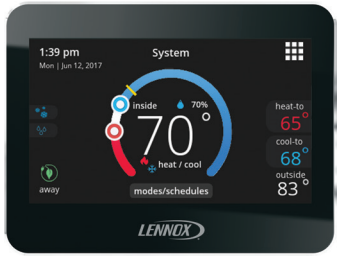


Disponible en español en www.LennoxPros.com.

iComfort® M30 Smart Thermostat

Installation and Setup Guide

507739-01
10/2017
Supersedes 9/2017

Tables of Contents

⚠ WARNING

This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

Shipping and Packing List

Item	Quantity
M30 Thermostat with backplate attached	1
Wall plate	1
Mounting screws (M3.5x25mm self-tapping screws)	2
Wall anchors	2
Warranty sheet	1
Installation & setup guide	1
User guide	1
System Wiring Diagrams Fold-Out Sheet	1

Thermostat

Unit Dimensions (H x W x D)

Dimensions: 3-5/16 x 4-5/16 x 7/8 in. (84 x 110 x 22mm)

Wall Plate Dimensions (H x W)

Dimensions: 4-1/2” x 5-3/4” (114 x 146mm)

Compressor Short-Cycle Protection (Compressor Protect)

This thermostat is equipped with automatic compressor protection to prevent potential damage due to short cycling or extended power outages.

The non-adjustable short-cycle protection provides a 5-minute delay between heating or cooling cycles to prevent the compressor from being damaged.

NOTE: *There is an option in advanced settings that will allow this safety feature to be disabled. By default it is set to ON. Short Cycle protection is disabled during testing of the outdoor unit. It is automatically reset once the test is completed.*

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.

Installation and service must be performed by a licensed professional HVAC installer (or equivalent) or a service agency.

⚠IMPORTANT

In all applications, the M30 thermostat can only be used with all residential units and approved commercial split-system matches, and those which meet the following installation criteria:

Installation uses 18 gauge thermostat wire or larger and wire run length DOES NOT EXCEED 300 feet (91 meters).

Load from any thermostat connection is 1 AMP or less.

⚠WARNING

Always turn off power at the main power source by switching the circuit breaker to the OFF position before installing or removing this thermostat.

All wiring must conform to local and national building and electrical codes and ordinances.

⚠CAUTION

This is a 24VAC low-voltage thermostat. Do not install on voltages higher than 30VAC.

Do not short (jumper) across terminals on the gas valve or at the system control to test installation.

This will damage the thermostat and void the warranty.

Installation Considerations

Before beginning installation, note the type of equipment, number of stages, and any accessories being installed. This thermostat is a 24VAC low-voltage thermostat and requires a common wire to the thermostat to operate.

- Shut off all power to system components before installing thermostat.
- Make sure that all wiring conforms to local and national building and electrical codes and ordinances.
- Never short (jumper) across terminals on the gas valve or at the system control to test installation. This will damage the thermostat and void the warranty.
- Never install thermostat on outside walls or in direct sunlight.

Outdoor Temperature Sensor Installation (Optional)

Install the optional (purchase separately) outdoor sensor (X2658) on a northern wall of the home, away from direct sunlight or other heat sources that may affect its sensitivity.

The sensor is required for:

- Outdoor temperature displays on the home screen if enabled
- Balance point adjustment and control. The sensor enables optimal heating equipment operation via programmable balance points.
- Dew point humidity control
- Humiditrol EDA operation (required)
- Requires 22AWG thermostat wire or larger and not to exceed 300 feet (91 meters) maximum run.
- Connects to **To** and **Tc** terminals on thermostat

Connect outdoor sensor to terminals Tc and To on thermostat.

NOTE: *If alert code 108 appears on the screen, check your wiring connections to terminals To and Tc on the thermostat. Check resistances using the resistance table provided in the outdoor sensor instruction.*

Thermostat Installation

New Installation

The following procedure is for new installation or installing the M30 to a new location in an existing home.

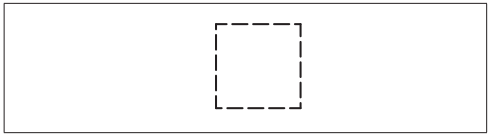
1. Unpacked the thermostat and open the case with a thin-blade screwdriver. Place between wall base and unit and twist to separate unit from base.

2. Select a location for the thermostat about 5 feet (1.5 meters) above the floor in an area with good air circulation at average temperature.

3. Do not install the thermostat where it can be affected by:
   - Drafts or dead spots behind doors and in corners.
   - Building entrances or automatic doors
   - Heat generating equipment such as kitchen equipment
   - Enclose environment unless a remote indoor sensor is used.
   - Hot or cold air from ducts.
   - Radiant heat from sun or appliances.
   - Concealed pipes and chimneys.
   - Non-heated (non-cooled) areas such as an outside wall behind the thermostat.

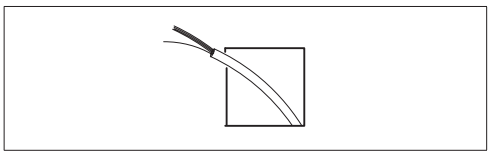
4. Run thermostat wiring from indoor unit to location where thermostat will be installed.

5. Drill or make opening through wall for thermostat wiring 3/4” x 3/4” (19mm x 19mm).



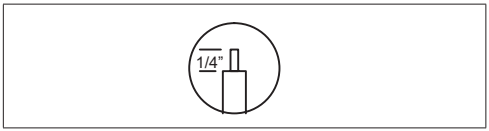
6. Pull about 3 inches (76mm) of thermostat wire through the opening and removed outer thermostat wire jacket. This will help in routing the thermostat wiring to the proper thermostat terminals.

NOTE: *Thermostat wires and outdoor sensor wire can be run in the same bundle of wires if needed.*



7. Seal the hole in the wall with a suitable material to prevent drafts from entering the thermostat case. Not doing so could affect the thermostat’s internal temperature sensor.

8. Trim 1/4 inch (6 mm) insulation from end of each thermostat wire lead.



Replacement Installation

Use the following two steps to replace an existing thermostat.

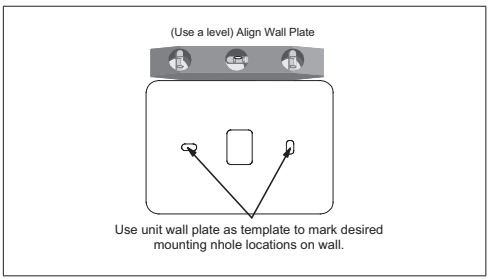
1. Remove existing thermostat.

2. Note the wire colors and what terminals they are connected for future reference.

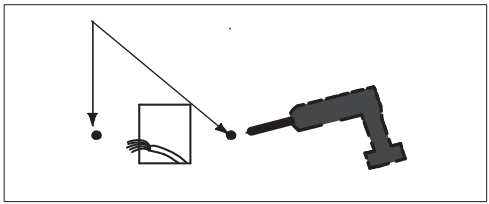
Common Installation Practices

1. Use the provided wall plate as a template on where to drill the mounting holes.

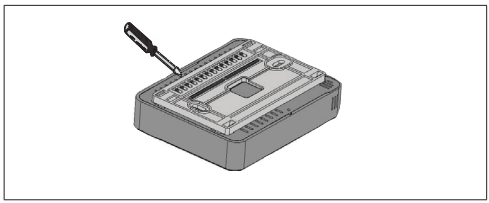
NOTE: *Installation of wall plate is optional. Use a field-provided level to allow for proper alignment.*



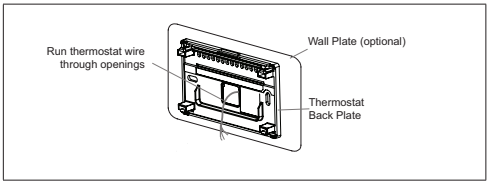
2. Drill 3/16” (5 mm) holes in wall for provided wall anchors. Insert provided wall anchors into drilled holes.



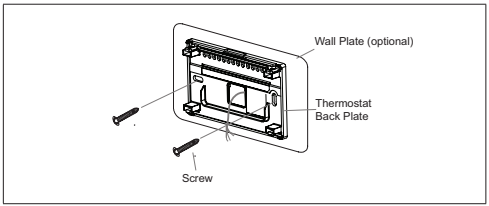
3. Remove back plate from main thermostat assembly using a flat-head screw driver.



4. Route thermostat and outdoor temperature sensor (optional) wiring from wall through center openings on wall plate (use is optional) and back plate.



5. Secure back plate and wall plate (optional) to wall with the two provided mounting screws.



THERMOSTAT TERMINAL INFORMATION

Table 1. Terminal Designations

Terminal	Purpose
Tc and To	Used for connection to an optional outdoor temperature sensor.
ACC1 and ACC2	Default factory software setting for ACC (Accessory) is off. Terminal function setting can be changed by going to **settings > advanced settings > terminal settings**. Available settings are off, humidify and dehumidify. Connect accessory to terminal ACC2 and change software setting to the applicable type of accessory. Power is supplied by R2 to ACC1 factory jumper. ***NOTE:*** *Do not remove the factory installed jumper between ACC1 and R2 terminals unless a secondary 24VAC power source is connected to ACC1.*
R2	This is the secondary 24VAC power source for ACC (Accessory). The R2 terminal is connected to the ACC1 terminal by factory provided jumper.
D/H	This terminal is for an optional dehumidifier or humidifier. Factory default software setting is for dehumidify. Terminal settings can be changed by going to **settings > advanced settings > terminal settings**. Available settings are off, humidify and dehumidify. ***NOTE:*** *The user interface refers to the terminal as H/D.*
W2	Second-stage heating (non-heat pump) or 4th stage (heat pump).
Y2	Second-stage heating or cooling.

Table 1. Terminal Designations

Terminal	Purpose
O/B	Heat pump reversing valve operations. When O (default) is selected under **settings > advanced settings > terminal settings**, the relay is ON during cooling and OFF during heating. When B is selected, the relay is ON during heating and OFF during cooling.
C	Common 24VAC
G	Fan relay
W1	First-stage heating (non-heat pump or emergency heat) or third-stage heating (heat pump)
Y1	First-stage heating or cooling
R	24VAC power

Table 2. O/B Terminal Relationship States

State	O/B Terminal Control
Power ON	O terminal : ON (If O terminal selected) B terminal : OFF (If B terminal selected
Heat only or emergency heat mode	O terminal : always OFF B terminal : always ON
Cool mode only	O terminal : always ON B terminal : always OFF

Table 2. O/B Terminal Relationship States	
State	**O/B Terminal Control**
Heat/Cool mode	During heating O terminal : OFF B terminal : ON During cooling O terminal : ON B terminal : OFF No Demand The terminal continues the previous ON / OFF state
Off mode	The terminal state continues the state before entering off mode

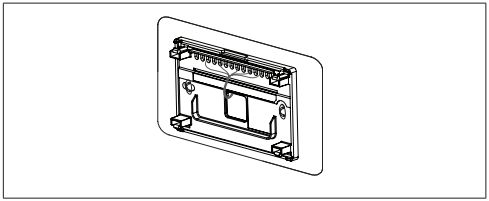
System Wiring Diagrams

For system diagrams, see the included fold-out ***iComfort® M30 Smart Thermostat System Diagrams*** sheet.

Connecting Thermostat Wiring

Use “Table 1. Terminal Designations” on page 8 for connecting the thermostat wiring to the back plate terminals.

If this is a replacement thermostat, connect to terminals as noted when removing the old thermostat. If terminals were different on old thermostat, use “Table 1. Terminal Designations” on page 8 and wiring diagrams provided in the kit.



NOTE: *Remember to seal the hole in the wall with a suitable material to prevent drafts from entering the thermostat case. Not doing so could affect the thermostat’s internal temperature sensor.*

Supported Configurations

See “Table 3. Supported Configurations” on page 10.

Table 3. Supported Configurations

Outdoor unit setting	Indoor unit setting	Comp. Stages	Indoor Heat Stages	Heat Stages	Cool Stages	Heat Stage				EM Heat Stage		Cool Stage	
						1st	2nd	3rd	4th	1st	2nd	1st	2nd
HP	No Heat	1	0	1	1	Y1	-	-	-	-	-	Y1	-
		2	0	2	2	Y1	Y1+Y2	-	-	-	-	Y1	Y1+Y2
	Gas / Oil	1	1	2	1	Y1	W1	-	-	W1	-	Y1	-
		1	2	3	1	Y1	W1	W1+W2	-	W1	W1+W2	Y1	-
		2	1	3	2	Y1	Y1+Y2	W1	-	W1	-	Y1	Y1+Y2
		2	2	4	2	Y1	Y1+Y2	W1	W1+ W2	W1	W1+W2	Y1	Y1+Y2
	Elec	1	1	2	1	Y1	Y1+W1	-	-	W1	-	Y1	-
		1	2	3	1	Y1	Y1+W1	Y1+W1+W2	-	W1	W1+W2	Y1	-
		2	1	3	2	Y1	Y1+Y2	Y1+Y2+W1	-	W1	-	Y1	Y1+Y2
		2	2	4	2	Y1	Y1+Y2	Y1+Y2+W1	Y1+Y2+W1 +W2	W1	W1+W2	Y1	Y1+Y2

Table 3. Supported Configurations

Outdoor unit setting	Indoor unit setting	Comp. Stages	Indoor Heat Stages	Heat Stages	Cool Stages	Heat Stage				EM Heat Stage		Cool Stage	
						1st	2nd	3rd	4th	1st	2nd	1st	2nd
A/C	No Heat	1	0	-	1	-	-	-	-	-	-	Y1	-
		2	0	-	2	-	-	-	-	-	-	Y1	Y1+Y2
	Gas / Oil or Elect	1	1	1	1	W1	-	-	-	-	-	Y1	-
		1	2	2	1	W1	W1+W2	-	-	-	-	Y1	-
		2	1	1	2	W1	-	-	-	-	-	Y1	Y1+Y2
		2	2	2	2	W1	W1+W2	-	-	-	-	Y1	Y1+Y2
No OU	Gas / Oil or Elect	0	1	1	0	W1	-	-	-	-	-	-	-
		0	2	2	0	W1	W1+W2	-	-	-	-	-	-

OU = Outdoor Unit
Elect = Electrical Heat

Install Thermostat to Backplate

The thermostat assembly simply snaps onto the back plate. Once secure to the back plate apply power to the system. Thermostat should boot up and go into the commissioning process.

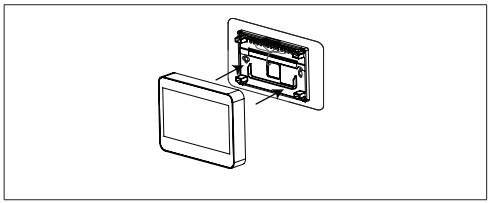


Figure 1. Installing Thermostat

If power is applied and the thermostat screen remains off, inspect and verify all wire connections.

Commissioning and Advanced Settings

After power is applied to the thermostat for the first time it displays the Lennox® “splash screen”.

The Installer is then presented with the several Setup Screens to configure the system prior to operation.

Commissioning

“Table 4. Commissioning Screens” on page 13 list all of the screens and parameters that can be configured during the commissioning phase.

Table 4. Commissioning Screens

MENU		SETTING (default is bold)		Notes:
DEALER INFO	**Dealer ID Number**	Enter id		Installer can add the dealer number and phone number using the keyboard tool.
	Dealer Phone Number	Enter phone		
	Name, email, website, dealer address (address1, address2, city, state and zip/postal code			
GENERAL	**Language**	**English**		
		Français		
		Español		
	Country/Region	**United States**		
		Canada		
		Australia		
GENERAL	**Date and Time**	Time		Adjust the date and time using the set date and set time tools.
		Date		
		Time Zone\	Atlantic	
			Eastern	
			Central	
			Mountain	
			Pacific	
			Alaska	
			Hawaii	
			Samoa	
			Chamorro (Guam)	

Table 4. Commissioning Screens

MENU		SETTING (default is bold)		Notes:
GENERAL	**Date and Time**	Daylight Savings	On or Off	
		Temperature Units	°F or °C	
TERMINAL SETTINGS	(See Terminal Settings on page 17)			
SYSTEM SETUP	(See System Setup on page 15)			
OUTDOOR SENSOR	(See Outdoor Sensor on page 16)			
HUMIDITY	**Humidity Control**	Off		
		Dehumidify		
NOTIFICATIONS (Reminders)	**Replace Filter 1**	Disabled		Adjustable 3, 6, 12, 24 months or custom date, can be set to calendar time or run-time. Touch custom to access the Set date Tool screen to input custom date settings.
	Replace Filter 2	Disabled		
	Replace UV Bulb	Disabled		
	Replace Humidifier Pad	Disabled		
	PureAir Maintenance	Disabled		
	Maintenance Reminder	Disabled		

Advanced Settings

"Table 5. Advanced Settings" on page 15 list the menu options and parameters that can be set under the Advance Settings menu option.

Table 5. Advanced Settings

MENU		SETTING (default is bold)	Notes:
SYSTEM SETUP	Outdoor Unit Type	**Not Installed**	
		1 Stage A/C Unit	
		2 Stage A/C Unit	
		1 Stage HP Unit	
		2 Stage HP Unit	
		Outdoor Unit Capacity - 36 kBtu	Adjustable 18 to 60 kBu
		Outdoor Unit 1st Stage Capac (capacity)	Adjustable 30 to 100% (This setting is only available if outdoor unit is 2-stage.)
	Indoor Unit Type	**Not Installed**	
		1 Stage Electric	
		2 Stage Electric	
		1 Stage Oil	
		2 Stage Oil	
		1 Stage Gas	
		2 Stage Gas	

Table 5. Advanced Settings

MENU		SETTING (default is bold)	Notes:
SYSTEM SETUP	**Humidifier**	**Not Installed**	These options only appear under System Setup if the H/D and ACC terminals have been enabled for the specific type of accessory. Go to Terminal Settings to enabled attached accessory for the specific terminal being used.
		Humidification	
	Dehumidifier	**Not Installed**	
		Humiditrol - Min	
		Humiditrol - Mid	
		Humiditrol - Max	
		Auxiliary Dehumidifier	
OUTDOOR SENSOR		**Yes** or No	Required for high and low balance points option.
RESIDUAL COOL		**0**, 30, 60, 90, 120 seconds, -300 (5 min delayed)	
BALANCE POINT		**Disabled** or Enabled	When enabled: Low Balance Point: 25°F (-20 to 72°F) High Balance Point: 50°F (-17 to 75°F)
TEMPERATURE CONTROL MODE		Normal and **Comfort**	
WALL INSULATION		Poor, **Average** and Good	
DEADBAND		3°F Adjustable (3 to 8°F)	
SMOOTH SETBACK RECOVERY		**Enabled** or Disabled	
OFFSET		Temperature Offset - 0°F	Adjustable (-5 to 5°F)
		Humidity Offset - 0%	Adjustable (-10 to 10%)

Table 5. Advanced Settings

MENU		SETTING (default is bold)	Notes:
STAGE DIFFERENTIAL		Stage 1 - 1.0°F	Adjustable (0.5 to 8.0°F)
		Stage 2 - 1.0°F	Adjustable (0.5 to 8.0°F)
		Stage 3 - 0.5°F	Adjustable (0.5 to 8.0°F)
		Stage 4 - 0.5°F	Adjustable (0.5 to 8.0°F)
STAGE DELAY		**On** or Off	
		Stage 2 through 4 - 20 min.	Adjustable (5 to 120 minutes)
H/C STAGES LOCKED IN		Enable or **Disable**	Turns heating stages off separately
STAGE 2 HP LOCK TEMP		**Off**, 40°F, 45°F, 50°F, 55°F	Heat Pump - for dual-fuel applications (locks out 2nd stage compressor)
COMPRESSOR PROTECT		**On** or Off	
DISPLAY PERFORMANCE REPORT		**On** or Off	
TERMINAL SETTINGS	H/D	Off	
		Humidify	
		Dehumidify	
	ACC	Off	
		Humidify	
		Dehumidify	
		Ventilation (future use)	Not selectable at this time.
	O/B	**O (energized during cooling)**	
		B (energized during heating)	
SYSTEM TEST MODE		Confirm Button	Installer run tests to check all output relays. Tests confirm signals between thermostat/unit are being sent/received. Stops system to run system tests

Table 5. Advanced Settings

MENU	SETTING (default is bold)	Notes:
RESET SETTING	Confirm Button	Resets all parameters to factory settings
RESTART	Confirm Button	Reboot the thermostat.

Advanced Settings Parameter Descriptions

Table 6. Parameter Descriptions

Parameter Name	Definition
Smooth Setback Recovery (SSR)	SSR is an algorithm designed to smoothly" reach a occupied program schedule setpoint. The algorithm looks 2 hours ahead for the occupied program schedule period's setpoint. If the occupied setpoint requires the system to turn on (present temperature below the heat setpoint or above the cool setpoint), then SSR will calculate a new setpoint. Once initiated, SSR monitors the change in room temperature and calculates a new setpoint every 30 seconds. Then SSR provides this new setpoint for the heating and cooling algorithms; the new setpoint will be displayed on the User Interface. **SSR Rules:** • SSR is enabled when both Smooth Setback Recovery" is set to enabled (default) and the program schedule is turned on. • SSR does NOT turn off stage delay timers. • SSR will NOT change the dead band between heating and cooling modes. • SSR will not overshoot the target set point. • SSR will reset if the user updates the program schedule during the active SSR period. Smooth Setback Recovery - default is enabled . ***NOTE:*** *SSR aims to bring the sensor temperature (room temperature) to the value of the next active set point at the exact time the next active set point is associated with. This means that conditioning to reach the next active set point starts before the currently active set point period expires.*
Offset	This is a feature that lets you adjust the room temperature reading +/- 5°F. This helps if your thermostat is in a slightly warm or cold spot, or if the room temperature does not match your old thermostat. The other option setting in our thermostat is humidity offset which is basically the same as temperature, but works on a humidity percentage instead.

Table 6. Parameter Descriptions

Parameter Name	Definition
Stage Differential	There are four options for stage differential: • 1st Stage Differential: The default is 1.0°F. The first stage differential is the difference between the equipment activation and deactivation temperatures. The first stage differential is used in all models. It can be programmed between 0.5 and 8.0°F in 0.5°F steps. • 2nd Stage Differential: The default is determined by the system setup. The second stage differential is used in the multi-stage model only. The second stage differential is the difference in temperature between the second stage activation and the first stage activation. It can be programmed between 0.5 and 8.0°F in 0.5°F steps. If system has only 1st stage equipment, this item is hidden from installer screen. • 3rd Stage Differential: This setting is used with the multi-stage model, in heat pump applications only. The default is determined by the system setup. The third stage differential is the difference in temperature between the third stage activation and the second stage activation. It can be programmed between 0.5 and 8.0°F in 0.5°F steps. If system has no more than three stages equipment, this item is hidden from installer screen. • 4th Stage Differential: This setting is used with the multi-stage model, in heat pump applications only. The default is determined by the system setup. The fourth stage differential is the difference in temperature between the fourth stage activation and the third stage activation. It can be programmed between 0.5 and 8.0°F in 0.5°F steps. If system does not have fourth stage equipment, this item is hidden from installer screen.

Table 6. Parameter Descriptions

Parameter Name	Definition
Stage Delays	There are four settings for this option: • Stage Delay Timer: The user shall be able to select ON (default) or OFF for stage delay timers. When OFF is selected all STG DELAYS timers (STG 2 DELAY, STG 3 DELAY, STG 4 DELAY) are disabled. This means that the stages are changed based on the temperature and not the timer delays. When ON is selected all STG DELAYS timers are enabled and set to their default values (20min). If system has only first stage equipment, this item is hidden from installer screen. • 2nd Stage Delays: The Stage Delay option is enabled when ON is selected from STG Delay Timers. The second stage delay is used in the multi-stage model only. The default is 20 minutes. If the first stage fails to advance the ambient temperature toward the setpoint by 1.0°F during each consecutive programmed time delay, then the second stage is activated until demand is satisfied. It can be programmed from 5 to 120 minutes in 5-minute steps. If system has only first stage equipment, this item is hidden from installer screen. • 3rd Stage Delays: The Stage Delay option is enabled when ON is selected from STG Delay Timers. This setting is used with the multi-stage model, in heat pump applications only. The default is 20 minutes. If the second stage fails to advance the ambient temperature toward the setpoint by 1.0°F during each consecutive programmed time delay, then the third stage is activated until demand is satisfied. It can be programmed from 5 to 120 minutes in 5-minute steps. If the system has no more than three stages, this item is hidden from the installer screen. • 4th Stage Delays: The Stage Delay option is enabled when ON is selected from STG Delay Timers. This setting is used with the multistage model, in heat pump applications only. The default is 20 minutes. If the third stage fails to advance the ambient temperature toward the set point by 1.0°F during each consecutive programmed time delay, then the fourth stage is activated until demand is satisfied. It can be programmed from 5 to 120 minutes in 5-minute increments. If the system does not have a fourth stage, this item is hidden from installer screen. If temperature is stuck at a value lower than the set point and multiple stages have been turned on because of the delay timers expired (not because of the temperature), all these stages shall stay on until the required temperature (set point + 0.5) is reached.
H/C STGS Locked In	The user shall be able to select disable or enable for H/C STGS LOCKED IN mode. In disable, mode different stages of heat or cool are turned off separately. In enable mode, different stages of heat or cool are turned off together.
Stage 2 HP Lock Temp	The User shall be able to select the STG 2 HP lock temp from 40F, 45F, 50F, 55F or OFF. The value is used in dual fuel algorithm to lock the second stage of compressor .The default is OFF which means it is disabled and is not used in dual fuel algorithm. If system has only 1st stage equipment, this item is hidden from installer screen. For more information see “Stage 2 HP Lock Temp” on page 28.

Table 6. Parameter Descriptions

Parameter Name	Definition
Feels Like	This feature will display the home temperature based on a combination of inputs. Feels Like uses outdoor temperature, indoor temperature, and indoor humidity to determine the “feels like” condition of the home.
Wider Set Point Range	By default your thermostat operates within a range of 60-90°F. Enabling this options changes the range to 44-99°F.
Heating Mode: Normal or Comfort	Options are Normal and Comfort. Default is Normal. When changing to Comfort Mode, several parameters are automatically modified for optimal system operations. The changed parameters are listed on the screen when set to Comfort. • Normal - This setting cools the home to the desired temperature setting. Once second-stage is activated by timer or differential, it will not stage down to first-stage until the next heating cycle demand. • Comfort - This is when the system could automatically stage up or down based on the current load demand.
Smart Away	This setting when enabled controls the temperature in the home when no one is home. For this to function, the Lennox Mobile app needs to be installed on a mobile device.
Low Balance Point	(Multistage Heat Pump Model only) -The default is 25°F. This option will only be available if an outdoor sensor is installed. If the outside temperature is below the programmed Low Balance Point, then the compressor stage operation is disallowed. This protects the compressor from operation and damage in cold outdoor temperatures. Also, if the heat pump is not effective at a low outdoor temperature, then it is more comfortable and efficient to go directly to the second stage. Low Balance Point can be disable in this screen. When this is enable, the options are from –40°F to (the High Balance Point temperature -2) in 1.0°F steps.
High Balance Point	The default is 50°F. This option is only available if an outdoor sensor is installed. If the outside temperature is above the High Balance point, then the auxiliary heat stage is disallowed. This prevents the more expensive auxiliary heat stage from operating, and forces the more efficient heat pump to satisfy the demand. High Balance Point can be disable in this screen. When this is enable, the high balance point range is from (the low balance point + 2) up to 75°F.
Deadband	The deadband setting is the minimum difference between the cooling and heating setpoints. This setting is used in auto-changeover to ensure smooth equipment operation. It also allows for flexibility of Humiditrol operation. The default deadband is 3 and the deadband is adjustable from 3 to 9°F degrees.

Table 6. Parameter Descriptions	
Parameter Name	**Definition**
Offset	There are two options for offset which are: • Temperature offset can be used to offset the displayed space temperature by up to +/- 5 degrees. The default temperature offset is zero. This offset also applies to the control temperature. • Humidity offset can be used to offset the displayed room humidity by up to +/- 10%, the default offset is 0.

Stage Control

- The following figures list typical configurations.

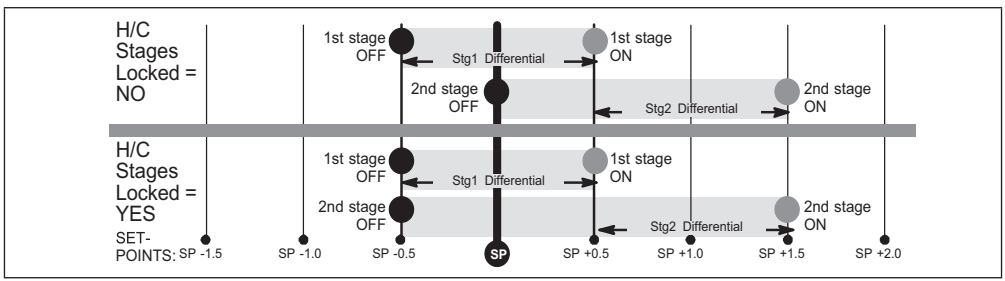


Figure 2. Cooling - 1 or 2 stages

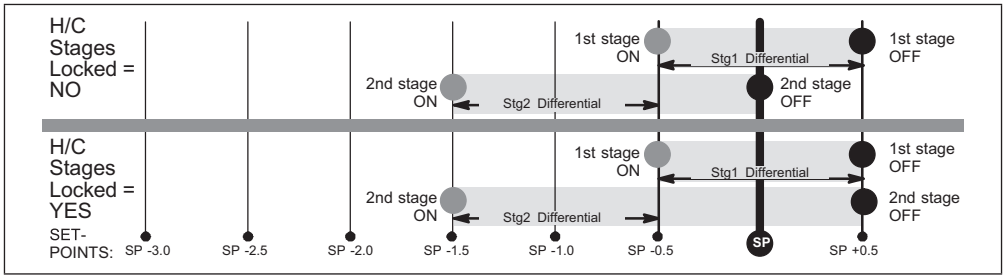


Figure 3. Heating - Non-Heat Pump or Heat Pump w/o backup heat - 1 or 2 stages

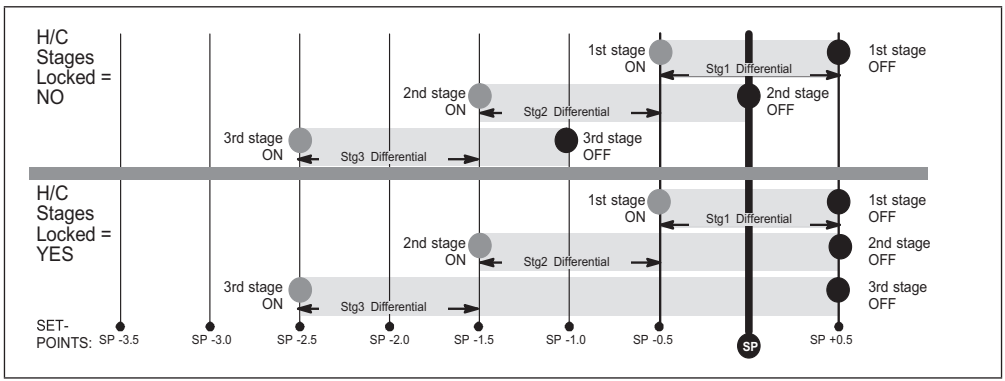


Figure 4. Heating - Heat Pump w/electric - 3 stage (2 compressor / 1 backup OR 1 compressor / 2 backup)

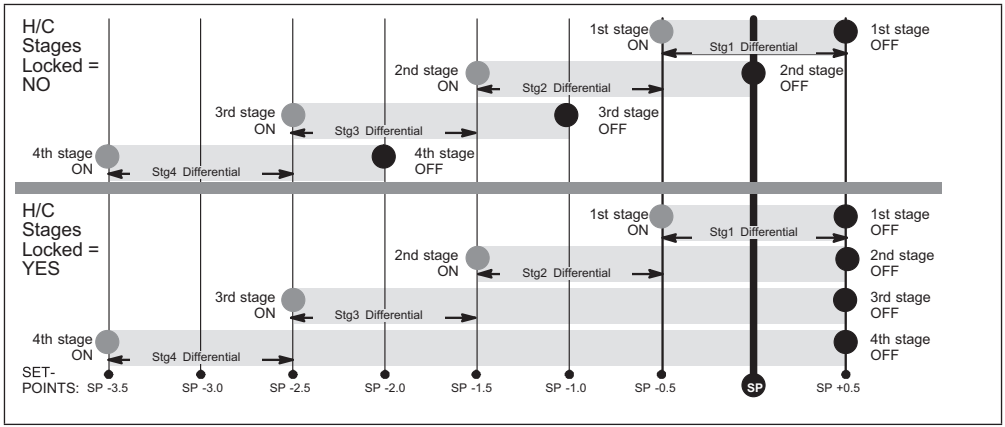


Figure 5. Heating - Heat Pump w/electric - 4 stage (2 compressor / 2 backup)

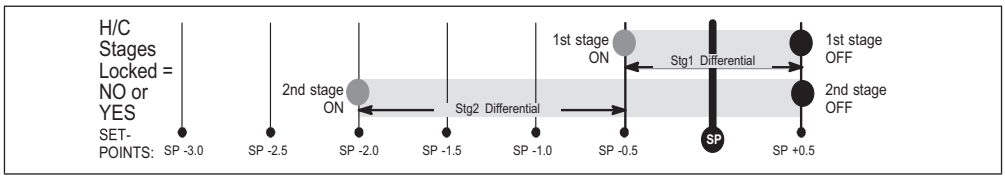


Figure 6. Heating - dual fuel - 2 stage (1 compressor / 1 backup)

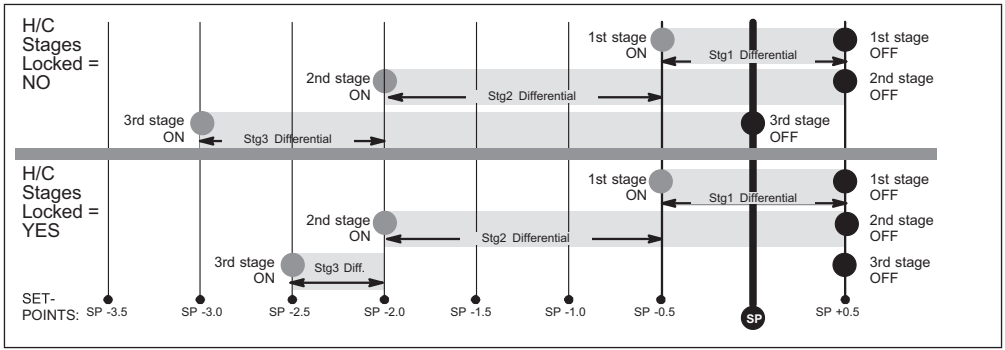


Figure 7. Heating - dual fuel - 3 stage (1 compressor / 2 backup)

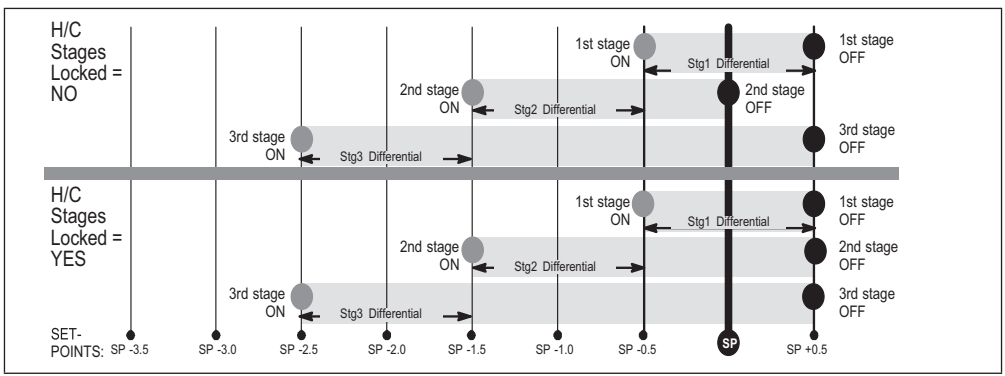


Figure 8. Heating - dual fuel - 3 stage (2 compressor / 1 backup)

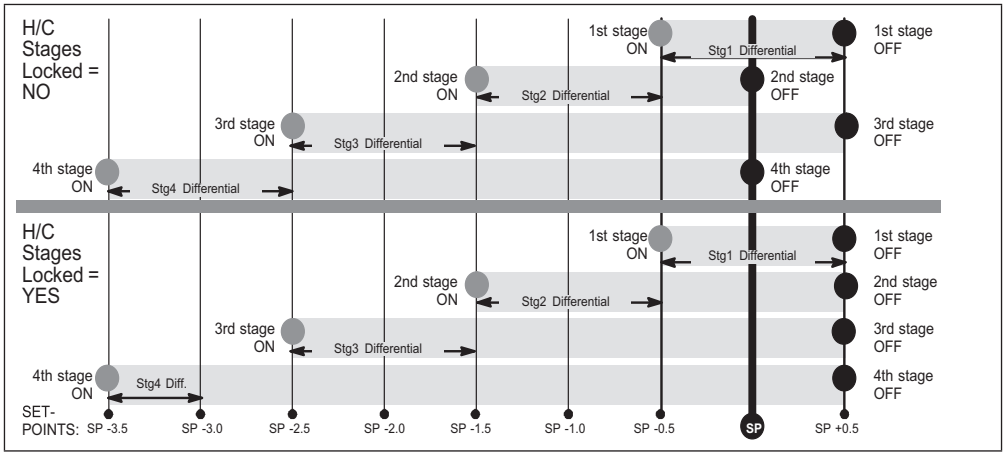


Figure 9. Heating - dual fuel - 4 stage (2 compressor / 2 backup)

Wi-Fi Connection

Wireless networks supported by this system are:

- 802.11b is 2.4Ghz band (max 11 Mbit/s)
- 802.11g is 2.4Ghz band (max 54 Mbit/s)
- 802.11n is 2.4Ghz band (max 130 Mbit/s)

This is for connecting the thermostat to a secure home wireless network.

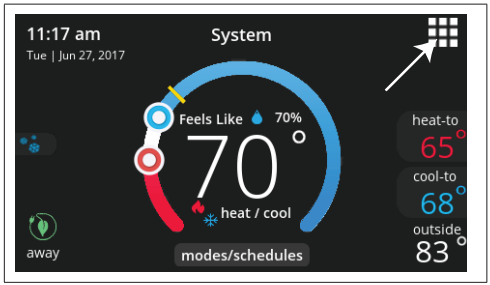
NOTE: *A router with Bonjour capabilities is required for this function. Check the router functions if the thermostat does not connect. Apple Bonjour® is an implementation of zero-configuration networking (Zeroconf), a group of technologies that includes service discovery, address assignment, and host name resolution.*

NOTE: *Never use a home guest account and never use an open router connection (non-secure).*

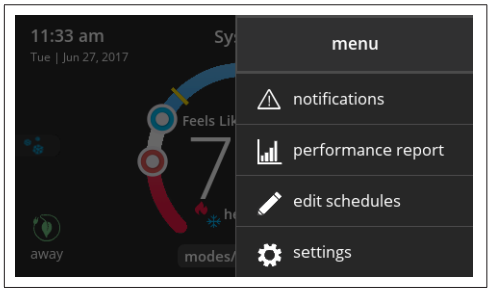
NOTE: *Always use a secure connection physically located in the home where the thermostat is located.*

NOTE: *If thermostat will not connect to the home router, then try using a hot spot to check thermostat Wi-Fi connectivity. A Wi-Fi extender may be required or move the router closer to thermostat for connection.*

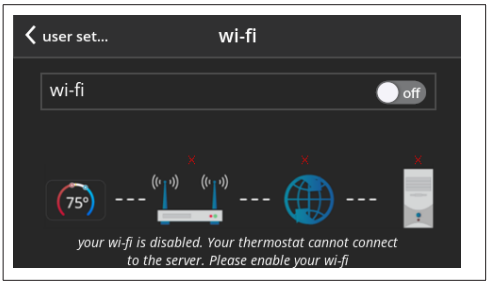
1. Touch the Menu icon in the upper right-hand corner of the display.



2. Touch the settings option on the menu.



3. If Wi-Fi is set to disabled, touch the > icon to enabled. The Wi-Fi screen will appear where you can toggle it to ON.



Connecting to Visible Home Wi-Fi Access Point

1. Touch Wi-Fi network. This will display a list of visible Wi-Fi networks within range of the thermostat.

2. Select the homeowner network and type in the password. Touch **join** to continue.

NOTE: *The thermostat can connect to a home wireless router that uses up to 32 characters in the access point name (visible or hidden).*

NOTE: *If you wish to see the characters you are typing, check show password.* The thermostat will support up to a 63 character password. The password cannot contain the % or # symbols.

3. If joining the network was successful, the access point name will appear next to Wi-Fi networks.

Connecting to Hidden Home Wi-Fi Access Point

1. Touch Wi-Fi network. Scroll down to others.

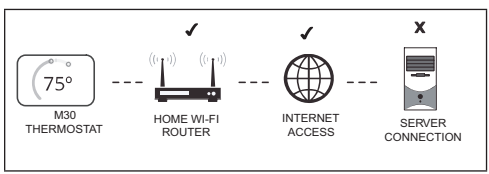
2. Enter new network information. You will need the name of the access point and the type of security being used. Select Security. Options are: none, WEP, WPA and WPA2. If your home Wi-Fi connection is unsecured, then Wi-FI security must be enabled using WEP, WPA or WPA2 via the router before proceeding. Consult your router documentation on how to enable Wi-Fi security.

3. Enter the password.

4. Touch join to complete.

5. If joining the hidden network was successful, the access point name will appear next to wi-fi networks.

Whether connecting to a visible or hidden network, if successful, a check mark will appear above both the router and Internet icons.



Wireless Terminology

The following terminology is used:

- Received Signal Strength Indication (RSSI). This indicates the signal strength of the Wi-Fi router being received by the scanning device (i.e., smart phone). So the higher the RSSI number (or less negative in some devices), the stronger the signal.
- Internet Protocol Address (IP address). This is an address assigned by your home router for each network device (e.g., computer, printer, thermostat).

Wireless Connectivity Troubleshooting Tips

Locate the thermostat and router away from other devices that could possibility interfere with wireless communications. Some examples of other devices that could interfere are:

- Microwave ovens
- Wireless cameras
- Portable phones and bases
- Baby monitors
- Wireless speakers
- Bluetooth devices
- Garage door openers
- Neighbor's wireless devices

To eliminate a possible source of interference, temporally disable any nearby 2.4Ghz band devices in the home and see if Wi-Fi performance has improved.

Determining Wireless Connection Signal Strength

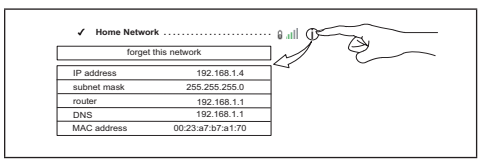
The ideal signal strength range for the thermostat is -1 to -69 Received Signal Strength Indication (RSSI). The signal strength can be viewed from the thermostat interface.

1. Press **NETWORK SETTINGS**; This screen shows a graphical view of buttons representing OPEN and SECURE wireless networks, along with button for adding a network.

2. Select the access point that has already been established and connected.

3. When selecting the info icon, a screen will appear which will display an option to forget the network and IP address assigned to the thermostat by your router, sub-net mask, router, DNS and RSSI.

4. If the RSSI signal strength is anywhere between -9 to -69, then the signal strength is sufficient. If outside this range, then either relocate the router closer to the thermostat, add a repeater, or move the thermostat. Adjusting antenna on router may resolve the issue.



Alert Codes

Table 7. Alert Codes and Reminders

Alert Code	Priority Condition	Display Message	Condition	System Action	Clear/Recovery
18	Minor	Low Ambient HP Heat Lockout	The outside temperature is below the level where the heat pump is programmed to heat the home.	When the thermostat is in heat mode and a heat demand exists, if the temperature measured by outdoor sensor is below the low balance point, the heat pump is turned off and only the electric heat or gas/oil heat is used. ***NOTE:*** *This alert message is not displayed.*	If the temperature measured by outdoor sensor is rises above low the balance point, then any available heat source (heat pump, electric heat or gas/oil heat) can be used.
19	Minor	High Ambient Auxiliary Heat Lockout	The outside temperature is higher than the level where the furnace or electric heat is programmed to work.	When the thermostat is in heat mode and a heat demand exists, if the temperature measured by outdoor sensor is above the high balance point, the electric heat or gas/oil heat is turned off and only the heat pump is used. ***NOTE:*** *This alert message is not displayed.*	If the temperature measured by outdoor sensor drops below the high balance point, then any available heat source (heat pump, electric heat or gas/oil heat) can be used.
29	Critical	Over Temperature Protection	Indoor temperature that is higher than 99ºF.	• All stages of heat and cool are turned off by safety relay. • Heating and cooling operation is not allowed. • This error is displayed in notification screen.	If room temperature goes less then 99°F, it will start working again.
30	Moderate	Low Temperature Protection	Indoor temperature that is lower than 40ºF.		If room temperature goes more then 40°F, it will start working again.

Table 7. Alert Codes and Reminders

Alert Code	Priority Condition	Display Message	Condition	System Action	Clear/Recovery
180	Critical	Outdoor Temperature Sensor Problem	Outdoor sensor reads out of range (-50ºF to 180ºF)	• Operation will be performed. (Weather information is not used) • Thermostat will stop the operation that requires outdoor temperature information (i.e. balance point control and 2nd stage lock-in). • Thermostat will switch the control to the operation that does not require outdoor temperature information. • This error is displayed in notification screen.	If the outdoor sensor reads a value not within its normal range then replace sensor.
610	Critical	Low Room Temperature Detected	The the freeze protection temperature range is 30ºF to 50ºF and with default of 40ºF.	• This alert message is displayed when safety protection is enabled. • If the room temperature drops below the setting range, an alert will be displayed. (System will raise alert only)	The system automatically clears the alert message when the temperature rises above the freeze protection temperature.
611	Critical	High Room Temperature Detected	The heat protection temperature range is 80ºF to 100ºF with a default of 90ºF.	• This alert message is displayed when safety protection is enabled. • If the room temperature rises above the setting range, an alert will be displayed. (System will raise alert only)	The system clears the alert message when the temperature goes below the heat protection temperature.

Table 7. Alert Codes and Reminders

Alert Code	Priority Condition	Display Message	Condition	System Action	Clear/Recovery
700	Critical	Internal Temperature Sensor Problem	Local temperature sensor reads out of range -4ºF to 158ºF. There is a difference between main thermistor and sub-thermistor of more than 5ºF.	• Indoor temp is displayed as "–" on the home screen. This will STOP all temperature related operation. • All stages of heat and cool are turned off by safety relay. • This error is displayed in notification screen.	Thermostat will have to be replace or if sensor returns to with in the normal operating range (0ºF to 113ºF), the error message will be automatically cleared. System will return to normal operations.
703	Critical	Comfort Sensor Humid Sensor Problem	Sensor reads out of range 0% to 100%	• This message indicates humidity sensor is not functioning correctly. • The humidity display on the home screen will indicated "–". • This error is displayed in notification screen.	Thermostat will have to be replace or if sensor returns to with in the normal operating range, the error message will be automatically cleared. System will return to normal operations.
3000	Reminder	Replace filter 1	Not Applicable	Displayed in notification screen	Press the "back" button, "clear" button or "remind later" button.
3001	Reminder	Replace filter 2			
3002	Reminder	Replace humidifier pad			
3003	Reminder	Replace UV bulb			
3004	Reminder	Maintenance reminder			
3005	Reminder	Pure Air maintenance			

System Test Modes

After the thermostat has been installed and set-up, the installer may run a system test function (accessed through the installer settings menu), to test all cooling, heating, emergency heating stages and FAN outputs.

Select system test mode. A pop-up will be displayed indicating all equipment will be stopped. Touch confirm to continue.

Pressing the OFF button next to the desired option will change the status to ON and will enable the relay for that terminal. Pressing again will turn OFF the relay. Touch the left arrow (<) to exit the system test mode.

Save Energy Default

Energy saving recommended set points for heating and cooling can help save energy. The time and temperatures reference in the following table are pre-programmed into the thermostat to achieve energy savings.

Scroll to **ENERGY SAVING DEFAULT**; touch to select. Read the message on the screen and to continue, touch **CONFIRM**.

Table 8. Energy Saving Set Points

Time	Heating	Cooling
Wake	70°F (21°C)	78°F (25°C)
Leave	62°F (17°C)	85°F (29°C)
Return	70°F (21°C)	78°F (25°C)
Sleep	62°F (17°C)	82°F (28°C)

NOTE: *Humidification and dehumidification are not part of the energy savings program. A higher utility bill may occur when not using the setpoints in this table.*

Dehumidification Control

Normal and Max

Dehumidification options are listed at **menu** > **settings** > **humidity**. Under **Humidity Control,** select **dehumidify** to enable dehumidification. By default it is **disabled**.

There are four setting options which are Normal, Max, Humiditrol* and Aux Dehumidifier*.

* Requires hardware accessory

Slide bar adjust with a range of 40% to 60% RH.

Table 9. Dehumidification Modes

Option	Description
Normal	• Activate: If RH measured is >= (RH set point + 2%), and, Cool is ON, then D is inactive (open circuit), and G is ON (if not already ON), and Y2 (if available) is ON. • Deactivate: If RH measured is <= (RH set point - 2%) or Cool is OFF, then D is active (24VAC present). G returns to the state determined by the thermostat control, either ON, Auto, or CIRC. (OR) If there is no more cool demand, then D is active (24VAC present). G returns to the state determined by the thermostat control, either ON, Auto, or CIRC, and Y2 (if available) is OFF. ***NOTE:*** *Note that H is inactive (open circuit) during dehumidification.*
Max	• Activate: IF RH measured is >= (RH set point + 2%), and if T measured >= T set point – 0°F to 4°F)AND unit is in Cool mode (O = ON), then D is inactive (open circuit), and G, Y1, and Y2 (if available) are ON. • Deactivate: IF RH measured is <= (RH set point - 2%), or if T measured < T set point - 0°F to 4°F) or unit isn't in Cool mode(B = ON), then D is active. Y1, Y2, are OFF and G returns to the state determined by the thermostat control, either ON, Auto, or CIRC. ***NOTE:*** *H is inactive (open circuit) during dehumidification.*

HUMIDITROL

This option is available if the Humiditrol accessory is present and enabled in the Advanced Settings > System Setup. Under **Advanced Settings** > **Terminal Settings**, verify that the H/D or ACC terminals are configured correctly for dehumidify control. In this mode, the H/D terminal (if selected for dehumidify) is always ON (24VAC) when the outdoor temperature is greater than 95°F. This prevents the system blower from running at reduced speed if the outdoor temperature is greater than 95°F.

NOTE: *The outdoor temperature sensor MUST be attached to the unit in order to use this mode.*

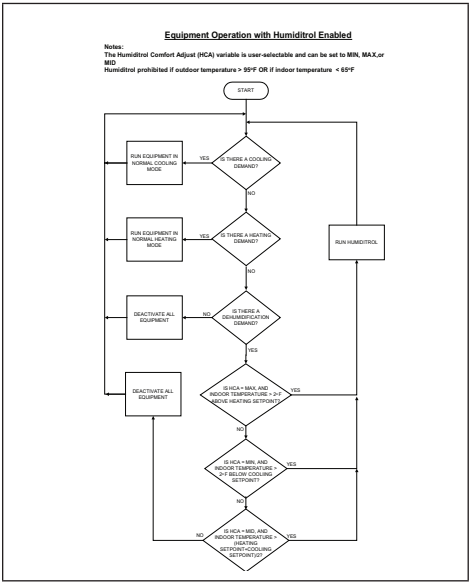


Figure 10. Equipment Operation with Humiditrol Enabled

Auxiliary Dehumidifier

This option is available if the Auxiliary Dehumidifier accessory is present and enabled in the **Advanced Settings > System Setup. Under Advanced Settings > Terminal Settings**, verify that the H/D or ACC terminals are configured correctly for dehumidify control.

Cooling demand only: Y1 and Y2 come on initiating the conventional cooling only demand.

Dehumidification demand only: D is de-energized (G should also be energized) but with out Y1 or Y2. D remains off until the demand is satisfied or if a true cooling demand comes on (unit must be in cooling mode).

Both cooling and dehumidification demands: Y1 and Y2 are ON (G must be ON and D is also 0 volts) When cooling is satisfied , D is still 0 volts and G must stay ON until dehumidification demand is satisfied.

Table 10. Auxiliary Dehumidifier Option

Option	Description
Normal	• Activate: If RH measured is >= (RH set point + Activate: IF RH measured is >= (RH set point + 2%), and AND unit is in Cool mode (O = ON),, THEN D is inactive (open circuit), AND G is ON. • Deactivate: IF RH measured is <= (RH set point - 2%), or unit isn't in Cool mode(B = ON), THEN D is active. G returns to the state determined by the thermostat control, either ON, Auto, or CIRC.

Humidification Control

This option is available if the humidifier accessory is present and enabled in the **Advanced Settings > System Setup**.

Under **Advanced Settings** > **Terminal Settings**, verify that the H/D or ACC terminals are configured correctly for humidify control.

Humidification is provided only when both a humidification accessory is installed and the thermostat is in heat mode.

- Setpoint Range: 15 – 45% RH
- Relative Humidity Controlled to 2% of Setpoint (1% resolution)
- "H/D" Terminal to Humidifier (deactivated during cooling)
- This behavior changes based on H/D terminal or ACC terminal

Normal and Max

The following table describes the function of normal and max humidification settings.

Table 11. Humidification Modes

Option	Description
Normal	(Humidification only with Heat Demand) • Activate: If RH measured is <= (RH setpoint - 2%), and, heat is ON, then H is ON, and G is ON (if not already ON). ***NOTE:*** *In Normal humidification mode, thermostat should not activate G when used with Gas/Oil systems* • Deactivate: If RH measured is >= (RH set point + 2%) or Heat is OFF then H is Off. G returns to the state determined by the thermostat control, either ON, Auto, or CIRC. (OR) If there is no more heat demand, then H is Off. G returns to the state determined by the thermostat control, either ON, Auto, or CIRC. ***NOTE:*** *The D terminal is active during humidification.*

Table 11. Humidification Modes

Option	Description
Max	(Humidification with or without Heat Demand) • Activate: IF RH measured is <= (RH set point - 2%), and unit is in heat mode (regardless of whether a heating demand exists), then H is ON, and G is ON (if not already ON). • Deactivate: IF RH measured is >= (RH set point + 2%) or unit is not in Heat mode (O = ON), then H is Off. G returns to the state determined by the thermostat control, either ON , Auto, or CIRC. ***NOTE:*** *The D terminal is active during humidification. Following is the table that shows status of FAN for different humidity modes and system outputs.*

Normal and Max Dew Point Control

To set the system to Normal Dew Point Control, select normal and dew point options under settings humidity option.

To set the system for Max Dew Point Control, select **Max** and **Dew Point Control**.

NOTE: *Outdoor air temperature sensor is required for this feature.*

Table 12. Dew Point Control Modes

Option	Description
Normal	Normal Dew Point Control mode is useful in colder climates where moisture can collect on interior window surfaces. Normal dew point control helps to minimize this condensation. In this mode the activation and deactivation of H/D terminal is controlled as follows. RH set point= .5*Outdoor Temp + 25 + RH user dew point adjustment where: RH user dew point adjustment is user-selectable and cannot exceed +/-15%, default RH user dew point adjustment = 0 The RH set point cannot exceed 45% The minimum RH set point is 15%
Max	Max Dew Point Control mode is also useful in colder climates where moisture can collect on interior window surfaces. Max Dew point control helps to minimize this condensation. In this mode the activation and deactivation of H terminal is controlled as it is done in the Max. RH set point= .5*Outdoor Temp + 25 + RH user dew point adjustment where: RH user dew point adjustment is user-selectable and cannot exceed +/-15%, default RH user dew point adjustment = 0 The RH set point cannot exceed 45%

Installer Checklist

Table 13. Installation Checklist

Item	Description	Yes	No
1	Is the thermostat properly mounted to either a wall stud or wall? (Do not mount on exterior wall or near any ventilation outputs, doorways or location that could be directly exposed to sunlight)		
2	Are all terminals wiring properly connected and tight?		
3	When required, is the outdoor air temperature sensor (OATS) properly connected and isolated when used? Is the input enabled using the user interface? Go to **advanced settings > outdoor sensor** and set to **YES** if not done so already. Then go to **settings > display** and make sure the outdoor temperature display setting is configured for sensor. If OATS is not used, leave the setting on Internet.		
4	Have all the Thermostat Features been explained to the Home Owner?		
5	Has User manual been given to Home Owner?		
6	Has additional Alexa information not in user manual been given to Home Owner and shown where to find answers to additional questions? Go to www.myicomfort.com Support page & FAQ.		
7	Is the Wi-Fi connected?		
8	Can the homeowner access the consumer portal (www.myicomfort.com) from either a PC or tablet?		
9	Has the homeowner downloaded the Lennox Thermostat application from either Google Play or IOS App Store to their mobile devices?		
10	Is the Lennox Dealer account number or your main shop phone number been added to the dealer information screen? This will tie the homeowners system to your LennoxPROS account.		
11	If applicable, has the air handler's electric heat strips been commissioned? If not, commissioning of heat strips must be performed.		
12	Has a complete system test been run? If not, from the HD Display home screen go to **settings > advanced settings > view dealer control center >** and select **tests**.		

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