



Model CH-TSM10-WF Touch Screen Wi-Fi Automation Thermostat with Integrated Indoor Air Quality Solutions



Safety & Installation Instructions

READ AND SAVE THESE INSTRUCTIONS

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WI-FI SETUP

To connect the CH-TSM10-WF thermostat to a Wi-Fi network follow the steps below.

Note: You will need a computer or mobile device with Wi-Fi and a web browser.

STEP 1

Verify the thermostat is in Wi-Fi Connection Mode.

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



Note: If the thermostat is not in Wi-Fi Connection Mode, refer to the Owner's manual for instructions on clearing the Wi-Fi settings.

STEP 2

Connect to the thermostat using a computer or mobile device.

On your computer or mobile device, scan for available networks. The thermostat should appear as CLAREHVAC followed by a unique identifier, corresponding to the last 4 digits of the MAC address. Connect to the thermostat you want to configure.

If you are installing multiple thermostats, the MAC address of each thermostat will be displayed in the message center on the display of the thermostat. The MAC address can also be found by removing the cover on the front of the thermostat.

STEP 3

Configure the thermostat 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/clare.html>

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

STEP 4

Verify the thermostat is connected to the Wi-Fi network.

Once all the required information is entered in the web browser interface, the thermostat will connect to the Wi-Fi network you selected. After the thermostat is connected to the Wi-Fi network, the thermostat will display the radio bars based on the Wi-Fi signal strength. If the radio bars are not displaying the signal strength, refer to Troubleshooting Wi-Fi Connection on page 22.

INSTALLATION

INSTALLATION LOCATION RECOMMENDATIONS

Thermostat should be mounted:

- On an interior wall, in a frequently occupied space.
- Approximately 5' 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 S1 and S2 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:

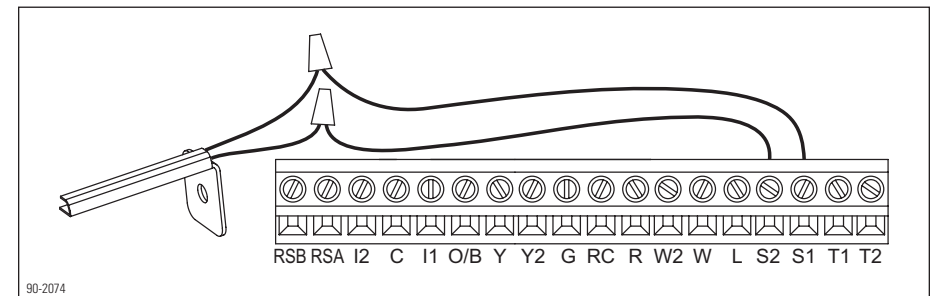
- When the outdoor temperature is less than the Low Balance Point, the heat pump will be locked out and only auxiliary heating will be used to provide heating.
- When the outdoor temperature is higher than the High Balance Point, the auxiliary heating will be locked out and only the heat pump will be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

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

- Control humidification setpoint based on outdoor temperature to prevent condensation.
- Lock out humidification for temperatures over 60°F or below -30°F.
- 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' away from exhaust vents and condensing lines.
- Using less than 300' of wire.
- Do not route wires along 120 VAC lines.



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INSTALLATION

REMOTE TEMPERATURE SENSOR (OPTIONAL)

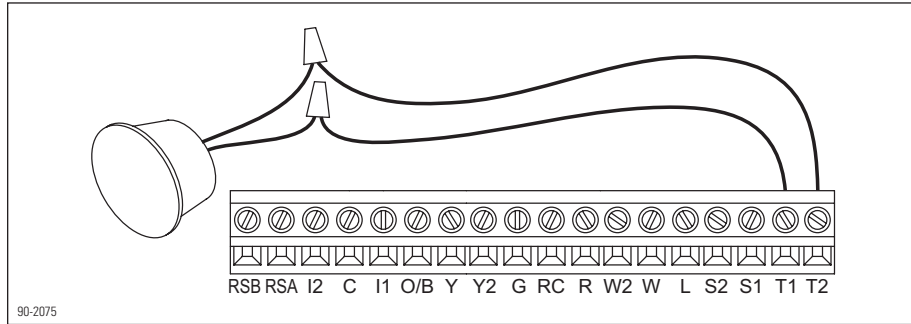
A remote temperature sensor can be used for control if the thermostat is to be mounted in a concealed location or a remote sensor can be averaged with the thermostat sensor to control a large space. An 8051 flush mount or 8053 surface mount remote temperature sensor can be attached to the T1 and T2 terminals and mounted in a recommended area. The remote sensor must be enabled in the installer setup 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' above floor.
- At least 18" from outside wall.
- Using less than 300' of wire.

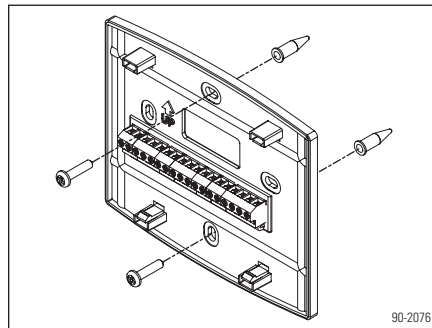
Do not mount remote sensor:

- 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.



THERMOSTAT MOUNTING

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. 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.

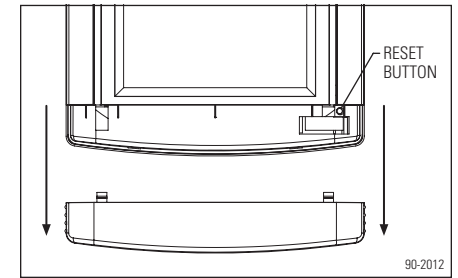


INSTALLATION

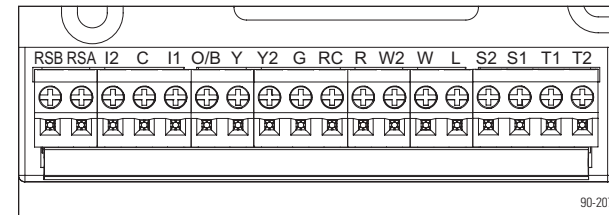
POWER & RESET OPTIONS

The thermostat is powered from 24VAC. In the case of power loss the thermostat will maintain the clock for 24 hours. The thermostat has a memory backup that saves the thermostat settings in case of power interruption.

The reset button located under the cover on the front of the thermostat can be used to reset the thermostat to factory defaults. The Installer System Settings will also be set to the default 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.

RSB & RSA – Model 8081 or 8082 Support Module communication

I1 & I2 – Indoor Air Quality control output

C – Common

O/B – Reversing valve

Y – First stage cooling (conventional) / First stage compressor (heat pump)

Y2 – Second stage cooling (conventional) / Second stage compressor (heat pump)

G – Fan

RC – 24VAC supply cooling¹

R – 24VAC supply heating¹

W2 – Second stage heat (conventional) / Second stage auxiliary (heat pump)

W – First stage heat (conventional) / First stage auxiliary (heat pump)

L – System fault indicator (optional) (heat pump only)

S1 & S2 – outdoor temperature sensor (included)

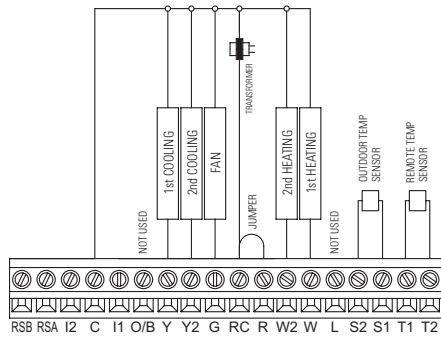
T1 & T2 – remote temperature sensor (optional)

¹Jumper between RC & R is used in single transformer systems (see wiring diagrams).

INSTALLATION

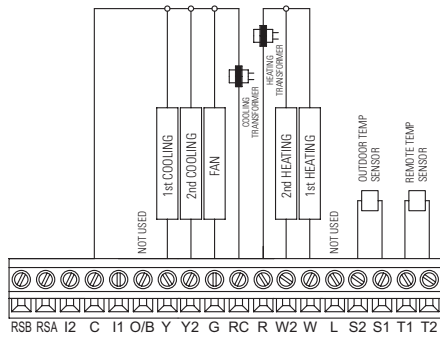
CONVENTIONAL HEAT/COOL WIRING DIAGRAMS

SINGLE TRANSFORMER (USE JUMPER WIRE)



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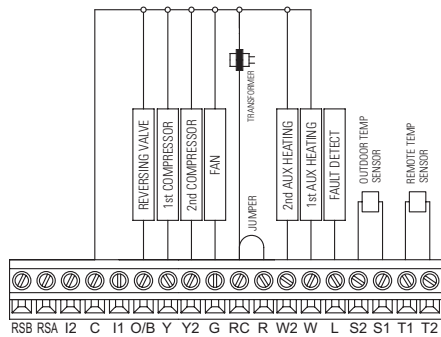
TWO TRANSFORMERS (REMOVE JUMPER WIRE)



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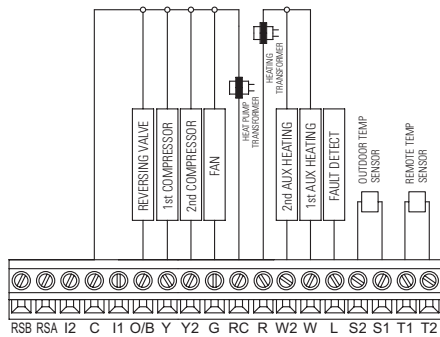
HEAT PUMP WIRING DIAGRAMS

SINGLE TRANSFORMER (USE JUMPER WIRE)



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TWO TRANSFORMERS (REMOVE JUMPER WIRE)

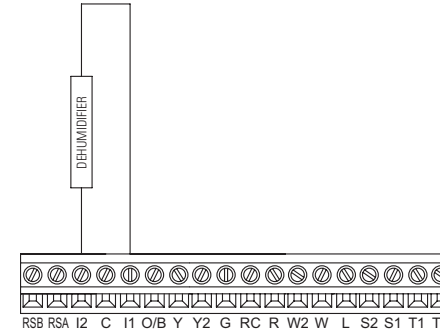


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INSTALLATION

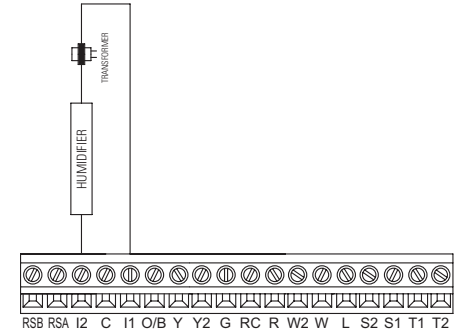
INDOOR AIR QUALITY EQUIPMENT WIRING DIAGRAMS

DEHUMIDIFIER WIRING



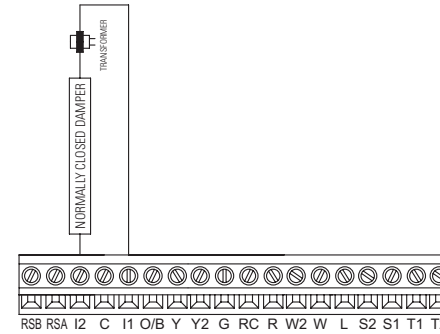
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HUMIDIFIER WIRING



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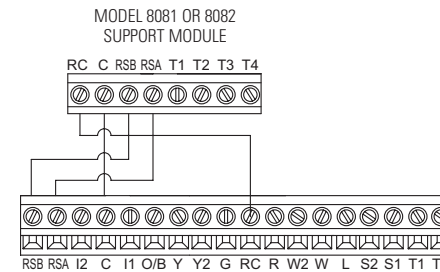
VENTILATION WIRING



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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 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.

SUPPORT MODULE WIRING DIAGRAM



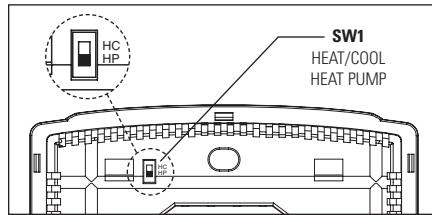
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Note: Up to four Support Modules can be wired to the thermostat. Support Modules should be wired with CAT-5 wire. The total length of wire for all support modules should not exceed 1000 feet.

SETUP & TESTING

EQUIPMENT TYPE SELECTION SWITCH (SW1)

This thermostat has the option of being used in heat pump or heat/cool systems. Switch SW1 located on the back of the thermostat's face is used to select this option. This setting is displayed in the Installer System Settings under Equipment Type.



INSTALLER SETUP MENU

HOW TO ENTER THE INSTALLER SETUP MENU AND SELECT EQUIPMENT TO SETUP:

In the Installer Setup menu, Thermostat or Indoor Air Quality (IAQ) setup can be selected. If IAQ setup is selected, the user can then select to set up Air Cleaning, Humidification, Dehumidification or Ventilation.

Press **[MODE]** to set system to OFF.

Press **[MENU]** to enter main menu.

Press and hold **[SETUP]** for seven seconds, **[INSTALL SETUP]** appears.

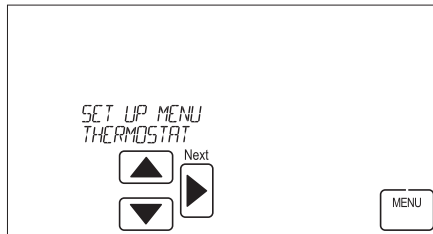
Press **[INSTALL SETUP]** to enter installer setup menu.

Press **▲** or **▼** to adjust the option.

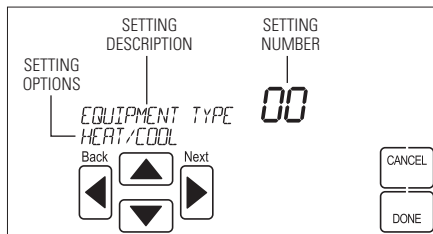
Press **[MENU]** to exit.

Press **[NEXT]** to select option.

Note: If IAQ is selected prior to performing thermostat setup, the Installer System Setting for Outdoor Sensor will be presented prior to entering IAQ setup.



CHANGE SYSTEM SETTINGS



Press **[NEXT]** or **[BACK]** to page through the settings.

Press **▲** or **▼** to adjust the setting.

Press **[DONE]** to save and exit, or **[CANCEL]** to exit without saving.

The thermostat will discard changes and exit if nothing is pressed within 60 seconds.

To reset the Installer System Settings to the default settings, reset the thermostat by pressing the **[RESET]** button for 5 seconds.

SETUP & TESTING

THERMOSTAT INSTALLER SYSTEM SETTINGS TABLE

The following table contains the system settings and their details. Default settings are shown in **bold**. Some settings are only available dependent upon the value of other settings.

System setting	Description	Factory default setting (bold) and setting range
01. Equipment Type	Equipment type set by SW1.	Heat/Cool Heat Pump
02. Temperature Scale	Set the thermostat to Fahrenheit or Celsius mode.	Fahrenheit Celsius
03. Reversing Valve	Selects O or B operation.	O – On in cooling B – On in heating
04. Control Setup	Used to lockout heating or cooling outputs. Note: Only available if Equipment Type is set to Heat/Cool.	Heat and Cool Heat Only Cool Only
05. Heat/Cool: Cooling Stages Heat Pump: Compressor Stages	Heat/Cool: Number of Cooling Stages. Heat Pump: Number of Compressor Stages.	One Two
06. Heat/Cool: Heating Stages Heat Pump: Aux Heat Stages	Heat/Cool: Number of Heat Stages. Heat Pump: Number of Auxiliary Heat Stages.	One Two
07. Heat/Cool: Fan Control in Heating Heat Pump: Auxiliary Equipment Type	Heat/Cool: Determines if the thermostat or equipment controls the fan in heating. Heat Pump: Auxiliary Equipment type.	Gas/Oil Heat (equipment controls fan) Electric Heat (thermostat controls fan)
08. Extended Fan – Heat	Extends fan operation after heat call ends.	Disable Enable (90 second extension)
09. Extended Fan – Cool	Extends fan operation after cool call ends.	Disable Enable (90 second extension)
10. Temperature Sensor Offset	Field adjustment of controlling temperature sensor(s).	0° (no offset applied) -4°F to +4°F (-2°C to +2°C)
11. Humidity Offset	Field adjustment of internal RH sensor.	0 (no offset applied) -5% to +5%
12. Auto Changeover	Enable or disable Auto Changeover mode.	Disable Enable
13. Deadband	Auto Changeover mode deadband.	3°F (1.5°C) 2°F to 9°F (1°C to 4.5°C)
14. Remote Sensor	Select if remote sensor is attached, and if it is attached, if it is the primary control or averaged with the built-in sensor. If the remote sensor is the primary control it can be configured to use the built-in sensor as a back-up sensor.	Not installed Control no backup Control with built-in backup Average with thermostat built-in sensor
15. Outdoor Sensor	Selects if an outdoor temperature sensor is not installed, a wired sensor is installed, or the outdoor temperature is provided by the automation system.	Not installed Installed Automation
18. Compressor Min Off Time	Minimum off time for compressor protection.	5 minutes 1 to 5 minutes
19. Heating Min Off Time	Minimum off time for heating.	2 minutes 1 to 5 minutes
20. Equipment Min On Time	Minimum on time for heating and cooling.	2 minutes 1 to 5 minutes
21. Auto Changeover Time	Minimum time between heating and cooling calls.	4 minutes 1 to 5 minutes
22. First Stage Differential	First stage differential.	1°F (0.5°C) 1°F to 9°F (0.5°C to 4.5°C)

SETUP & TESTING

HVAC INSTALLER SYSTEM SETTINGS TABLE (CONTINUED)

System setting	Description	Factory default setting (bold) and setting range
23. Second Stage Differential	Second stage differential.	1°F (0.5°C) 1°F to 9°F (0.5°C to 4.5°C)
24. Third Stage Differential	Third stage differential.	1°F (0.5°C) 1°F to 9°F (0.5°C to 4.5°C)
25. Fourth Stage Differential	Fourth stage differential.	1°F (0.5°C) 1°F to 9°F (0.5°C to 4.5°C)
26. Away	Enables the Away feature. The Away feature allows the automation system to use a single button press to set the thermostat to a predefined setpoint(s). The thermostat will hold the setpoint(s) until Away is canceled with the automation system or at the thermostat.	Disable Enable
27. Heat Blast	Enables the Heat Blast feature.	Disable Enable
28. Blast Offset	Amount of heating when Heat Blast is initiated.	3°F (1.5°C) 3°F to 5°F (1.5°C to 2.5°C)
37. Stage Rate	Accumulation of equipment run time in equipment staging determination. 1 = more rapid staging of equipment (comfort). 5 = slower staging of equipment (economy).	2 1 to 5 or "OFF" to ignore accumulated run time.
38. Progressive Recovery	Enable or disable progressive recovery.	Disable Enable
39. Low Balance Point	Outdoor temperature low balance point. Note: This option is only available if the thermostat is set to Heat Pump and Outdoor Sensor is set to Installed or Automation.	20°F or -8°C 0°F to 60°F (-18°C to 12°C) or OFF to ignore LBP
40. High Balance Point	Outdoor temperature high balance point. Note: This option is only available if the thermostat is set to Heat Pump and Outdoor Sensor is set to Installed or Automation.	65°F or 14.5°C 0°F to 80°F (-18°C to 22°C) or OFF to ignore HBP
41. Program Format	Enables the 7 day program.	7-Day Non-Prog
42. Reset Service Reminders	Clears the Air Filter, Dehumidifier, Fresh Air, and HVAC service reminders if they are active and resets the start date to the current date. Clears the Change Water Panel reminder if it is active. If the reminder is set to Timed, the clock will be reset.	No Yes
43. HVAC Service Reminder	The period for displaying the "HVAC Service Reminder" message.	Off 1 to 12 months or "Off" to disable
44. Constant Backlight	Enable constant, low intensity backlight.	Disable Enable
45. Backlight Intensity	Set the active backlight intensity. Note: The minimum setting is 40% when Constant Backlight is enabled.	100 Percent 0 to 100 Percent
51. Support Module Controlling Temp Sensors	Sets the number of controlling support module temperature sensors.	NONE 1 to 8
52. Support Module Controlling RH Sensors	Sets the number of controlling support module humidity sensors.	NONE 1 to 4
53. Display Monitor Support Module Sensor	Selects if the temperature or humidity values from support modules that are configured for monitoring are displayed in the message center of the thermostat.	No Yes

SETUP & TESTING

INDOOR AIR QUALITY SYSTEM SETTINGS TABLES

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 the included outdoor temperature sensor (recommended) enables additional Indoor Air Quality functionality. If the outdoor temperature sensor was not enabled in the thermostat system settings, thermostat system setting 15, outdoor sensor, will be presented prior to entering the Indoor Air Quality system settings.

Please refer to the Model CH-TSM10-WF Owner's Manual for further information about thermostat features.

Air Cleaning System Settings Table

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 cleaning settings will be available.)	No Yes
Change Air Filter Reminder	The period for displaying the "Change Air Filter" message.	Off 1 to 12 months or "Off" to disable

SETUP & TESTING

Humidifier System Settings Table

Note: A humidifier can only be installed if ventilation is not installed and Dehumidifier Control is not set to Whole Home or AC w/IAQ Output.

System setting	Description	Factory default setting (bold) and setting range
Humidifier Installed	Selects if a humidifier is installed. (If set to no, no other humidifier settings will be available.)	No Yes
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 Outdoor Sensor is set to Installed or Automation.)	Auto Manual
Humidity Setpoint Deadband	Select the minimum difference between the humidifier and dehumidifier setpoints. (Only available if a humidifier is installed and Dehumidifier Control is set to Air Conditioner. Available in both set-ups.)	10 Percent RH 10 to 20 Percent RH
Humidifier Operation	Selects when humidification is allowed to occur relative to heating and fan operation.	Heat Only Heat or Fan Forces Fan
Change Water Panel Reminder	Selects the when the "Change Water Panel" message is displayed.	Off 1 Per Season 2 Per Season 300 Hours 600 Hours
Reminder Month (Change Water Panel Reminder set to 1 per Season)	Change Water Panel Reminder set to 1 per Season: Determines the month the "Change Water Panel" message is displayed.	October November December
First Reminder Month (Change Water Panel Reminder set to 2 per Season)	Change Water Panel Reminder set to 2 per Season: Determines the first month the "Change Water Panel" message is displayed.	January February March April May June July August September
Second Reminder Start Month	Determines the second month the "Change Water Panel" message is displayed. (Only available when Change Water Panel Reminder set to 2 per Season.)	October November December January February March April May June July August September

SETUP & TESTING

Dehumidifier System Settings Table

Note: Dehumidifier Control can only be set to Whole Home or AC w/IAQ Output if ventilation and humidification are not installed.

System setting	Description	Factory default setting (bold) and setting range
Dehumidifier Control	Selects method of dehumidification. If set to None, no other dehumidifier settings will be available. If dehumidification is done with the air conditioner, using the option of AC w/IAQ Output will cause the IAQ output to be active when overcooling for dehumidification. This can be used if the HVAC equipment has a dedicated input to slow the fan during cooling to maximize dehumidification.	None (no dehumidification installed) Whole Home Air Conditioner AC w/IAQ Output
Humidity Setpoint Deadband	Select the minimum difference between the humidifier and dehumidifier setpoints. (Only available if a humidifier is installed and Dehumidifier Control is set to Air Conditioner. Available in both set-ups.)	10 Percent RH 10 to 20 Percent RH
Lockout Dehumidifier During Cooling	Selects if dehumidification is disabled during a cooling call. (Only available if Dehumidifier Control is set to Whole Home.)	No Yes
Dehumidifier Forces Fan	Select if dehumidification can turn on the fan. (Only available if Dehumidifier Control is set to Whole Home.)	No Yes
Dehumidifier Service Reminder	The period for displaying the "Dehum Service Reminder" message. (Only available if Dehumidifier Control is set to Whole Home.)	Off 1 to 12 months or "Off" to disable
Dehumidifier Overcooling Limit	Selects the amount of overcooling that can occur for dehumidification. (Only available if Dehumidifier Control is set to Air Conditioner or AC w/IAQ Output.)	3°F (1.5°C) 1°F to 3°F (0.5°C to 1.5°C)
Dehumidify in Vacation Mode	Selects if dehumidification with the air conditioner is done in Vacation Mode. (Only available if Dehumidifier Control is set to Air Conditioner or AC w/IAQ Output.)	No Yes
Vacation Dehumidifier Low Temp Limit	Sets the lowest temperature the air conditioner will cool to, to meet RH setpoint in Vacation Mode. (Only available if Dehumidifier Control is set to Air Conditioner or AC w/IAQ Output.)	75°F (23.5°C) 70°F to 85°F (21°C to 28.5°C)

SETUP & TESTING

Ventilation System Settings Table

Note: Ventilation can only be installed if humidification is not installed and Dehumidifier Control is not set to Whole Home or AC w/IAQ Output.

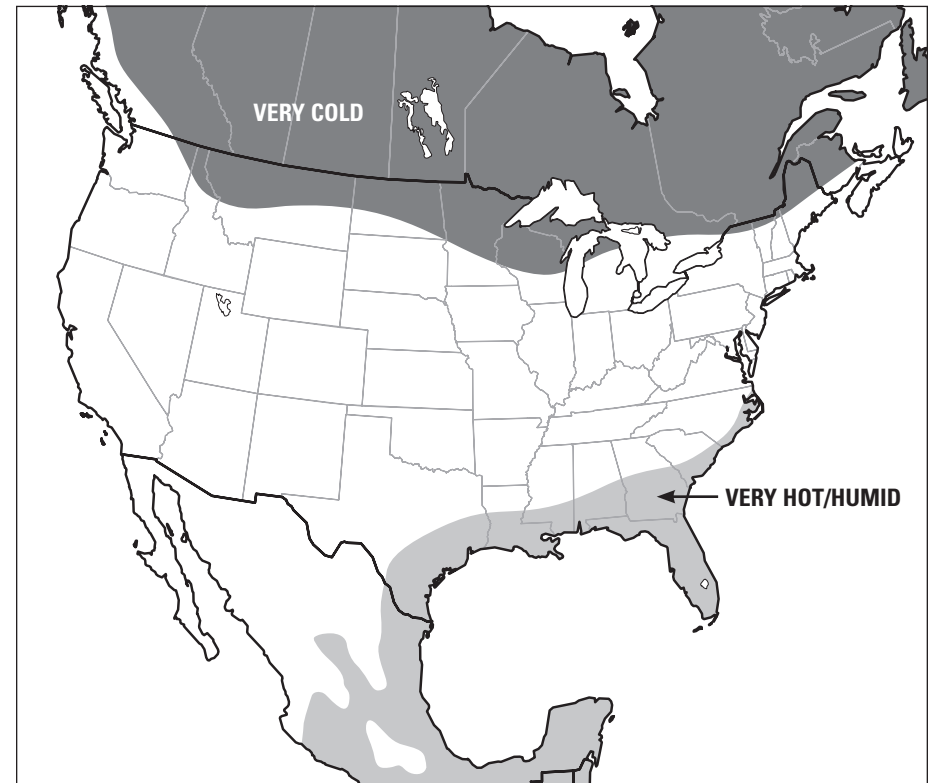
System setting	Description	Factory default setting (bold) and setting range
Fresh Air Vent Installed	Selects if ventilation is installed. (If set to no, no other ventilation settings will be available.)	No Yes
Fresh Air Forces Fan	Selects if ventilation forces the fan on.	No Yes
Fresh Air Setup	Selects if ventilation is configured through the ASHRAE setup or Timed. If ASHRAE setup is selected, the hourly ventilation time will be calculated using the ASHRAE recommendations. If Timed set-up is selected, the hourly ventilation time will be determined based on the Fresh Air Time value.	Timed ASHRAE
Fresh Air Time	Selects how many minutes per hour that ventilation will be active. (Only available if Fresh Air Setup is set to Timed.)	30 MIN/HR 0 to 60 MIN/HR
High Limit Outdoor Temp	Selects if ventilation is disabled if the outdoor temperature exceeds the outdoor high limit. (Only available if Fresh Air Setup is set to Timed and Outdoor Sensor is set to Installed or Automation.)	No Yes
Outdoor High Limit	Sets the high temperature limit for ventilation. (Only available if High Limit Outdoor Temp is set to Yes.)	100°F (38°C) 90°F to 100°F (32°C to 38°C)
Low Limit Outdoor Temp	Selects if ventilation is disabled if the outdoor temperature exceeds the outdoor low limit. (Only available if Fresh Air Setup is set to Timed and Outdoor Sensor is set to Installed or Automation.)	No Yes
Outdoor Low Limit	Sets the low temperature limit for ventilation. (Only available if Low Limit Outdoor Temp is set to Yes.)	10°F (-12°C) -10°F to 30°F (-24°C to 0°C)
High Limit Indoor RH	Selects if ventilation is disabled if the indoor RH exceeds the indoor RH limit. (Only available if Fresh Air Setup is set to Timed.)	No Yes
Indoor RH Limit	Sets the high indoor RH limit for ventilation. (Only available if High Limit Indoor RH is set to Yes.)	60% 50% to 70%
Number of Bedrooms	Selects the number of bedrooms to be used for the ASHRAE calculation. (Only available if Fresh Air Setup is set to ASHRAE.)	3 Bedrooms 1 to 6 Bedrooms
Number of Occupants	Selects the number of occupants to be used for the ASHRAE calculation. (Only available if Fresh Air Setup is set to ASHRAE.)	4 Occupants 1 to 10 Occupants
Home Size	Selects the home size to be used for the ASHRAE calculation. (Only available if Fresh Air Setup is set to ASHRAE.)	2500 SQ FT 1000 to 5000 SQ FT
Fresh Air CFM	Selects the ventilation CFM to be used for the ASHRAE calculation. (Only available if Fresh Air Setup is set to ASHRAE.)	60 CFM 30 to 200 CFM
Select Climate	Selects the climate to be used for the ASHRAE calculation. (Only available if Fresh Air Setup is set to ASHRAE.) To determine what region you are in, refer to the map on the following page.	Normal Very Hot/Humid Very Cold
ASHRAE Cycle Time	Displays the Fresh Air Time calculated by the ASHRAE standard. (Only displayed if Fresh Air Setup is set to ASHRAE.)	Minutes/Hour
Fresh Air Service Reminder	The period for displaying the "Fresh Air Service Reminder" message.	Off 1 to 12 months or "Off" to disable

Note: In ASHRAE set-up temperature and humidity limits are disabled.

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

SETUP & TESTING

CLIMATE MAP FOR ASHRAE FRESH AIR SETUP



SETUP & TESTING

REMOVAL OF INDOOR AIR QUALITY CONTROL BUTTONS

If any of the Indoor Air Quality control features are not installed, the corresponding button can be removed using the following procedure:

Step 1: Verify the specific Indoor Air Quality control feature is not installed in the Installer System Settings (see pages 11-14).

Step 2: From the home screen (see page 20), **press and hold** the Indoor Air Quality button you wish to remove for 7 seconds.

Step 3: The message center will display REMOVE BUTTON and the options of NO and YES (NO will be flashing).

Step 4: Press ▲ or ▼ to select YES.

Step 5: Press [DONE].

Step 6: The button is now removed.

Note: Once the button is removed it can be brought back by installing the corresponding Indoor Air Quality feature (see pages 11-14).



SYSTEM TEST MENU

The system test menu is used to test a system after installation. The outputs of the thermostat can be manually activated to test their function. The instructions below show how to enter the test mode and turn outputs on and off.

HOW TO ENTER THE SYSTEM TEST MENU:

Press [MODE] to set system to off.

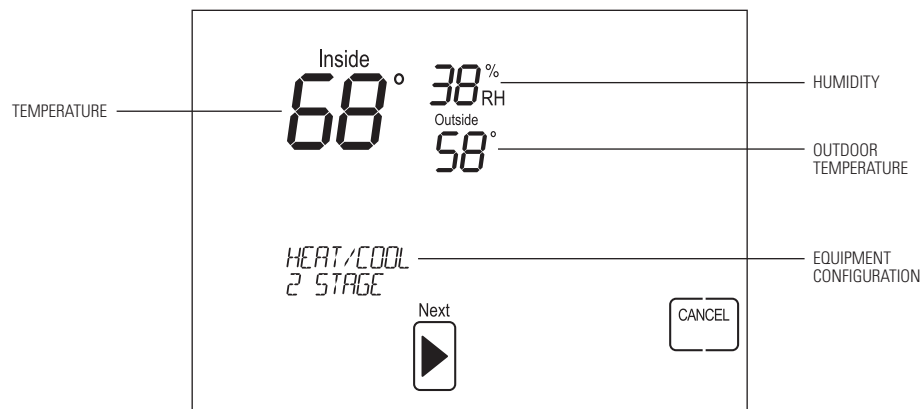
Press and hold [FAN] and [MODE] for three seconds to enter system test mode.

The first screen of the installer test displays the equipment configuration.

Press [NEXT] to enter the first installation test or [CANCEL] to exit.

SYSTEM TEST STEPS

Heating equipment test
Cooling equipment test
Fan equipment test
Humidification equipment test
Dehumidification equipment test
Ventilation equipment test



SETUP & TESTING

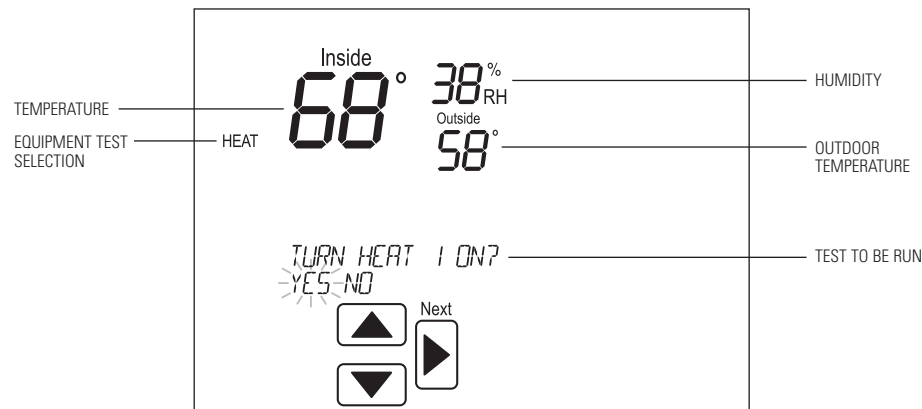
SYSTEM TEST MENU (CONTINUED)

Each equipment test will begin with the selection of turning on the output or stage as shown below.

Press ▲ or ▼ to change the selection.

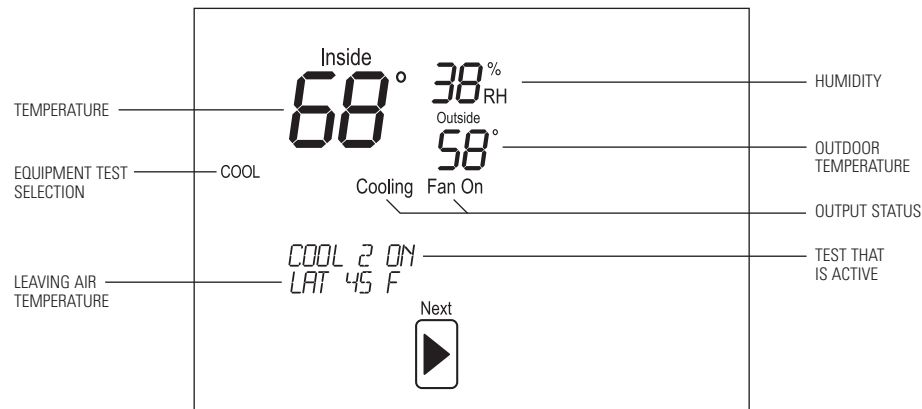
Press [NEXT] to accept the selection and proceed to the next step.

If **YES** is selected, the thermostat will test the corresponding output. If **NO** is selected, the thermostat will proceed to the next step.



While the equipment test is active the corresponding test information will be shown.

Press [NEXT] to accept the selection and proceed to the next test selection.



SETUP & TESTING

SYSTEM TEST TABLES

Heat / Cool Heating Equipment Test						
Heat Type		W	W2	Y	Y2	G
Gas	1st Stage Test	ON				
Gas	2nd Stage Test	ON	ON			
Electric	1st Stage Test	ON				ON
Electric	2nd Stage Test	ON	ON			ON

Heat Pump Heating Equipment Test (Electric Heat)									
Compressor Stages	Aux Stages		W	W2	Y	Y2	O/B set to		G
							O	B	
1	1	1st Stage Test			ON			ON	ON
1	1	2nd Stage Test	ON		ON			ON	ON
2	1	1st Stage Test			ON			ON	ON
2	1	2nd Stage Test			ON	ON		ON	ON
2	1	3rd Stage Test	ON		ON	ON		ON	ON
1	2	1st Stage Test			ON			ON	ON
1	2	2nd Stage Test	ON		ON			ON	ON
1	2	3rd Stage Test	ON	ON	ON			ON	ON
2	2	1st Stage Test			ON			ON	ON
2	2	2nd Stage Test			ON	ON		ON	ON
2	2	3rd Stage Test	ON		ON	ON		ON	ON
2	2	4th Stage Test	ON	ON	ON	ON		ON	ON

Note: System Variable 03, O/B operation selects O or B.

Heat Pump Heating Equipment Test (Gas Heat)									
Compressor Stages	Aux Stages		W	W2	Y	Y2	O/B set to		G
							O	B	
1	1	1st Stage Test			ON			ON	ON
1	1	2nd Stage Test	ON					ON	
2	1	1st Stage Test			ON			ON	ON
2	1	2nd Stage Test			ON	ON		ON	ON
2	1	3rd Stage Test	ON					ON	
1	2	1st Stage Test			ON			ON	ON
1	2	2nd Stage Test	ON					ON	
1	2	3rd Stage Test	ON	ON				ON	
2	2	1st Stage Test			ON			ON	ON
2	2	2nd Stage Test			ON	ON		ON	ON
2	2	3rd Stage Test	ON					ON	
2	2	4th Stage Test	ON	ON				ON	

Note: System Variable 03, O/B operation selects O or B.

SETUP & TESTING

SYSTEM TEST TABLES (CONTINUED)

Heat / Cool Cooling Equipment Test					
	W	W2	Y	Y2	G
1st Stage Test			ON		ON
2nd Stage Test			ON	ON	ON

Heat Pump Cooling Equipment Test							
	W	W2	Y	Y2	O/B set to		G
					O	B	
1st Stage Test			ON		ON		ON
2nd Stage Test			ON	ON	ON		ON

Note: System Variable 03, O/B operation selects O or B.

Fan Equipment Test				
W	W2	Y	Y2	G
				ON

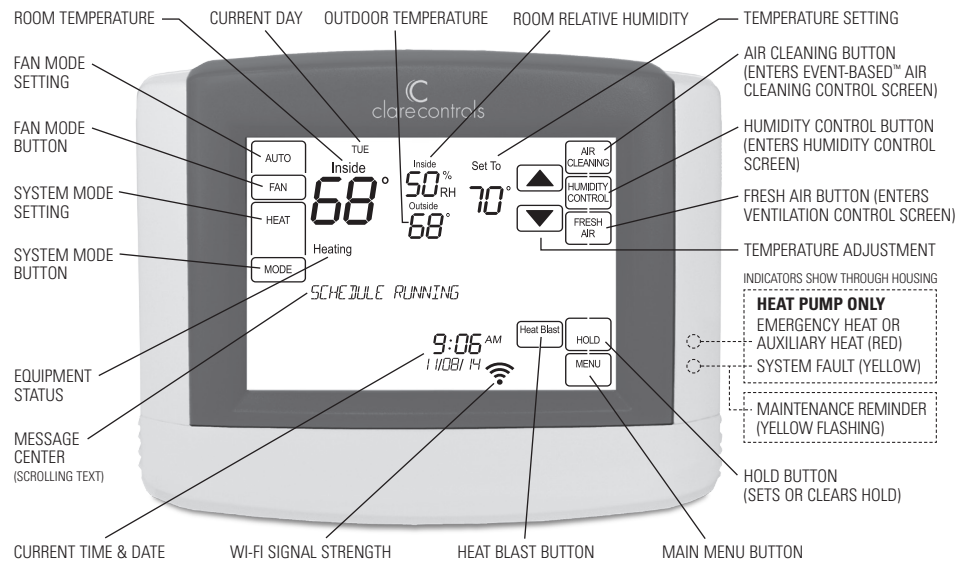
Humidification Equipment Test	
I1/I2	G
ON	ON

Dehumidification Equipment Test	
I1/I2	G
ON	ON

Ventilation Equipment Test	
I1/I2	G
ON	ON

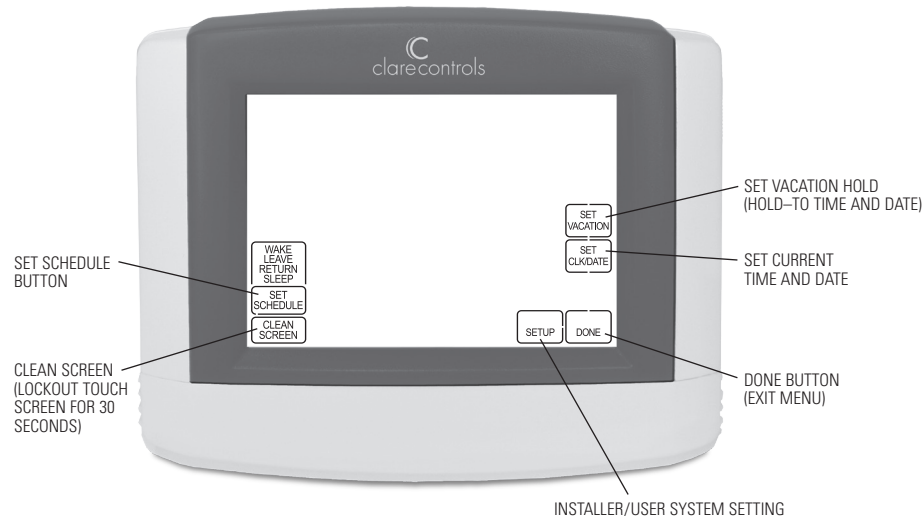
QUICK REFERENCE TO CONTROLS & DISPLAY

HOME SCREEN



NOTE: BACKLIGHT IS ACTIVATED WITH FIRST BUTTON PRESS AND AUTOMATICALLY TURNS OFF.

MAIN MENU



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.

TEMPERATURE SETTINGS DO NOT CHANGE

Make sure heating and cooling temperatures are set to acceptable ranges:

- Heat: 40° to 90°F (4° to 32°C).
- Cool: 50° to 99°F (10° to 37°C).

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.

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 07 (Fan Control), to make sure the fan control is properly set to match the type of system (see page 9).

HEAT PUMP ISSUES COOL AIR IN HEAT MODE, OR WARM AIR IN COOL MODE

- Check System Setting 03 (O/B Operation) to make sure the reversing valve operation matches the heat pump.

HEAT/COOL BOTH ON AT SAME TIME

- Check SW1 (Equipment Type), to make sure it is set to match the installed heating/cooling equipment (see page 8).
- Check to make sure heating and cooling wires are not shorted together.

HEATING EQUIPMENT IS RUNNING IN COOL MODE

- Check SW1 (Equipment Type), to make sure it is set to match the installed heating/cooling equipment (see page 8).

"HEATING" IS NOT DISPLAYED

- Check Installer System Setting number 04 (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 Installer System Setting number 04 (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 15 (Outdoor Sensor) is set to Installed or Automation.
- Verify that the outdoor sensor is functioning correctly or if it is set to Automation that it has not timed out. If the sensor is functioning correctly the outdoor temperature will display in the outdoor temperature location (see Home Screen on page 20 for the location).

TROUBLESHOOTING

TROUBLESHOOTING WI-FI CONNECTION

The Wi-Fi connection status is communicated through the use of the radio strength indicator and the message center. The table below describes the various statuses and the corresponding message and radio bar display.

Wi-Fi connection status	Radio status indicator	Message Center
Normal Operation.	Wi-Fi signal strength is indicated by the appropriate number of bars. 	No corresponding message
The thermostat Wi-Fi settings have not been entered. Refer to Wi-Fi Setup on page 2 for instructions for entering the Wi-Fi settings.	The frame is displayed and the bars cycle from 0 to 4.      	Displays the SSID of the thermostat. Note: The SSID will be used to identify the thermostat when using a smart device to connect the thermostat to your Wi-Fi router.
The thermostat cannot connect to the Wi-Fi router. Verify that the router is functioning properly.	The frame and all bars flash on and off. 	WiFi Connection Lost
Indicates the thermostat was not configured properly when connecting to the router. Confirm there is no IP conflict and repeat Wi-Fi setup.	The display will alternate between displaying the frame and all bars.    	Internet Connection Lost
There is an internal error with the thermostat Wi-Fi radio. The thermostat will continue to control the HVAC and indoor air quality control equipment, but will not be able to connect to Wi-Fi. Contact an HVAC professional for repair.	The frame will flash on and off. 	Radio Error
Wi-Fi radio turned off. Refer to the Accessing Wi-Fi Settings Menu in the Owner's Manual for information about turning the Wi-Fi radio on.	Not displayed.	WiFi Turned Off

ERROR CODES

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
01	"SENSOR ERROR"	Open temperature sensor circuit
02		Shorted temperature sensor circuit
03	"EEPROM ERROR"	Error in permanent memory
06	"REMOTE SENSOR ERROR"	Open remote temperature sensor circuit
07		Shorted remote temperature sensor circuit
08	"SUPPORT MODULES LOST"	All support modules with controlling temperature sensors are in error

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.
- Temperature control.
- Heat Blast® raises the room temperature 3°F to 5°F.
- Large touch screen with adjustable backlight – constant backlight option available.
- Message center provides feedback and instructions.
- 7 day programmability.
- Displays room temperature, room humidity, temperature setting, and outdoor temperature.
- Air filter, humidifier, dehumidifier, fresh air, 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 temperature at the start of a program event.
- Built in compressor protection prevents damage to your equipment.
- System test mode.

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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