AprilAire

Thermostats

HEATING

70

♨ 72

BACK SELECT

Model S86W MUPR

Wi-Fi Thermostat with IAQ

READ AND SAVE THESE INSTRUCTIONS

TABLE OF CONTENTS

INSTALLATION

INSTALLATION LOCATION RECOMMENDATIONS

Thermostat should be mounted:

• On an interior wall, in a frequently occupied space.

• Approximately 5 feet above floor.

• At least 18" from outside wall.

• Thermostat can be mounted to a vertical junction box.

Do not mount thermostat:

• 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.

OUTDOOR TEMPERATURE SENSOR (INCLUDED)

Outdoor temperature can be measured by attaching the included 8052 sensor to the T1 and T2 terminals. The outdoor sensor must be enabled in the installer setup menu.

Heat pump models can use the outdoor temperature to effectively utilize the heat pump:

• When the outdoor temperature is lower than the Low Balance Point, the heat pump will be locked out and only auxiliary heating will be used to provide heating.

• When the outdoor temperature is higher than the High Balance Point, the auxiliary heating will be locked out and only the heat pump will be used to provide heating.

Indoor Air Quality functions can use the outdoor temperature sensor to:

• Control humidification set point based on outdoor temperature to prevent condensation.

• Lock out ventilation based on high and/or low outdoor temperatures.

• Display outdoor temperature on thermostat.

Outdoor temperature sensor should be mounted:

• On side of building out of direct sunlight (north side recommended).

• Above snow line.

• At least 3 feet away from exhaust vents and condensing lines.

• Using less than 300 feet of wire.

• Do not route wires along 120 VAC lines.

FIGURE 1 – OUTDOOR TEMPERATURE SENSOR WIRING
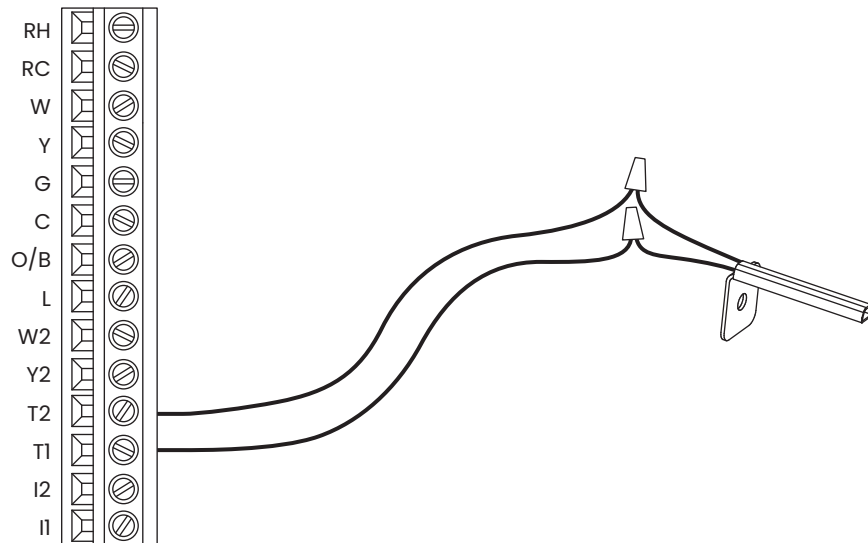
90-2561

REMOTE TEMPERATURE SENSOR (OPTIONAL)

A remote temperature sensor can be used for control if the thermostat is to be mounted in a concealed location or a remote sensor can be averaged with the thermostat sensor to control a large space. An 8051 flush mount or 8053 surface mount remote temperature sensor can be attached to the T1 and T2 terminals and mounted in a recommended area. The remote sensor must be enabled in the installer set-up menu, and once enabled will override or be averaged with the thermostat's internal temperature sensor, based on the setting.

Remote temperature sensor should be mounted:
- On an interior wall, in a frequently occupied space.
- Approximately 5 feet above floor.
- At least 18" from outside wall.
- Using less than 300 feet of wire.

Do not mount remote sensor:
- 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.
- Near 120 VAC lines.

FIGURE 2 – REMOTE TEMPERATURE SENSOR WIRING

90-2562
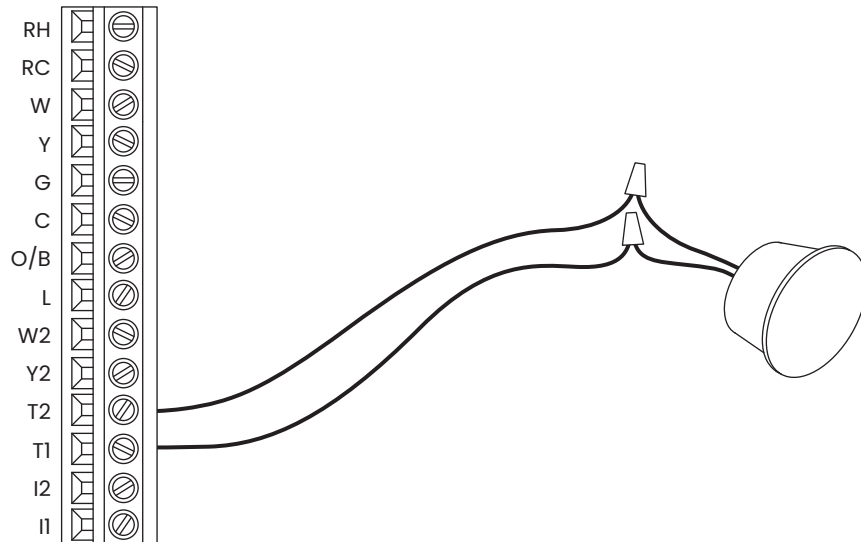
This thermostat is compatible with the following AprilAire wireless sensors:

- **Model Z10IDT Indoor Temperature and Humidity Sensor**
  Up to eight of these sensors can be connected to the thermostat. Connected sensors will automatically be averaged, or individual sensors can be selected for scheduled events.

- **Model Z10ODT Outdoor Temperature and Humidity Sensor**
  One sensor can be connected to the thermostat.

The wireless sensor settings can be found under the thermostats' installer settings. See the sensors instruction manual for mounting and connecting details.

1. Remove the rear mounting plate from the thermostat.
2. Pull wires through the opening on the back of the rear mounting plate.
3. Position and level the mounting plate of the thermostat on wall and mark the hole locations with a pencil.
4. Insert and tighten supplied self-drilling 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 3 – THERMOSTAT MOUNTING

90-2563
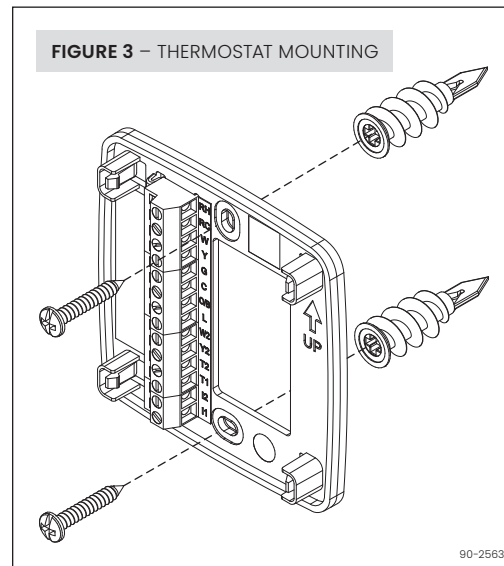
POWER AND RESET OPTIONS

The thermostat is powered from 24VAC. In the case of power loss, the thermostat will maintain the clock for 2 hours. The thermostat has a memory backup that saves the thermostat settings in case of power interruption. The thermostat can be set back to factory defaults from the installer settings menu. See Installer System Settings section for details.

The factory reset does not clear thermostat account information from the **AprilAire Wi-Fi Thermostat App**. To clear this information, remove the thermostat from the app or use the unregister option from the thermostat's Wi-Fi settings.

WIRING TERMINAL

WIRE SPECIFICATIONS:

• 18-24 gauge thermostat wire

INSTALLATION NOTES:

• Ensure power at the HVAC equipment is off.
• Loosen screw terminals, insert stripped wire and re-tighten.
• Push the excess wire back into the opening and plug the wall opening to prevent drafts.

RH	24VAC supply heating*
RC	24VAC supply cooling*
W	First stage heat (conventional) / First stage auxiliary (heat pump)
Y	First stage cooling (conventional) / First stage compressor (heat pump)
G	Fan
C	Common
O/B	Reversing valve
L	System fault indicator (optional) (heat pump only)
W2	Second stage heat (conventional) / Second stage auxiliary (heat pump)
Y2	Second stage cooling (conventional) / Second stage compressor (heat pump)
T1 & T2	Outdoor/remote temperature sensor
I1 & I2	Indoor Air Quality control output

Jumper between RC & RH is used in single transformer systems (see wiring diagrams).

FIGURE 4 – WIRING TERMINALS
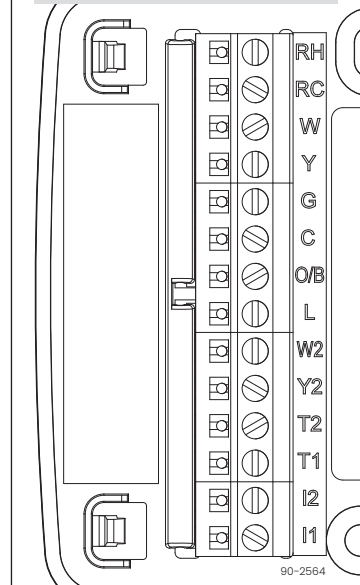
90-2564

WIRING DIAGRAMS

FIGURE 5 – SINGLE & MULTI STAGE HEAT/COOL, ONE TRANSFORMER

NOTE: Dashed lines represent wiring for multi stage systems only.
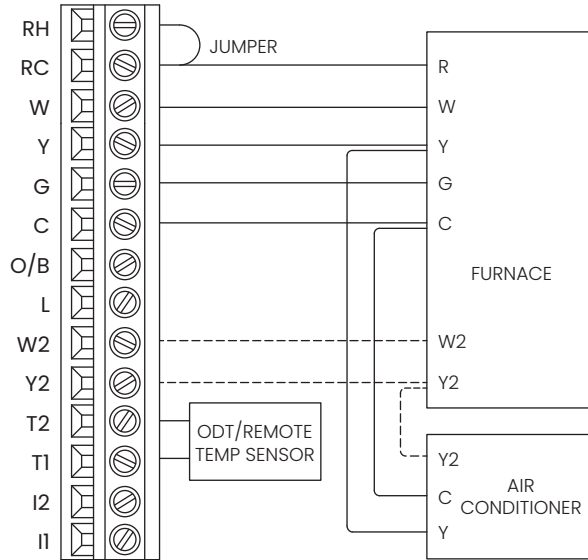
90-2565

FIGURE 6 – SINGLE & MULTI STAGE HEAT/COOL, (EX: BOILER) TWO TRANSFORMER

NOTE: Dashed lines represent wiring for multi stage systems only.
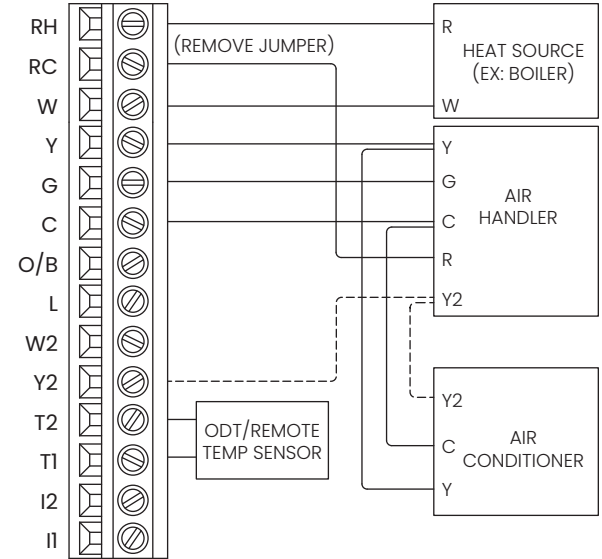
90-2566

FIGURE 7 – SINGLE & MULTI STAGE HEAT PUMP, ONE TRANSFORMER

NOTE: Dashed lines represent wiring for multi stage systems only.

RH
RC
W
Y
G
C
O/B
L
W2
Y2
T2
T1
I2
I1

JUMPER

R
W
Y
G
C

AIR HANDLER

W2
Y2

ODT/REMOTE TEMP SENSOR

Y2
C
Y
W
R
O/B
L

OUTDOOR UNIT

90-2567
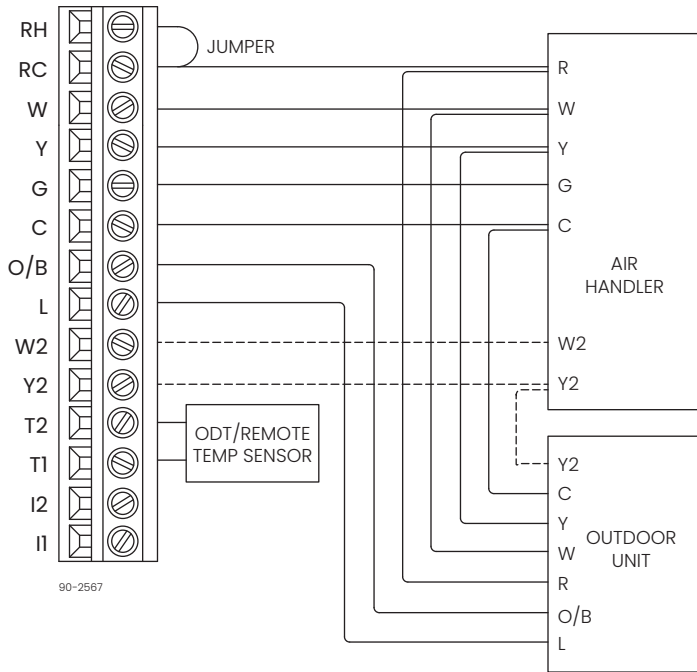
FIGURE 8 – RADIANT & HEAT/COOL, ONE TRANSFORMER

RH
RC
W
Y
G
C
O/B
L
W2
Y2
T2
T1
I2
I1

JUMPER

24V
COM   AA
       8024
E/W2

NO(1)
COM(3)

R
W

RADIANT FLOOR

Y
G
C
R

FURNACE

W

C   AIR
     CONDITIONER
Y

ODT/REMOTE TEMP SENSOR

90-2677
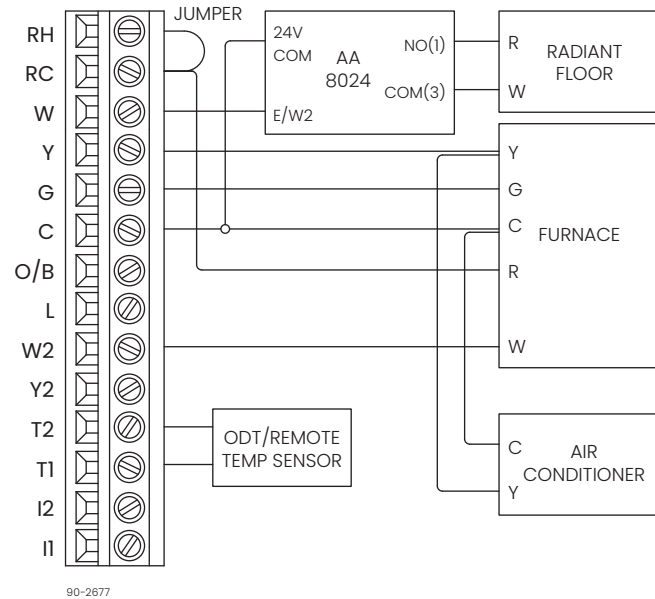
FIGURE 9 – RADIANT & HEAT PUMP, ONE TRANSFORMER

RH
RC
W
Y
G
C
O/B
L
W2
Y2
T2
T1
I2
I1

JUMPER

24V COM
AA 8024
E/W2
Y

NC(2)
COM(3)
NO(4)
COM(6)

R
W
RADIANT FLOOR

G
C
R
O/B
W
Y
AIR HANDLER

ODT/REMOTE TEMP SENSOR

Y
W
O/B
R
C
L
OUTDOOR UNIT

90-2678
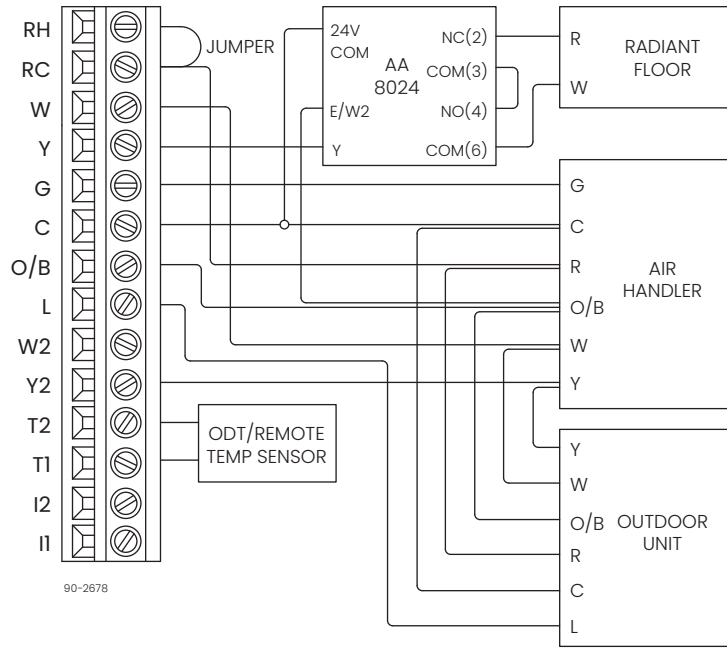
FIGURE 10 - INDOOR AIR QUALITY EQUIPMENT WIRING DIAGRAMS

DUCT MOUNTED EVAPORATIVE HUMIDIFIERS
(APRILAIRE SERIES 400, 500, 600, 700)

I2
I1
TRANSFORMER
HUMIDIFIER SOLENOID

90-2570
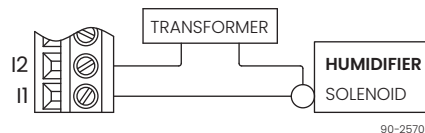
DEHUMIDIFIER
(APRILAIRE SERIES 1800, e-SERIES)

I2
I1
DEHUMIDIFIER DRY CONTACT INPUT

90-2569
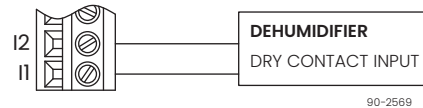
STANDALONE OR RESIDENTIAL STEAM HUMIDIFIER
(APRILAIRE SERIES 300, 800)

I2
I1
HUMIDIFIER DRY CONTACT INPUT

90-2680
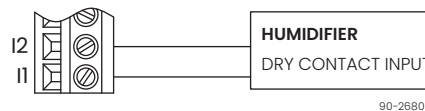
VENTILATION
(APRILAIRE SERIES 8100)

I2
I1
TRANSFORMER*
VENTILATION DAMPER

90-2571
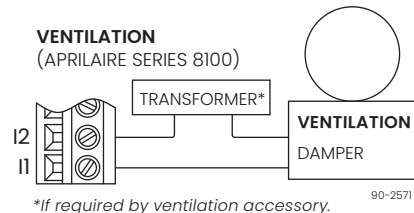
If required by ventilation accessory.

NOTE: The **I1/I2** output is a dry contact closure. The **HUMIDIFIER** wiring diagram assumes the control is powering a solenoid valve. The **DEHUMIDIFIER** wiring diagram is for a normally open dry contact input. The **VENTILATION** wiring diagram assumes the control is for a normally closed damper. Refer to the individual humidifier, dehumidifier or ventilation installation instructions for product specific wiring details.

SETUP AND TESTING

INSTALLER SETUP WIZARD AND INSTALLER SETTING

The first time the thermostat is powered up (or after a factory reset) it will enter the **Installer Setup Wizard**. All Installer Settings can be set through this process. The Installer Settings are also accessible in the **Installer Menu**.

HOW TO ENTER THE INSTALLER MENU:

1. Press **Select** to enter the **Main Menu**.
2. Use ∧ or ∨ to navigate to **Settings**, press SELECT.
3. Press and hold ∧ and ∨ for 3 seconds to unlock the **Installer** option.
4. Use ∧ or ∨ to navigate to **Installer**, press SELECT. Refer to the chart at right for options.

INSTALLER MENU OPTIONS	DESCRIPTION
HVAC Settings	Essential HVAC equipment (equipment type, stages, etc.)
HVAC Advanced	Advanced HVAC control (effsets, deadbands, staging, protection, etc.)
IAQ Settings	Humidifier, Dehumidifier, Air Cleaner, and Ventilation configuration
Wireless Sensor	Connect/disconnect wireless indoor and outdoor sensors
Test	Installer test for configured equipment relay outputs
Reset	Reset all settings to factory default

HVAC INSTALLER SYSTEM SETTINGS TABLE

The following table contains 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 1 – HVAC INSTALLER SYSTEM SETTINGS		
System setting	**Description**	**Factory default setting (bold) and setting range**
Equipment Type	**NOTE:** Equipment Type related settings will return to defaults if this is changed.	**Heat/Cool** Heat Pump
O/B Energized For?	Selects O or B reversing valve operation. (Heat Pump mode only.)	**Cooling** Heating
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

TABLE 1 – HVAC INSTALLER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
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
Programmable	Non Programmable hides all scheduling features.	**Programmable** Non Programmable
Wired Temperature Sensor Installed?	Selects how the external temperature sensor terminals (T1 & T2) are being used. Choose **Outdoor** for a wired outdoor sensor or **Remote/Remote Average** for a wired indoor sensor.	Outdoor Remote (Onboard sensor disabled) Remote Average (Average with onboard sensor) **No** (No external sensor connected)

System setting	Description	Factory default setting (bold) and setting range
Outdoor Temperature Data Provided From?	Select where the outdoor temperature data comes from. (This option is not available if you are using the wired outdoor temperature sensor.)	**Web** Automation (for home automation config only) None Wireless (Wireless outdoor sensor)
Advanced HVAC Settings?	Select **No** to skip the rest of the thermostat settings.	**No** Yes
Connection Type	Selects if the thermostat connects with an automation system or an AprilAire account.	**AprilAire Cloud** Automation System
Progressive Recovery	Enables or disables progressive recovery.	Disabled **Enabled**
Display Heat Blast?	Select if the Heat Blast option is displayed.	**No** Yes
Heat Blast Offset	Amount of heating when Heat Blast is initiated.	**3ºF (1.5ºC)** 4ºF (2ºC) 5ºF (2.5ºC)

TABLE 1 – HVAC INSTALLER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
Extended Fan – Heat	Extends fan operation 90 seconds after heat call ends. **NOTE:** Only available with electric heat.	**Disabled** Enabled
Extended Fan – Cool	Extends fan operation 90 seconds after cool call ends.	**Disabled** Enabled
Auto Changeover	Enable or disable Auto Changeover mode.	**Disabled** Enabled
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	Field adjustment of controlling temperature sensors.	**0°F (0°C)** –4 to 4°F (–2 to +2°C)
RH Sensor Offset	Internal RH sensor. Increases or decreases displayed RH%.	**0** –5 to 5
Equipment Minimum On Time	Minimum on time for heating and cooling.	**2 Minutes** 1 to 5 Minutes

TABLE 1 – HVAC INSTALLER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
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 an ODT is installed.)	**Enabled** Disabled
High Balance Point 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 an ODT is installed.)	**Enabled** Disabled
Low Balance Point 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)

TABLE 1 – HVAC INSTALLER SYSTEM SETTINGS		
System setting	**Description**	**Factory default setting (bold) and setting range**
Stage Rate	Accumulation of difference from setpoint over time in staging determination.	**Enabled** Disabled
Stage Rate 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)
Fourth Stage Differential	Fourth stage differential.	**1°F (0.5°C)** 1 to 9°F (0.5 to 4.5°C)
Service HVAC Reminder	Enable or disable the HVAC Service reminder message.	**Disabled** Enabled

TABLE 1 – HVAC INSTALLER SYSTEM SETTINGS		
System setting	**Description**	**Factory default setting (bold) and setting range**
Recurrence	Select number of months between HVAC Service reminder messages.	**12 Months** 1 to 12 Months
Max Heat Setting	Select the maximum heating set point temperature allowed.	**90°F (32°C)** 40 to 90°F (4.5 to 32°C)
Min Heat Setting	Select the minimum heating set point temperature allowed.	**40°F (4.5°C)** 40* to 90°F (4.5 to 32°C)
Max Cool Setting	Select the maximum cooling set point temperature allowed.	**99°F (37°C)** 50 to 99°F (10 to 37°C)
Min Cool Setting	Select the minimum cooling set point temperature allowed.	**50° (10°C)** 50 to 99°F (10 to 37°C)

The following tables contain the Indoor Air Quality system settings and their details. Default settings are shown in **bold**. The availability of some settings is dependent upon the value of other settings. The use of outdoor temperature data enables additional Indoor Air quality functionality. While the outdoor temperature sensor option was presented in the HVAC installer settings, it is also available in the Indoor Air Quality settings.

Please refer to the **Owner's Manual** for further information about thermostat features.

TABLE 2 – HUMIDIFIER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
NOTE: A humidifier can only be installed if ventilation is not installed and dehumidifier control is not set to **Whole Home**.		
Humidifier Installed?	Selects whether a humidifier is installed. Yes/On HVAC is used for applications where the humidifier is installed on the HVAC duct. Yes/Standalone is used for applications where the humidifier is independent from the HVAC system. (If set to **No**, no other humidifier settings will be available.)	**No** Yes/On HVAC Yes/Standalone

TABLE 2 – HUMIDIFIER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
Wired Temperature Sensor Installed?	Selects how the external temperature sensor terminals (T1 & T2) are being used. Choose **Outdoor** for a wired outdoor sensor or **Remote/Remote Average** for a wired indoor sensor.	Outdoor Remote (Onboard sensor disabled) Remote Average (Average with onboard sensor) **No** (No external sensor connected)
Outdoor Temperature Data Provided From?	Select where the outdoor temperature data comes from. (This option is not available it you are using the wired outdoor temperature sensor)	**Web** Automation (for home automation config only) None Wireless (Wireless outdoor sensor)
Humidifier Mode	Selects auto or manual mode. Auto mode controls humidity based on the humidity setting and outdoor temperature. Manual mode controls humidity based on the %RH setpoint. (Auto mode is only available if an outdoor sensor option is enabled.)	**Auto** Manual

TABLE 2 – HUMIDIFIER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
Allowed Humidifier Operation	Selects when humidification is allowed to occur relative to heating and fan operation. **NOTE: Without Fan** is only available when Humidifier Installed is set to **Yes/Standalone**. It allows humidification to occur without activating an HVAC fan and should only be used when the humidifier is mounted independently of any HVAC system.	Heat Only Heat or Fan **Forces Fan** Without Fan

⚠ CAUTION

When **Humidifier Operation** is set to **Without Fan** the thermostat 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.

TABLE 2 – HUMIDIFIER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range	
Humidifier Reminder	Selects when the "Change Water Panel" message is displayed.	**Off** 150h Valve 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. (Only available when 2 reminders per season is selected.)	October November December **January** February March	April May June July August September

TABLE 3 – DEHUMIDIFIER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
NOTE: Dehumidifier control can only be set to **Whole Home** if ventilation and humidification are not enabled.		
Dehumidifier Type Installed?	Selects if a dehumidifier is installed. (If set to **None**, no other dehumidifier settings will be available.) AC w/ IAQ selects overcooling, I1 and I2 terminals energize during overcooling. AC w/o IAQ selects overcooling, I1 and I2 terminals are not used.	**None** Whole Home AC w/ IAQ AC w/o IAQ
Disable Dehumidification During Cooling?	Selects if dehumidification is disabled during a cooling call.	**Yes** No
Dehumidifier Forces Fan?	Selects if dehumidification can turn on the HVAC system fan.	**Yes** No
Dehumidifier Overcool Limit	Selects the amount of overcooling that can occur for dehumidification. (Only available if dehumidifier type is set to **Overcool**.)	**1°F (0.5°C)** 2°F (1°C) 3°F (1.5°C)

TABLE 3 – DEHUMIDIFIER SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
Dehumidifier Reminder	Enable or disable the Dehumidifier Service reminder message.	**Disabled** Enabled
Recurrence	Select number of months between Dehumidifier Service reminder messages.	**12 Months** 1 to 12 Months
Dehumidify in Vacation Hold?	Selects if dehumidification with the air conditioner is done in vacation mode.	**No** Yes
Vacation Hold Low Temperature Limit	Sets the lowest temperature the air conditioner will cool to, to meet RH setpoint in Vacation Mode. (Only available if dehumidifier type is set to **Overcool**.)	**75°F (24°C)** 70 to 85°F (21 to 29.5°C)
Humidity Deadband	Select the minimum difference between the humidifier and dehumidifier setpoints. (Only available if both Humidifier and Dehumidifier are enabled.)	**10%** 10 to 20%

TABLE 4 – AIR CLEANING SYSTEM SETTINGS		
System setting	**Description**	**Factory default setting (bold) and setting range**
Air Cleaner Installed?	Selects if an air cleaner is installed. (If set to **No**, no other air cleaner settings will be available.)	**No** Yes
Air Cleaner Reminder	Enable or disable the Change Air Filter message.	**Disabled** Enabled
Recurrence	Select number of months between Change Air Filter messages.	**12 Months** 1 to 12 Months

TABLE 5 – FRESH AIR VENTILATION SYSTEM SETTINGS		
System setting	**Description**	**Factory default setting (bold) and setting range**
NOTE: Ventilation can only be installed if humidification is not enabled and dehumidifier control is not set to **Whole Home**.		
Fresh Air Vent Installed?	Selects if ventilation is installed. (If set to **No**, no other ventilation settings will be available.)	**No** Yes
Fresh Air Setup Type	Selects if ventilation is configured through the Code setup or Comfort. Comfort setup has more lockout options. Code setting ensures time missed due to lockouts is made up.	**Comfort** Code
Number of Bedrooms	Selects the number of bedrooms to be used for the Calculated Minutes per Hour.	**3 Bedrooms** 1 to 10 Bedrooms
Square Footage	Selects the size of the home to be used for the Calculated Minutes per Hour.	**2500 SQ FT** 500 to 7500 SQ FT
Measured CFM	Selects the ventilation CFM to be used for the Calculated Minutes per Hour.	**110 CFM** 30 to 250 CFM

TABLE 5 – FRESH AIR VENTILATION SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
Calculated Minutes Per Hour	Displays the Fresh Air Time calculated.	**None** Range 6 to 60 Minutes
Override	Manual adjustment of Calculated Minutes per Hour.	**(Calculated Minutes per Hour)** Range 6 to 60 Minutes
Wired Temperature Sensor Installed?	Selects how the external temperature sensor terminals (T1 & T2) are being used. Choose **Outdoor** for a wired outdoor sensor or **Remote/Remote Average** for a wired indoor sensor.	Outdoor Remote (Onboard sensor disabled) Remote Average (Average with onboard sensor) **No** (No external sensor connected)
Outdoor Temperature Data Provided From?	Select where the outdoor temperature data comes from. (This option is not available it you are using the wired outdoor temperature sensor)	**Web** Automation (for home automation config only) None Wireless (Wireless outdoor sensor)

TABLE 5 – FRESH AIR VENTILATION SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
High Vent RH Limit	Selects if ventilation is disabled when the indoor RH exceeds the indoor RH limit. (Only available if Fresh Air Setup is set to **Comfort**.)	Disabled **Enabled**
High Vent RH Limit	Sets the ventilation indoor RH lockout limit. (Only available if High Vent RH Limit is set to **Enabled**.)	**55%** 45% to 70%
Low Vent RH Limit	Selects if ventilation is disabled when the indoor RH exceeds the indoor RH limit. (Only available if Fresh Air Setup is set to **Comfort**.)	**Disabled** Enabled
Low Vent RH Limit	Sets the ventilation indoor RH lockout limit. (Only available if Low Vent RH Limit is set to **Enabled**.)	**20%** 10% to 30%
High Vent Temperature Limit	Enables high ventilation temperature lockout limit. (Only available if an outdoor sensor option is enabled.)	**Disabled** Enabled

TABLE 5 – FRESH AIR VENTILATION SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
High Vent Temperature Limit	Sets high ventilation temperature lockout limit. (Only available if High Vent Temperature Limit is set to **Enabled**.)	**100ºF (38ºC)** 85ºF to 105ºF (29ºC to 41ºC)
Low Vent Temperature Limit	Enables low ventilation temperature lockout limit. (Only available if an outdoor sensor option is enabled.)	**Disabled** Enabled
Low Vent Temperature Limit	Sets low ventilation temperature lockout limit. (Only available if Low Vent Temperature Limit is set to **Enabled**.)	**10ºF (−12ºC)** −10ºF to 40ºF (−24ºC to 6ºC)
HVAC Fan with Vent?	Selects if ventilation forces the fan on. (Yes with high and low limits is only available if an outdoor sensor option is enabled.)	**Yes** Yes with high and low limits No
High Mixing Temperature	Enables high mixing temperature. (Only available is HVAC Fan with Vent is set to **Yes with high and low limits**.)	**Disabled** Enabled
High Mixing Temperature	Sets the high mixing temperature. (Only available if High Mixing Temperature is set to **Enabled**.)	**80ºF or (26ºC)** 60ºF to 105ºF (14ºC to 41ºC)

TABLE 5 – FRESH AIR VENTILATION SYSTEM SETTINGS

System setting	Description	Factory default setting (bold) and setting range
Low Mixing Temperature	Enables low mixing temperature. (Only available is HVAC Fan with Vent is set to **Yes with high and low limits**.)	**Disabled** Enabled
Low Mixing Temperature	Sets the Low mixing temperature. (Only available if Low Mixing Temperature is set to **Enabled**.)	**40ºF (6ºC)** 0ºF to 50ºF (−18ºC to 12ºC)
Fresh Air Reminder	Enable or disable the Service Fresh Air message.	**Disabled** Enabled
Recurrence	Select number of months between Service Fresh Air messages.	**12 Months** 1 to 12 Months

The system test menu is used to test a system after installation. The Installer Test can be accessed from the Installer Menu. All equipment outputs that are configured in the installer settings can be turned on and off for testing equipment. Minimum on and off times are not enforced while in this mode. The instructions below show how to enter the test mode and turn outputs on and off.

ENTER THE SYSTEM TEST MENU

1. Press **Select** to enter the **Main Menu**.
2. Use ∧ or ∨ to navigate to **Settings**, press **Select**.
3. Press and hold ∧ and ∨ for 3 seconds to unlock the **Installer** option.
4. Use ∧ or ∨ to select **Installer Settings**, press **Select**.
5. Use ∧ or ∨ to select **System Test**, press **Select**.

SYSTEM TEST STEPS

1. Heating equipment test.
2. Cooling equipment test.
3. Fan equipment test.
4. Humidification equipment test.
5. Dehumidification equipment test.
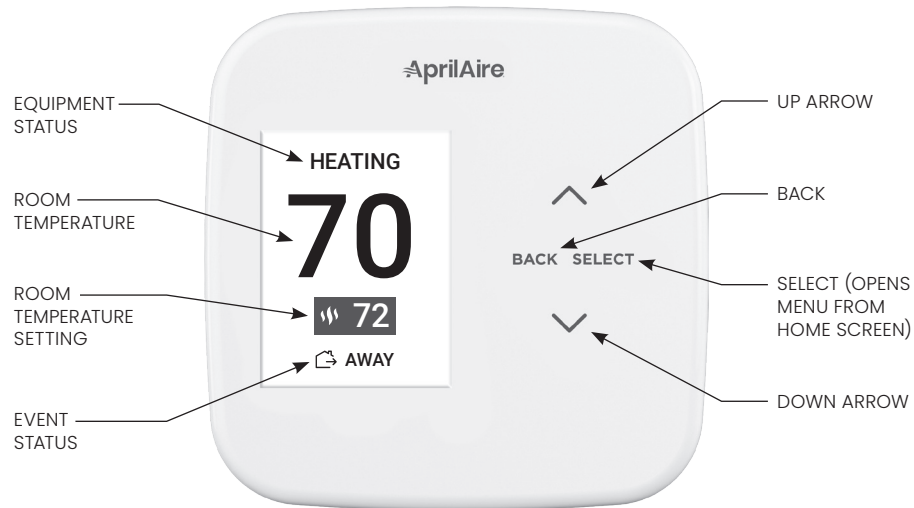6. Ventilation equipment test.

For detailed instructions for connecting the thermostat to a Wi-Fi network and registering it to an AprilAire account, refer to the **Wi-Fi Quick Start Guide** included in the box.
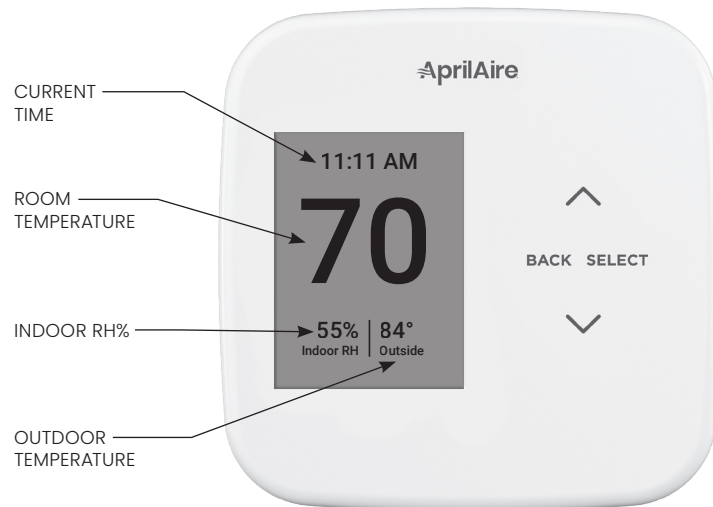
QUICK REFERENCE TO CONTROLS & DISPLAY

EQUIPMENT STATUS

ROOM TEMPERATURE

ROOM TEMPERATURE SETTING

EVENT STATUS

UP ARROW

BACK

SELECT (OPENS MENU FROM HOME SCREEN)

DOWN ARROW

☰ **Main Menu**

⚊ **Mode**
🐾 **Fan**
⏸ **Hold**
☑ **Schedule**
🔥 **Heat Blast**
↩ **Away**
💧 **Humidifier**
💧 **Dehumidifier**
💨 **Ventilation**
⠿ **Air Cleaning**
🧳 **Vacation**
⚙ **Settings**

*Item availability based
on installed options.*

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☰ **Main Menu**
⚊ **Mode** >
🐾 **Fan**
⏸ **Hold**
☑ **Schedule**
🔥 **Heat Blast**

BACK   SELECT

Starts 45 seconds after inactivity, press any button to wake the screen.

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CURRENT TIME

ROOM TEMPERATURE

INDOOR RH%

OUTDOOR TEMPERATURE

11:11 AM

70

55% | 84°
Indoor RH | Outside

BACK   SELECT

TROUBLESHOOTING

DISPLAY IS BLANK
- 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 thermostat is functional. Check the heating equipment to find the cause of the problem.
- Check for loose or broken wires between the thermostat and the heating equipment.

TEMPERATURE SETTINGS DO NOT CHANGE
- Make sure heating and cooling temperatures are set to acceptable ranges:
  - **Heat:** 40º to 90ºF (4º to 32ºC).
  - **Cool:** 50º to 99ºF (10º to 37ºC).

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 thermostat is functional. Check the cooling system to find the cause of the problem.
- Check for loose or broken wires between the thermostat and the cooling equipment.

FAN DOES NOT TURN ON IN A CALL FOR HEAT
- Check System Setting (Fan Control in Heating), to make sure the fan control is properly set to match the type of system (see page 19).

HEAT PUMP ISSUES COOL AIR IN HEAT MODE, OR WARM AIR IN COOL MODE
- Check System Setting (O/B Operation) to make sure the reversing valve operation matches the heat pump.

HEAT/COOL BOTH ON AT SAME TIME
- Check System Setting (Equipment Type), to make sure it is set to match the installed heating/cooling equipment (see page 19).
- Check to make sure heating and cooling wires are not shorted together.

HEATING EQUIPMENT IS RUNNING IN COOL MODE
- Check System Setting (Equipment Type), to make sure it is set to match the installed heating/cooling equipment (see page 19).

"HEATING" IS NOT DISPLAYED
- Check System Setting (Control Setup) is set correctly.
- Change the System Mode to Heat, and set the temperature level above the current room temperature.

"COOLING" IS NOT DISPLAYED
- Check System Setting (Control Setup) is set correctly.
- Change the System Mode to Cool, and set the temperature level below the current room temperature.

HUMIDIFIER DOES NOT OPERATE IN AUTO MODE
- Check Installer System Setting number (Outdoor Sensor) is set to **Yes**.
- Verify that the outdoor sensor is functioning correctly. If the sensor is functioning correctly the outdoor temperature will display in the outdoor temperature location (see **SCREEN SAVER** on page 42 for the location).

If the thermostat enters an error mode, all outputs are turned off. The thermostat attempts to recover every 10 minutes.

Error Code	Message	Error Description
E01	Sensor Error	Internal temperature & RH sensor failure
E03	EEPROM Error	Error in permanent memory
E06	Remote Sensor Error	Open remote temperature sensor circuit
E07	Remote Sensor Error	Shorted remote temperature sensor circuit

THERMOSTAT FEATURES

- Remote access and control over Wi-Fi.
- Indoor air quality control.
  - Humidification automatic or manual control.
  - Dehumidification.
  - Event-Based™ air cleaning.
  - Ventilation with temperature and humidity limits.
- Heat Blast® raises the room temperature 3°F to 5°F.
- Easy to read, color graphical display.
- Easy to use installer settings, no codes.
- 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 can override program schedule at any time.
- Progressive recovery ensures proper room temperature at the start of a program event.
- Built in compressor protection prevents damage to your equipment.
- System test mode.
- Optional wireless indoor and outdoor sensors.
- Sensor averaging and the ability to assign a sensor to a scheduled event.
- Installer adjustable set point limits.

SPECIFICATIONS

ENVIRONMENT	
Temperature	**Operating:** 32° to 120°F (0° to 48.9°C) **Shipping:** -30° to 150°F (-34.4° to 65.5°C)
Relative humidity	**Operating:** 5% to 90% R.H. (non-condensing)
ELECTRICAL	
Operating voltage	24VAC (18–30VAC)
Current	**Maximum:** 2.5A (total), 1.0A (single output) **Maximum surge current:** 5A
THERMAL	
Outdoor & Remote temperature sensor	**Maximum distance:** 300 feet
Room temperature measurement	**Display range:** 32° to 99°F (0° to 40°C)
Outdoor temperature measurement	**Display range:** -40° to 130°F (-40° to 55°C)
Setpoint temperature range	**Heat:** 40° to 90°F (4° to 32°C) **Cool:** 50° to 99°F (10° to 37°C)
Setpoint humidity range	**Humidification:** 10% to 50% R.H. **Dehumidification:** 40% to 90% R.H.

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