6000 Series Zone Control System

For models 6010, 6015, 6020, 6025, 6030, 6035, 6040, 6045, 6045M

Safety & Installation Instructions



SAFETY INSTRUCTIONS

Read this entire installation manual before beginning installation of the Aprilaire 6000 Series Zone Control System. For questions call Aprilaire customer support at (800) 334-6011 or visit AprilairePartners.com.

⚠ WARNING

1. 120 volts may cause serious injury from electrical shock. Leave power disconnected until installation is complete.
2. The system is designed for indoor use only. Do not expose any of the components to moisture.

⚠ WARNING

1. Turn off the system power before removing or installing any wires into the terminals of any component of the system. Wiring with a live circuit can lead to electrical shorts that can damage components.
2. Installation must be done in accordance with all applicable codes.
3. Installer should touch a grounded metal object before handling the components of the system. This will prevent any static discharge that may cause damage.
4. A 6000 Series Zone Control System may not control temperature properly unless the heating and cooling system is properly sized and balanced.
5. Insufficient air flow or excessive temperatures through the heating and cooling system could result in equipment damage. Refer to the manufacturer's recommendations for minimum safe airflow and temperature requirements.
6. Do not mount the 6000 Series Control or Sensors on any exterior wall or equipment supply ductwork.
7. Do not install the system components where temperatures exceed 158°F (70°C) or are below 32°F (0°C), non-condensing.
8. Improper system installation could cause water damage from frozen pipes. Check system operation after installation.

READ AND SAVE THESE INSTRUCTIONS

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SPECIFICATIONS

INPUT RATINGS (6000 SERIES HUB)

Voltage: 18-30VAC 50/60 Hz

MAXIMUM CURRENT

Damper output per zone (fused): 18VA at 158°F, 30VA at 90°F

Note: Use 18 or 20 AWG solid (non-stranded) wire

ENVIRONMENT

6000 Series Hub Temperature (operating): 32°F – 158°F

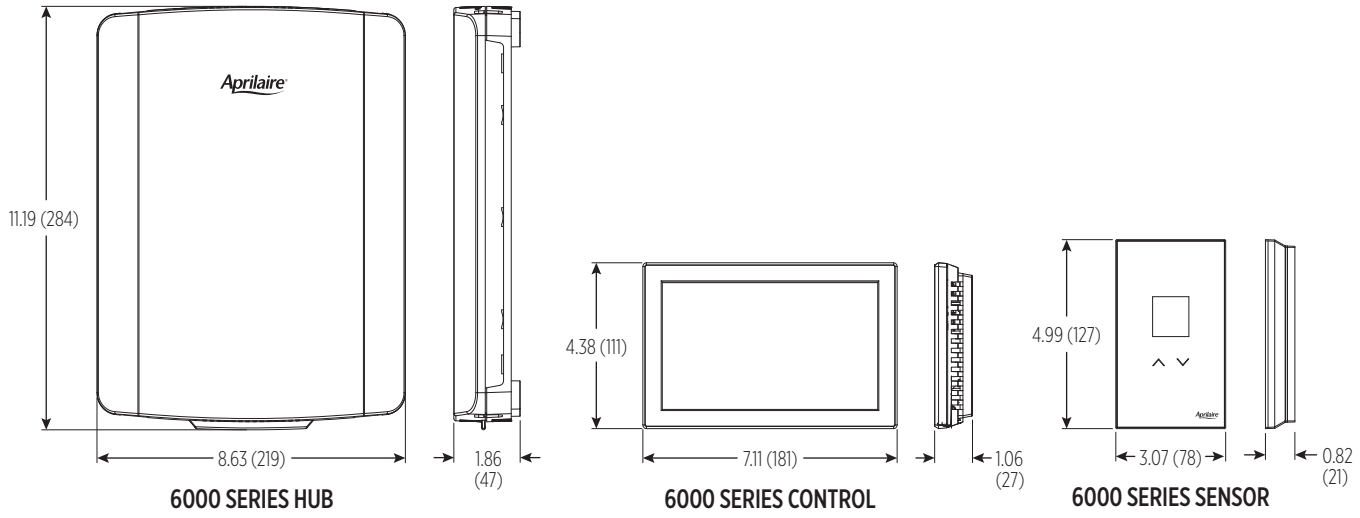
6000 Series Control and Sensors (operating): 32°F – 120°F

Temperature (shipping): -30°F – 150°F

Humidity: 5% – 90%, non-condensing

DIMENSIONS

FIGURE 1 – DIMENSIONS IN INCHES (mm)



APPLICATIONS

The Aprilaire 6000 Series Zone Control System is available in these configurations:

Model 6010	2 Zone Hub	Black Control	1 Black Sensor
Model 6015	2 Zone Hub	White Control	1 White Sensor
Model 6020	3 Zone Hub	Black Control	2 Black Sensors
Model 6025	3 Zone Hub	White Control	2 White Sensors

Model 6030	2 Zone Hub	Black Control
Model 6035	2 Zone Hub	White Control
Model 6040	3 Zone Hub	Black Control
Model 6045	3 Zone Hub	White Control
Model 6045M	3 Zone Hub	White Control

FEATURES

- Remote access using a downloadable app from the iOS App Store and from Google Play Store
- Indoor air quality control
- Humidification with automatic or manual control
- Dehumidification
- Event-Based™ air cleaning
- Ventilation with temperature and humidity limits
- Temperature control
- Heat Blast® raising the room temperature 3°F to 5°F
- One touch Away
- Large touch screen with adjustable backlight
- 7 day programmability
- Displays room temperature, room humidity, temperature setting, and outdoor temperature
- Air filter, humidifier, dehumidifier, and HVAC service reminders
- Programmable fan control with fan circulation mode
- Easy to use temperature control that can override program schedule at any time
- Progressive recovery that ensures proper temperature at the start of a program event
- Built in compressor protection that prevents damage to your equipment
- Two heating and two cooling stages (conventional)
- Four heating and two cooling stages (heat pump)
- Integrated balance point control
- System test mode

LAYOUT

6000 SERIES HUB

TERMINALS

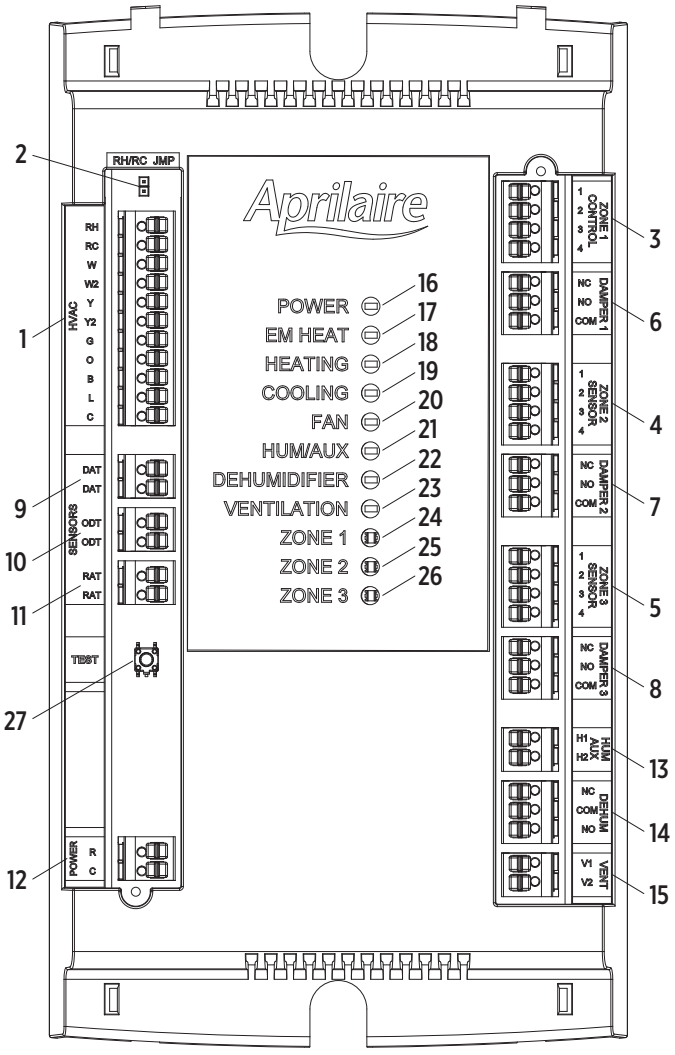
1. **HVAC** – HVAC connection.
2. **JUMPER** – RH/RC Jumper.
3. **ZONE 1 CONTROL** – 6000 Series Control connection.
4. **ZONE 2 CONTROL** – 6000 Series Sensor 2 connection.
5. **ZONE 3 CONTROL** – 6000 Series Sensor 3 connection (3 Zone models only).
6. **DAMPER 1** – Zone 1 damper connection.
7. **DAMPER 2** – Zone 2 damper connection.
8. **DAMPER 3** – Zone 3 damper connection (3 Zone models only).
9. **REMOTE SENSORS DAT** (Discharge Air Temperature).
10. **REMOTE SENSORS ODT** (Outdoor Air Temperature).
11. **REMOTE SENSORS RAT** (Returning Air Temperature).
12. **POWER** – System power connection 24VAC.
13. **HUM/AUX** – Humidifier (AUX is for future upgrades).
14. **DEHUM** – Dehumidifier.
15. **VENT** – Ventilation.

LEDS

16. **POWER** – Green: 24VAC present. Flashing: Not connected to 6000 Series Control.
17. **EM HEAT** – Yellow: Emergency heating is active.
18. **HEATING** – Green: Heating is active.
19. **COOLING** – Green: Cooling is active.
20. **FAN** – Green: Fan output is active.
21. **HUM/AUX** – Green: Humidification output is active (AUX is for future upgrades).
22. **DEHUMIDIFIER** – Green: Dehumidification output is active.
23. **VENTILATION** – Green: Humidification output is active.
24. **ZONE 1** – Green: Damper is open. Red: Damper is closed.
25. **ZONE 2** – Green: Damper is open. Red: Damper is closed.
26. **ZONE 3** – Green: Damper is open. Red: Damper is closed. (3 Zone models only)

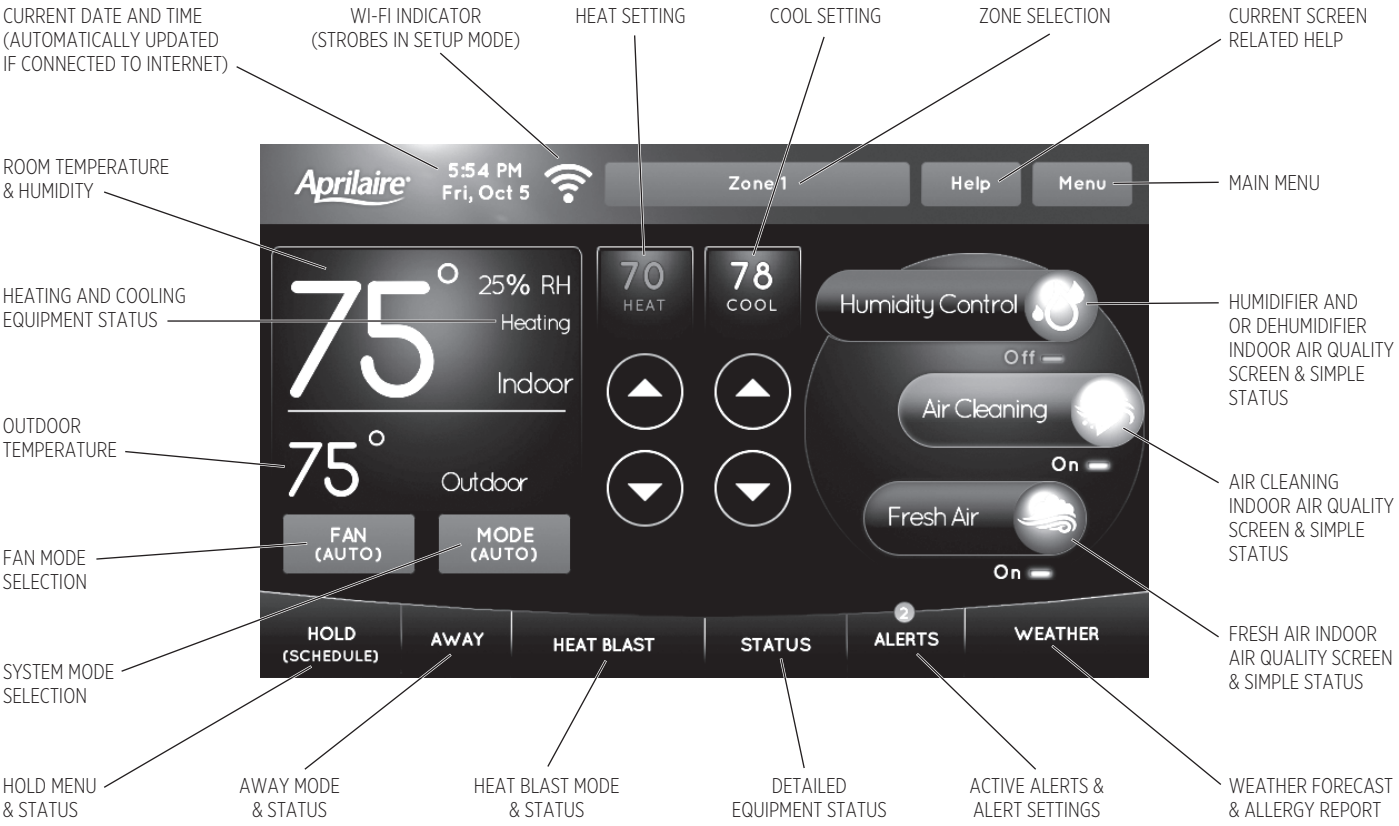
BUTTON

27. **INSTALLER TEST BUTTON** – See page 24.



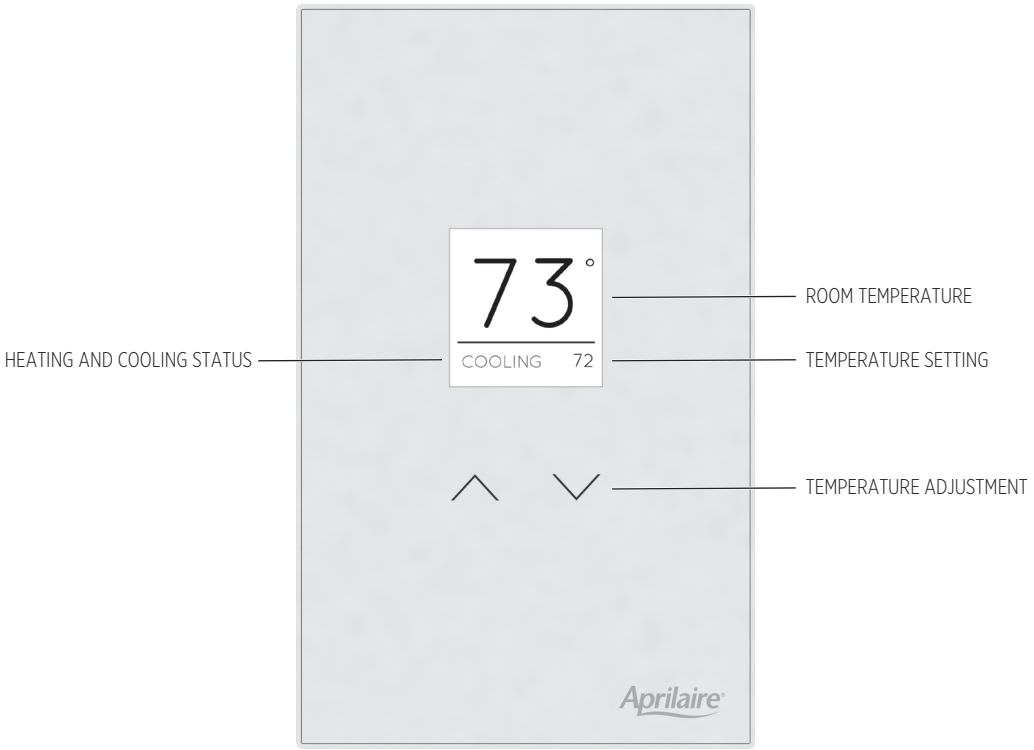
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6000 SERIES CONTROL HOME SCREEN



NOTE: SCREEN BRIGHTENS AFTER FIRST TOUCH.

6000 SERIES SENSOR



6000 SERIES HUB INSTALLATION

LOCATION

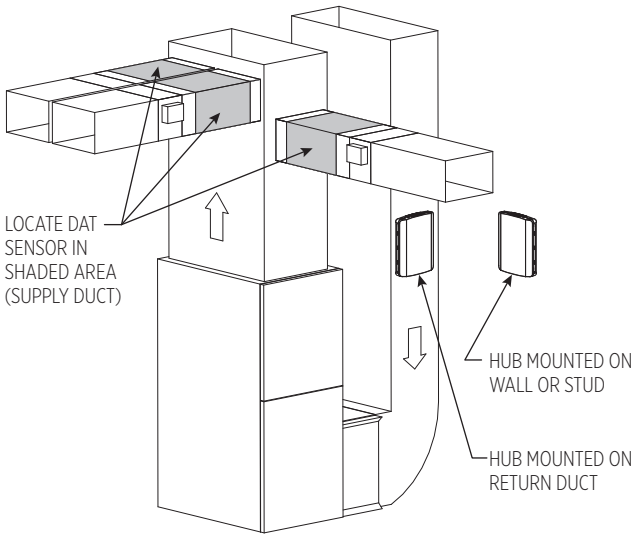
1. Mount the 6000 Series Hub near the HVAC equipment, on an interior wall, stud or return duct. See **FIGURE 2**.
2. Locate the Discharge Air Temperature (DAT) in the supply trunk, downstream of the heat exchanger and cooling coils, and before the zone dampers (refer to the shaded areas of **FIGURE 2**).

   Note: Do not mount the sensor in direct line-of-sight of the heat exchanger, cooling coils or UV lights as this may cause the sensor to report false temperature readings. Do not route wires along 120VAC lines.
3. Before wiring the sensor to the 6000 Series Hub, measure the resistance across the sensor. The resistance corresponds (approximately) to the sensed temperature according to **TABLE 1**.

TABLE 1 – DAT SENSOR RESISTANCE

Temperature (°F)	30	40	50	60	70	80	90	100
Resistance (kΩ)	34.6	26.1	19.9	15.3	11.9	9.4	7.4	5.9

FIGURE 2 – 6000 SERIES HUB MOUNTING LOCATION

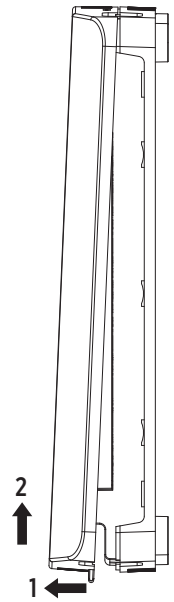


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MOUNTING

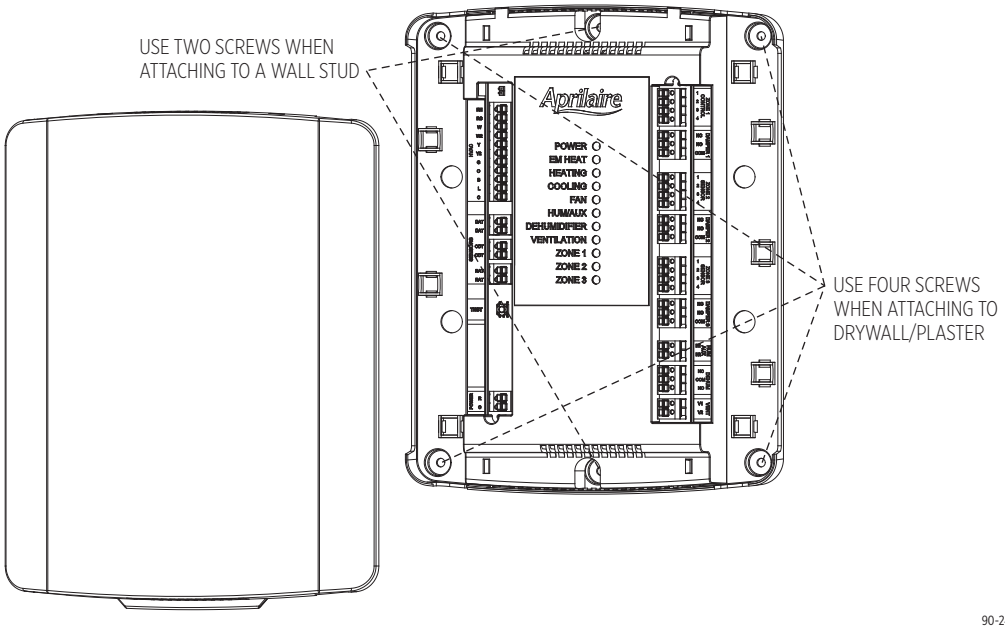
1. Separate the 6000 Series Hub cover from the base. See **FIGURE 3**.
2. Use the base as a template to drill mounting holes. See **FIGURE 4** for mounting hole locations.
3. Attach the base to an interior wall, stud or return duct.

FIGURE 3



90-2408

FIGURE 4 – 6000 SERIES HUB MOUNTING LOCATION



90-2409

6000 SERIES HUB WIRING

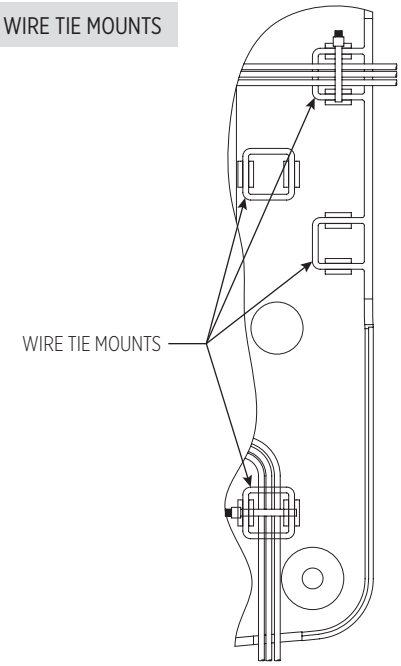
⚠ WARNING

120 volts may cause serious injury from electrical shock. Sudden operation may cause serious injury from moving parts. Leave power disconnected until installation is complete.

Follow these steps for all system connections. Wiring will vary depending on equipment. Wiring of the system must comply with applicable codes, ordinances and regulations.

- Use only 18 or 20 gauge solid (non-stranded) wire.
- Strip off 7/16" of insulation from the wire.
- Push wire into the terminal of the 6000 Series Hub.
- To release the wire, press down on the top of the terminal and pull the wire out.
- The 6000 Series Hub supports multiple options to route and anchor wires to the housing. See **FIGURE 5**.

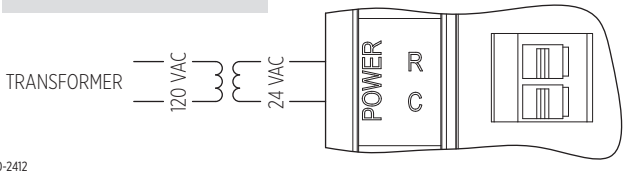
FIGURE 5 – WIRE TIE MOUNTS



TRANSFORMER

Note: The HVAC equipment transformer cannot be used for power. A separate transformer should be used to power the system.

FIGURE 6 – TRANSFORMER



1. Wire 24VAC from transformer to the POWER, R and C terminals (see **FIGURE 6**).
2. Sizing of transformer to accommodate the number of dampers:
   - **a.** Select your damper type.

     OPTION 1: Normally Open/Power Close Dampers (2-Wire)

     - **i.** Add up all the zone dampers that are in the system.
     - **ii.** Subtract the number of dampers in the zone with the least number of dampers. This is the greatest number of dampers that could be energized at one time.
     - **iii.** Multiply this number by 10 to determine the damper VA requirement. Add an additional 10VA for the 6000 Series System.

       Example: If you have a 3-zone system, and there are two dampers per zone, then the total number of dampers that could be energized at one time is,
       6 dampers – 2 dampers = 4 dampers
       4 dampers x 10VA per damper + 10VA for 6000 Series System = 50VA required

     OPTION 2: Power Open/Power Close Dampers (3-Wire)

     - **i.** Add up all the zone dampers that are in the system.
     - **ii.** Multiply this number by 2.5 to determine the transformer size. Add an additional 10VA for the 6000 Series System.

       Example: If you have a 3-zone system, and there are two dampers per zone, then the total number of dampers that could be energized at one time is,
       6 dampers x 2.5VA per damper + 10VA for 6000 Series System = 25VA required

   - **b.** Select a transformer that meets or exceeds the value calculated.

DAMPER

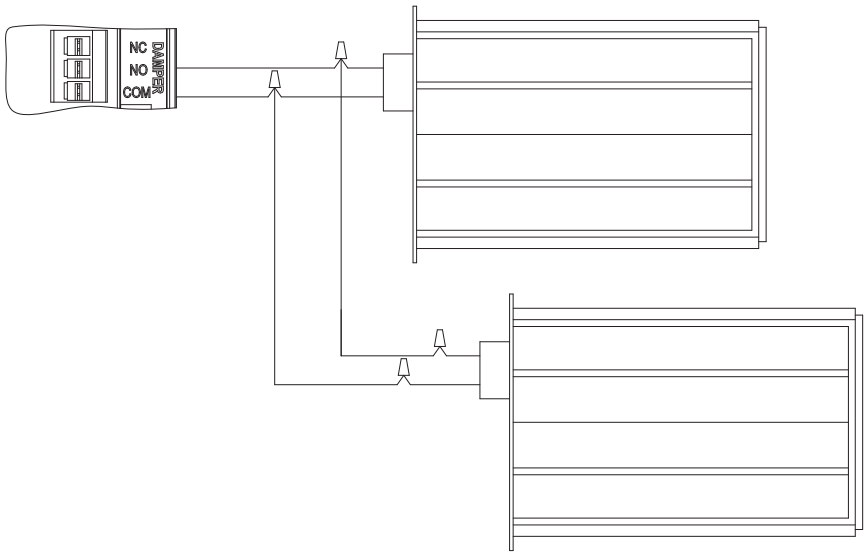
- Run 2-conductor thermostat wire for spring return dampers (normally open or normally closed).
- Run 3-conductor thermostat wire for power open/power close dampers.
- Multiple dampers for the same zone can be wired in parallel as shown in **FIGURES 7 & 8**.
- Wire the dampers to the 6000 Series Hub:

  NC – This terminal is used to power open a normally closed damper. For power open and power close dampers this terminal is used to power open the damper.

  NO – This terminal is used to power close a normally open damper. For power open and power close dampers this terminal is used to power close the damper.

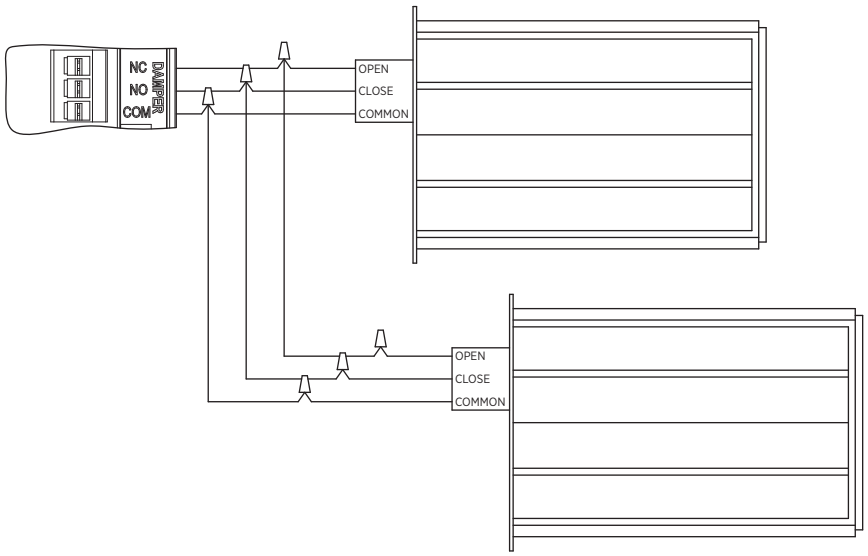
  COM – This terminal provides a common connection for the NC and NO terminals.
- If multiple transformers will be required, wire them in parallel as shown. Before wiring the transformers together, ensure that they are connected in phase by observing polarity marks or terminal orientation on each transformer. See **FIGURE 9**.

FIGURE 7 – NORMALLY OPEN / POWER CLOSE DAMPERS



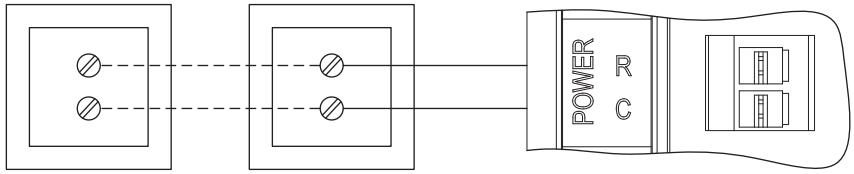
90-2413

FIGURE 8 – POWER OPEN / POWER CLOSE DAMPERS



90-2414

FIGURE 9 – MULTIPLE TRANSFORMERS



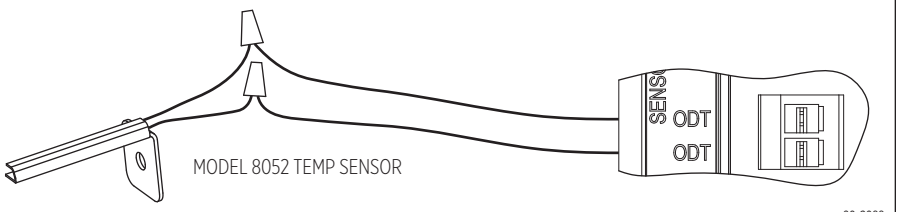
– – – – – – **IMPORTANT:** CHECK PHASE OF TRANSFORMERS BEFORE WIRING TOGETHER

90-2415

OUTDOOR TEMPERATURE SENSOR (INCLUDED)

- Wire the outdoor temperature sensor Model 8052 to the "ODT" terminals as shown. See **FIGURE 10**.
- Maximum distance of the ODT sensor from the 6000 Series is 300 feet.
- Do not wire along 120VAC lines.
- Outdoor temperature sensor should be mounted:
  - On side of building out of direct sunlight.
  - Above snow line.
  - At least 3 feet away from exhaust vents and condensing lines.

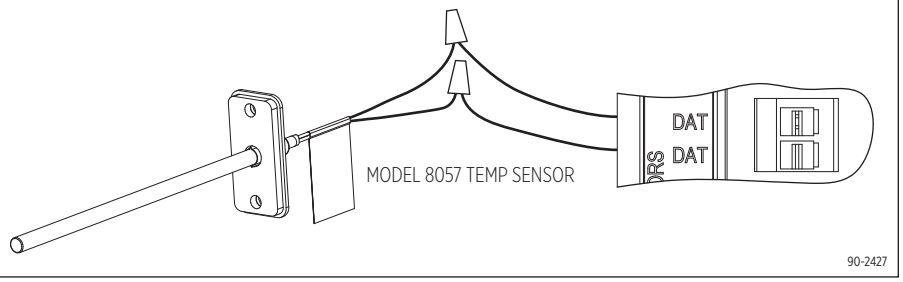
FIGURE 10 – OUTDOOR TEMPERATURE SENSOR



DISCHARGE AIR TEMPERATURE SENSOR (INCLUDED)

- Wire the discharge air temperature sensor Model 8057 to the "DAT" terminals as shown. See **FIGURE 11**.
- Maximum distance of the DAT sensor from the 6000 Series Hub is 300 feet.
- Do not wire along 120VAC lines.
- Refer to **FIGURE 2** on page 7 for the proper mounting location of the discharge air temperature sensor.

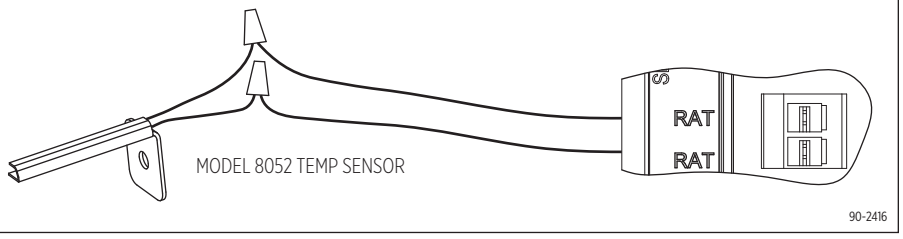
FIGURE 11 – DISCHARGE AIR TEMPERATURE SENSOR



RETURN AIR TEMPERATURE SENSOR (OPTIONAL)

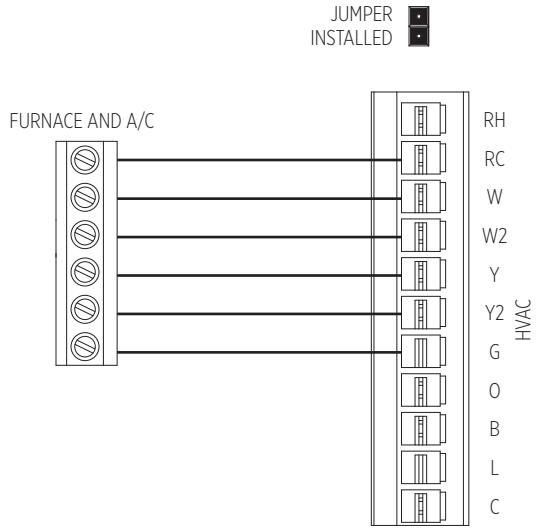
- Wire the return air temperature sensor Model 8052 to the "RAT" terminals as shown. See **FIGURE 12**.
- Maximum distance of the RAT sensor from the 6000 Series Hub is 300 feet.
- Do not wire along 120VAC lines.
- Mount the sensor according to the installation instructions provided with the sensor.

FIGURE 12 – RETURN AIR TEMPERATURE SENSOR



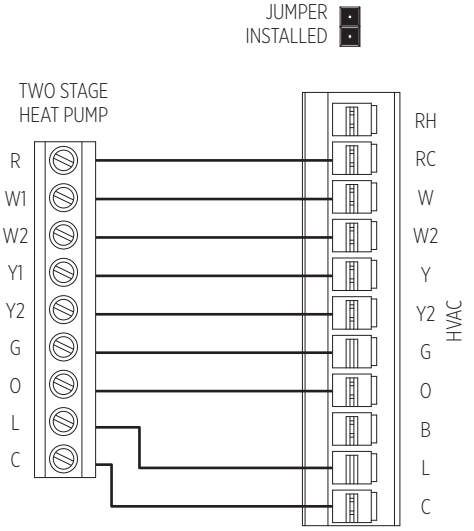
HVAC EQUIPMENT WIRING DIAGRAMS

FIGURE 13 – TWO-STAGE FURNACE AND A/C



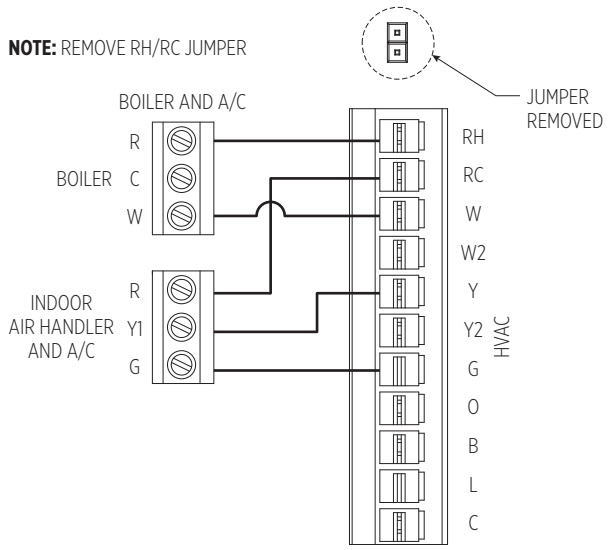
90-2417

FIGURE 14 – TWO-STAGE HEAT PUMP



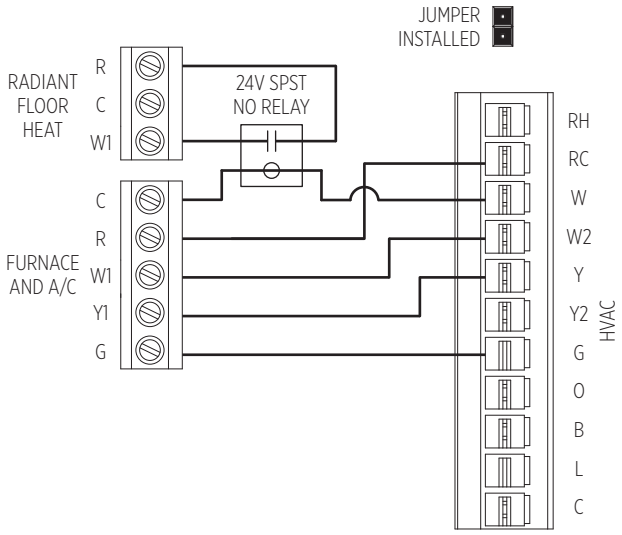
90-2418

FIGURE 15 – BOILER AND A/C



90-2419

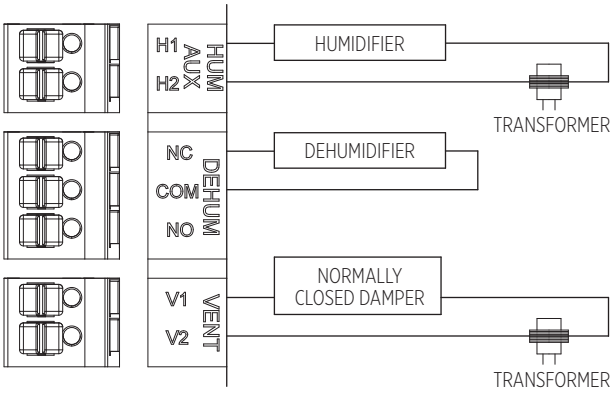
FIGURE 16 – RADIANT FLOOR FIRST-STAGE HEAT, FURNACE SECOND-STAGE HEAT AND A/C



90-2420

INDOOR AIR QUALITY WIRING DIAGRAMS

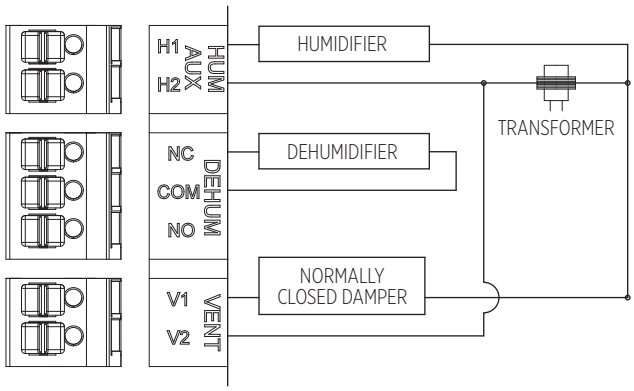
FIGURE 17 – INDOOR AIR QUALITY WIRING WITH SEPARATE TRANSFORMERS



Note: Outputs are 24VAC dry contact. Refer to individual product installation instructions for more details.

90-2425

FIGURE 18 – INDOOR AIR QUALITY WIRING WITH A SINGLE TRANSFORMER



Note: Outputs are 24VAC dry contact. Refer to individual product installation instructions for more details.

90-2426

6000 SERIES CONTROL AND SENSORS INSTALLATION

LOCATION RECOMMENDATIONS

6000 Series Control and Sensors should be mounted:

- On an interior wall, in a frequently occupied space.
- Approximately 5 feet above floor.
- At least 18" from outside wall.
- Displays can be mounted to a vertical junction box.

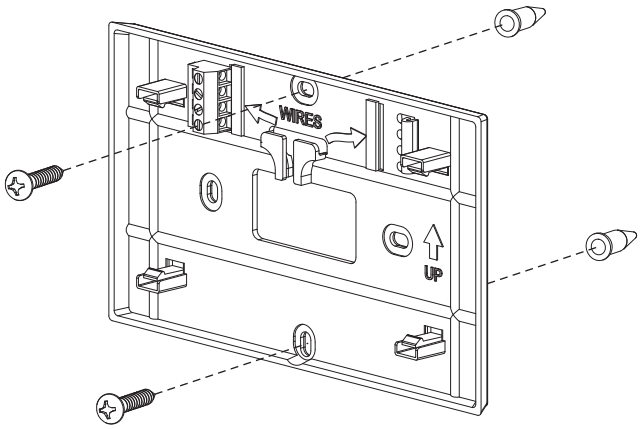
Do not mount:

- Behind doors, in corners, or other dead air spaces.
- In direct sunlight, near lighting fixtures, or other appliances that give off heat.
- On an outside or unconditioned area wall.
- In the flow of a supply register, in stairwells, or near outside doors.
- On a wall with concealed pipes or ductwork.

MOUNTING

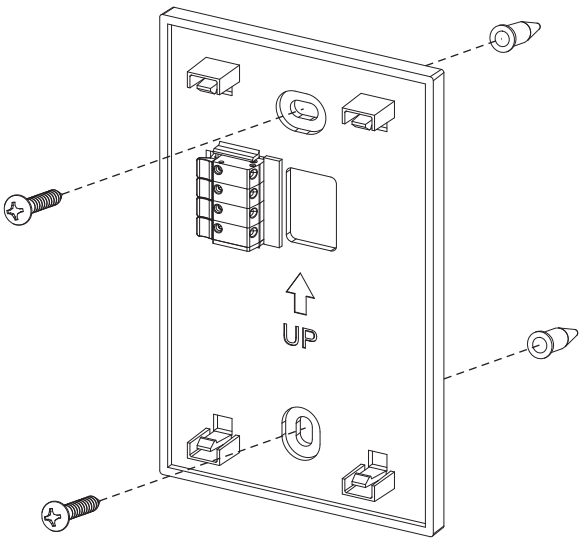
1. Remove the rear mounting plate.
2. Pull wires through the opening on the rear mounting plate.
3. Position and level the mounting plate of the display on the wall and mark the hole locations with a pencil.
4. Drill 1/4" holes and insert supplied anchors (drywall only).
5. Place mounting plate over anchors, insert and tighten screws.
6. Seal wire entry holes to prevent drafts affecting temperature readings.

FIGURE 19 – 6000 SERIES CONTROL MOUNTING PLATE



90-2421

FIGURE 20 – 6000 SERIES SENSOR MOUNTING PLATE



90-2422

WIRING

WIRE SPECIFICATIONS:

18-24 gauge thermostat wire

INSTALLATION NOTES:

Control to Hub

- Ensure power at the 6000 Series Hub is off.
- Insert stripped wire (Hub).
- Loosen screw terminals (Control), insert stripped wire and re-tighten.
- Push the excess wire at Control, back into the opening and plug the wall opening to prevent drafts.

1 – Connect Control terminal 1 to Hub terminal 1

2 – Connect Control terminal 2 to Hub terminal 2

3 – Connect Control terminal 3 to Hub terminal 3

4 – Connect Control terminal 4 to Hub terminal 4

Sensor to Hub

- Ensure power at the 6000 Series Hub is off.
- Insert stripped wire (Sensor & Hub).
- Push the excess wire at Sensor, back into the opening and plug the wall opening to prevent drafts.

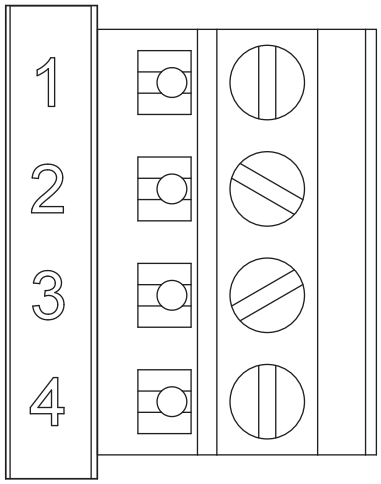
1 – Connect Sensor terminal 1 to Hub terminal 1

2 – Connect Sensor terminal 2 to Hub terminal 2

3 – Connect Sensor terminal 3 to Hub terminal 3

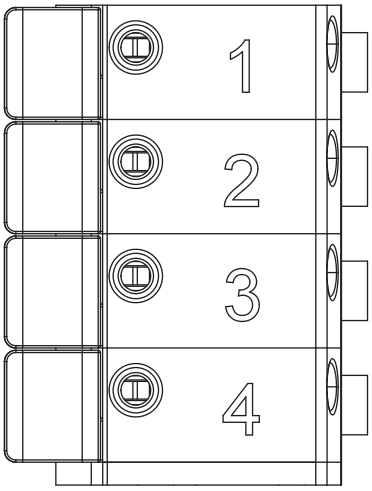
4 – Connect Sensor terminal 4 to Hub terminal 4

FIGURE 21 – 4-WIRE CONNECTION, 6000 SERIES CONTROL



90-2423

FIGURE 22 – 4-WIRE CONNECTION, 6000 SERIES SENSOR



90-2424

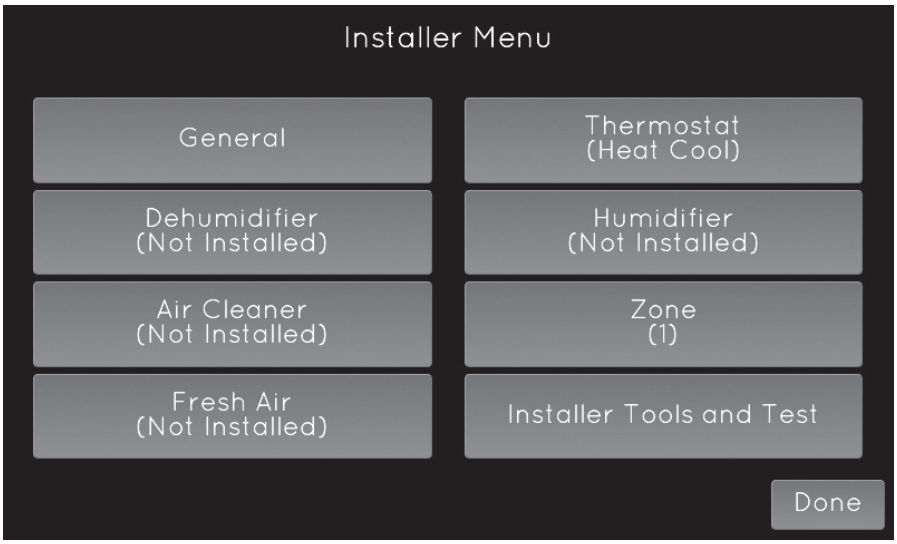
INSTALLER SETUP

6000 SERIES CONTROL

The 6000 Series Hub is powered by 24VAC. The 6000 Series Control is powered by the 6000 Series Hub. In the case of power loss, the system will maintain the clock for 24 hours. The system has a memory backup that saves the system settings in case of power interruption. The factory reset is located in the Installer Tools option of the Installer Menu. See Installer System Settings section for details.

INSTALLER SETUP MENU

The first time the system is powered up (or after a factory reset) it will enter the Installer Setup Menu. All installer settings can be set here. The installer settings are also accessible in the MENU by pressing the Contractor Info button for 10 seconds. Installer settings can be imported and exported via USB drive. This feature can be found by selecting the Installer Tools button on the Installer Settings Menu Screen.



INSTALLER TOOLS AND TEST TABLE

TABLE 2: INSTALLER TOOLS AND TEST MENU

Function	Description
Import USB Settings	Import installer settings from another 6000 Series Control. USB drive required.
Export USB Settings	Export installer settings to use on another 6000 Series Control. USB drive required.
Factory Reset	Reset the control back to factory defaults.
Connection Type	Select whether the control will connect to the Aprilaire App (default) or to an home automation system.
Installer Test	Test equipment outputs. See page 23.

INSTALLER SETTINGS TABLES

The following tables contain the system settings and their details. Default settings are shown in bold. The availability of some settings is dependent upon the value of other settings.

TABLE 3: GENERAL SYSTEM SETTINGS

System Setting	Description	Factory Default Settings (bold) and Settings Range
Installer Temperature Scale	This selection only effects the installer setup menus.	**Fahrenheit** Celsius
Contractor Information Input	Enter contractor's contact information.	Company, Phone, Email, Web.

TABLE 4: THERMOSTAT SYSTEM SETTINGS

System Setting	Description	Factory Default Settings (bold) and Settings Range
Equipment Type	**Note:** Equipment Type related settings will return to defaults if this is changed.	**Heat/Cool** Heat Pump
Control Setup	Used to lockout heating or cooling outputs. (Heat/Cool mode only.)	**Heat & Cool** Heat Only Cool Only
Heat Pump Auxiliary Type	Selects auxiliary type. (Heat Pump mode only.)	**Gas/Oil Heat** Electric Heat
Fan Control In Heating	Selects thermostat or equipment to control the fan in heating. (Heat/Cool mode only.)	**Gas/Oil Heat** Electric Heat
Number of Compressor Stages	Select number of compressor stages. (Heat Pump mode only.)	**One** Two
Number of Auxiliary Heat Stages	Select number of auxiliary heat stages. (Heat Pump mode only.)	**One** Two
Number of Stages of Heat	Select number of heat stages. (Heat/Cool mode only.)	**One** Two
Number of Stages of Cool	Select number of cool stages. (Heat/Cool mode only.)	**One** Two
Return Air Temperature Sensor Installed?	Select whether return air temperature sensor is attached or not.	**No** Yes
Outdoor Temperature Sensor Installed?	Select whether outdoor sensor is attached or not.	**Yes** No Automation
Schedule Zone 1	Enables or disables programmable schedule. **Note:** Disabled if Automation.	**Enabled** Disabled
Schedule Zone 2	Enables or disables programmable schedule. **Note:** Disabled if Automation.	**Enabled** Disabled
Schedule Zone 3	Enables or disables programmable schedule. **Note:** Disabled if Automation.	**Enabled** Disabled
Progressive Recovery	Enables or disables progressive recovery.	**Enabled** Disabled
Display Away Button?	Away allows the user to set the thermostat to a predefined setpoint using a single button press. The predefined setpoints can be selected in the User Settings.	**Yes** No
Display Heat Blast Button?	Select whether the Heat Blast button is displayed.	**Yes** No
Blast Offset	Amount of heating when Heat Blast is initiated.	**3°F (1.5°C)** 4°F (2°C) 5°F (2.5°C)
Extended Fan – Heat	Extends fan operation after heat call ends.	**Disabled** Enabled
Extended Fan – Cool	Extends fan operation after cool call ends.	**Disabled** Enabled
Auto Changeover	Enable or disable Auto Changeover mode.	**Enabled** Disabled
DeadBand	Auto Changeover mode deadband.	**3°F (1.5°C)** 2 to 9°F (1 to 4.5°C)
Auto Changeover Time	Minimum time between heating and cooling calls.	**4 Minutes** 1 to 5 Minutes
Temp Sensor Offset Zone 1	Field adjustment of controlling temperature sensors.	**0°F (0°C)** -4 to 4°F (-2 to +2°C)

TABLE 4: THERMOSTAT SYSTEM SETTINGS

System Setting	Description	Factory Default Settings (bold) and Settings Range
RH Sensor Offset Zone 1	Field adjustment of internal RH sensor.	**0** -5 to 5
Temp Sensor Offset Zone 2	Field adjustment of controlling temperature sensors.	**0°F (0°C)** -4 to 4°F (-2 to +2°C)
RH Sensor Offset Zone 2	Field adjustment of internal RH sensor.	**0** -5 to 5
Temp Sensor Offset Zone 3	Field adjustment of controlling temperature sensors.	**0°F (0°C)** -4 to 4°F (-2 to +2°C)
RH Sensor Offset Zone 3	Field adjustment of internal RH sensor.	**0** -5 to 5
Equipment Minimum On Time	Minimum on time for heating and cooling.	**2 Minutes** 1 to 5 Minutes
Heating Minimum Off Time	Minimum off time for heating.	**2 Minutes** 1 to 5 Minutes
Compressor Minimum Off Time	Minimum off time for compressor protection.	**5 Minutes** 1 to 5 Minutes
Outdoor Temperature High Balance Point	Enable or disable high balance point. (Available if ODT is installed.)	**Enabled** Disabled
Select Temperature	If outside temperature is above the high balance point, the aux heat operation is not allowed. (Available if high balance point is enabled.)	**65°F (14.5°C)** 0 to 80°F (-18 to 22°C)
Outdoor Temperature Low Balance Point	Enable or disable low balance point. (Available if ODT is installed.)	**Enabled** Disabled
Select Temperature	If outside temperature is below the low balance point, the compressor operation is not allowed. (Available if low balance point is enabled.)	**20°F (-8°C)** 0 to 60°F (-18 to 12°C)
Stage Rate	Accumulation of equipment run time in staging determination.	**Enabled** Disabled
Factor	1 = more rapid staging of equipment (comfort). 5 = slower staging of equipment (economy).	**2** 1 to 5
First Stage Differential	First stage differential.	**1°F (0.5°C)** 1 to 9°F (0.5 to 4.5°C)
Second Stage Differential	Second stage differential.	**1°F (0.5°C)** 1 to 9°F (0.5 to 4.5°C)
Third Stage Differential	Third stage differential.	**1°F (0.5°C)** 1 to 9°F (0.5 to 4.5°C)
Forth Stage Differential	Fourth stage differential.	**1°F (0.5°C)** 1 to 9°F (0.5 to 4.5°C)
Service HVAC Reminder	The period for displaying the HVAC Service reminder message.	**Disabled** Enabled
Recurrence	Select number of months for displaying reminder.	**12 Months** 1 to 12 Months

TABLE 5: ZONE SYSTEM SETTINGS

System Setting	Description	Factory Default Settings (bold) and Settings Range
Number of Zones	Number of zones detected.	1 2 3
Staging Based On	Staging based on Zones.	**Zone** Number of Zones
Zones to Stage	Selects how many Zones are required to stage up. **Note:** Only option if ZONES is enabled.	**2** 1-9
Zone 1 Weighting	The amount of precedence each zone has.	1 2 3
Zone 2 Weighting	The amount of precedence each zone has.	1 2 3
Zone 3 Weighting	The amount of precedence each zone has.	1 2 3
DAT Sensor	Enables or disables the DAT sensor.	**Yes** No
DAT Low Limit	Low Temperature Limit. Safety limit at which the HVAC equipment will turn off. **Note:** Only option if DAT Sensor is enabled.	30°F to 45°F (2.5°F steps / **35°F**)
DAT High Limit	High Temperature Limit. Safety limit at which the HVAC equipment will turn off. **Note:** Only option if DAT Sensor is enabled.	110°F to 170°F (5°F steps / **160°F**)
Downstage on DAT	Allows panel to downstage multistage equipment when DAT temperature comes within 5°F high or low limit. **Note:** Only option if DAT Sensor is enabled.	**Yes** No

INDOOR AIR QUALITY (IAQ)

The following tables contain the Indoor Air Quality system settings and their details. Default settings are shown in bold. Some settings are only present dependent upon the value of other settings. The use of an outdoor temperature sensor (recommended) enables additional Indoor Air Quality functionality. Please refer to the Owner's Manual for further information about control features.

Note: Refer to manuals for humidifier, dehumidifier, air cleaner, and ventilation products for recommended installation and operation.

TABLE 6: HUMIDIFIER SYSTEM SETTINGS

System Setting	Description	Factory Default Settings (bold) and Settings Range
Humidifier Installed?	**No:** Humidifier is not installed. **Yes/On HVAC:** Humidifier is installed on the HVAC duct. **Yes/Standalone:** Humidifier is independent of the HVAC system.	**No** Yes/On HVAC Yes/Standalone
Display Button?	**Note:** Only available if Humidifier Installed is set to No.	**Yes** No
Outdoor Temperature Sensor Installed?	Select if outdoor sensor is attached or not.	**Yes** No Automation
Humidifier Mode	**Auto:** Controls based on setting and outdoor temperature. **Manual:** Controls based on RH% setpoint. (Auto mode is only available if Outdoor sensor is set to Yes.)	**Auto** Manual
Allowed Humidifier Operation	Selects when humidification is allowed to occur relative to heating and fan operation. Without Fan allows humidification to occur without the HVAC fan. This option should only be used when the humidifier is independent of the HVAC system. **Note: Without Fan is only available when Humidifier Installed is set to Yes/Standalone.**	**Forces Fan** Heat Only Heat or Fan Without Fan
CAUTION: When Humidifier Operation is set to Without Fan, the control will turn on humidification without energizing the HVAC fan. Do not select this option when the humidifier is installed on the HVAC duct. Without airflow, moisture can accumulate in the duct resulting in significant damage. Humidity Deadband Select the minimum difference between the humidifier and dehumidifier setpoints. (Only available if both a humidifier and dehumidifier are installed.)		
Humidity Deadband	Select the minimum difference between the humidifier and dehumidifier setpoints. (Only available if both a humidifier and dehumidifier are installed.)	**10%** 10 to 20%
Humidifier Reminder	Selects when the Change Water Panel message is displayed.	**Off** 300h Valve 600h Valve 1 per season 2 per season
Single or First Reminder Appears	Determines the month the first (or only) Change Water Panel message is displayed.	**October** November December January February March April May June July August September
Second Reminder Appears	Determines the month the second Change Water Panel message is displayed.	October November December **January** February March April May June July August September

TABLE 7: DEHUMIDIFIER SYSTEM SETTINGS

System Setting	Description	Factory Default Settings (bold) and Settings Range
Dehumidifier Type Installed?	Selects whether a dehumidifier is installed. (If set to None, no other dehumidifier settings will be available.)	**None** Whole Home Air Conditioner Overcooling
Display Button?	**Note:** Only available if Dehumidifier Installed is set to None	**Yes** No
Disable Dehumidification During Cooling?	Selects whether a dehumidifier is disabled during a cooling call.	**Yes** No
Dehumidifier Forces Fan?	Selects whether dehumidification can turn on the fan.	**Yes** No
Dehumidifier Overcooling Limit	Selects the amount of overcooling that can occur for dehumidification. (Only available if dehumidifier type is set to Air Conditioning.)	1°F (0.5°C) 2°F (1°C) **3°F (1.5°C)**
Dehumidifier Reminder	The period for displaying the Dehumidification Service Reminder message.	**Disabled** Enabled
Recurrence	Select number of months for displaying reminder.	**12 Months** 1 to 12 Months
Humidity Deadband	Select the minimum difference between the humidifier and dehumidifier setpoints. (Only available if both a humidifier and dehumidifier are installed.)	**10%** 10 to 20%

TABLE 8: AIR CLEANING SYSTEM SETTINGS

System Setting	Description	Factory Default Settings (bold) and Settings Range
Air Cleaner Installed?	Selects whether an air cleaner is installed. (If set to No, no other air cleaner settings will be available.)	**No** Yes
Display Button?	**Note:** Only available if Air Cleaning Installed is set to No.	**Yes** No
Air Cleaner Reminder	The period for displaying the Change Air Filter message.	**Disabled** Enabled
Recurrence	Select number of months for displaying reminder.	**12 Months** 1 to 12 Months

TABLE 9: FRESH AIR SYSTEM SETTINGS

System Setting	Description	Factory Default Settings (bold) and Settings Range
Fresh Air Vent Installed?	Select whether ventilation is installed. (If set to No, no other ventilation settings will be available.)	**No** Yes (6045M default is **Yes**)
Display Button?	**Note:** only available if Fresh Air Installed is set to No.	**Yes** No
Fresh Air Setup Type	**ASHRAE:** hourly ventilation time will be calculated using the ASHRAE recommendations. **Timed:** hourly ventilation time will be determined based on the Fresh Air Time value.	**Comfort** Code
Number of Bedrooms	Selects the number of bedrooms to be used for the ASHRAE calculation.	**3** 1 to 10
Square Footage	Home size to be used for the ASHRAE calculation.	**2500 sq ft** 500 to 7500 sq ft
Measured CFM	Selects the ventilation CFM to be used for the ASHRAE calculation.	**110 CFM** 30 to 250 CFM
Calculated Minutes Per Hour	Displays the Fresh Air Time calculated by the ASHRAE standard.	6 to 60 Min/hr
Override	Manual adjustment of Calculated Minutes per Hour.	**(Calculated Minutes per Hour)** 6 to 60 Minutes
Outdoor Temperature Sensor Installed?	Select whether outdoor sensor is attached or not.	**Yes** No Automation
High Vent RH Limit	Selects whether ventilation is disabled if the indoor RH exceeds the indoor RH limit. (Only available if Fresh Air Setup is set to Timed.)	**Enabled** Disabled
RH	Sets the high indoor RH limit for ventilation. (Only available if Fresh Air Setup is set to Timed.)	**55%** 45 to 70%
Low Vent RH Limit	Selects whether ventilation is disabled if the indoor RH exceeds the indoor RH limit. (Only available if Fresh Air Setup is set to Timed.)	**Disabled** Enabled
RH	Sets the low indoor RH limit for ventilation. (Only available if Fresh Air Setup is set to Timed.)	**20%** 10 to 30%
High Vent Temperature Limit	Selects whether ventilation is disabled if the outdoor temperature exceeds the outdoor high limit. (Only available if an outdoor temperature sensor is installed.)	**Disabled** Enabled
Temperature	Sets the high temperature limit for ventilation. (Only available if an outdoor temperature sensor is installed.)	**100°F (38°C)** 85 to 105°F (29 to 41°C)
Low Vent Temperature Limit	Selects whether ventilation is disabled if the outdoor temperature exceeds the outdoor low limit. (Only available if an outdoor temperature sensor is installed.)	**Disabled** Enabled
Temperature	Sets the low temperature limit for ventilation. (Only available if an outdoor temperature sensor is installed.)	**10°F (-12°C)** -10 to 40°F (-24 to 6°C)
HVAC Fan with Vent?	Selects whether ventilation forces the fan on. (Yes with high and low limits is only available if Outdoor Sensor is set to Installed or Automation.)	**Yes** High & Low limits No
High Mixing Temperature	Enables high mixing temperature. (Only available if HVAC Fan with Vent is set to Yes with high and low limits.)	**Disabled** Enabled
Temperature	Sets the high mixing temperature. (Only available if Enable High Mixing Temperature is set to Yes.)	**80°F (26°C)** 60 to 105°F (14 to 41°C)
Low Mixing Temperature	Enables low mixing temperature. (Only available if HVAC Fan with Vent is set to Yes with high and low limits.)	**Disabled** Enabled
Temperature	Sets the Low mixing temperature. (Only available if Enable Low Mixing Temperature is set to Yes.)	**40°F (6°C)** 0 to 50°F (-18 to 12°C)
Fresh Air Reminder	The period for displaying the Fresh Air Service Reminder message.	**Disabled** Enabled
Recurrence	Select the number of months for displaying reminder.	**12 Months** 1 to 12 Months

WI-FI SETUP

The 6000 Series Zone Control System can be connected to a Wi-Fi network with the Aprilaire App, on the 6000 Series Control, or with another Wi-Fi device with a web browser.

STEP 1: Verify the 6000 Series Control is in Wi-Fi Connection Mode.

The 6000 Series Control by default will be in Wi-Fi Connection Mode. To confirm that the 6000 Series Control is in Wi-Fi Connection Mode, verify that the radio bars on 6000 Series Control are strobing as shown below.

Note: If the 6000 Series Control is not in Wi-Fi Connection Mode, refer to the online owner's manuals found at **my.aprilaire.com**.



FOR APRILAIRE APP CONNECTED CONTROLS

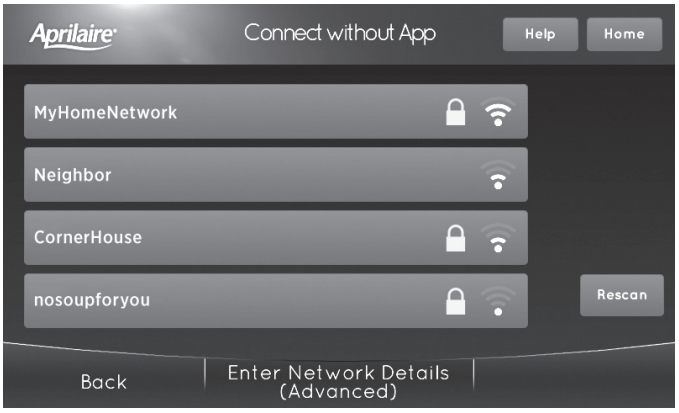
For detailed instructions for connecting the Control to a Wi-Fi network and registering it to an Aprilaire account, refer to the WI-Fi Quick Start Guide included in the box.

FOR HOME AUTOMATION CONNECTED CONTROLS

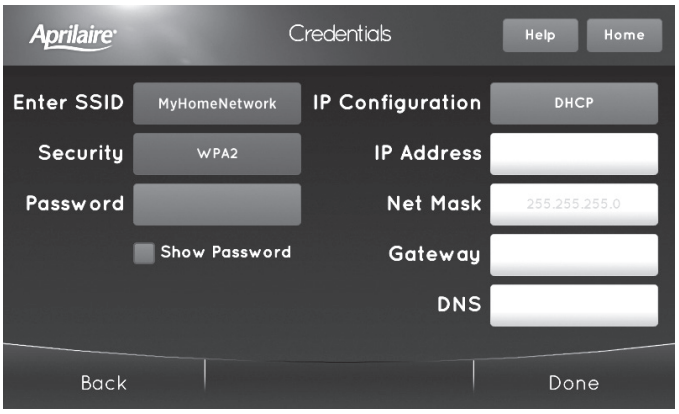
CONNECT TO A NETWORK USING THE 6000 SERIES CONTROL

STEP 2: Navigate to the Connect without App screen: Menu > Wi-Fi Settings > Advanced > Connect without App.

STEP 3: Select a network from the list of scanned networks.



STEP 4: Enter a password and press **Done**.



STEP 5: Press **Done** on the Credentials screen to connect.

CONNECT TO A NETWORK USING A BROWSER

STEP 2: Connect to the 6000 Series Control using a computer or mobile device.

On your computer or mobile device, scan for available networks. The 6000 Series Control should appear as APRILAIRE6000 followed by a unique identifier, corresponding to the last 6 digits of the MAC address. Connect to the 6000 Series Control you want to configure. If you are installing multiple systems, the MAC address of each system will be displayed on the Wi-Fi Settings screen, and can be found on the back of the 6000 Series Control.

STEP 3: Configure the 6000 Series Control to connect to the Wi-Fi network.

Open a web browser on your computer or mobile device. In the browser enter:

http://192.168.1.99/index.html

In the web browser interface select the network you want to connect the 6000 Series Control to, and enter the network's security credentials.

STEP 4: Verify the 6000 Series Control is connected to the Wi-Fi network.

Once all the required information is entered in the web browser interface, the 6000 Series Control will connect to the Wi-Fi network you selected. After the 6000 Series Control is connected to the Wi-Fi network, the 6000 Series Control will display the radio bars based on the Wi-Fi signal strength.

6000 SERIES SENSOR

ZONE NUMBER SELECTION

When the 6000 Series Sensor is connected and powered for the first time it will display – and "select zone", the installer will be prompted to select a zone number of 2 or 3. Pressing the up or down arrow will display 2 or 3. The 6000 Series Sensor will revert to Room Temperature Display 5 seconds after selecting a zone number.

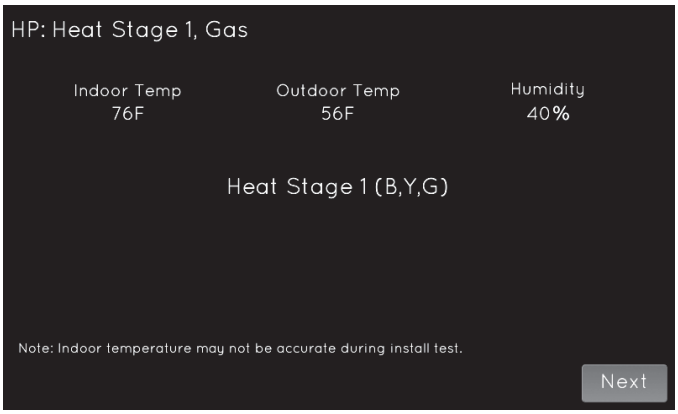


INSTALLER TEST

There are two options for performing installer checkout test, from the 6000 Series Control or from the 6000 Series Hub.

6000 SERIES CONTROL

The Installer Test can be accessed from the Installer Menu. All equipment outputs that are configured in the installer settings will be turned on and off for testing equipment. Minimum on and off times are not enforced while in this mode.



6000 SERIES HUB

The Installer Test can be accessed by pressing and holding the TEST button located on the left side of the 6000 Series Hub for 7 seconds. The installer test mode allows stepping through all outputs sequentially via presses of the TEST button. The test will auto advance to next step after 5 minutes. Minimum off times are not enforced in Installer Test Mode. During Installer Test Mode the 6000 Series Hub will ignore all commands from the 6000 Series Control. Certain steps will have different outputs depending on the Equipment Type. When Installer Test Mode is activated, the 6000 Series Hub will enter step 1 Stage 1 Heat.

Note: Installer Test Mode cannot be entered if the 6000 Series Hub has not been previously connected to the 6000 Series Control.

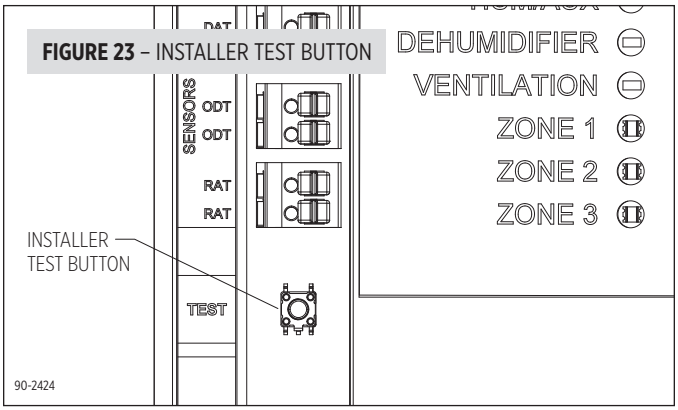


FIGURE 23 – INSTALLER TEST BUTTON

TABLE 9: HEAT COOL INSTALLER SETTING

HVAC Equipment Outputs								
Test Step	**Test Description**	**Y**	**Y2**	**W**	**W2**	**O**	**B**	**G**
1	Stage 1 Heat, Heat Cool	OFF	OFF	ON	OFF	OFF	ON	ON
2	Stage 2 Heat, Heat Cool	OFF	OFF	ON	ON	OFF	ON	ON
3	Stage 1 Cool	ON	OFF	OFF	OFF	ON	OFF	ON
4	Stage 2 Cool	ON	ON	OFF	OFF	ON	OFF	ON
5	Fan	OFF	OFF	OFF	OFF	ON	OFF	ON

IAQ Equipment Outputs					
Test Step	**Test Description**	**HUM/AUX**	**DEH**	**VENT**	**G**
6	Humidifier	ON	OFF	OFF	ON
7	Dehumidifier	OFF	ON	OFF	ON
8	Ventilation	OFF	OFF	ON	ON

Damper Equipment Outputs					
Test Step	**Test Description**	**Damper 1**	**Damper 2**	**Damper 3**	**G**
9	Damper 1	OPEN	CLOSED	CLOSED	OFF
10	Damper 2	CLOSED	OPEN	CLOSED	OFF
11	Damper 3 (3 zone systems only)	CLOSED	CLOSED	OPEN	OFF

TABLE 10: HEAT PUMP INSTALLER SETTING

HVAC Equipment Outputs								
Test Step	**Test Description**	**Y**	**Y2**	**W**	**W2**	**O**	**B**	**G**
1	Stage 1 Heat, Heat Pump	ON	OFF	OFF	OFF	OFF	ON	ON
2	Stage 2 Heat, Heat Pump	ON	ON	OFF	OFF	OFF	ON	ON
3	Aux 1 Heat, Heat pump	OFF	OFF	ON	OFF	OFF	ON	ON
4	Aux 2 Heat, Heat pump	OFF	OFF	ON	ON	OFF	ON	ON
5	Stage 1 Cool	ON	OFF	OFF	OFF	ON	OFF	ON
6	Stage 2 Cool	ON	ON	OFF	OFF	ON	OFF	ON
7	Fan	OFF	OFF	OFF	OFF	ON	OFF	ON

IAQ Equipment Outputs					
Test Step	**Test Description**	**HUM/AUX**	**DEH**	**VENT**	**G**
8	Humidifier	ON	OFF	OFF	ON
9	Dehumidifier	OFF	ON	OFF	ON
10	Ventilation	OFF	OFF	ON	ON

Damper Equipment Outputs					
Test Step	**Test Description**	**Damper 1**	**Damper 2**	**Damper 3**	**G**
11	Damper 1	OPEN	CLOSED	CLOSED	OFF
12	Damper 2	CLOSED	OPEN	CLOSED	OFF
13	Damper 3 (3 zone systems only)	CLOSED	CLOSED	OPEN	OFF

SEQUENCE OF OPERATION

The Aprilaire 6000 Series Zone Control System is a heat call priority system with automatic heating/cooling changeover after 20 minutes of operation. If two opposing (heating/cooling) thermostat calls exist while the system is idle, the heating call will be satisfied first.

HEAT/COOL CHANGEOVER

When a call for heating/cooling exists and an opposing call is made from another zone, a changeover time limit of 20 minutes begins at the time that the opposing call is made. If the original call is not satisfied within that 20-minute time period, the call will be interrupted, and the system will turn the equipment off and complete the normal fan purge cycle and minimum equipment off time. The opposing call will then be answered. After 20 minutes, if the original call still exists, the opposing call will be interrupted and the original call can once again be recognized.

DISCHARGE AIR TEMPERATURE (DAT) SENSOR HIGH/LOW TEMPERATURE LIMIT

The high/low temperature limit settings are designed to prevent the heat exchanger from overheating or the cooling coil from freezing. An 8052 sensor mounted in the supply duct senses the discharge air temperature and can either downstage or interrupt the heating/cooling equipment before overheating/freezing occurs.

When Downstage On DAT is set to Yes, if the discharge air temperature comes within 5°F of the HIGH DAT LIMIT or LOW DAT LIMIT setting, the system will go to the next lowest equipment stage, if it is not already in first stage heating or cooling. The system will remain in this lower stage until the discharge air temperature is 10°F from the HIGH DAT LIMIT or LOW DAT LIMIT setting. When the discharge air temperature reaches the HIGH DAT LIMIT or LOW DAT LIMIT the system will interrupt the heating/cooling call. When the interrupt occurs the system ends the heating/cooling call and energizes the fan terminal (if not already energized). The 6000 Series Control will display the status of the interrupt on the Status screen. Once the temperature drops/rises 10°F, the high/low temperature interrupt will end and the heating/cooling call to the equipment can resume.

EMERGENCY HEAT MODE

This feature can only be used with heat pump systems. The EM Heat button, on the control, can be used to enable Emergency Heat mode. When Emergency Heat mode is enabled, any call for heat will be answered with auxiliary heat equipment and the heat pump will be locked out.

FAN OPERATION

A call for Fan from any zone will initiate the G equipment output terminal. The dampers for all zones not calling for a continuous fan will be closed during the fan call.

HEATING OPERATION

When a zone makes a call for heating, the 6000 Series Zone Control System will initiate a heating call to the equipment and close the dampers for all zones that are not calling for heat. Following a 2-minute (heat/cool or auxiliary) or 4-minute (heat pump) minimum on time, the heating call will end when (1) all zones stop calling for heating, (2) the call has exceeded the 20 minute heating/cooling changeover time limit while a cooling call exists or (3) the call is interrupted because the discharge air temperature sensor reaches the DAT HIGH LIMIT setting.

COOLING OPERATION

When a zone makes a call for cooling, the 6000 Series Zone Control System will initiate a cooling call to the equipment and close the dampers for all zones that are not calling for cooling. Following a 4-minute minimum on time, the cooling call will end when (1) all zones stop calling for cooling, (2) the call has exceeded the 20 minute heating/ cooling changeover time limit while a heat call exists or (3) the call is interrupted because the discharge air temperature sensor has reach the DAT LOW LIMIT setting.

MULTISTAGE EQUIPMENT STAGING

The 6000 Series Zone Control System can be configured to control staging of multi-stage HVAC equipment in two ways, based on the Staging Based On setting.

STAGING BASED ON THE ZONE

When Staging Based On is set to Zone, the 6000 Series Zone Control System will stage the HVAC equipment to the highest stage call. For example if Zone 1 is calling for first stage heating, and Zone 2 is calling for second stage heating, the 6000 Series Zone Control System will create a second stage heating call to the equipment, open the dampers for Zone 1 and Zone 2 and close the dampers for all other zones.

STAGING BASED ON THE NUMBER OF ZONES

When Staging Based On is set to Number of Zones, the 6000 Series Zone Control System will stage the HVAC equipment based on the number of zones calling and the Zones to Stage setting. Note that each zone can be counted as more than one zone calling based on the Zone Weighting setting for that zone. This is useful if the zones are not equally sized

Example:
EQUIPMENT TYPE = Heat Pump
COMPRESSOR STAGES = 2
ZONES TO STAGE = 2
ZONE 1 WEIGHTING = 2
ZONE 2 WEIGHTING = 1
ZONE 3 WEIGHTING = 1

When a cooling call occurs from Zone 2, the 6000 Series Zone Control System will initiate a first stage cooling call to the heat pump, because the total number of zones calling is 1 which does not meet the Zones to Stage setting of 2. If Zone 3 then initiates a call for cooling the 6000 Series Zone Control System would stage up to a second stage cooling call to the heat pump, because the number of zones calling is now 2. With the same set-up as above if only Zone 1 were to call for cooling the 6000 Series Zone Control System would answer that call with a second stage cooling call to the heat pump because Zone 1 would meet the Zones to Stage setting of 2.

DUAL FUEL OPERATION

For heat pump applications, the outdoor temperature sensor is used to efficiently utilize an air source heat pump. The HIGH BALANCE POINT and LOW BALANCE POINT settings will determine the temperatures at which the heat pump and auxiliary heat will be locked out. When the outdoor temperature is less than the LOW BALANCE POINT setting, the heat pump will be locked out and only auxiliary heating will be used when the 6000 Series Zone Control System initiates a heating call. When the outdoor temperature is greater than the HIGH BALANCE POINT setting, the auxiliary heating will be locked out and only the heat pump will be used when the 6000 Series Zone Control System initiates a heating call.

TROUBLESHOOTING

DISPLAY IS BLANK

If Power LED is not illuminated at the 6000 Series Hub check the following:

- Check circuit breaker and reset if necessary.
- Make sure power switch at heating & cooling system is on.
- Make sure furnace door is closed securely.

HEATING SYSTEM DOES NOT RESPOND ("HEATING" APPEARS ON SCREEN)

- Check for 24VAC at the equipment on the secondary side of the transformer between power and common. If voltage is not present, check the heating equipment to find the cause of the problem.
- Check for 24VAC between the heat terminal (W) and the transformer common. If 24VAC is present, the 6000 Series Zone Control System is functional. Check the heating equipment to find the cause of the problem.
- Check for loose or broken wires between the 6000 Series Hub and the heating equipment.

COOLING SYSTEM DOES NOT RESPOND ("COOLING" APPEARS ON SCREEN)

- Check for 24VAC at the equipment on the secondary side of the transformer between power and common. If voltage is not present, check the cooling equipment to find the cause of the problem
- Check for 24VAC between the cooling terminal (Y) and the transformer common. If 24VAC is present, the 6000 Series Hub is functional. Check the cooling system to find the cause of the problem.
- Check for loose or broken wires between the 6000 Series Hub and the cooling equipment.

FAN DOES NOT TURN ON IN A CALL FOR HEAT

- Check Installer Setting Fan Control In Heating / Heat Pump Auxiliary Type, to make sure the fan control is properly set to match the type of system.

LIMITED WARRANTY

Your Research Products Corporation Aprilaire® 6000 Series Zone Control System® is expressly warranted for five (5) years from date of installation to be free from defects in materials or workmanship. Any modifications to the product voids the warranty.

Research Products Corporation's exclusive obligation under this warranty shall be to supply, without charge, a replacement for any component which is found to be defective within such five (5) year period and which is returned not later than thirty (30) days after said five (5) year period by you to either your original supplier or to Research Products Corporation, Madison, Wisconsin 53701, together with the model number and installation date of the 6000 Series Zone Control System.

THIS WARRANTY SHALL NOT OBLIGATE RESEARCH PRODUCTS CORPORATION FOR ANY LABOR COSTS AND SHALL NOT APPLY TO DEFECTS IN WORKMANSHIP OR MATERIALS FURNISHED BY YOUR INSTALLER AS CONTRASTED TO DEFECTS IN THE 6000 SERIES ZONE CONTROL ITSELF.

IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE AFORESAID FIVE YEAR PERIOD. RESEARCH PRODUCTS CORPORATION'S LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER THAN DAMAGES FOR PERSONAL INJURIES, RESULTING FROM ANY BREACH OF THE AFORESAID IMPLIED WARRANTIES OR THE ABOVE LIMITED WARRANTY IS EXPRESSLY EXCLUDED. THIS LIMITED WARRANTY IS VOID IF DEFECTS(S) RESULT FROM FAILURE TO HAVE THIS UNIT INSTALLED BY A QUALIFIED HEATING AND AIR CONDITIONING CONTRACTOR. IF THE LIMITED WARRANTY IS VOID DUE TO FAILURE TO USE A QUALIFIED CONTRACTOR, ALL DISCLAIMERS OF IMPLIED WARRANTIES SHALL BE EFFECTIVE UPON INSTALLATION.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages so the above exclusion or limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

This equipment if installed in strict accordance with the manufacturer's instructions, complies with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules.

WARRANTY REGISTRATION

Visit us online at **www.aprilaire.com** to register your Aprilaire product. If you do not have online access, please mail a postcard with your name, address, phone number, email address, product purchased, model number, date of purchase, and dealer name and address to: Research Products Corporation, P.O. Box 1467, Madison, WI 53701.

Your warranty registration information will not be sold or shared outside of this company.

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