

The ZCDC 2-Zone Comfort Control works with any thermostat to provide you with a uniformly comfortable home in every season.

The ZCDC monitors the equipment for heating and cooling calls as well as the temperatures in the upstairs and downstairs zones. If the temperatures differ more than 2 degrees, the ZCDC automatically directs more heating or cooling to the zone that needs it.

Or, you can manually direct more heating or cooling to the upstairs or downstairs zone as desired.

The ZCDC includes a Nighttime Comfort option, Auto Sleep, that automatically directs more heating or cooling to the upstairs sleeping zone and less to the unoccupied downstairs zone and is ideal for homes where all of the bedrooms are located upstairs.



Look for this symbol throughout the manual to see how the ZCDC can save energy as well as reduce wasted energy.

To learn how the ZCDC complements smart thermostats with remote sensors, see page 5 for more information.



HOMEOWNER

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FEATURES

AIRFLOW COMFORT SELECTION

Automatic Uniform Comfort

The ZCDC monitors the upstairs and downstairs temperatures and automatically adjusts the distribution of heating and cooling to the upstairs and downstairs to keep the spaces within 2 degrees of each other. Factory default.

Upstairs Comfort Focus

More heating or cooling is directed upstairs and less to the unoccupied downstairs.

Downstairs Comfort Focus

More heating or cooling is directed downstairs and less to the unoccupied upstairs.

NIGHTTIME COMFORT CONTROL

Automatically directs 30% more heating or cooling to the upstairs sleeping zone and 30% less to the unoccupied downstairs living zone. Saves 30% in energy at night. Factory set to Off.

AIRFLOW LIMITS

40% to 160%.

AIRFLOW ADJUSTMENT

The ZCDC makes a larger initial adjustment to distribution if the upstairs and downstairs temperatures differ greatly. After the initial adjustment, the ZCDC makes a 2% adjustment to distribution every 2 minutes.

TEMPERATURE CALIBRATION OPTION

The ZCDC includes a temperature calibration option for calibrating the upstairs and downstairs temperatures. This is helpful if the thermostat is reading a bit differently than the ZCDC control. See page 4, Calibrate Zone1 or Zone2.

COMPATIBLE THERMOSTAT

Any smart, OEM or simple 24VAC thermostat.

COMPATIBLE EQUIPMENT

Gas/Electric or Heat Pump equipment. ZCDC only monitors the equipment.

COMPATIBLE MODULATING DAMPERS

Model R80CJ - Round, Plug&Play Damper
Model RT80CJ - Rectangular, Plug&Play Damper.

POWER

- The ZCDC operates on 24VAC provided by the DC3C using the provided plug&play cable.
- The DC3C operates on 24VAC using the R and C terminals at the equipment.

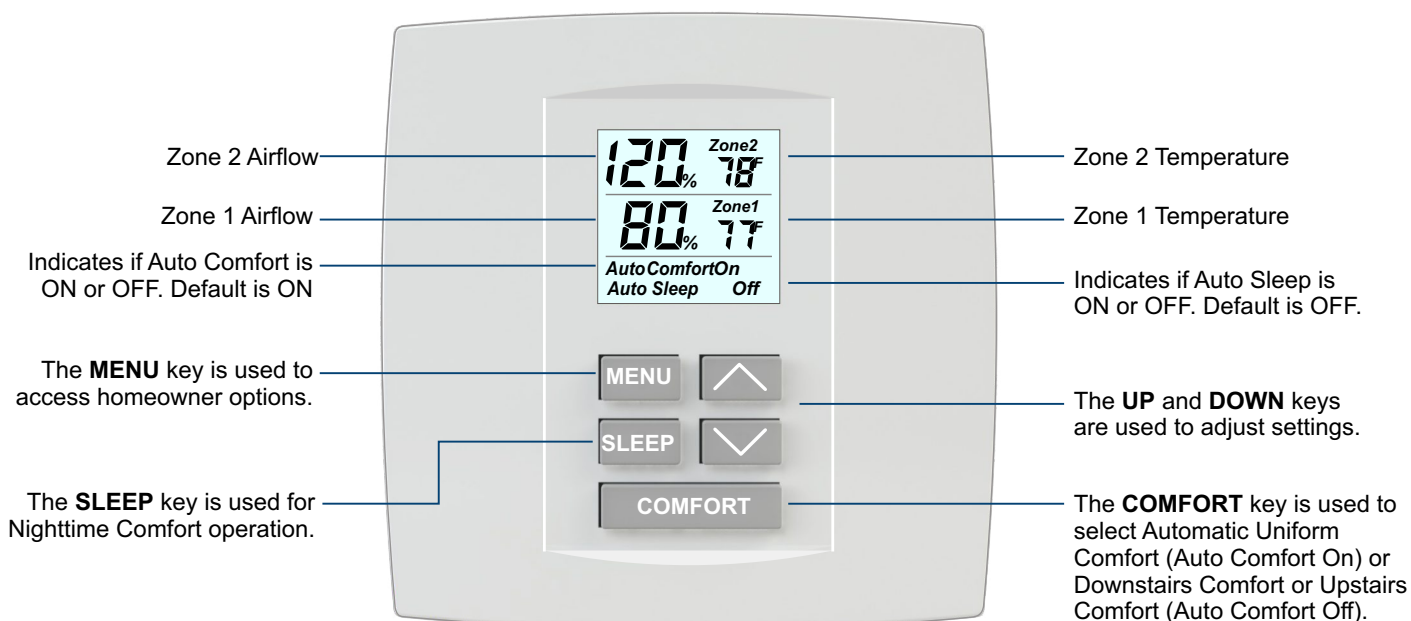
WARRANTY

5-year warranty, limited to the repair or replacement of the product due to defective material or workmanship.

HOMEOWNER

Understanding Your 2-Zone Comfort Control

The ZCDC 2-Zone Control is typically installed in the downstairs zone (living space), a temperature sensor is installed in the upstairs zone (sleeping space), a damper control module is installed near the equipment and two modulating dampers are installed in the duct work to control the distribution of heating and cooling to the downstairs and upstairs zones.




Comfort Control

The ZCDC includes three different comfort options - Automatic Uniform Comfort, Downstairs Comfort Focus and Upstairs Comfort Focus that are designed to maximize your comfort and energy savings.

The ZCDC defaults to Automatic Uniform Comfort. Pressing the **COMFORT** key cycles through the comfort options.

Automatic Uniform Comfort

In Uniform Comfort, the ZCDC monitors the upstairs and downstairs temperatures and automatically directs more heating or cooling to the zone that needs it every 2 minutes to keep the temperatures within 2 degrees to provide a balanced, uniformly comfortable home.

 Reduces the wasted energy caused by overcooling your downstairs zone in the summer to make your upstairs zone more comfortable or overheating your upstairs zone in the winter to make your downstairs zone more comfortable.




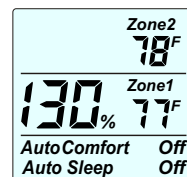
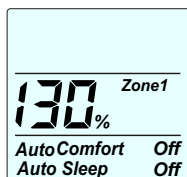
Press the **COMFORT** key until both ZONE1 airflow and ZONE2 airflow are displayed. The selection is saved when the backlight turns off.

When Uniform Comfort is selected, the Zone1 airflow and Zone2 airflow are displayed, Auto Comfort indicates On and the UP and DOWN keys are disabled.

Downstairs Comfort Focus

In Downstairs Comfort, the ZCDC directs more heating or cooling to the downstairs zone and less to the upstairs zone, and is ideal for homes where the upstairs is rarely used.

 Reduces the wasted energy used to heat or cool the unoccupied upstairs zone and saves energy by satisfying the heating and cooling calls sooner.




Press the **COMFORT** key until only ZONE1 airflow is displayed. The selection is saved when the backlight turns off.

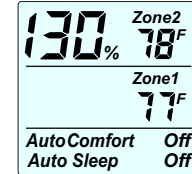
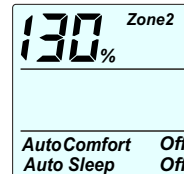
Airflow can be adjusted at any time by **Pressing** the **UP** or **DOWN** key.

When Downstairs Comfort is selected, only Zone1 airflow is displayed and Auto Comfort indicates Off.

Upstairs Comfort Focus

In Upstairs Comfort, the ZCDC directs more heating or cooling to the upstairs zone and less to the downstairs zone, and is ideal for homes with an upstairs home office or theater room.

 Reduces the wasted energy used to heat or cool the unoccupied downstairs zone and saves energy by enabling you to adjust your heating and cooling set to temperatures to more energy saving settings without sacrificing comfort.



Press the **COMFORT** key until only ZONE2 airflow is displayed. The selection is saved when the backlight turns off.

Airflow can be adjusted at any time by **Pressing** the **UP** or **DOWN** key.


When Upstairs Comfort is selected, only Zone2 airflow is displayed and Auto Comfort indicates Off.

Nighttime Comfort Option - Auto Sleep

The nighttime comfort option, Auto Sleep, saves energy and improves comfort at night and is ideal for homes where all of the bedrooms are located upstairs. Each night, the ZCDC automatically directs 30% more heating or cooling to the upstairs zone and 30% less to the unoccupied downstairs zone. In the morning, the ZCDC returns to the Comfort option previously selected.

Default settings for Auto Sleep:

- Defaults to Off. Access the Auto Sleep options to turn the option On.
- 8 Hour Timer Operation - Changed by accessing the Auto Sleep options.
- 130% Airflow to Zone2 - Can be changed anytime during Auto Sleep operation or by accessing the Auto Sleep options.

 Auto Sleep reduces the wasted energy used to heat or cool the unoccupied downstairs zone at night and saves energy by enabling you to adjust your heating and cooling set to temperatures to more energy saving settings without sacrificing comfort.

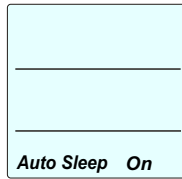
Turn Auto Sleep Option ON and Set Options

TURN AUTO SLEEP ON

Press the **MENU** key to display AutoSleep.

Press the **UP** key to turn AutoSleep On.

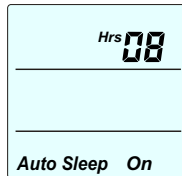
Press the **MENU** key to go to Timer Hours for Auto Sleep.



SET THE TIMER HOURS

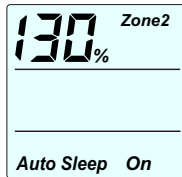
The default number of hours is 8 hours. To adjust, **Press** the **UP** or **DOWN** key.

The settings are saved when the backlight turns off. Or **Press** the **MENU** key to go to Airflow Settings for Auto Sleep.

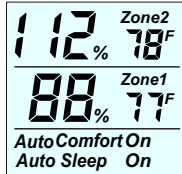


ADJUST THE AIRFLOW SETTING

The default airflow is 130%. To adjust, **Press** the **UP** or **DOWN** key.



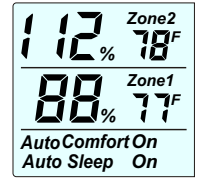
The settings are saved when the backlight turns off. Auto Sleep On is now displayed.



Set Nightly Start Time (First Operation)

For the first operation only, the nightly start time needs to be set.

At your desired nightly start time, **Press** and **Hold** the **SLEEP** key until the Auto Sleep airflow settings are displayed.



Each night at this time, the ZCDC will automatically switch to Nighttime Comfort operation.

If desired, adjust the airflow by **Pressing** the **UP** or **DOWN** key. The setting is saved and becomes your default airflow at night.



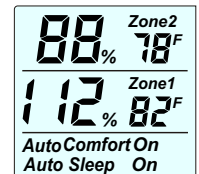
END OF AUTO SLEEP OPERATION

In the morning when the Auto Sleep timer ends, the ZCDC automatically returns to the previous Comfort selection.

To end Auto Sleep at any time, **Press** the **COMFORT** key to return to the previous Comfort selection.



If Automatic Uniform Comfort was previously selected, the airflow returns to 100% in both Zone1 and Zone2, but within 2 minutes an appropriate adjustment to airflow will automatically be made.



Quick Tips For Auto Sleep Operation

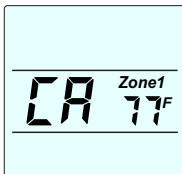
- To set a new nightly start time for Auto Sleep, simply **Press** the **SLEEP** key at the desired start time.
- To end Auto Sleep operation and return to the previous Comfort selection, **Press** the **COMFORT** key.
- Following a power outage, the nightly start time for Auto Sleep needs to be reset. Simply **Press** the **SLEEP** key at the desired start time.
- To turn the Auto Sleep option Off, **Press** the **MENU** key to display AutoSleep then **Press** the **DOWN** key to display AutoSleep Off.

OPTION - Calibrate Zone 1 Temperature

This option enables you to calibrate the Zone 1 temperature to a temperature that you feel is more correct or to align with the temperature displayed on your thermostat.

Press the **MENU** key until CA Zone1 is displayed.

Press the **UP** or **DOWN** key to adjust the temperature. The setting is saved when the backlight turns off.

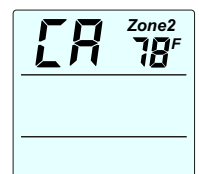


OPTION - Calibrate Zone 2 Temperature

This option enables you to calibrate the Zone 2 temperature to a temperature that you feel is more correct or to align with your thermostat's remote sensor (if installed).

Press the **MENU** key until CA Zone2 is displayed.

Press the **UP** or **DOWN** key to adjust the temperature. The setting is saved when the backlight turns off.



Smart Thermostats w/ Remote Sensor

The ZCDC 2-Zone Comfort Control optimizes the comfort features in smart thermostats with remote sensors while adding valuable energy savings.

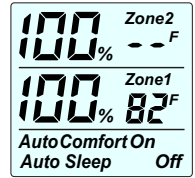
At night, use the thermostat's remote sensor located upstairs in the bedroom space to control the heating and cooling calls. The Nighttime Comfort option directs more heating and cooling upstairs and satisfies the heating or cooling call sooner, saving energy and optimizing comfort.

When Upstairs Comfort is selected, use the thermostat's remote sensor located upstairs to control the heating and cooling calls. More heating and cooling is directed upstairs, satisfying the heating or cooling call sooner, saving energy and optimizing comfort.

Troubleshooting

Sensor Error

When there is an error with the temperature sensor, the ZCDC displays the temperature as dashes. A technician should check for open wires or shorts.



Until the error is corrected, the ZCDC will open both dampers and disable Automatic Uniform Comfort. Upstairs Comfort and Downstairs Comfort will function normally.

Blank Screen

The ZCDC is powered by the DC3C Damper Control. A blank display indicates that the ZCDC is not receiving power from the DC3C. A technician should verify that the DC3C and equipment are powered, as well as check for open wires or shorts.



INSTALLATION

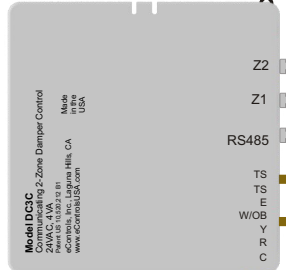
Wiring Diagram

TS4B 2-Wire Temperature Sensor
Monitors the Upstairs Temp.



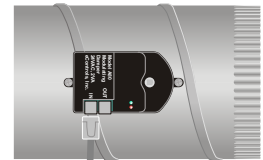
Installed in Zone2

DC3C Damper Control
Powered by Equipment 24VAC.
Monitors equipment terminal for Heating or Cooling Calls. Controls the distribution of Airflow using Modulating Dampers

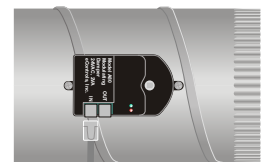


Installed near HVAC Equipment

R80CJ-XX Modulating Plug&Play Damper
Installed in Zone2 trunk



R80CJ-XX Modulating Plug&Play Damper
Installed in Zone1 trunk



Plug&Play cables provided with dampers.

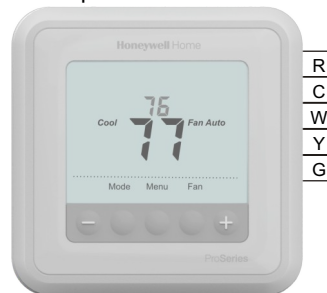
ZCDC Plug&Play Comfort Control
Monitors downstairs Temp and selects Comfort Mode



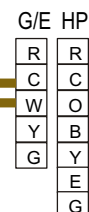
Installed in Zone1

50' Plug&Play cable provided with Damper Control and installed at rough-in.

Use Smart, OEM Communicating or simple 24VAC thermostat



HVAC Equipment Indoor Unit



INSTALLATION

CAUTIONS

- Before installing the ZCDC system, turn off all power to the HVAC system.
- Read and follow all instructions carefully.
- Read entire manual before installing products.
- Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes.
- Use cautions when mounting components to surfaces that may have concealed wiring beneath the surface.
- When servicing products or accessing products, turn off all power to these items.

STEP 1 Rough In Wiring

Use 18 or 20 gage thermostat cable.

Rough-In Wiring - TS4B Temperature Sensor

Typical location for the TS4B Sensor is on an upstairs wall (Zone 2), about 5 feet off the floor, in a space that will best detect the temperature for the upstairs zone.

- Run a 2-conductor thermostat cable from where the DC3C Damper Control will be installed near the equipment to the sensor location.

Rough-In Wiring - ZCDC 2-Zone Comfort Control

Typical location for the ZCDC Control is on a downstairs wall (Zone 1) near the thermostat, about 5 feet off the floor.

- Run the plug&play cable included with the DC3C Damper Control from where the DC3C Damper Control will be installed near the equipment to the ZCDC location.

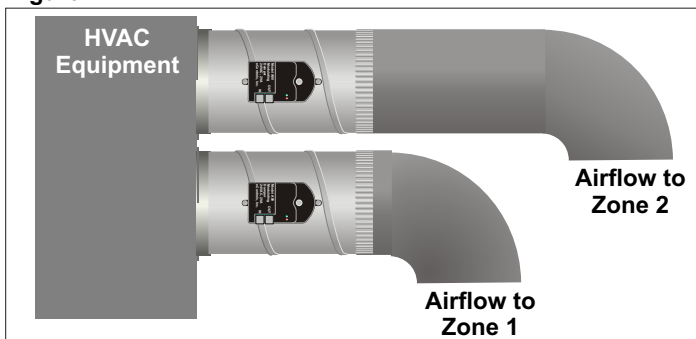
Save time by running the plug&play cable and the thermostat cable at the same time.

STEP 2 Install Dampers

In a typical installation, Zone 1 is the downstairs living zone and Zone 2 is the upstairs sleeping zone.

- Install an R80CJ or RT80CJ damper in the trunk supplying air to Zone 1. Install an R80CJ or RT80CJ damper in trunk supplying air to Zone 2. Install so crimped end is in the direction of airflow. Each damper uses 2VA of power. See Figure 1.

Figure 1



STEP 3 Install DC3C Damper Control

- Remove cover of the DC3C Damper Control by pressing the tabs in the area indicated to release the cover. See Figure 2.
- Mount DC3C near the HVAC equipment using the hardware provided. Locate it on a wall, stud or roof truss. Do not install on a metal surface or near 120VAC lines. See Figure 3.

Figure 2

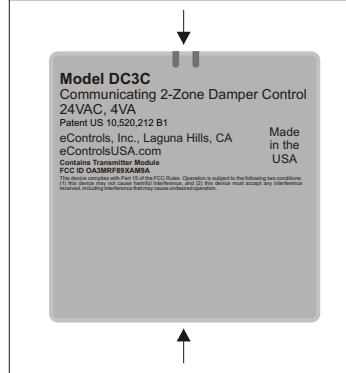
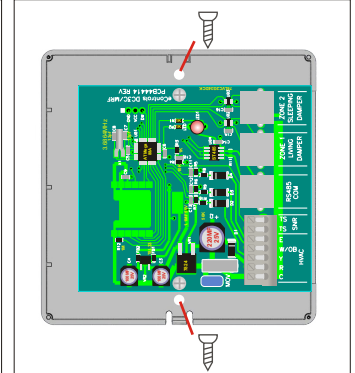


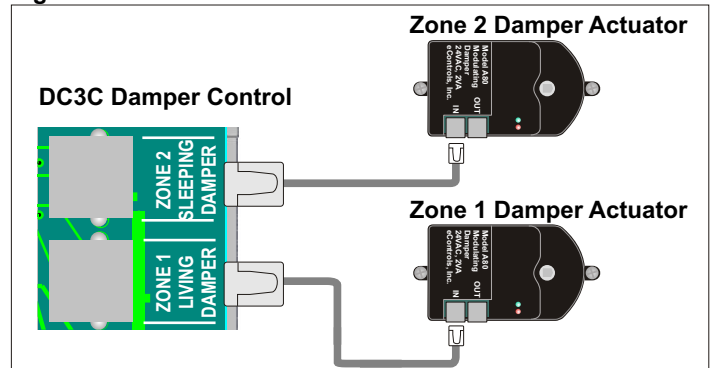
Figure 3



STEP 4 Connect Dampers to DC3C

- Using one of the plug&play cables included with the dampers, plug one end of the cable into the "IN" connector on the Zone 1 damper actuator then plug the other end into the Zone 1 connector on the DC3C Damper Control. Using the other cable, plug one end of the cable into the "IN" connector on the Zone 2 damper actuator then plug the other end into the Zone 2 connector on the DC3C Damper Control. See Figure 4.

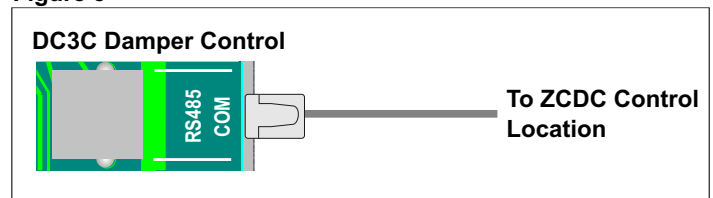
Figure 4



STEP 5 Connect ZCDC Cable to DC3C

- Plug the ZCDC plug&play cable installed during rough into the connector on the DC3C marked RS485 COM. See Figure 5.

Figure 5

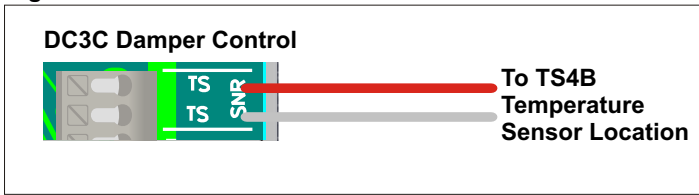


INSTALLATION

STEP 6 Connect TS4B Wires to DC3C

- Connect the sensor wire installed during rough in to the two sensor terminals on the DC3C marked TS. See Figure 6.

Figure 6

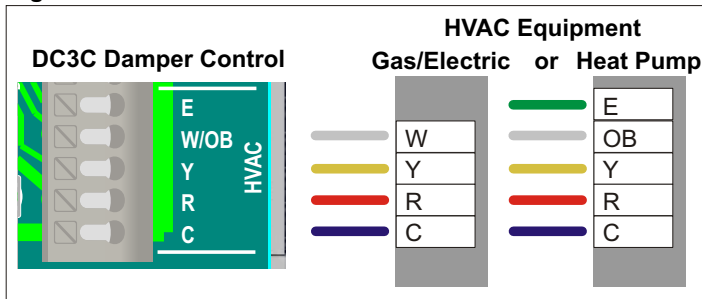


STEP 7 Wire DC3C to Equipment

The DC3C Damper Control is wired to the equipment for power using the R and C terminals and for monitoring the status of heating and cooling calls using the W/OB, Y and E terminals.

- **Gas/Electric Equipment** - Use 4-conductor, 18 or 20 gage thermostat cable to connect the DC3C Control terminals W/OB, Y, R and C to the equipment terminals W, Y, R and C. See Figure 7.
- **Heat Pump Equipment** - Use 4 or 5-conductor, 18 or 20 gage thermostat cable to connect the DC3C Control terminals W/OB, Y, E, R and C to the equipment terminals E, O or B, Y, R and C. See Figure 7.

Figure 7



STEP 8 Wire & Install TS4B Sensor

- Feed the sensor wire through the opening on the back of the TS4B sensor then attach the sensor to the wall using the hardware provided. See Figure 8.
- Connect the wires to the terminals. See Figure 9. Attach the sensor cover.

Figure 8

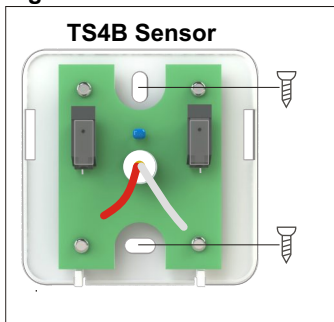
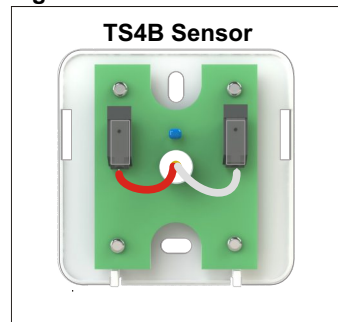


Figure 9



STEP 9 Connect and Install ZCDC Control

- Feed the plug&play cable through the back of the ZCDC subbase. Attach the ZCDC subbase to the wall using the provided hardware. See Figure 10.
- Plug the plug&play cable into the connector on the ZCDC. See Figure 11.
- Attach the ZCDC to the subbase. See Figure 12.

Figure 10

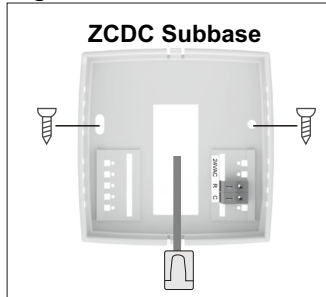


Figure 11

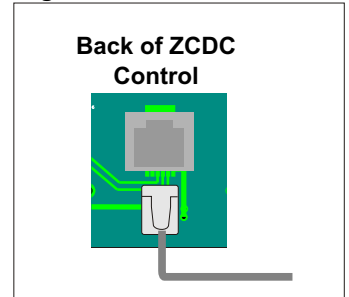
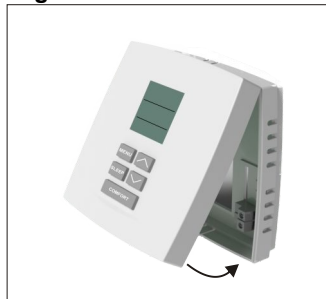


Figure 12



STEP 10 Power Controls and Dampers

Apply power to the equipment. The ZCDC Control, DC3C Damper Control and Dampers should all be powered.

- Both dampers should display a Green LED.
- DC3C Damper Control initially displays a Red LED, then within about 10 seconds of powering up, the LED displays as Green
- ZCDC Comfort Control display should be lit and displaying Zone1 and Zone2 airflow percentages and temperatures.

INSTALLER OPTIONS

Installer Options ONLY need to be changed if heat pump equipment is installed and/or the ZCDC control is installed in the upstairs zone.

Option	Default	Range
Equipment Type	Gas/Electric	Gas/Electric or Heat Pump
Heat Pump Reversing Valve	Type O	Type O or Type B
ZCDWLR Location	Zone 1 Downstairs	Zone 1 Downstairs or Zone 2 Upstairs

To access the installer options, **Press** the **MENU** key & **COMFORT** key at the same time to display the first option. **Press** the **MENU** key to advance through the options.

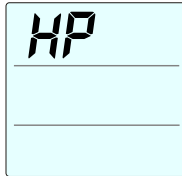
INSTALLATION

OPTION 1 - Equipment Type

Defaults to Gas/Electric equipment.

If equipment type is Gas/
Electric, **Press** the **MENU**
key to go to the next option.

Or, **Press** the **UP** key to
select HP (Heat Pump)
then **Press** the **MENU** key
to go to the next option.

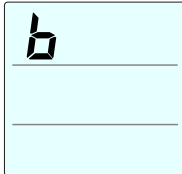


OPTION 2 - Heat Pump Reversing Valve Type

Only displayed if HP was selected. Defaults to type o.

If reversing valve type is o,
Press the **MENU** key to go
to the next option.

Or, **Press** the **UP** key to
select B type then **Press**
the **MENU** key to go to the
next option.

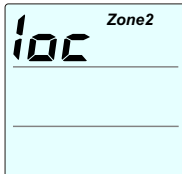
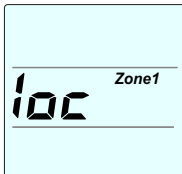


OPTION 3 - ZCDC and Sensor Location

Defaults to Zone1 Downstairs location. Use this option to change
the ZCDC location if the ZCDC will be installed in Zone2
(Upstairs) and the sensor will be installed in Zone1 (Downstairs).

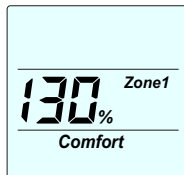
If the ZCDC location is
Zone1 Downstairs, **Press**
the **MENU** key to return to
normal operation.

Or, **Press** the **UP** key to
select Zone2 Upstairs
location then **Press** the
MENU key to return to
normal operation.



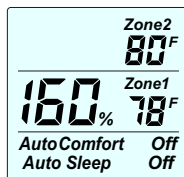
TEST ZONE 1 AIRFLOW

Press the **COMFORT** key to select Zone
1 Comfort. The selection is saved when
the backlight turns off.



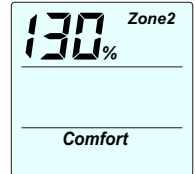
Press the **UP** key to increase airflow to
160% in Zone 1. The setting is saved
when the backlight turns off. You should
measure or feel more airflow in Zone 1
and less in Zone 2.

Press the **DOWN** key to return airflow to
the default of 130%.



TEST ZONE 2 AIRFLOW

Press the **COMFORT** key to select Zone
2 Comfort. The selection is saved when
the backlight turns off.

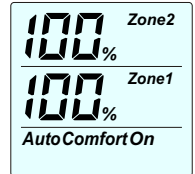


Press the **UP** key to increase airflow to
160% in Zone 2. The setting is saved
when the backlight turns off. You should
measure or feel more airflow in Zone 2
and less in Zone 1.



Press the **DOWN** key to return airflow to
the default of 130%.

To return the ZCDC to the default of *Auto
Comfort On*, **Press** the **COMFORT** key to
select Auto Comfort On. The selection is
saved when the backlight turns off.



TROUBLESHOOTING

Airflow appears to be reversed or not changing.

Make sure the connections for the upstairs and downstairs
dampers are not reversed. Make sure the DC3C is powered by
observing lit LED on the DC3C. Make sure the dampers are
powered by observing a green LED on the actuators when the
dampers are in a 100% open position.

Understanding Damper LEDs and Airflow

Airflow Displayed	Zone 1 Damper	Zone 2 Damper
100% Zone 2 100% Zone 1	Open Green LED	Open Green LED
More Airflow to Zone 1	Open Green LED	Partially Closed No LED
More Airflow to Zone 2	Partially Closed No LED	Open Green LED

No Display on ZCDC

The ZCDC is powered by the DC3C using the cable. Make sure
the cable is plugged into the connector on the back of the ZCDC
and the connector marked RS485 on the DC3C. Make sure the
DC3C and equipment are powered. Check the wiring to the R
and C terminals on the DC3C.

Sensor Error

- - displayed where the Zone 2 temperature should be
displayed, indicates a sensor error. Check the sensor wiring.

nC Communication Error

nC indicates a loss of communication with the DC3C Damper
Control. This can be caused by damage to the plug&play cable.

Limited 5-Year Warranty

The 5-year warranty is limited to the repair or replacement of
defective product due to parts failure or defective workmanship.

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