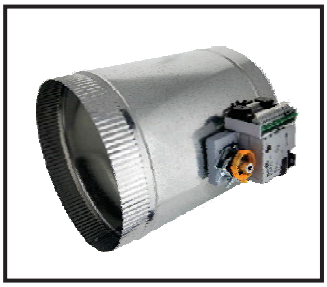
Installation Guide
Version 2001

Z-2000
MODULATING 20 ZONE SYSTEM



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OVERVIEW

The Z-2000 (Version 2001) is a commercial, modulating forced air zone control system that allows a single HVAC unit to have up to 20 individual zones. Each zone is controlled by a proprietary space thermostat that wires to a factory mounted actuator board located on a master damper or diffuser serving the zone. The actuator board also wires back to the Z-2000 logic panel which receives calls from each zone thermostat for either heating or cooling and controls the HVAC equipment based on a selected control sequence configuration.

The Z-2000 is compatible with 2 Heat / 2 Cool conventional or 3 Heat / 2 Cool heat pump systems. All low voltage wiring is 18 gauge thermostat wire and no computer is required to setup, configure or diagnose the system.

SEQUENCE OF OPERATION

Z-2000 Panel:

The Z-2000 controls the system fan and all stages of heating and cooling. During the occupied mode, the fan runs continuously. As calls for heating or cooling are received from the individual zone thermostats, the zone control panel establishes the equipment mode of operation based on a selectable ***Majority Wins*** or ***Cooling Priority*** control algorithm. In addition, the panel is equipped with ***Minimum Call*** selector switches designed to prevent the equipment from coming on until a minimum number of calling zones is reached. This feature helps prevent short equipment run times and minimizes high or low limit trip-out when only a few zones are calling. Refer to the Panel Setup and Scheduling section for configuration guidelines.

Z-2000-T Zone Thermostat:

The Z-2000-T zone thermostat is an integral part of the Z-2000 zoning system. The thermostat not only signals the panel when the zone requires heating or cooling, but also controls the damper or diffuser serving the zone. The Z-2000-T is a single setpoint thermostat and sends a signal to the Z-2000 panel for heating or cooling when the temperature in the zone deviates 1.5° F above or below the setpoint. The thermostat can be configured for modulating or two-position damper control and interfaces with a duct sensor mounted in the master damper or diffuser to determine if the discharge air is usable for the call. If the discharge air temperature at the damper is warmer than 72° F, the thermostat will open the damper on a call for heating. If the discharge air temperature at the damper is below 72° F, the thermostat will open the damper on call for cooling. Refer to the Zone Thermostat Setup section for configuration guidelines.

DESIGN AND INSTALLATION GUIDELINES

[ ] Extra consideration should be given when applying any zone control system to a building that requires large amounts of cooling in the core zones during cold weather. Consider adding auxiliary heat to external zones or using one system for the core zones and one system for the external zones.

[ ] It is recommended that the system installation be limited to 25 tons of cooling capacity. Rooftop units with economizers and relief dampers are strongly recommended for building with core cooling loads.

[ ] Using zoning with oversized HVAC equipment is not recommended. This can cause short equipment run times and humidity problems.

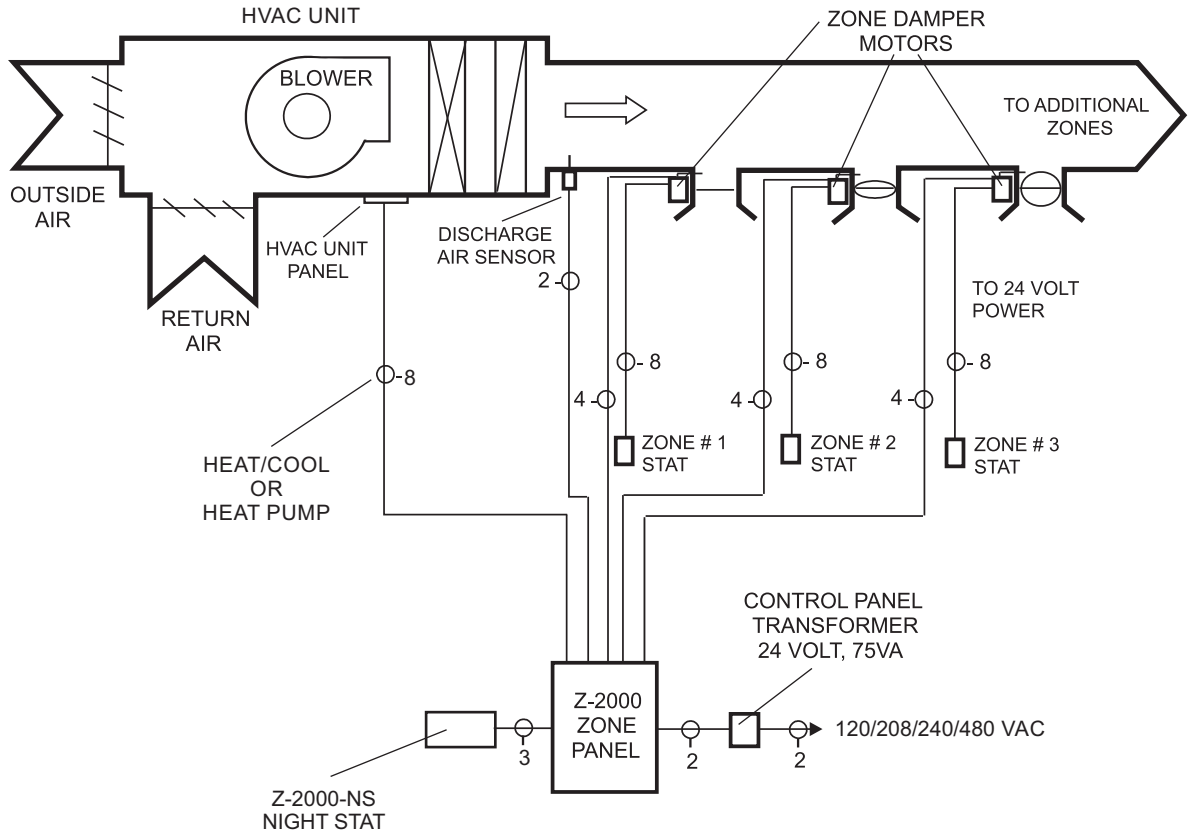
[ ] Multi-stage equipment is recommended with zone control systems.

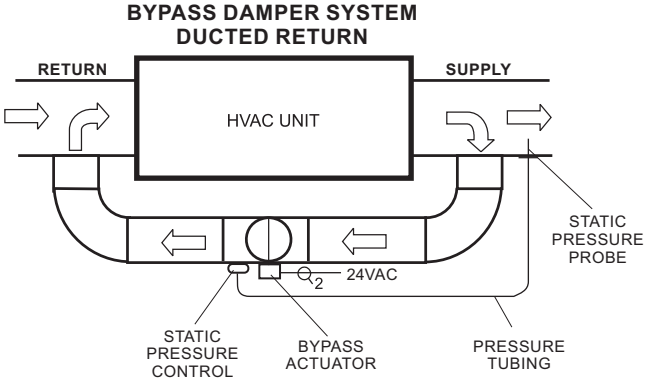
[ ] The pressure drop through zone dampers is negligible and not a factor when sizing branch runs.

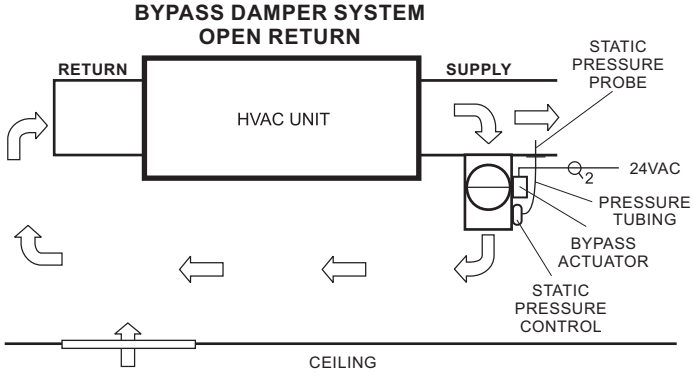
DESIGN AND INSTALLATION GUIDELINES

[ ] Zone dampers are rated for applications not exceeding 2" w.c. VAV diffusers should not exceed 0.25" w.c.
[ ] Zone dampers should be installed as far back from discharge air grills and diffusers. Flex duct should be used for the last 5 feet of each branch run.
[ ] Bypass dampers should be sized for 90% of the total system CFM.
[ ] The Z-2000 panel should be located in an accessible location in the conditioned space and never mounted inside the rooftop unit.
[ ] The Z-2000 system requires a separate 24VAC, 75VA transformer that provides power to the

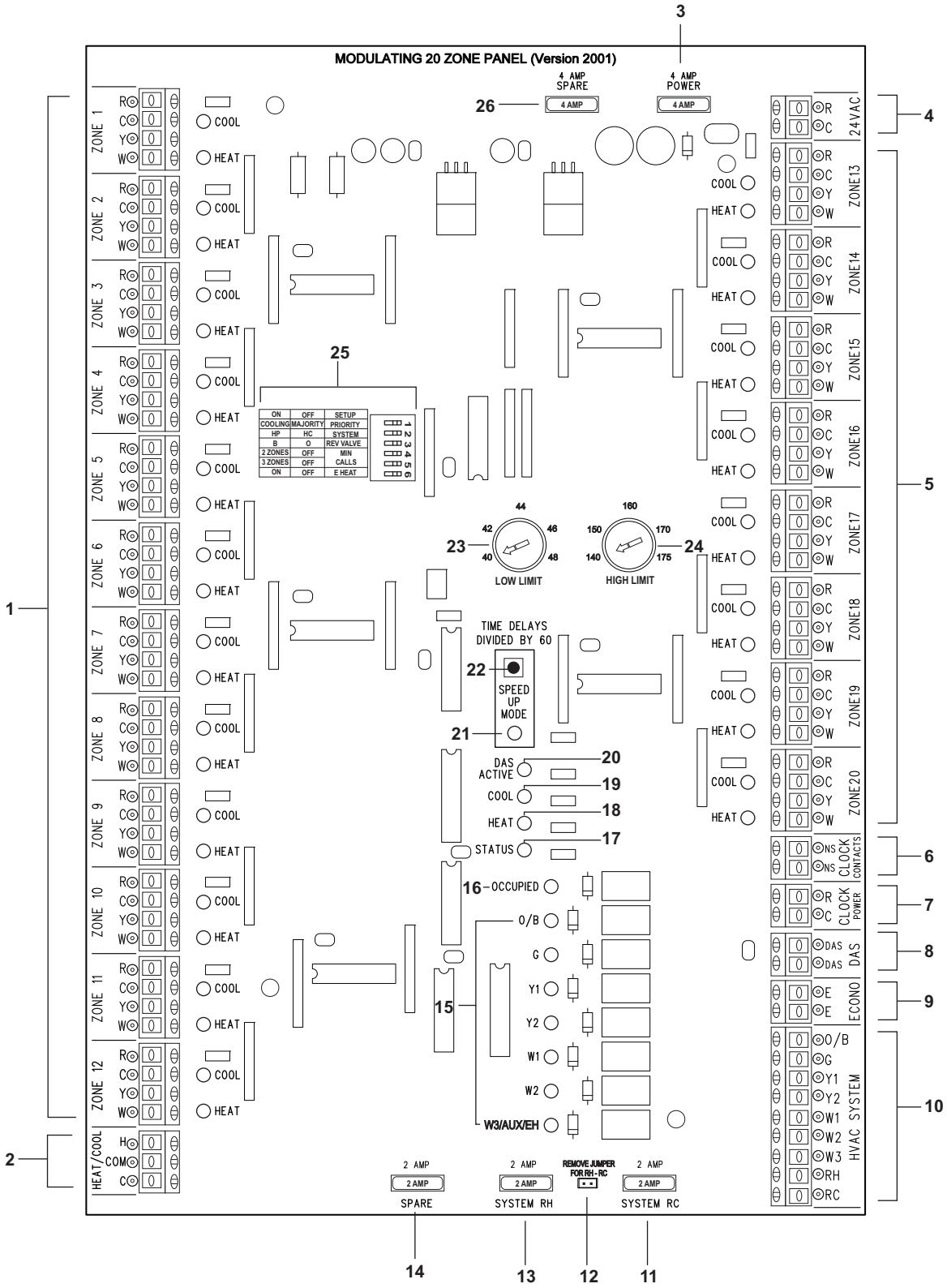
TYPICAL WIRING AND LAYOUT GUIDE







Z-2000 PANEL LAYOUT



1. Zone 1-12 Thermostat Terminals with Heat/Cool LED Indication
2. Cool/Auto/Heat Terminals
3. 4 AMP System Power Fuse
4. 24VAC System Power Terminals (Input)
5. Zone 13-20 Thermostat Terminals with Heat/Cool LED Indication
6. Scheduling Clock Terminals
7. 24VAC Clock Power Terminals (Output)
8. Discharge Air Sensor Terminals
9. Economizer Terminals
10. HVAC System Terminals
11. 2 AMP RC Fuse
12. RH/RC Jumper
13. 2 AMP RH Fuse
14. 2 AMP Spare Fuse
15. HVAC System Status LEDs
16. Occupied LED
17. System Status LED
18. Heat Status LED
19. Cool Status LED
20. Discharge Air Sensor LED
21. Speed UP Mode LED
22. Speed UP Mode Button
23. Low Limit Adjustment
24. High Limit Adjustment
25. System Configuration Switches
26. 4 AMP Spare Power Fuse

SYSTEM WIRING

WARNING!

1. Turn power off to HVAC equipment and control panel during installation to prevent serious injury from electrical shock and/or damage to the system.
2. Use extreme care when making duct openings and handling sheet metal to avoid injury.
3. Install all components in a manner that provides easy access for test, check and startup.

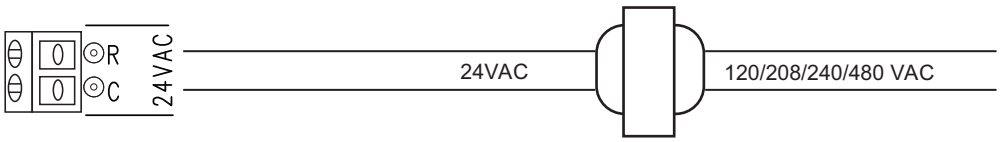
CAUTION!

1. Installation of this system must be in compliance with all applicable codes.
2. HVAC system must be properly sized and balanced to assure optimum system performance.
3. An electronic bypass damper or VFD (Variable Frequency Drive) must be installed to maintain proper system static pressure.
4. All low voltage wire must be 18 gauge.
5. All wiring should be color coded and tagged for proper identification.

Z-2000 PANEL WIRING

System Power

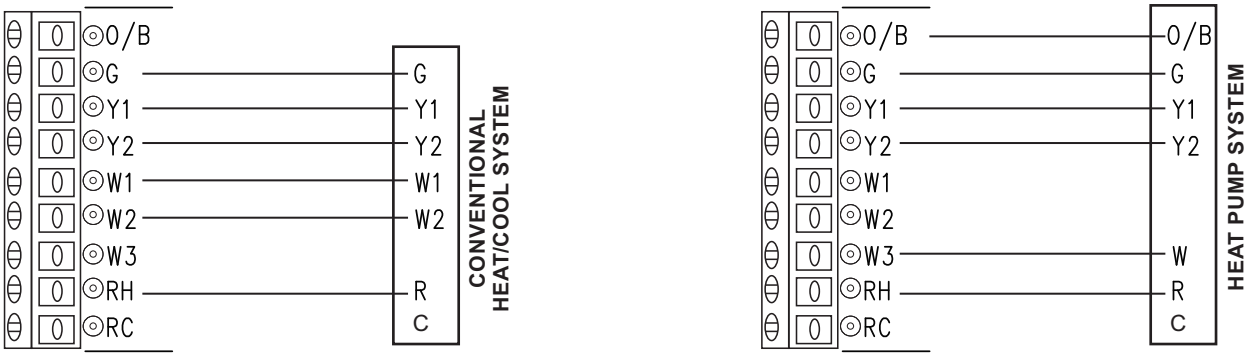
1. Wire a 24VAC, 75VA transformer to the 24VAC 'R' and 'C' terminals on the Z-2000 panel.



TR-75 TRANSFORMER

HVAC System

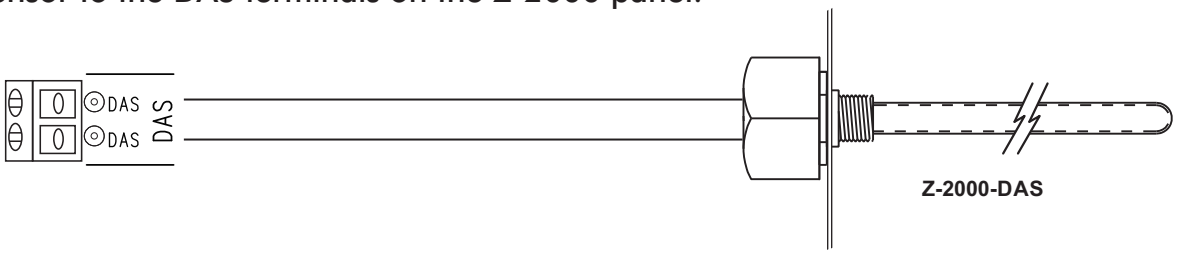
2. Wire the HVAC equipment to the HVAC SYSTEM terminals on the Z-2000 panel.



DO NOT WIRE EQUIPMENT COMMON TO PANEL

Discharge Air Sensor

3. Mount the Z-2000-DAS Discharge Air Sensor in the main supply plenum as far down stream from the evaporator coil but prior to any duct transitions and dampers. Wire the discharge air sensor to the DAS terminals on the Z-2000 panel.

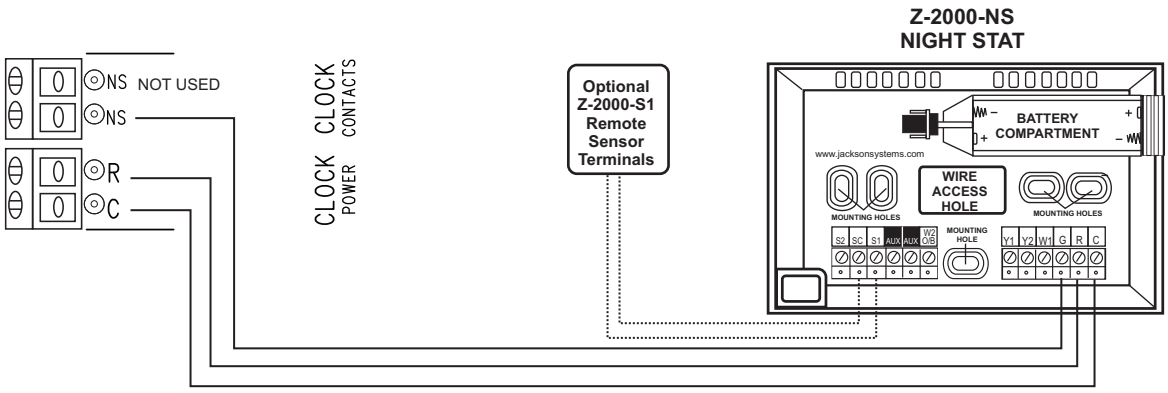


Z-2000-DAS

SYSTEM WIRING

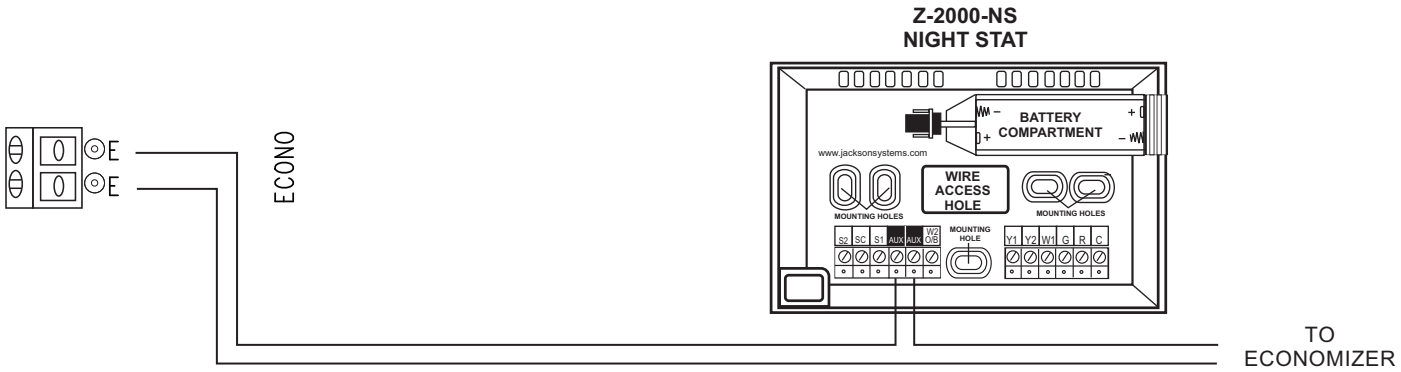
Night Stat

4. Remove the factory jumper on the Z-2000 panel from the NS CLOCK CONTACT terminals. Wire the Z-2000-NS Night Stat as shown in the wiring diagram. The Z-2000-NS Night Stat should be located in an area that represents the general load characteristics of the building. If the thermostat is located in an equipment room, a remote sensor may be required. In applications where 24 hour occupancy exists, a night stat may not be necessary.



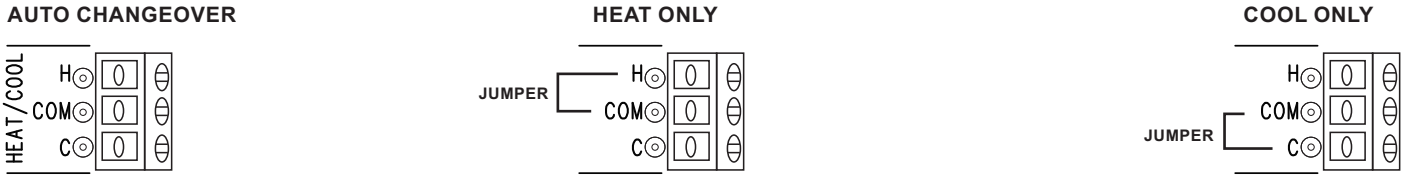
Economizer

If the HVAC unit has an economizer, the auxiliary contacts on the Z-2000-NS Night Stat can be used with the ECONO contacts on the Z-2000 panel so that the economizer is only energized during the occupied period. Wire the Night Stat as illustrated above and the ECONO terminals as illustrated below. Refer to the Z-2000-NS Installation Manual on assigning the auxiliary contacts.



Heat/Auto/Cool Terminals

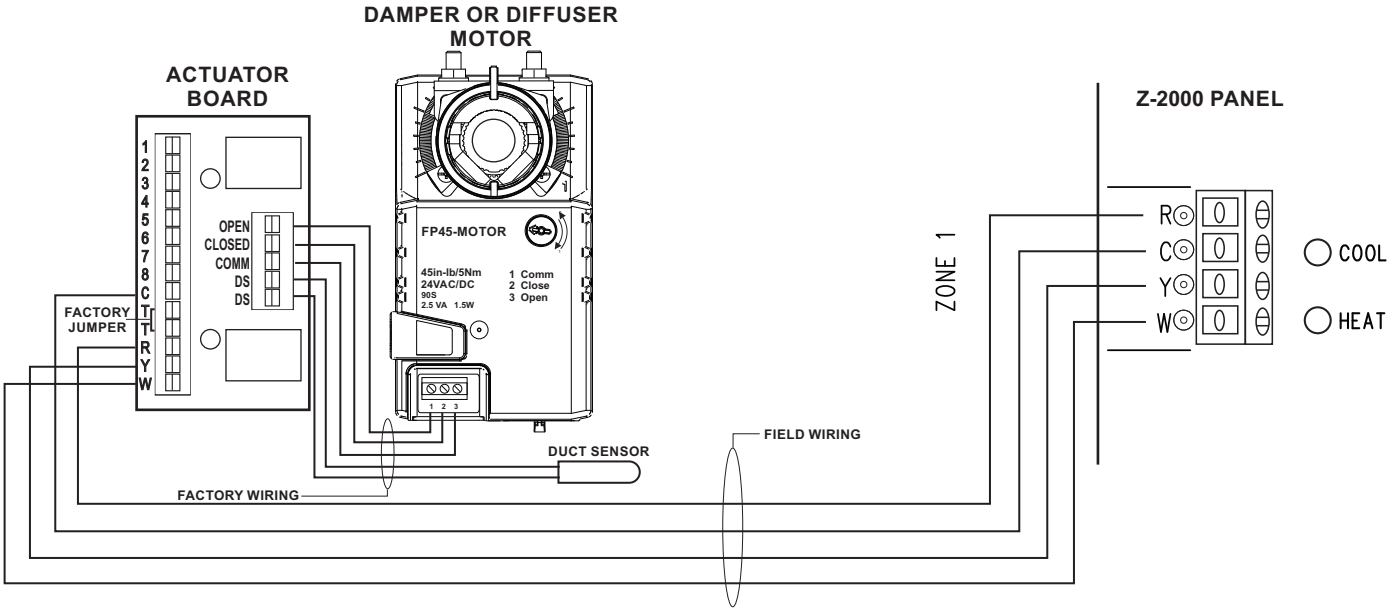
The Z-2000 panel has a set of terminals that can be used to place the panel in heating only, cooling only or auto changeover mode. A simple jumper wire can be placed between the COM and H for heat only or, COM and C for cool only mode. If a jumper is not used, the panel is in Auto Changeover. The terminals can also be used with a 3-position selector switch for remote applications.



SYSTEM WIRING

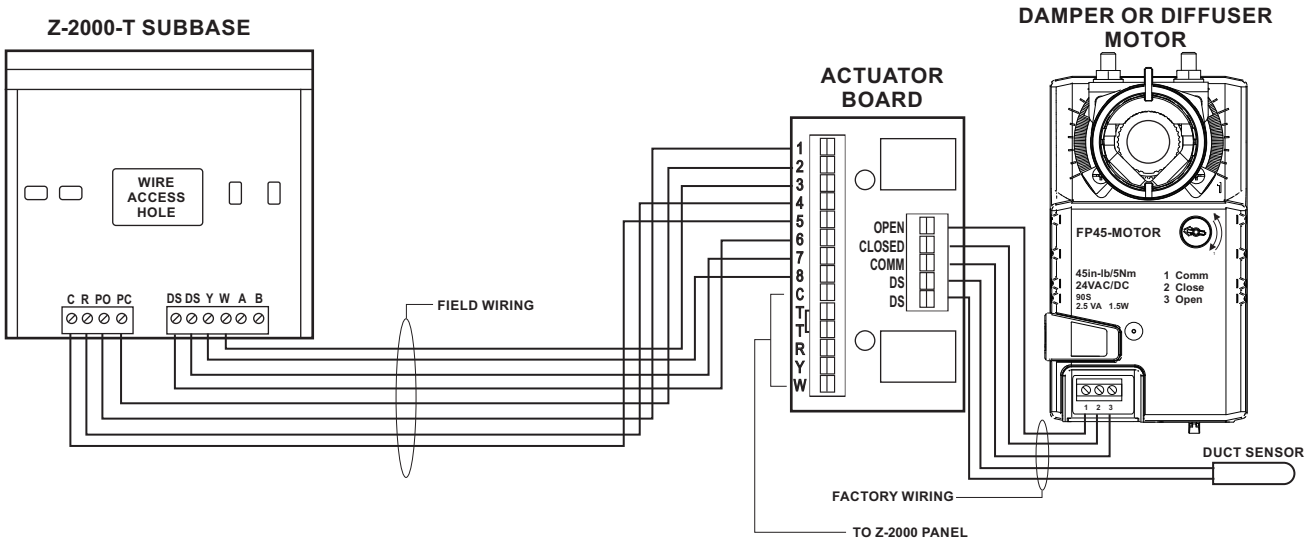
Zone Damper Actuator Board

Each master zone damper has an actuator board mounted to the side of the damper motor or diffuser. Run 4-wire cable from the Z-2000 panel to each zone actuator board as illustrated.



Z-2000-T Zone Thermostat Wiring

Each Z-2000-T zone thermostat wires to its master zone damper actuator board. Run 8-wire cable from the thermostat subbase terminals to the actuator board as illustrated.



TERMINAL CROSS REFERENCE	
Z-2000-T ZONE THERMOSTAT TERMINAL	**ACTUATOR BOARD TERMINAL**
C (24V COMM)	5
R (24V HOT)	4
PO (POWER OPEN)	1
PC (POWER CLOSED)	2
DS (DUCT SENSOR)	6
DS (DUCT SENSOR)	7
Y (CALL FOR COOLING)	8
W (CALL FOR HEATING)	3

SYSTEM WIRING

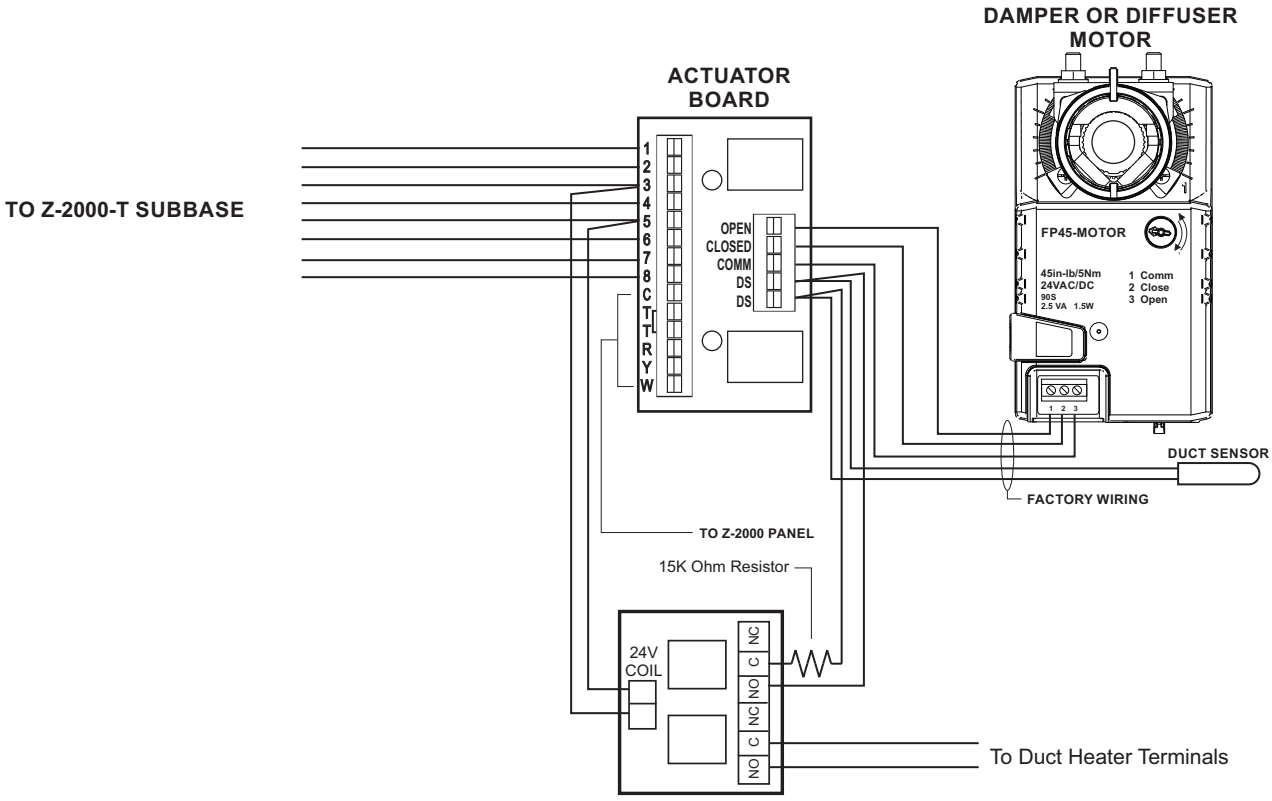
ZONE THERMOSTAT WIRING WITH ELECTRIC DUCT HEATER OR BASEBOARD ELECTRIC

Z-2000-T with Electric Duct Heater

There are two wiring options when using an electric duct heater in a zone.

Option1. A DPDT relay can be used to bring on the electric heat and drive the damper open without relocating the duct sensor. A 15K Ohm resistor must be wired to one side of the relay contact so that when the relay is energized, the resistor will be in parallel with the duct sensor. This will change the ohms value, translating to a higher duct temperature which will drive the damper open.

Option 2. The duct sensor can be relocated after the electric duct heater. A SPDT relay with a 24 volt coil can be applied and the coil wired to terminals 3 and 5 on the actuator board. The relay contacts are wired in series with the duct heater terminals.



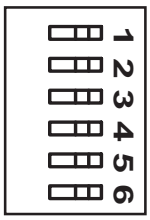
Z-2000-T with Electric Baseboard Heat

Option 2 above would apply for electric baseboard heat with the exception that the duct sensor would not have to be relocated. The contact rating of the relay must be determined for the specific electric baseboard application.

PANEL SETUP

The Z-2000 panel has a row of slide switches that are used to configure the panel for the specific equipment application along with other options. Switch definitions are as follows:

ON	OFF	SETUP
COOLING	MAJORITY	PRIORITY
HP	HC	SYSTEM
B	O	REV VALVE
2 ZONES	OFF	MIN CALLS
3 ZONES	OFF	
ON	OFF	E HEAT



Switch 1 - Priority:

OFF = Majority

When the Priority switch is placed in the OFF position, the panel treat calls for heating and cooling based on a Majority Wins control algorithm. This means that the panel will energize the equipment in the mode that represents the greatest number of calls. In the event of a tie, cooling will receive priority.

ON = Cooling

When the Priority switch is placed in the ON position, the panel gives priority to any cooling call regardless how many heating calls are taking place.

Switch 2 - System:

OFF = HC

When the System switch is placed in the OFF position, the panel is configured for conventional heating/cooling systems with up to 2 stages of heat and 2 stages of cooling.

ON = HP

When the Priority switch is placed in the ON position, the panel is configured for heat pump systems with up to 3 stage heat / 2 stage cool.

Switch 3 - Rev Valve: (Applies to heat pump operation only)

OFF = O

In heat pump configuration, when the Rev Valve switch is OFF, the reversing valve will energize on a call for cooling.

ON = B

In heat pump configuration, when the Rev Valve switch is ON, the reversing valve will energize on a call for heating.

Switch 4 and 5 - Min Call:

4 OFF and 5 OFF = No Minimum Call Requirement

When both Min Call switches are OFF, any single zone can initiate an equipment call.

4 ON and 5 OFF = 2 Zones

When switch 4 is ON and switch 5 is OFF, at least two zones must be calling in the same mode before the panel will energize the equipment.

4 OFF and 5 ON = 3 Zones

When switch 4 is OFF and switch 5 is ON, at least three zones must be calling in the same mode before the panel will energize the equipment.

4 ON and 4 ON = 5 Zones

When both switch 4 and 5 are ON, at least five zones must be calling in the same mode before the panel will energize the equipment.

Switch 6 - E Heat (Applies to heat pump operation only)

OFF = No Emergency Heat

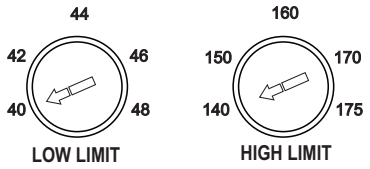
When switch 6 is OFF, the panel uses the compressor(s) and auxiliary heat for normal heating calls.

ON = Emergency Heat

When switch 6 is ON, the panel only uses the auxiliary heat source.

PANEL SETUP

High and Low Limit Settings
The panel has adjustable High and Low Limit potentiometers. When the low or high limit discharge air setpoint is reached, the panel will lock out the equipment while maintaining fan operation and initiate a time delay before the equipment is allowed to come back on. In conventional heating and cooling configuration, the time delay only applies to the cooling cycle. In heat pump configuration, the time delay applies to both heating and cooling.



NIGHT STAT SETUP AND SCHEDULING

OVERVIEW:
The Z-2000-NS programmable touchscreen thermostat can be used for occupied and unoccupied scheduling of the Z-2000 panel. When wired and configured properly, the thermostat takes the place of a separate 7-day clock, night stat and override timer. The Z-2000-NS Programmable Fan option is used to trigger the 'G' fan relay to open or close the Clock Contact 'NS' terminals on the Z-2000 panel that places the system in the occupied or unoccupied mode of operation. The thermostat can also be used with a Z-2000-S1 Indoor Remote Sensor. 24 volt power to the thermostat is supplied by the Z-2000 panel through dedicated Clock Power terminals 'R' and 'C'. The thermostat also has battery backup to maintain the real-time clock in the event of a power failure. The thermostat can be configured to provide 7-day scheduling with 2 or 4 events per day. For commercial schedules, 2 events per day is typical.

HOW IT WORKS:
The Z-2000-NS does not control the HVAC equipment and only uses the 'G' fan relay to set the Z-2000 panel in either the occupied or unoccupied mode. This is accomplished by using the Programmable Fan option so that the fan relay is energized during occupied mode (Always On) and de-energized during unoccupied mode (Automatic). When in Automatic mode, the fan relay will only energize when the temperature falls below or rises above the programmed unoccupied heating and cooling setpoints.

RECOMMENDED SETUP:
After mounting and wiring the thermostat subbase to the Z-2000 panel, follow the recommended setup and scheduling steps.

SYSTEM SWITCH SETTINGS:
The Z-2000-NS contains a set of four system switches located on the printed circuit board on the back of the thermostat. Make sure the system switches are set as follows:

Sw 1 = OFF
Sw 2 = ON
Sw 3 = ON
Sw 4 = OFF

NIGHT STAT SETUP AND SCHEDULING

INSTALLER SETUP MENU:
After the thermostat is powered, touch and hold both the **Clock** and **Mode** section of the display for 5 seconds to enter the Installer Menu. Touch **Mode** to advance forward through the menu or touch **Fan** to backup.

MENU CHANGES: (LEAVE ALL OTHER OPTIONS AT FACTORY DEFAULTS)

1:PR = 2 (Program Schedules)
4:PF = ON (Programmable Fan)

After the above changes have been made, touch and hold **Mode** until the thermostat exits the Installer Setup menu.

SETTING THE CLOCK AND DAY OF WEEK:
It is important that the time of day and day of the week is set properly so that occupied and unoccupied programs are initiated correctly.
1. Touch and hold the **Clock** and the hour will flash. Tap the **UP** or **DOWN** arrow to select the correct hour. Note: PM hours are indicated by **PM** on the LCD.
2. Tap **Clock** again and the minutes will flash. Tap the **UP** or **Down** arrow to select the correct minutes.
3. Tap **Clock** again and the month will flash. Tap the **UP** or **DOWN** arrow to select the month.
4. Tap **Clock** again and the day of the month will flash. Tap the **UP** or **DOWN** arrow to select the day of the month.
5. Tap Clock again and the year will flash. Tap the **UP** or **DOWN** arrow to select the year.
6. To exit the menu, touch **Clock** again. The thermostat will automatically display the correct day of the week.

DAYLIGHT SAVING TIME:
The thermostat automatically compensates for Daylight Saving Time. When Daylight Saving Time is active, **DST** is displayed next to the time of day.

PROGRAMMING EVENTS:
When the thermostat is configured to provide 2 schedules per day (Occupied/Unoccupied), 7 day per week, each event is displayed on the LCD as **DAY** (Occupied) and **NIGHT** (Unoccupied).
1. Touch and hold **Program** until **Mon** (Monday) flashes.
2. Tap **Program** again until the hour flashes and **Day** is displayed on the LCD. Use the **UP** or **DOWN** arrow to set the hour start time. Note: PM hours are indicated by **PM** on the LCD.
3. Tap **Program** again until the minutes flash. Use the **UP** or **DOWN** arrow to set the minutes.
4. Tap **Program** again and the heating setpoint will flash. Leave the setpoint at the factory default of 70 degrees.
5. Tap **Program** again and the cooling setpoint will flash. Leave the setpoint at the factory default of 75 degrees.

NIGHT STAT SETUP AND SCHEDULING

6. Tap **Program** again and the fan option **Always On** will flash. This is the correct setting for the Day mode. If not, use the **UP** or **DOWN** arrow to set the fan option from **Automatic** to **Always On**.
7. Tap **Program** again until the hour flashes and **Night** is displayed on the LCD. Use the **UP** or **DOWN** arrow to set the hour start time. Note: PM hours are indicated by **PM** on the LCD.
8. Tap **Program** again until the minutes flash. Use the **UP** or **DOWN** arrow to set the minutes.
9. Tap **Program** again and the heating setpoint will flash. You can use the **UP** or **DOWN** arrow to change the heating setpoint or use the factory default of 62 degrees.
10. Tap **Program** again and the cooling setpoint will flash. You can use the **UP** or **DOWN** arrow to change the cooling setpoint or use the factory default of 83 degrees.
11. Tap **Program** again and the fan option **Automatic** will flash. This is the correct setting for the Night mode. If not, use the **UP** or **DOWN** arrow to set the fan option from **Always On** to **Automatic**.
12. Tap **Program** again and **CPY** (Copy) will appear on the LCD. If you wish to copy the Monday program to additional days of the week, use the **UP** or **DOWN** arrow to add additional days. Example: **Mon Tue Wed Thu Fri**
13. Once you have selected the days to be copied, touch **Program**. **CPY** will begin to flash and then the next programming day will flash. Example: If you copy the Monday schedule through Friday, **Sat** (Saturday) will flash. Simply repeat the programming steps for any day where the building will be unoccupied. The only required change is that both the **Day** and **Night** fan option should be set to **Automatic** and the heating and cooling setpoints for **Day** should reflect the unoccupied setpoints for **Night**.

14. Once programming is completed, make sure the thermostat is set in the **Auto** mode of operation.

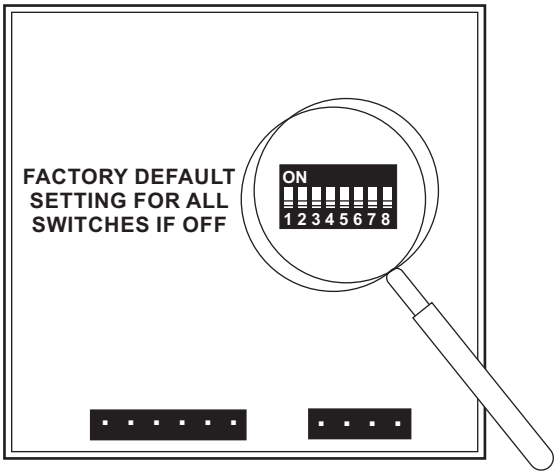
TYPICAL 7-DAY SCHEDULE HAVING 2 EVENTS PER DAY WITH SATURDAY AND SUNDAY UNOCCUPIED

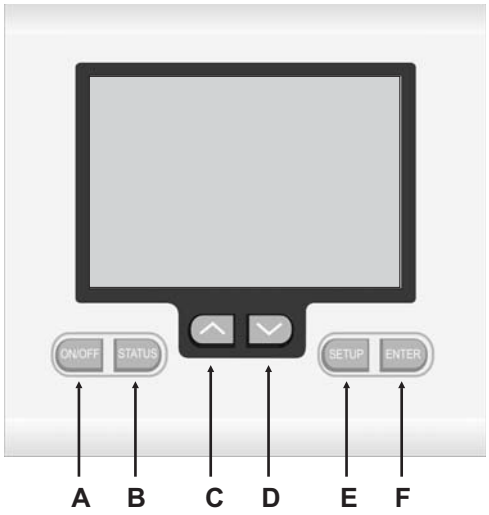
PROGRAM	DAY	START TIME	HEAT SETPOINT	COOL SETPOINT	FAN
DAY	MON	7:00 AM	70	75	Always On
NIGHT		5:00 PM	62	83	Automatic
COPY MONDAY PROGRAM TO TUESDAY, WEDNESDAY, THURSDAY AND FRIDAY					
DAY	SAT	7:00 PM	62	83	Automatic
NIGHT		5:00 PM	62	83	Automatic
COPY SATURDAY PROGRAM TO SUNDAY					

ZONE THERMOSTAT SETUP

SWITCH FUNCTIONS

The Z-2000-T contains a set of dip switches numbered 1 through 8. Only dip switches 1, 2, 3, 6 and 7 are active.





Switch 1 - Switch 1 is used to lock the thermostat after setup is completed. When the thermostat is locked (ON position) a padlock icon will show on the LCD. When locked, only setpoint changes and status functions can be accessed by the user. **Do not set Switch 1 in the ON position until all setup functions are completed.**
Switch 2 - Switch 2 is used to display the space temperature, duct temperature and setpoint in Celsius (ON position) or Fahrenheit (OFF position). Select Celsius or Fahrenheit before proceeding to the thermostat setup menu.
Switch 3 - Switch 3 is used to select two-position (ON position) or fully modulating (OFF position) damper control to best suit the specific application requirement.
Switch 6 - When switch 6 is ON, Heat or Cool are not displayed.
Switch 7 - When switch 7 is ON, the space temperature is replaced by the setpoint.

KEY FUNCTIONS

A = ON/OFF KEY - When the Z-2000-T is not locked, this key allows the thermostat to be turned ON or OFF. When in the OFF position, the damper is also driven closed.

B = STATUS KEY - Pressing the STATUS key repeatedly scrolls through the UNIT number, ZONE number, DUCT temperature and DAMPER position.

C and **D = UP** and **DOWN KEYS** - Used to increase and decrease the setpoint, as well as change thermostat setup values.

E = SETUP KEY - Used to toggle through the thermostat setup menu.

F = ENTER KEY - Used to enter changes as well as exit the setup menu.

ZONE THERMOSTAT SETUP

ENTERING THE SETUP MENU

Press and hold the **SETUP** key until the word DAMPER appears on the LCD. (Figure 1)

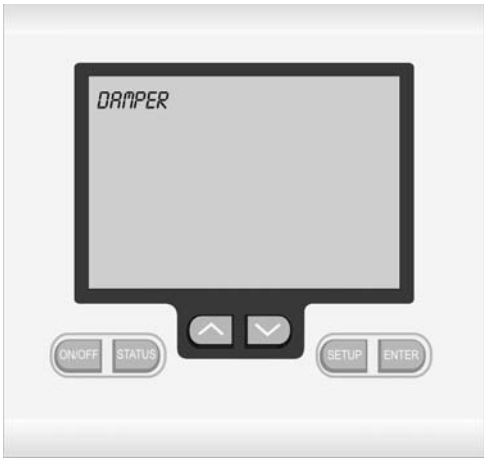


FIGURE 1

FIGURE 2

SETTING THE MINIMUM DAMPER POSITION

Press the **SETUP** key again and the LCD will display the minimum damper position. The factory default is 10% which means the damper is driven 90% closed after a heating or cooling call is satisfied. Press the **UP** and **DOWN** keys to change the minimum damper position. Position may be adjusted in 10% increments. (Figure 2)

FIGURE 3

FIGURE 4

SETTING THE MAXIMUM DAMPER POSITION

Press the **SETUP** key again and the LCD will display the maximum damper position for heating and cooling. The factory default is 100% which means the damper can drive fully open with a call for heating or cooling. Position may be adjusted in 10% increments using the **UP** and **DOWN** keys. (Figure 3)

SETTING A UNIT NUMBER

Press the **SETUP** key again and the LCD will display the word UNIT. The factory default is 00. This number can be used to assign the Z-2000-T to a particular HVAC unit. Use the **UP** and **DOWN** keys to assign a UNIT number from 00 to 99. (Figure 4)

ZONE THERMOSTAT SETUP

SETTING A ZONE NUMBER

Press the **SETUP** key again and the LCD will display the word ZONE. The factory default is 00. This number can be used to identify each Z-2000-T thermostat wired to a Z-2000™ zone control panel or when used in multiple stand-alone applications. Use the **UP** and **DOWN** keys to assign a ZONE number from 00 to 99. (Figure 5)

FIGURE 5

FIGURE 6

SETTING THE HEATING LIMIT

Press the **SETUP** key again and the LCD will display the heating limit. The factory default is 76° F. Press the **UP** and **DOWN** keys to change the heating limit setting. It is strongly recommended that the limit not be set above the factory default setting. (Figure 6)

FIGURE 7

FIGURE 8

SETTING THE COOLING LIMIT

Press the **SETUP** key again and the LCD will display the cooling limit. The factory default is 68° F. Press the **UP** and **DOWN** keys to change the cooling limit setting. It is strongly recommended that the limit not be set below the factory default setting. (Figure 7)

SETTING THE ACTUATOR SPEED

Press the **SETUP** key again and the LCD will display the actuator speed. The factory default is 90 seconds which is the time it takes the actuator to drive the damper blade fully open or fully closed. This is a critical step in the Z-2000-T setup since the thermostat can be used with a variety of 24 Volt actuators. If you are unsure of the actuator speed, place the actuator in the fully closed position and then apply 24 Volts to common and normally open. The time it takes to drive the damper blade fully open equals the actuator speed setting. (Figure 8)

ZONE THERMOSTAT SETUP

SETTING THE MODBUS ADDRESS

Press the **SETUP** key again and the LCD will display the Modbus communications address. The factory default is 01. The Z-2000-T has integrated Modbus communications capability for remote monitoring and control. For more information on Modus Communications, contact Jackson Systems at 1-888-652-9663 or info@jacksonsystems.com. (Figure 9)

FIGURE 9

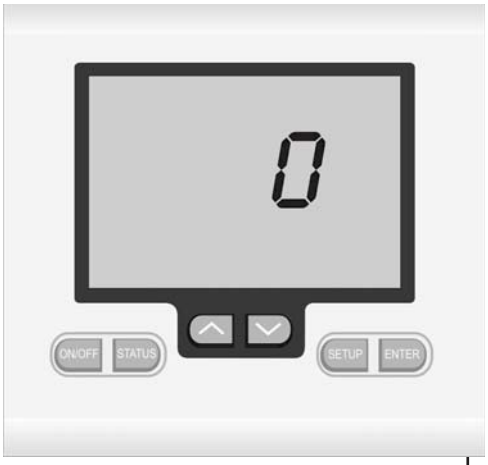


FIGURE 10

SENSOR LOCATION

TEMPERATURE CALIBRATION OFFSET

Press the **SETUP** key again and the LCD will display the temperature calibration offset. The factory default setting is 0. Typically, it is not necessary to adjust the temperature calibration offset, as the Z-2000-T has been factory calibrated. If calibration is necessary, a high quality electronic digital thermometer must be used. Place the thermometer sensor probe next to the thermostat sensor and allow five minutes before comparing the temperature readings. Use the **UP** and **DOWN** keys to adjust the temperature calibration. The range is +/- 9° F.
(Figure 10)

SAVING SETTINGS AND EXITING THE SETUP MENU

Press the **ENTER** key and the Z-2000-T will save the setup menu settings and exit the program. The LCD will display the space temperature along with other normal operating functions. To review the thermostat settings, simply press and hold the **SETUP** key until the setup menu is displayed and then toggle through the settings. Press the **ENTER** key to exit the setup menu.

ADVANCED FUNCTIONS

DAMPER POSITION OVERRIDE

The Z-2000-T has a damper position override feature to assist in air balancing and bypass damper setup. With the thermostat unlocked, press twice and hold the **SETUP** key until the word DAMPER appears on the LCD.(Figure 11)

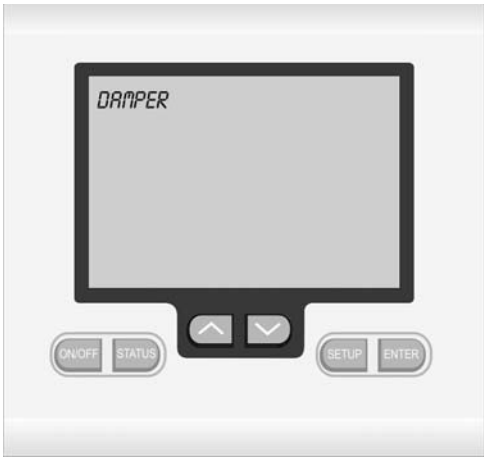


FIGURE 11

ZONE THERMOSTAT SETUP

OVERRIDE TO OPEN
Press the **UP** or **DOWN** key until the word OPEN appears on the LCD and then press the **ENTER** key. The damper will drive open and remain in the open position until the override is cancelled. (Figure 12)

FIGURE 12

FIGURE 13

OVERRIDE TO CLOSE
Press the **UP** or **DOWN** key until the word CLOSED appears on the LCD and press the **ENTER** key. The damper will drive closed and remain in the closed position until the override is cancelled. (Figure 13)

CANCELLING THE DAMPER OVERRIDE
In order for the Z-2000-T to return to normal operation, the override must be cancelled. Press and hold the **SETUP** key until the word DAMPER OPEN or DAMPER CLOSE appears on the LCD. Use the **UP** or **DOWN** key until only the word DAMPER is displayed and then press the **ENTER** key. The thermostat will then resume normal operation. (Figure 14)

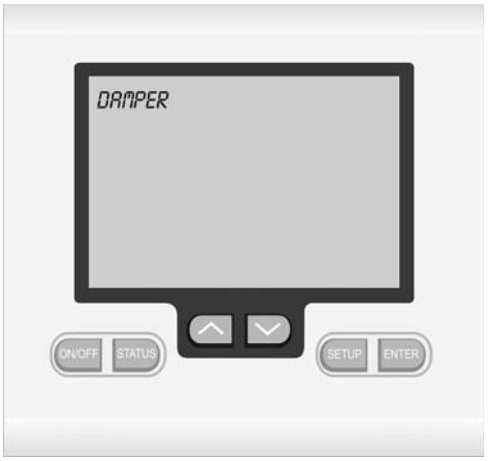


FIGURE 14

CHECKING THERMOSTAT STATUS POINTS
When the thermostat is first powered, it goes through a synchronization process to confirm the damper position before becoming operational, after which status points can be checked by repeatedly pressing the **STATUS** key and toggling through the following:

UNIT - Displays the HVAC unit number assigned to thermostat.

ZONE - Displays the thermostat zone number.

DUCT - Displays the duct temperature.

DAMPER - Displays the damper position in one degree increments. (0% = fully closed and 100% = fully open)

SYSTEM LED STATUS DEFINITIONS

Z-2000 LED FUNCTION	COLOR	STATUS
Zones (1-20)	Red Green	ON when there is a heating call. ON when there is a cooling call.
Time Delay Speed Up Mode	Red	OFF in normal mode. Blinks in speedup mode. Manual ON/OFF button with 10 minute auto-reset.
DAS Active	Green	ON when DAS is connected. Blinks when panel trips on high or low limit.
COOL	Green	ON when system is in cooling mode.
HEAT	Red	ON when system is in heating mode.
STATUS	Green	Blinks to confirm microprocessor operation.
OCCUPIED	Green	ON when system is in occupied mode. OFF during unoccupied mode.
O/B	Green	ON when reversing valve is energized.
G	Green	ON constantly during occupied mode and for 5 minutes after panel goes unoccupied.
Y1	Green	ON with 1st stage cooling or compressor.
Y2	Green	ON with 2nd stage cooling or compressor.
W1	Green	ON with 1st stage heating.
W2	Green	ON with 2nd stage heating.
W3/AUX/EH	Green	ON with 3rd stage auxiliary heat or emergency heat.
ACTUATOR BOARD LED FUNCTION		
HEAT	Red	ON when space temperature drops 1.5° F below setpoint sending signal to Z-2000 panel.
COOL	Green	ON when space temperature rises 1.5° F above setpoint sending signal to Z-2000 panel.

Z-2000 PANEL TIME DELAYS

FUNCTION	NORMAL MODE	SPEEDUP MODE
MINIMUM TIME IN HEAT OR COOL MODE Once system is in the heat or cool mode, it will remain there for a minimum of 15 minutes. The equipment may or may not be on during this period.	15 MIN	60 SEC
MINIMUM CHANGEOVER TIME BETWEEN HEAT OR COOL CALL	5 MIN	20 SEC
UPSTAGE TIMING	10 MIN	40 SEC
MINIMUM ON/OFF TIME	5 MIN	20 SEC
FAN RUN TIME AFTER CLOCK CONTACTS OPEN	5 MIN	20 SEC

STAGING AND LIMIT CONTROL SEQUENCE

Discharge Air Temperature Setpoints for Conventional Heating

Any time the discharge air temperature goes above the adjustable high limit setting of 145° F to 175° F, stage 1 heat will drop out.

Any time the discharge air temperature drops below 135° F, stage 1 heat will come on.

Any time the discharge air temperature goes above 125° F, stage 2 heat will drop out.

Any time the discharge air temperature drops below 115° F, stage 2 heat will come on.

Discharge Air Temperature Heating Setpoints for Heat Pump Mode Only

Any time the discharge air temperature goes above 110° F, stage 1 will drop out.

Any time the discharge air temperature drops below 105° F, stage 1 will come on.

Any time the discharge air temperature goes above 100° F, stage 2 will drop out.

Any time the discharge air temperature drops below 95° F, stage 2 will come on.

Any time the discharge air temperature goes above 120° F, stage 3 will drop out.

Any time the discharge air temperature drops below 115° F, stage 3 will come on.

When stage 3 is energized, heat pump stage 1 and 2 are locked on and their limits ignored.

When the discharge air temperature goes above 120° F, stage 3 is drops out and a 2 minute time delay is initiated before stage 1 and 2 limits are activated.

Discharge Air Temperature Setpoints for Conventional Cooling and Heat Pump

Any time the discharge air temperature drops below the adjustable low limit of 40° F to 48° F, stage 1 cooling will drop out.

Any time the discharge air temperature goes above 53° F, stage 1 cooling will come on.

Any time the discharge air temperature drops below 52° F, stage 2 cooling will drop out.

Any time the discharge air temperature goes above 57° F, stage 2 cooling will come on.

Z-2000 ZONE CONTROL LOGIC PANEL

APPLICATION:
The Z-2000 is a commercial zone control panel that allows a single heating and cooling unit to have up to 20 individual zones. The panel provides 24V power to individual zone dampers and thermostats and receives heating and cooling calls from each zone. The panel has dedicated terminals for wiring to the HVAC equipment, discharge air sensor, economizer and night stat for occupied and unoccupied scheduling. The equipment mode of operation is based on a selectable Majority Wins or Cooling Priority control algorithm. In addition, the panel is equipped with Minimum Call selector switches designed to prevent the equipment from coming on until a minimum number of calling zone is reached. The Z-2000 panel can be configured for up to 2 heat / 2 cool conventional or 3 heat / 2 cool heat pump.

DIMENSIONS:
Height: 13.5″
Width: 11.0″
Depth: 2.0″

PANEL CONSTRUCTION:
Rating: NEMA 1
Enclosure: 18 gauge aluminum
Access: Removable, self-centering cover
Finish: Blue anodized

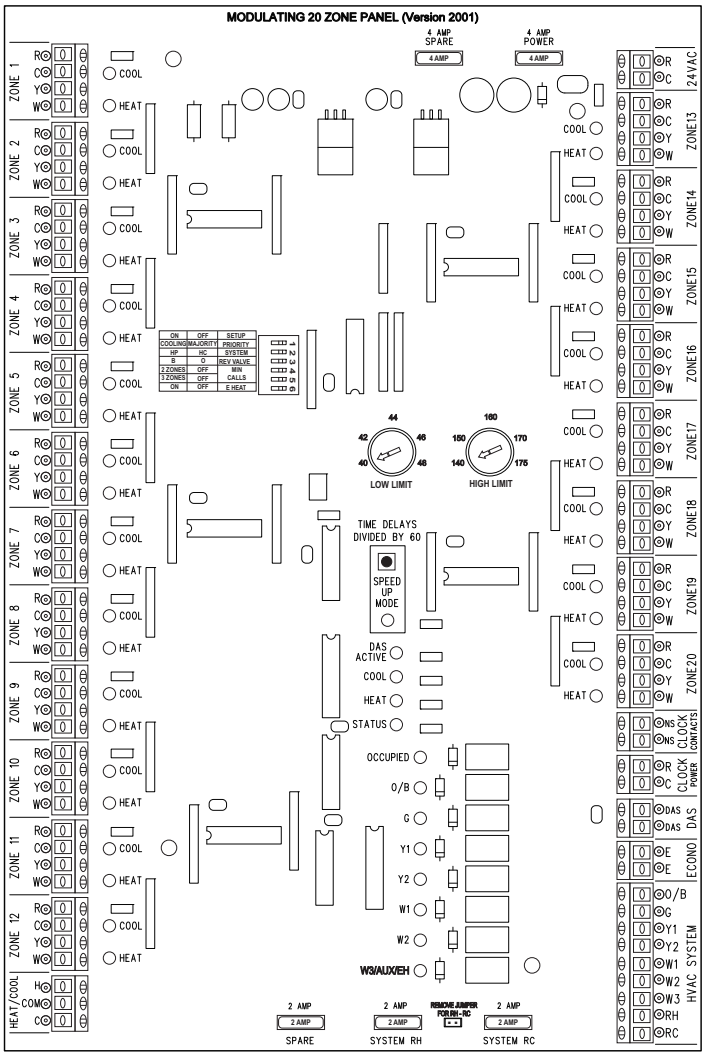
INPUT RATINGS:
Voltage: 18-30 VAC 50/60 Hz
VA: 75

CURRENT DRAW:
Zone Panel: 10 VA max.
All VA specifications at 24 VAC.

WIRING:
18-Gauge solid (not stranded) wire.

TEMPERATURE RATINGS:
Storage: 32° F - 150° F
Operating: 32° F - 150° F

HUMIDITY RANGE:
5% TO 95% RH non-condensing



SPECIFICATION SHEET

Z-2000-T ZONE THERMOSTAT

APPLICATION:
The Z-2000-T is a proprietary zone control thermostat designed to work with the Z-2000 zone control panel and the Zone One stand-alone zone damper and VAV diffuser. Depending on the application, the Z-2000-T can be configured to modulate the damper actuator or provide two-position control.

DIMENSIONS:
Height: 4.0″
Width: 4.375″
Depth: 0.875″

CONSTRUCTION:
Material: Injection molded ABS plastic
Access: Keypad Cover
Finish: Matte
Color: Warm White

INPUT RATINGS:
Voltage: 20-30 VAC 50/60 Hz

RELAY RATING:
24 VAC @ 1 Amp maximum per relay

WIRING:
18-guage solid (not stranded) wire

TEMPERATURE RATING:
Storage: 32° F - 150° F
Operating: 32° F - 150° F

HUMIDITY RANGE:
0 to 95% RH non-condensing

DISPLAY SIZE:
Height: 1.875″
Width: 2.750″

TEMPERATURE SENSOR:
NTC Type II - 10K @ 77° F

CONTROL RANGE:
36° F to 96° F

BACK LIGHT
Blue Electro Luminescent

APPROVALS:
FCC Part 15 C-tick

SPECIFICATION SHEET

Z-2000-NS NIGHT STAT

APPLICATION:
The Z-2000-NS is a programmable touchscreen thermostat used for occupied and unoccupied scheduling of the Z-2000 zone panel. When wired and configured properly, the thermostat takes the place of a separate 7-day clock, night stat and override timer. The Programmable Fan option is used to trigger the 'G' fan relay to open or close the Clock Contacts on the Z-2000 panel that places the system in the occupied or unoccupied mode of operation. The thermostat also has battery backup to maintain the real-time of day in the event of a power failure. The Z-2000-NS can be configured to provide 7-day scheduling with 2 or 4 events per day.

DIMENSIONS:
Height: 3.75″
Width: 5.50″
Depth: 1.312″

CONSTRUCTION:
Material: Injection molded ABS plastic
Access: Touchscreen
Finish: Matte
Color: Warm White

INPUT RATINGS:
Voltage: 20-30 VAC 50/60 Hz

RELAY RATING:
24 VAC @ 1 Amp maximum per relay

WIRING:
18-guage solid (not stranded) wire

TEMPERATURE RATING:
Storage: 32° F - 150° F
Operating: 32° F - 150° F

HUMIDITY RANGE:
0-95% RH non-condensing

DISPLAY SIZE:
Height: 2.375″
Width: 4.125″

TEMPERATURE SENSOR:
NTC Type II - 10K @ 77° F

CONTROL RANGE:
Heating: 41° F to 120° F
Cooling: 43° F to 122° F

BACK LIGHT
Blue LED

APPROVALS:
FCC Part 15 C-tick

SPECIFICATION SHEET

ZD-XX SERIES ZONE CONTROL DAMPER

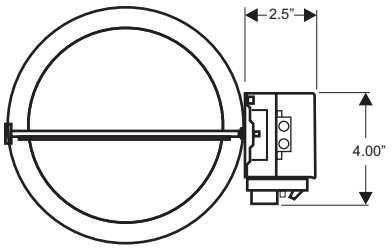
APPLICATION:

The model ZD-XX is a round commercial zone control damper assembly that includes a 24 Volt, floating point actuator, duct temperature sensor, and actuator control board. The ZD-XX zone damper is used with a Z-2000-T zone thermostat.

AVAILABLE SIZES:

Diameters: 5″, 6″, 7″, 8″, 10″, 12″, 14″, 16″, 18″, 20″

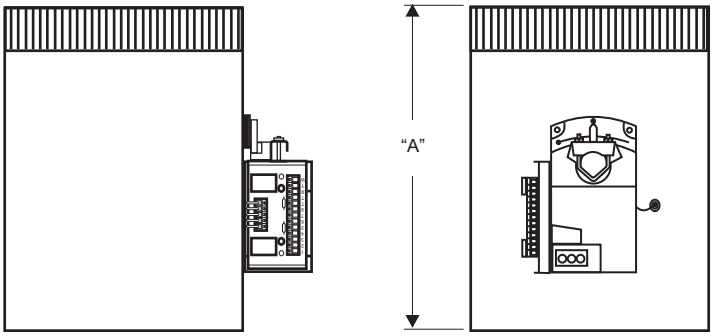
Length: 6″ - 20″ diameter = 10″



DAMPER SIZE	"A" DIMENSION
6"	10"
8"	10"
10"	10"
12"	10"
14"	10"
16"	10"
18"	10"
20"	10"

CONSTRUCTION:

Shell Material: 18 gauge rolled steel
Damper Material: 18 gauge
Shaft: ½"aluminum
Bushings: Nylon



AIR FLOW & PRESSURE:

Max static pressure: 2 inches w.c.
Max velocity: 2,000 fpm
CFM: 0 - 4,000 cfm

DAMPER ACTUATOR:

24 VAC, 2.5VA, 3-wire floating point actuator,
45 in-lb, 90 second timing, 90° stroke

OPERATION:

Continually regulates supply air volume in response to Z-2000-T thermostat control and duct temperature

COMPONENTS:

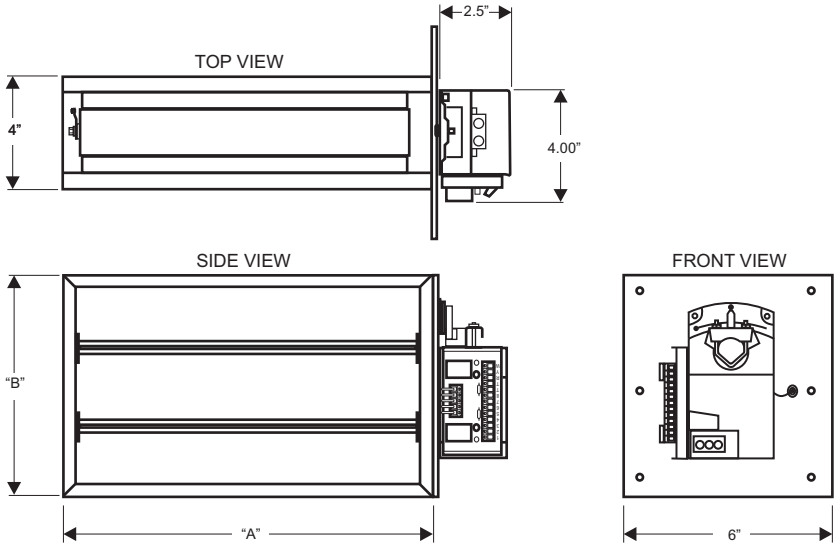
Damper, actuator, PC board and duct sensor

WARRANTY:

5 Years

SPECIFICATION SHEET

ZD-XXXX SERIES ZONE CONTROL DAMPER



APPLICATION:

The model ZD-XXXX is a rectangular commercial zone control damper assembly that includes a 24 Volt, floating point actuator, duct temperature sensor, and actuator control board. The ZD-XXXX zone damper is used with a Z-2000-T zone thermostat.

AVAILABLE SIZES:

Side mount models are sized width (A) by height (B) with actuator mounted on the (B) dimension.
Bottom mount models are sized width (A) by height (B) with actuator mounted on the (A) dimension.
(A) and (B) dimensions are undercut 1/4".
Standard sizes range from 8" x 8" up to 36" x 24" in 2" increments.
Custom sizes available.

CONSTRUCTION:

Frame:	1/16" extruded aluminum
Blades:	1/16" extruded aluminum (parallel design)
Flange:	1/16" aluminum
Shaft:	½" aluminum
Bushings:	Bronze

AIR FLOW & PRESSURE:

Max static pressure:	2 inches w.c.
Max velocity:	2,000 fpm
CFM:	0 - 4000 cfm

DAMPER ACTUATOR:

24 VAC, 2.5VA, 3-wire floating point actuator, 45 in-lb,
90 second timing, 90° stroke

OPERATION:

Continually regulates supply air
volume in response to Z-2000-T
thermostat control and duct temperature

COMPONENTS:

Damper, actuator, PC board
and discharge air sensor

WARRANTY:

5 Years

SPECIFICATION SHEET

SD-XX SERIES ZONE CONTROL DAMPER

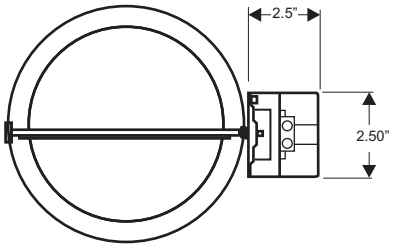
APPLICATION:

The model SD-XX is a round commercial auxiliary zone control damper assembly that includes a damper and 24 Volt floating point actuator. The SD-XX zone damper can be used as an auxiliary damper when wired to a ZD damper actuator in applications where more than one damper is required in a single zone.

AVAILABLE SIZES:

Diameters: 5", 6", 7", 8", 10", 12", 14", 16", 18", 20"

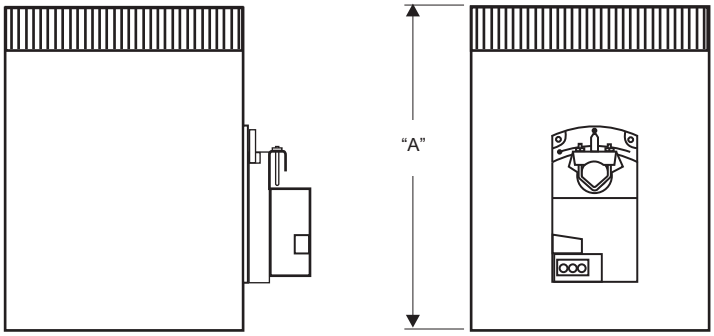
Length: 6" - 20" diameter = 10"



DAMPER SIZE	"A" DIMENSION
6"	10"
8"	10"
10"	10"
12"	10"
14"	10"
16"	10"
18"	10"
20"	10"

CONSTRUCTION:

Shell Material: 18 gauge rolled steel
Damper Material: 18 gauge
Shaft: ½"aluminum
Bushings: Nylon



AIR FLOW & PRESSURE:

Max static pressure: 2 inches w.c.
Max velocity: 2,000 fpm
CFM: 0 - 4,000 cfm

DAMPER ACTUATOR:

24 VAC, 2.5VA, 3-wire floating point actuator,
45 in-lb, 90 second timing, 90° stroke

COMPONENTS:

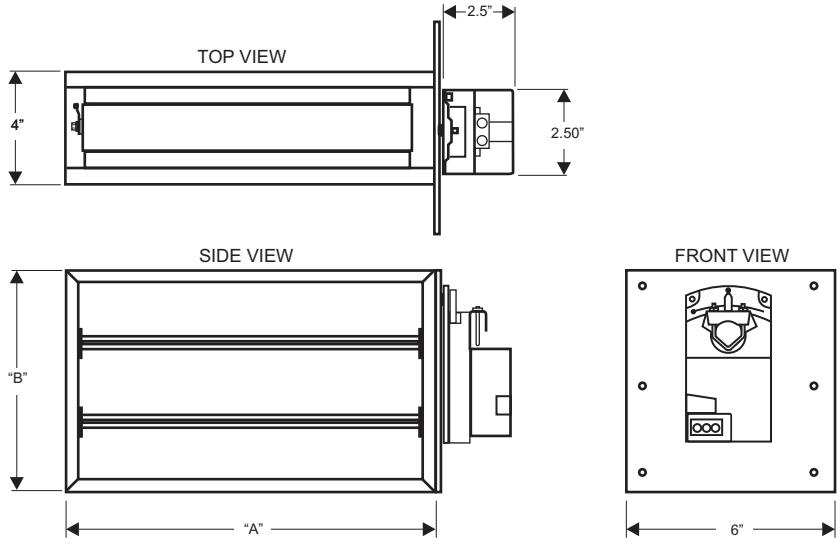
Damper and actuator

WARRANTY:

5 Years

SPECIFICATION SHEET

SD-XXXX SERIES ZONE CONTROL DAMPER



APPLICATION:

The model SD-XXXX is a rectangular commercial auxiliary zone control damper assembly that includes a 24 Volt, floating point actuator. The SD-XXXX can be used as an auxiliary damper when wired to a ZD damper actuator in applications where more than one damper is required in a single zone.

AVAILABLE SIZES:

Side mount models are sized width (A) by height (B) with actuator mounted on the (B) dimension.
Bottom mount models are sized width (A) by height (B) with actuator mounted on the (A) dimension.
(A) and (B) dimensions are undercut 1/4".
Standard sizes range from 8" x 8" up to 36" x 24" in 2" increments.
Custom sizes available.

CONSTRUCTION:

Frame:	1/16" extruded aluminum
Blades:	1/16" extruded aluminum (parallel design)
Flange:	1/16" aluminum
Shaft:	½" aluminum
Bushings:	Bronze

AIR FLOW & PRESSURE:

Max static pressure:	2 inches w.c.
Max velocity:	2,000 fpm
CFM:	0 - 4000 cfm

DAMPER ACTUATOR:

24 VAC, 2.5VA, 3-wire floating point actuator,
45 in-lb, 90 second timing, 90° stroke

COMPONENTS:

Damper and actuator

WARRANTY:

5 Years

SPECIFICATION SHEET

VD-XX, Series Modulating VAV Diffusers
Type LT, Lay-in, T-Bar

APPLICATION:
The Model VD-XX VAV Comfort System™ Diffuser is used to vary the supply air volume from a wall-mounted thermostat. The diffuser is designed to maintain the coanda effect (draft free) of discharge air along the ceiling, providing a sustained discharge velocity throughout the volume range. The Comfort System™ VAV Diffuser with a Z-2000-T zone thermostat.

AVAILABLE SIZES:
Face Size: 24" X 24" (23.75" x 23.75")
12" x 12" (11.75" x 11.75")

Neck Size: 6", 8" for 12" x 12" face size
6", 8", 10", 12", 14"
for 24" x 24" face size

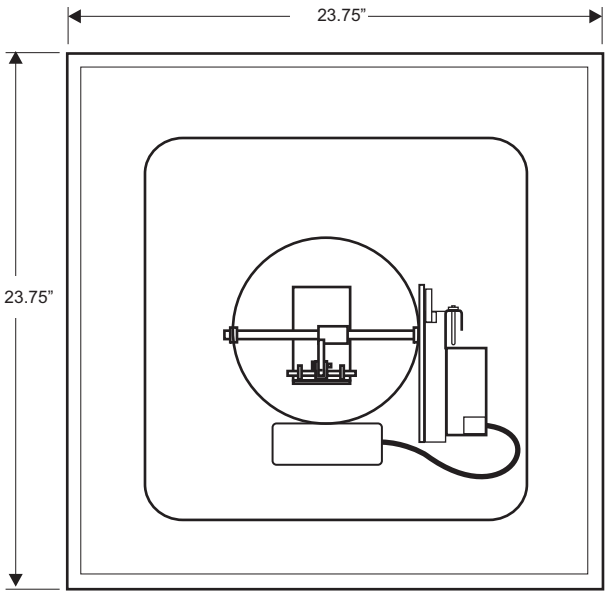
CONSTRUCTION:
Face Plate: Removable 18 gauge steel with baked white enamel finish

Back Cone: Unitary stamped 18 gauge steel

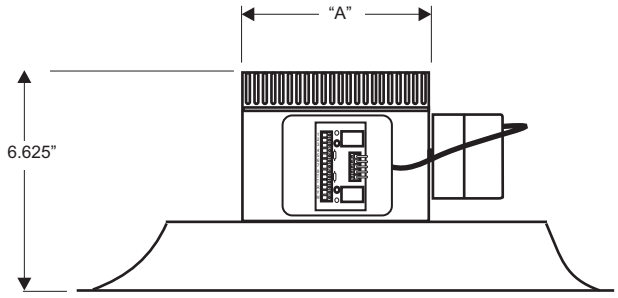
OPERATION:
Diffuser: Integral modulating disk that continually regulates supply air volume in response to thermostat control and duct temperature

Air Volume Range: 118 to 710 CFM

Maximum Static Pressure: 0.25" w.c.



TOP VIEW



SIDE VIEW

DIFFUSER ACTUATOR:
24 VAC, 2.5VA, 3-wire floating point actuator, 45 in-lb, 90 second timing, 90° stroke

COMPONENTS:
Diffuser, actuator, PC board and duct sensor

WARRANTY:
5 Years

ENGINEERING DATA

24" x 24" VD-XX VAV Diffuser

Part Number and Neck Size	Neck Velocity (FPM)	300	400	500	600	700	800	900	1000	1200	1400
	Velocity Pressure	0.006	0.01	0.016	0.022	0.031	0.04	0.051	0.062	0.09	0.122
VD-06 6" Ak = 0.19	Airflow (CFM)	60	80	100	120	140	160	180	200	240	280
	Total Pressure	0.009	0.011	0.017	0.025	0.034	0.044	0.057	0.070	0.100	0.135
	Horizontal Throw	1-1-2	1-1-4	1-2-4	1-3-5	2-3-6	2-4-7	3-4-8	3-4-9	4-5-11	4-6-11
	Noise Criteria	<15	<15	<15	<15	<15	<15	17	21	28	34
VD-08 8" Ak=0.26	Airflow (CFM)	105	140	175	210	245	280	315	350	420	490
	Total Pressure	0.011	0.018	0.028	0.040	0.055	0.072	0.091	0.112	0.162	0.220
	Horizontal Throw	1-2-4	2-3-6	2-4-7	3-4-9	3-5-10	4-6-12	4-6-12	5-7-13	6-9-14	7-10-15
	Noise Criteria	<15	<15	<15	<15	<15	17	21	25	32	38
VD-10 10" Ak=0.34	Airflow (CFM)	165	220	275	330	385	440	495	550	660	770
	Total Pressure	0.017	0.029	0.043	0.060	0.082	0.108	0.136	0.168	0.243	0.331
	Horizontal Throw	2-3-7	3-4-8	3-5-10	4-6-12	5-7-13	5-8-14	6-9-15	7-10-16	8-12-18	10-13-19
	Noise Criteria	<15	<15	<15	<15	15	20	24	28	35	41
VD-12 12" Ak=0.40	Airflow (CFM)	240	310	390	470	550	630	710	790	940	1100
	Total Pressure	0.023	0.037	0.059	0.085	0.115	0.151	0.191	0.237	0.338	0.461
	Horizontal Throw	2-4-7	4-5-11	5-7-14	5-8-15	6-9-16	7-11-17	8-12-18	9-14-19	11-15-21	13-16-23
	Noise Criteria	<15	<15	<15	<15	18	23	27	31	38	43
VD-14 14" Ak=0.51	Airflow (CFM)	320	430	530	640	750	860	960	1070	1280	1500
	Total Pressure	0.031	0.050	0.078	0.114	0.155	0.202	0.256	0.316	0.453	0.619
	Horizontal Throw	3-4-8	4-7-13	6-8-16	7-10-17	8-12-19	9-13-20	10-15-21	11-16-23	13-17-25	15-19-27
	Noise Criteria	<15	<15	<15	<15	20	25	29	33	40	45

Notes:

1. Tests conducted in accordance with ANSI/ASHRAE 70-1991 at isothermal conditions.
2. Tests conducted with a straight rigid inlet condition. Other inlet conditions may alter performance.
3. Units: Total Pressure = in. wc; Velocity Pressure -= in. wc; Effective Area (Ak) = $ft.^2$.
4. Throw - feet at 150 fpm, 100 fpm and 50 fpm terminal velocities.
5. NC is based upon 10dB room absorption (Re: 10^{-12} watts) evaluated at 125 thru 4000 Hz octave bands.
6. Flow hoods are recommended for system balancing.

SPECIFICATION SHEET

VD-XX-SD, Series Auxiliary Modulating VAV Diffusers
Type LT, Lay-in, T-Bar

APPLICATION:
The Model VD-XX-SD VAV Comfort System™ Diffuser includes a diffuser and modulating actuator. The VD-XX-SD can be used as an auxiliary damper when wired to a VD-XX difuser actuator in applications where more than one diffuser is required in a single zone.

AVAILABLE SIZES:
Face Size: 24″ X 24″ (23.75″ x 23.75″)
12″ x 12″ (11.75″ x 11.75″)

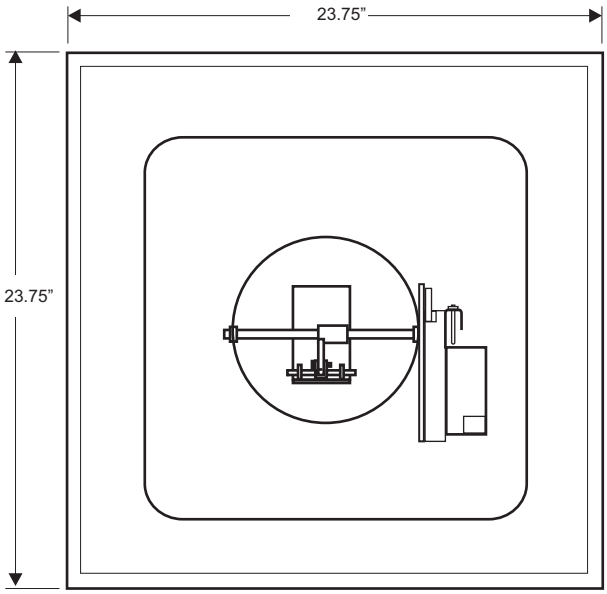
Neck Size: 6″, 8″ for 12″ x 12″ face size
6″, 8″, 10″, 12″, 14″
for 24″ x 24″ face size

CONSTRUCTION:
Face Plate: Removable 18 gauge steel with baked white enamel finish

Back Cone: Unitary stamped 18 gauge steel

Air Volume Range: 118 to 710 CFM

Maximum Static Pressure 0.25″ w.c.

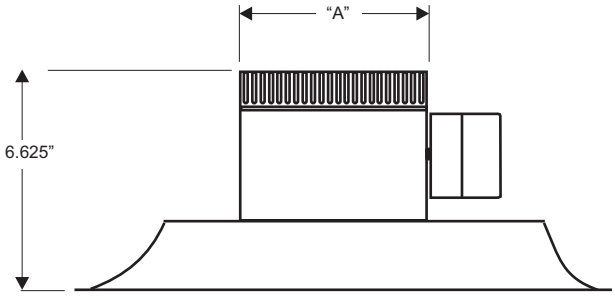


TOP VIEW

DIFFUSER ACTUATOR:
24 VAC, 2.5VA, 3-wire floating point actuator, 45 in-lb, 90 second timing, 90° stroke

COMPONENTS:
Diffuser and actuator

WARRANTY:
5 Years



SIDE VIEW

ENGINEERING DATA

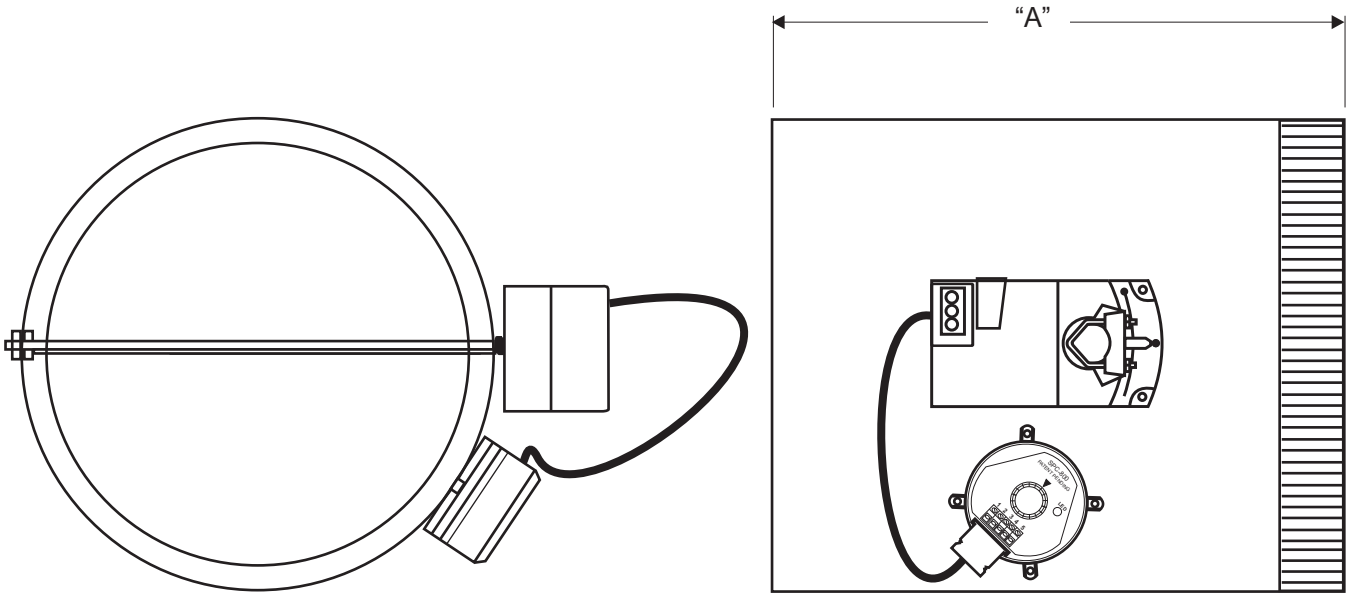
24" x 24" VD-XX-SD Auxiliary VAV Diffuser

Part Number and Neck Size	Neck Velocity (FPM)	300	400	500	600	700	800	900	1000	1200	1400
	Velocity Pressure	0.006	0.01	0.016	0.022	0.031	0.04	0.051	0.062	0.09	0.122
VD-06-SD 6" Ak = 0.19	Airflow (CFM)	60	80	100	120	140	160	180	200	240	280
	Total Pressure	0.009	0.011	0.017	0.025	0.034	0.044	0.057	0.070	0.100	0.135
	Horizontal Throw	1-1-2	1-1-4	1-2-4	1-3-5	2-3-6	2-4-7	3-4-8	3-4-9	4-5-11	4-6-11
	Noise Criteria	<15	<15	<15	<15	<15	<15	17	21	28	34
VD-08-SD 8" Ak=0.26	Airflow (CFM)	105	140	175	210	245	280	315	350	420	490
	Total Pressure	0.011	0.018	0.028	0.040	0.055	0.072	0.091	0.112	0.162	0.220
	Horizontal Throw	1-2-4	2-3-6	2-4-7	3-4-9	3-5-10	4-6-12	4-6-12	5-7-13	6-9-14	7-10-15
	Noise Criteria	<15	<15	<15	<15	<15	17	21	25	32	38
VD-10-SD 10" Ak=0.34	Airflow (CFM)	165	220	275	330	385	440	495	550	660	770
	Total Pressure	0.017	0.029	0.043	0.060	0.082	0.108	0.136	0.168	0.243	0.331
	Horizontal Throw	2-3-7	3-4-8	3-5-10	4-6-12	5-7-13	5-8-14	6-9-15	7-10-16	8-12-18	10-13-19
	Noise Criteria	<15	<15	<15	<15	15	20	24	28	35	41
VD-12-SD 12" Ak=0.40	Airflow (CFM)	240	310	390	470	550	630	710	790	940	1100
	Total Pressure	0.023	0.037	0.059	0.085	0.115	0.151	0.191	0.237	0.338	0.461
	Horizontal Throw	2-4-7	4-5-11	5-7-14	5-8-15	6-9-16	7-11-17	8-12-18	9-14-19	11-15-21	13-16-23
	Noise Criteria	<15	<15	<15	<15	18	23	27	31	38	43
VD-14-SD 14" Ak=0.51	Airflow (CFM)	320	430	530	640	750	860	960	1070	1280	1500
	Total Pressure	0.031	0.050	0.078	0.114	0.155	0.202	0.256	0.316	0.453	0.619
	Horizontal Throw	3-4-8	4-7-13	6-8-16	7-10-17	8-12-19	9-13-20	10-15-21	11-16-23	13-17-25	15-19-27
	Noise Criteria	<15	<15	<15	<15	20	25	29	33	40	45

Notes:

1. Tests conducted in accordance with ANSI/ASHRAE 70-1991 at isothermal conditions.
2. Tests conducted with a straight rigid inlet condition. Other inlet conditions may alter performance.
3. Units: Total Pressure = in. wc; Velocity Pressure -= in. wc; Effective Area (Ak) = $ft.^2$.
4. Throw - feet at 150 fpm, 100 fpm and 50 fpm terminal velocities.
5. NC is based upon 10dB room absorption (Re: 10^{-12} watts) evaluated at 125 thru 4000 Hz octave bands.
6. Flow hoods are recommended for system balancing.

EB-XX Round, Electronic Bypass Damper



DAMPER SIZE	"A" DIMENSION
12"	10"
14"	10"
16"	10"
18"	10"
20"	10"

DIMENSIONS:
Standard sizes from 12" to 20"

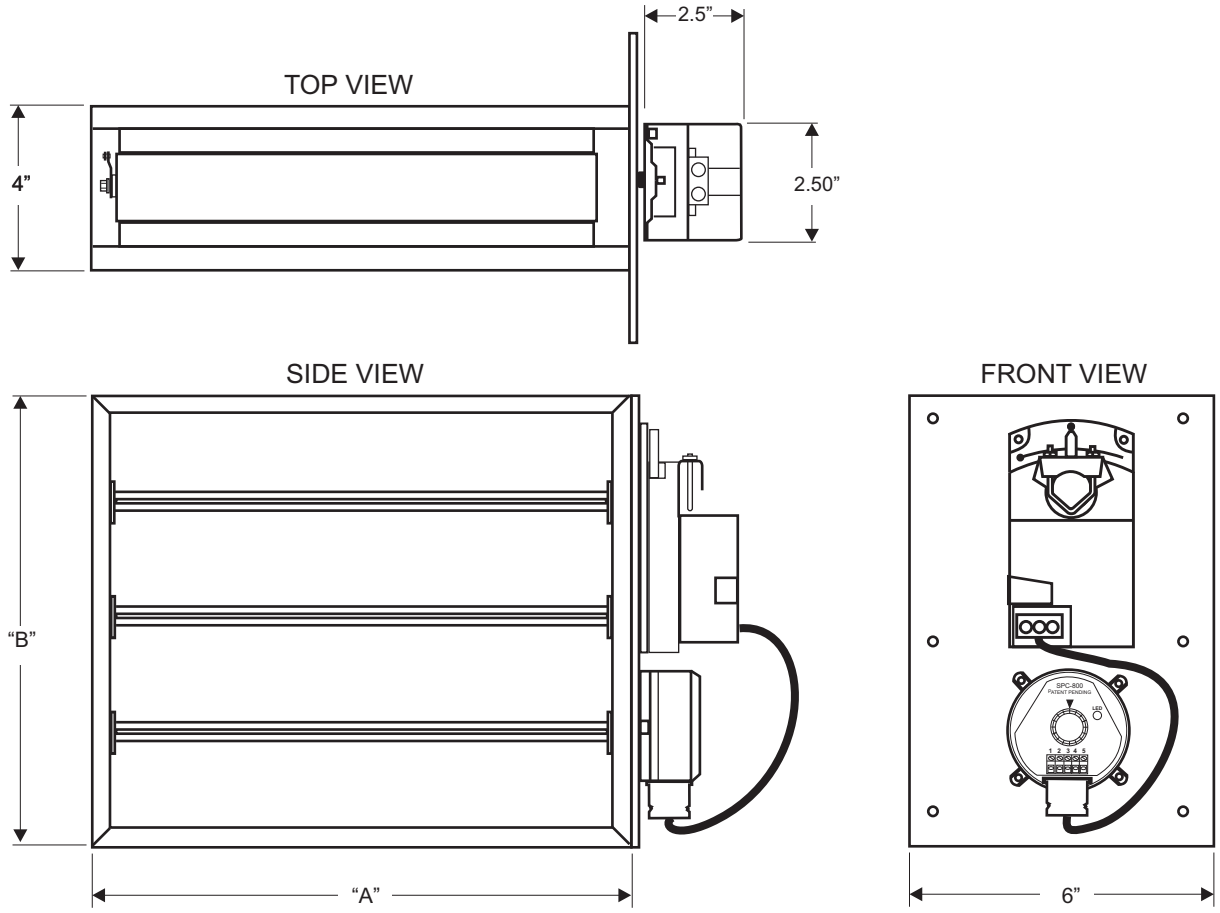
APPLICATION:
Compatible for zone control and other HVAC applications in maintaining system static pressure from 0.08" to 1.20" w.c.

CONSTRUCTION:
18 gauge rolled steel shell
18 gauge steel blade
½"aluminum shaft
Nylon bushings
Air tight blade seals
Minimum position adjustment

ELECTRICAL:
24 VAC, 2.5VA, 3-wire floating point actuator, 45 in-lb, 90 second timing, 90° stroke

FACTORY MOUNTED STATIC PRESSURE CONTROL:
1/4" I.D. flex hose connection
Tubing and plastic pressure probe included
Solid state control design
Built-in LED for damper direction
0.08" to 1.20" w.c. pressure range
40" W.C. maximum pressure
1 Amp switching current at 24 VAC

EB-XXXX Rectangular, Electronic Bypass Damper



DIMENSIONS:

Damper models EB-XXXX are sized width (A) by height (B) with actuator on the (B) dimension.
Actual (A) and (B) dimensions are undercut 1/4".
Standard sizes range from 8" x 8" up to 36" x 24" in 2" increments.
Custom sizes available.

APPLICATION:

Compatible for zone control and other HVAC applications in maintaining system static pressure from 0.08" to 1.20" w.c.

CONSTRUCTION:

1/16" extruded aluminum frame
1/16" extruded aluminum parallel blades
1/16" aluminum mounting flange
Nylon bushings
Minimum position adjustment

ELECTRICAL:

24 VAC, 2.5VA, 3-wire floating point actuator, 45 in-lb, 90 second timing, 90° stroke

STATIC PRESSURE CONTROL:

Factory mounted on "B" dimension 14" and up
1/4" I.D. flex hose connection
Tubing and plastic pressure probe included
Solid state control design
Built-in LED for damper direction
0.08" to 1.20" W.C. pressure range
40" W.C. maximum pressure
1 Amp switching

Z-2000-DAS DISCHARGE AIR SENSOR

APPLICATION:

The Z-2000-DAS is used with the Z-2000 zone control panel to measure the discharge air temperature of the HVAC system. The Z-2000-DAS contains a stainless steel probe with an encapsulated 10kΩ thermister. The discharge air temperature is interpreted as an Ohms value and the signal is sent to the Z-2000 zone control panel. The control algorithm of the Z-2000 uses this signal to control equipment staging as well as provide high and low limit protection.

INSTALLATION:

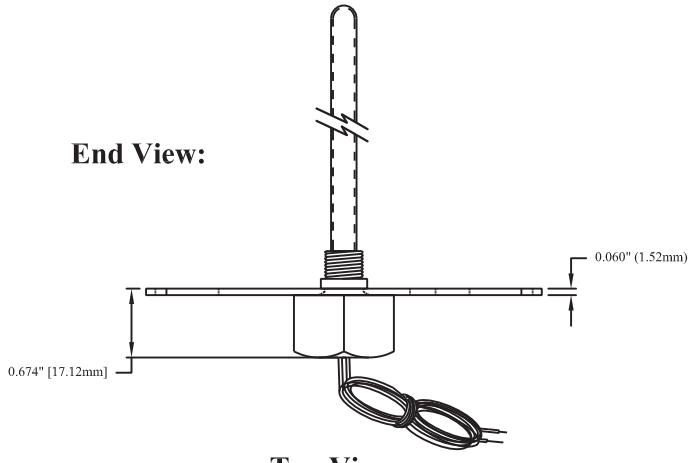
The Z-2000-DAS discharge air temperature sensor should be mounted a minimum of 26 inches from the HVAC equipment in the main supply duct and before all dampers. Connect the sensor to the terminals labeled **DAS** on the Z-2000 zone control panel. 18-2 plenum-rated thermostat wire is recommended.

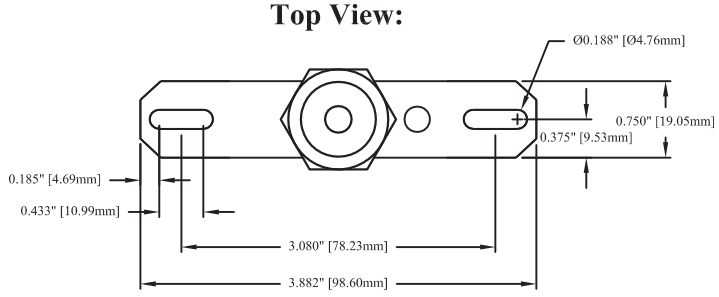
CONSTRUCTION:

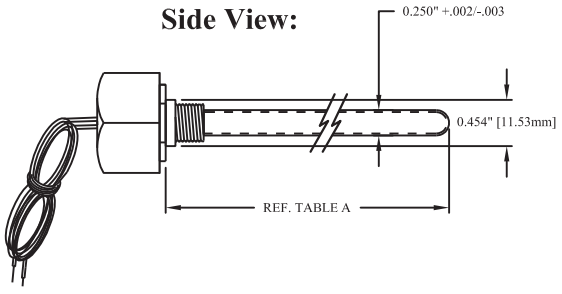
Sensor Probe: 6″ 304 Stainless Steel

SENSOR:

Type: 10K NTC Type 3
Resistance: 10kΩ @ 77° F
Tolerance: +/- 3% @ 77° F







NOTES:

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Controls Done Right™

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