08	8	8"	10"	11"
10"	900	STBP10	10	10"	12"	13"
12"	1250	STBP12	12	12"	14"	15"
14"	1700	STBP14	14	14"	16"	17"
16"	2200	STBP16	16	16"	18"	19"
18"	2600	STBP18	18	18"	20"	21"
20"	3300	STRDBP20	20	20"	24"	27"
22"	4000	STRDBP22	22	22"	24"	27"
24"	4700	STRDBP24	24	24"	24"	27"

Round Bypass Damper Selection

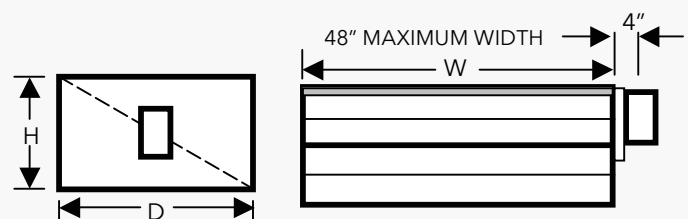
The Zonex Systems STBP damper is used for round bypass applications. When you know the bypass CFM requirements, use the ROUND BYPASS SELECTION TABLE to confirm the round damper size.

NOTE: Multiple round dampers can be slaved from one static pressure control to provide the correct capacity. One large rectangular bypass damper may be used instead of multiple round dampers. See below.



Rectangular Bypass Damper Selection

The Zonex Systems **STCDBP WxH** damper is used for rectangular bypass applications. These dampers are also sized for the total system CFM rated at 1500 FPM. Multiple dampers can be slaved from a single static pressure control.



RECTANGULAR BYPASS DAMPERS
SELECT FROM 8 x 8 thru 48 x 48

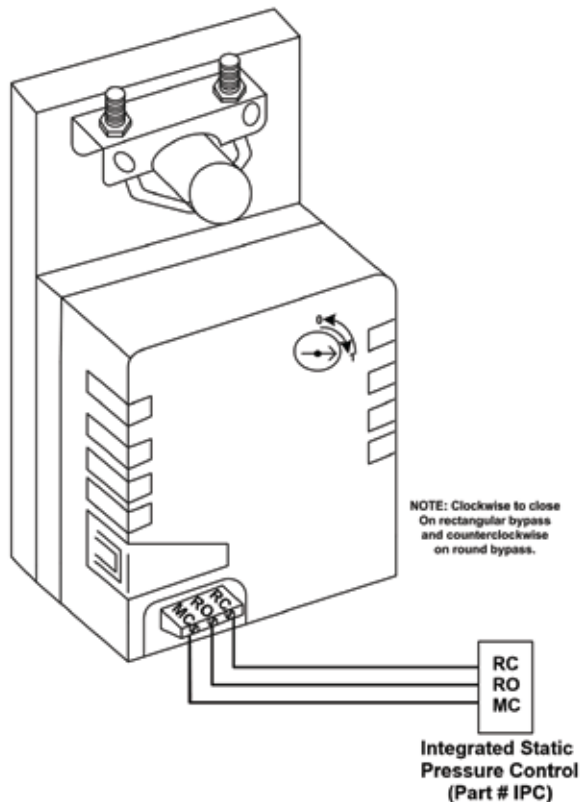
RECTANGULAR BYPASS SELECTION TABLE

		WIDTH IN INCHES														
HEIGHT IN INCHES		8	10	12	14	16	18	20	22	24	28	32	36	40	44	48
	8	667	833	1000	1167	1333	1500	1667	1833	2000	2333	2667	3000	3333	3667	4000
	10	833	1042	1250	1458	1667	1875	2083	2292	2500	2917	3333	3750	4167	4583	5000
	12	1000	1250	1500	1750	2000	2250	2500	2750	3000	3500	4000	4500	5000	5500	6000
	14	1167	1458	1750	2042	2333	2625	2917	3208	3500	4083	4667	5250	5833	6417	7000
	16	1333	1667	2000	2333	2667	3000	3333	3667	4000	4667	5333	6000	6667	7333	8000
	18	1500	1875	2250	2625	3000	3375	3750	4125	4500	5250	6000	6750	7500	8250	9000
	20	1667	2083	2500	2917	3333	3750	4167	4583	5000	5833	6667	7500	8333	9167	10000
	22	1833	2292	2750	3208	3667	4125	4583	5042	5500	6417	7333	8250	9167	10083	11000
	24	2000	2500	3000	3500	4000	4500	5000	5500	6000	7000	8000	9000	10000	11000	12000
	28	2333	2917	3500	4083	4667	5250	5833	6417	7000	8167	9333	10500	11667	12833	14000
	32	2667	3333	4000	4667	5333	6000	6667	7333	8000	9333	10667	12000	13333	14667	16000
	36	3000	3750	4500	5250	6000	6750	7500	8250	9000	10500	12000	13500	15000	16500	18000
	40	3333	4167	5000	5833	6667	7500	8333	9167	10000	11667	13333	15000	16667	18333	20000
	44	3667	4583	5500	6417	7333	8250	9167	10083	11000	12833	14667	16500	18333	20167	22000
	48	4000	5000	6000	7000	8000	9000	10000	11000	12000	14000	16000	18000	20000	22000	24000

Bypass air in CFM. Calculated at 1500 FPM.

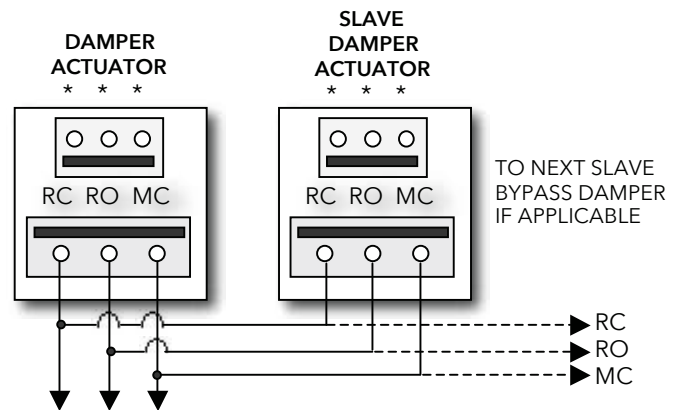
Formula used: $B = W \times H / 144 \times 1500$, where B = Bypass air in CFM, W = damper width in inches, H = damper height in inches, 144 = 144 sq. inches per sq. ft., 1500 = 1500 FPM.

ROUND AND RECTANGULAR BYPASS DAMPER MOTORS



Slaving Bypass Dampers

Use only one Pressure Sensor when slaving two or more Bypass Dampers together. Connect the Pressure Sensor to one damper as described above. Connect the slave dampers in parallel as shown. Up to 4 dampers can be slaved to one Sensor. The slaved dampers will self-synchronize each time the dampers reach full open or full close.



To Static Pressure Control, as shown on the Bypass Wiring Diagram on the next page.

INTEGRATED STATIC PRESSURE CONTROL SETUP

Bypass Damper with Integrated Pressure Control is used to control bypass operations. The bypass damper modulates to maintain static pressure as zone dampers open and close. The bypass system reduces air noise from the supply registers caused by excessive air velocity. If the system is configured for intermittent fan mode and the system satisfies, there will be a 3-minute delay to allow for system purge, after which the bypass damper will open to 25%, preventing noisy rush of air through supply registers when fan starts up on a call for heat or cool. If the system is configured for fan continuous operation, the **STBP** (Round) or **STCDBP** (Rectangular) Electronic Bypass will monitor static pressure continuously, providing constant control of system static.

Integrated Pressure Control Description

- A. Supply air tube
- B. 24vac R and C
- C. Damper Terminal RO, RC, MC
- D. LED lights
- E. Adjustable Potentiometer
- F. TP1 Test Point

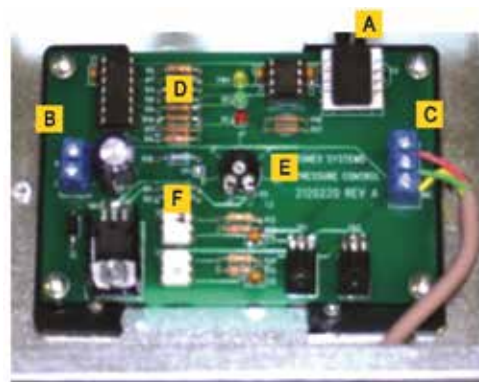


Fig. 1

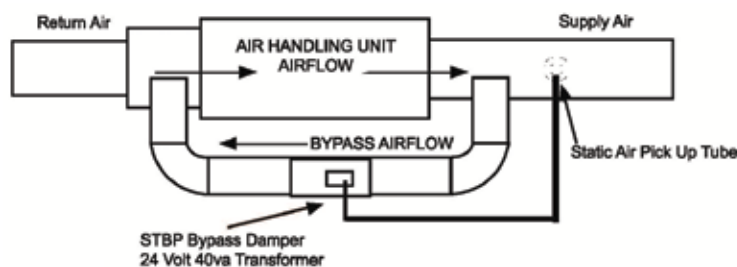


Fig. 2



1. Verify the bypass damper is sized properly to the system and not undersized. (Bypass damper sizing is recommended for 100% of system CFM.)
2. Bypass damper and controller are powered by a dedicated 24vac 40VA transformer.
3. Do not install the bypass damper outside.
4. Locate the Integrated Pressure Control (IPC) and air tube on the bypass damper.
5. Drill hole into the side of the supply duct 2' after the bypass and before the 1st supply take-off. Mount pressure supporting block over hole, align hole in block with hole in duct. Use provided sheet metal screws.
6. Install air tube into supply air duct by slipping supplied plastic tubing into holes in support block and duct. Slip tube 3" into the duct. Pickup tubing fits snugly into provided hole.
7. Connect pressure tube from static air pickup to Integrated Pressure Controller (port closest to you).

Bypass Damper With Integrated Bypass Control Setup

1. Run all supply dampers to the full open position and have blower motor running at 100% fan speed. (See Note #1)
2. Manually close the bypass damper by pressing in the release lever on the motor side of the actuator. With the release lever pressed, rotate the damper actuator collar to close the damper and release the lever to lock the damper closed.
3. **Quick Set Option:** Turn the potentiometer on the damper control board to the full left position and slowly rotate RIGHT, until the "RC" RED LED turns on. Now rotate LEFT just slightly, until RC LED turns off. The **IPC** is ready for operation.

"RC" RED LED means damper closing.

"RO" GREEN LED means damper opening.

4. Static Pressure Option: The Integrated Pressure Control Board can be field configured for specified static pressure using a multi meter and the static pressure - voltage chart. (Exhibit A). This chart shows voltage (DC) to inches of W.C. (static pressure) relationship. Use a multi meter set on VDC and place the leads on the "C" terminal and "TP1" (test point one) next to the potentiometer. The Voltage reading translates to inches of W.C.

Static Pressure Voltage Chart

STATIC PRESSURE	TP1	STATIC PRESSURE	TP1
INCH W.C.	VOLTAGE (DC)	INCH W.C.	VOLTAGE (DC)
0.1	1.49	0.5	2.22
0.15	1.62	0.55	2.27
0.2	1.69	0.6	2.42
0.25	1.81	0.65	2.48
0.3	1.85	0.7	2.6
0.35	1.91	0.75	2.68
0.4	1.94	0.8	2.81
0.45	2.06	N/A	N/A

EXHIBIT A

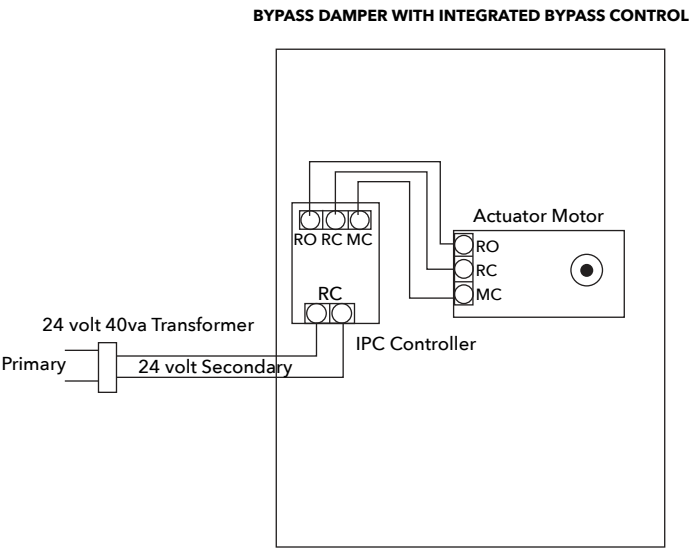
Note # 1: To open all dampers, it may be necessary to remove Y outputs to unit on the zone control board and to make full cool calls on all thermostats. This will modulate dampers fully open and lock out compressor.

On GEN X use air balance mode on the mobile App for simplified bypass setup.

Bypass Checkout For Static Pressure Controller

1. Make cool call at the zone thermostat of the smallest zone.
2. Verify all zone dampers are closed except for calling zone.
3. Verify noise at zone registers is not excessive. Adjust the Integrated Pressure Control LEFT to lower noise (airflow) or RIGHT to increase airflow until too noisy.

Bypass Damper Wiring Diagram With Integrated Bypass Control



[illegible]

NOTES



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PART # GENXWMAN
April 2018