LENNOX®

iComfort® S30
Ultra Smart Thermostat
Installation and Setup Guide

Table of Contents

Shipping and Packing List

Quantity	Description
1	iComfort S30 ultra smart thermostat includes a Smart Hub, HD Display, Mag-Mount and optional use wall plate.
4	Mounting screws (#6 X 1.25" pan head)
4	Wall anchors (alligator flanged solid wall anchors)
1	Installation and setup guide
1	User guide
1	Warranty certificate

NOTE: *Due to Lennox' ongoing commitment to quality, features and options are subject to change without notice and without incurring liability. Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury. Installation and service must be performed by a qualified installer and servicing agency.*

Operating and Storage Environment, Electrical and Dimensions

• Operating Temperature is -40°F to 175°F (-40 to 79°C)

• Shipping and storage temperature range is -40°F to 185°F (-40°C to 85°C)

• Operating humidity range is 10% to 90% non-condensing at 104°F (40°C)

• Storage humidity range is 5% to 95% non-condensing at 104°F (40°C)

• S30 Smart Hub Power Input: 24VAC, 1AMP at 60Hz.

• S30 Smart Hub DC Power Output: 12VDC (to Mag-Mount/HD Display)

• Dimensions (H x W x D):

  » Mag-Mount: 3-1/4" x 3-1/4" x 1/2" (83 x 83 x 13 mm)

  » HD Display: 5" x 7-1/2" x 1" (127 x 19 x 25 mm)

  » S30 Smart Hub: 4-1/2 x 4-/2 x 1-1/2" (114 x 114 x 38 mm) - antenna length is 7-1/4" (184 mm)

Installation Recommendations

⚠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.

⚠ WARNING

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

Before beginning installation, note the type of equipment, number of stages, and any accessories being installed.

Do

• Read this entire document, noting which procedures pertain to your specific equipment and system requirements.

• Make sure that all wiring conforms to local and national building and electrical codes and ordinances.

Do Not

• Install on voltages higher than 30VAC.

• Short (jumper) across terminals on the gas valve or at the system controls to test installation. This will damage the thermostat and void the warranty.

• Exceed 300 feet (91 meters) run when using 18 #AWG thermostat wire or larger.

• Allow power load from any thermostat connection to be more than 1 AMP.

Smart Hub Installation, External Components, LEDs and Terminals

INSTALLATION

1. Things to consider when installing the Smart Hub:

  • Install near the indoor unit such that there is a direct path to the approximate location of the home Wi-Fi access point (the signal is not blocked by the indoor unit or duct work, for example).

  • Can be attached to a vertical surface such as a wall stud or roof truss web, or to a horizontal surface such as a floor or ceiling joist, or a roof rafter.

  • Smart Hub antenna should be positioned such that it is roughly vertical, no matter the orientation of the Smart Hub, itself.

  • Do not install the Smart Hub on the indoor unit, duct work, or other equipment that could induce vibration in the Smart Hub

- Do not install the Smart Hub on or near large metal objects. This could adversely affect the range and directional coverage of the Smart Hub Wi-Fi signal.

- If the Smart Hub MUST be installed on a metal object, orientate the antenna perpendicular to the metal surface.

- In all cases, the Smart Hub antenna orientation may need to be adjusted to obtain best Wi-Fi results.

2. Use the following procedure outlined in "Figure 1. Smart Hub Installation" to install the Smart Hub controller.

A USE SMART HUB AS TEMPLATE TO MARK DESIRED MOUNTING LOCATIONS ON WALL OR STUD.

CAUTION: DO NOT OVERTIGHTEN LOWER MOUNTING SCREW, MAY DAMAGE SMART HUB.

KEYHOLE

THROUGH-HOLE

FRONT

REAR

B STRIP 1/4" INSULATION FROM END OF EACH CONTROL WIRE

1/4"

D SECURE SMART-HUB TO WALL WITH FIELD-PROVIDED FASTENERS

SMART HUB WIRE CONNECTORS

C MAKE CONNECTIONS TO SMART HUB USING WIRING DIAGRAMS PROVIDED

PUSH SPRING-LOADED LEVER IN AND INSERT WIRE THROUGH HOLE LOCATED ON BOTTOM SIDE OF CONNECTOR. RELEASE LEVER TO SECURE WIRE.

18-GAUGE THERMOSTAT WIRE

Figure 1. Smart Hub Installation

3. For low voltage wiring connections use diagrams in section titled "Connecting Low Voltage Wiring" on page 8.

EXTERNAL COMPONENTS

System Status LED

System Commissioning Status LED

Antenna

USB Port

Dealer commissioning and manual reboot button

Terminal Connection Access Cover
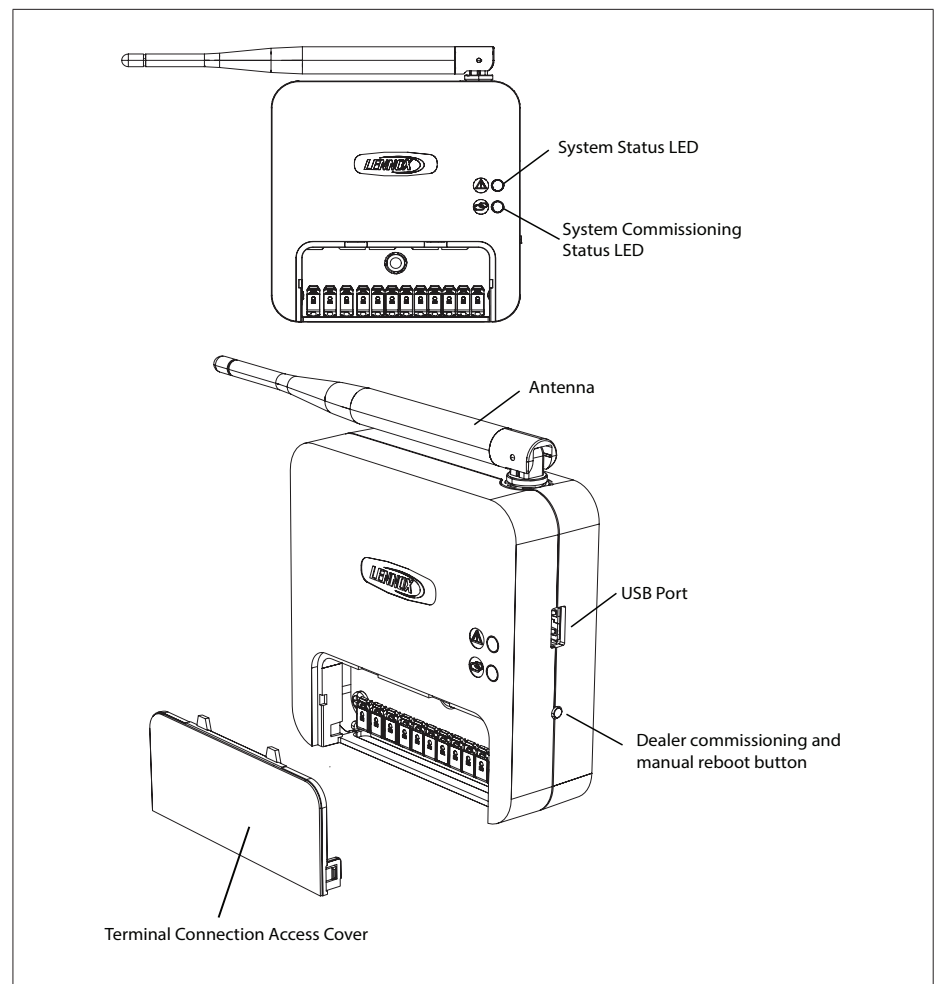
Figure 2. Smart Hub Indicators and External Components

PUSH BUTTON FUNCTIONS

The Smart Hub push button switch has two primarily functions.

- **Rebooting**: Press and hold the button for five seconds to reboot the Smart Hub.

- **Commissioning**: Quickly press and release the button to start the process of creating a direct network connection between the Smart Hub and mobile device running the iComfort Mobile Setup application.

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The push button has a LED associated with it that indicates the status of the Smart Hub commissioning state (see "Table 1. LED Indicators").

LED INDICATORS

Table 1. LED Indicators

	System Status LED	
LED Color	**Status**	**Description**
Green	System is normal	A solid green LED indicates no system errors are detected. System operating as designed.
Red	HVAC Fault	System has critical alert which needs attention.
Amber	Wi-Fi Error	Blinking amber LED indicates either Wi-Fi is not connected, no Wi-Fi is within range, or and Wi-Fi hardware error. Could also indicate intermittent Wi-Fi connection.
Magenta	Thermostat Error	Blinking magenta LED indicates either Mag-Mount or HD display not connected.
Cyan	HVAC Error	Indoor unit is not connected or unable to communicate.
	Commissioning Status LED	
Blue	System is normal	No mobile device is directly connected using Wi-Fi to the Smart Hub.
Green		Blinking green LED indicates the commissioning button has been activated and the Smart Hub is waiting for a connection with a mobile device.
Green		A solid green LED indicates a mobile device is connected to the Smart Hub.

- If multiple errors are present, the system status LED will display each active error for one second on and one second off and then display the next error if present.
- The system will continue to cycle through all active errors.
- System status errors are displayed in the following priority: HVAC , thermostat and then Wi-Fi.

TERMINALS

Table 2. Terminal Designations

Terminal Designation	Description	Terminal Color
R	24VAC input	Red
I+	RSBUS I+	Yellow
I-	RSBUS I-	Green
C	24VAC return	Black
ACC1*	Accessory 1 and 2 (FOR FUTURE USE)	Orange
ACC2*		White
+	12VDC output	Blue
-	12VDC return	Black
A	Communications bus A	Yellow

Table 2. Terminal Designations

Terminal Designation	Description	Terminal Color
B	Communications bus B	Green

* ACC1 and ACC2 are for future use. DO NOT USE.

Mag-Mount LED and Installation

⚠CAUTION

Magnets located in this product have far-reaching and strong magnetic fields. They could damage TVs and laptops, computer hard drives, credit and ATM cards, data storage media, mechanical watches, hearing aids and speakers.

Keep HD Display and Mag-Mount away from devices and objects that could be damaged by strong magnetic fields.

INSTALLATION
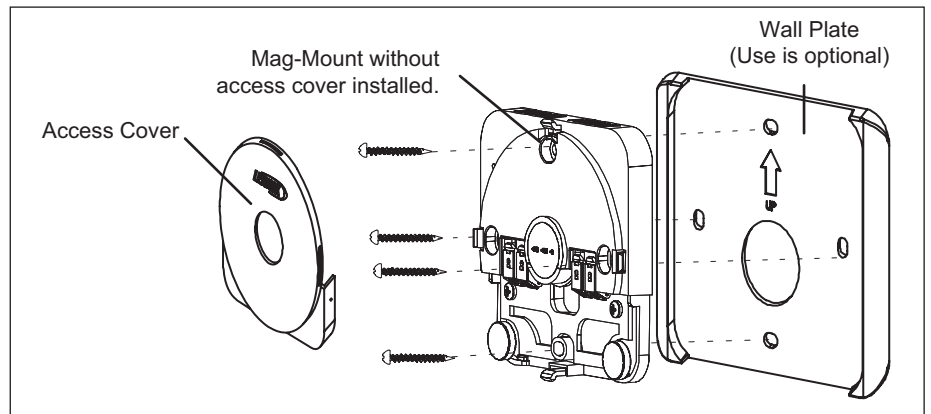
Use the following procedure for installation of the Mag-Mount where existing thermostat wiring does not exist:

1. Unpack the HD Display and Mag-Mount (wall base).

2. Determine the best location to install Mag-Mount. Ideal location should be located away from outside wall, direct sunlight or discharge air vents.

3. Cut or drill a small hole for thermostat wiring.

3/8" (10 mm) Diameter Hole

4. Pull about three inches of thermostat wire through the opening and remove the outer thermostat wire jacket.
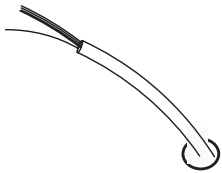
Seal wire hole in wall to prevent
cold or hot air from affecting temperature
sensor in display.

⚠ **IMPORTANT**

Seal wire hole in wall to prevent cold or hot air from affecting temperature sensor in HD Display.

5. Strip 1/4" (7 mm) insulation from end of each wire.
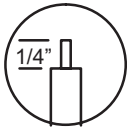
6. Use a level to align either the mag-mount or wall plate on wall horizontally.

7. Remove cover from mag-mount by inserting a flat-head screwdriver into the slot on each side of the mag-mount. Give it a gentle twist to separate the two sections.

Slot   Slot
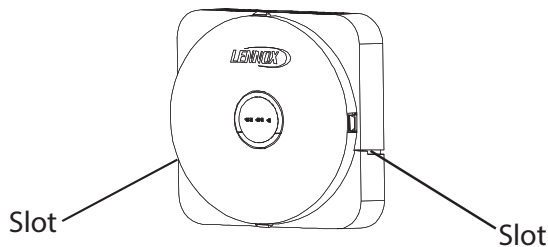
8. Use Mag-Mount as a template to mark the desired mounting hole locations on the wall.
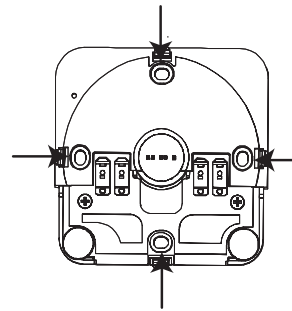
Use either the Mag-Mount or wall plate as a template to mark the desired mounting hole locations on the wall.

9. Drill 3/16" (5 mm) holes at marked locations on the wall for anchors. Then insert wall anchors into holes until flush with the wall.
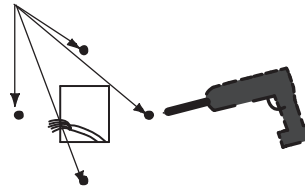
Drill Holes   Insert in hole until flush with wall.

⚠**WARNING**

DO NOT over-tighten mounting screws. Doing so my distort the mag-mount plastic housing and cause connection issues when installed the HD display.

10. Secure mag-mount to wall or through wall-plate to wall with provided #6 x 1.25" pan-head screws (4).

11. Connect thermostat wiring to Mag-Mount terminals referencing provided wiring diagrams in this guide.

12. Reinstall access cover.

NOTE: *Verify that the Mag-Mount access cover is reinstalled correctly to the Mag-Mount base. The access cover must be flush with the base or could cause power or communication issues.*

LED INDICATORS

1. A blue LED is visible on the front of the Mag-Mount when it is connected, power applied, and the HD Display has not been installed (see following illustration). The blue LED is also visible through the top vent of the Mag-Mount near the top-left corner when the HD Display is installed.

Smart Hub

Smart Hub

System Status LED

System Commissioning Status LED

Blue LED Location

Mag-Mount

12VDC
+ -

COMM BUS
A   B
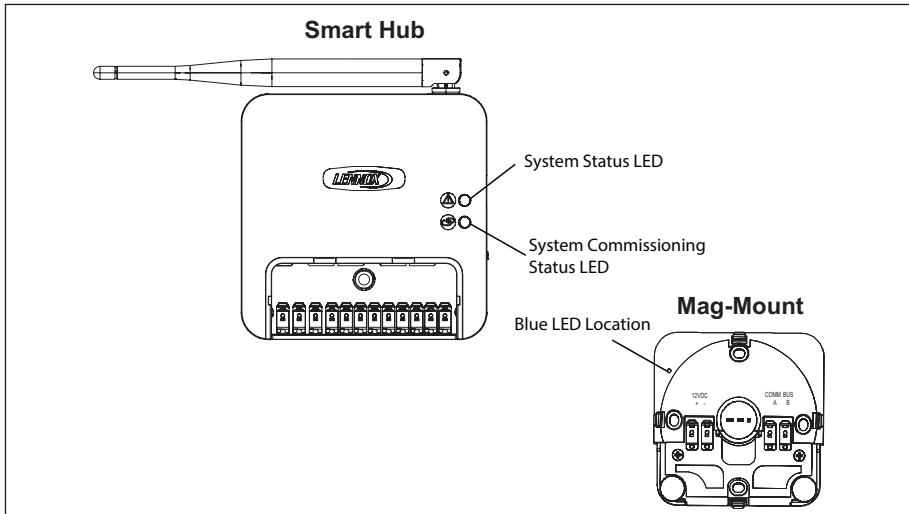
Table 3. Communication Error Troubleshooting
(Mag-Mount to Smart Hub)

Possible Connection Issues	Mag-Mount LED Condition (HD Display Removed)	S30 Smart Hub - System Status LED
One communication wire at either the Mag-Mount or Smart Hub COMM BUS A or B terminals is disconnected.	Steady Blue	Flashing Magenta LED
B**oth** communication wires – at either the Mag-Mount or Smart Hub COMM BUS A or B are disconnected.	Flashing Blue	Flashing Magenta LED
B**oth** communication wires – at either the Mag-Mount or Smart Hub COMM BUS A or B terminals are reversed.	Flashing Blue	Flashing Magenta LED
Power wires at either the Smart Hub or Mag-Mount 12VDC + and - terminals are disconnected.	Off	Flashing Magenta LED.
If terminals are connected correctly, then check HD Display mounting to Mag-Mount. HD Display may not be secured correctly to Mag-Mount.	LED not visible when HD Display is installed.	Flashing Magenta LED. HD Display screen may be either blank or a message indicating iComfort cannot communicate with the equipment.

HD Display Components and Installation

INSTALLATION

1. Hold the HD Display by the edges, line it up with the Mag-Mount (horizontal position), and move the HD Display toward the Mag-Mount.

2. When the magnets in the Mag-Mount attract the HD Display, guide it toward the Mag-Mount and let the magnets pull it into place.

3. Lightly press on the sides of the HD Display to verify it is completely seated on the Mag-Mount.

4. To remove the HD Display from the Mag-Mount, rotate the HD Display right or left (clockwise or counter-clockwise) at least 30 degrees to disengage the plastic hooks and then pull it straight off of the Mag-Mount

⚠ WARNING

Failure to rotate the HD Display before pulling it off of the Mag-Mount may loosen the dry wall anchors or pull the Mag-Mount off of the wall due to the increased forced required to separate the HD Display from the Mag-Mount when it is not rotated.

NOTE: *If the HD Display is removed from the Mag-Mount base, the HD Display will shut down and will not be able to communicate with the system. System can be controlled from mobile devices or consumer/dealer web portals once registration has been completed.*

5. Do not remove the label covering the HD Display screen until after power is applied to the system.

CAUTION

1) Battery may need to charge before operation. Once the display is connected, instructions may appear within 15 seconds with further detail.

2) TO AVOID BREAKING THE GLASS DISPLAY
   a. Do not apply force directly to the glass display
   b. Holding the display horizontally
      i. Center the display cavity on the base
      ii. Press both sides equally until the snaps engage

3) AVOID EXCESSIVE FORCE TO THE CLASS DISPLAY

- Proximity sensor - Detects a person approaching the HD Display. If the HD Display is in Screen Saver mode and the Proximity Sensor setting is enabled, the proximity sensor takes the HD Display out of screen saver mode automatically and returns to the home screen when someone approaches.

- Power button - Turns off the HD Display when pressed and held for about five (5) seconds.

- microSD card slot - Not functional, for future use.

- Micro USB connector - Not functional, for future use.
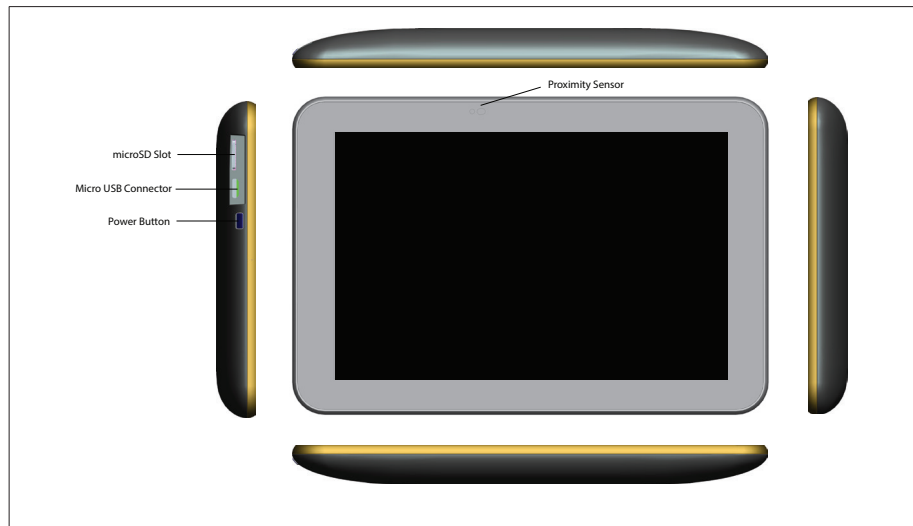
Figure 3. HD Display Components

Connecting Low Voltage Wiring

The following diagrams in this section illustrates the basic Lennox control wiring for all compatible components.

CONTROL WIRING REQUIREMENTS

The following is the wiring specification requirements for installation of this system.

- iComfort wiring size is 18 #AWG.
- Thermostat does not required shielded cable wiring.
- Maximum total length of all connections combined is 1500 feet (457 meters).
- Maximum length between components is 300 feet (90 meters).

DISCHARGE AIR TEMPERATURE SENSOR (DATS)

Installation of discharge air temperature sensor (DATS) (88K38) must comply with the following requirements:

- Installed downstream of the heat exchanger or electric heat elements.
- It must be placed in free airflow, where other accessories (such as humidifiers, UV lights, etc.) will not interfere with its accuracy.
- Wiring distance between the integrated furnace and air handler controls or damper control module and the discharge air sensor must not exceed 10 feet (3 meters) when wired with 18 #AWG thermostat wire.
- DATS is highly recommended for all systems that include a modulating outdoor unit in order to provided more precise dehumidification operation.

OUTDOOR AIR TEMPERATURE SENSOR (OATS)

The optional outdoor air (temperature) sensor (OAS) (X2658) wiring distance to the iComfort S30 should not exceed 150 feet (45 meters) when wired with minimum 22 #AWG (recommend 18 #AWG) dedicated 2-conductor thermostat cable. Installation of OAS must comply with the following requirements:

- Sensor wiring must be run to avoid touching or being close to high voltage wiring and light ballast.
- Choose a protected outdoor location away from direct sunlight or other heat sources (usually on the north side of the building).
- Ensure that water will neither collect on, nor wash over the sensor.
- Do not locate the sensor near driveways or similar heat-absorbing masses which may reflect stored heat energy onto the sensor and send inaccurate information to the thermostat.
- Locate the sensor away from attic and soffit vents, or furnace venting pipes.
- Do not locate the sensor directly above an air conditioner or heat pump.

REDUCING ELECTRICAL NOISE ON COMMUNICATION BUS - INDOOR, OUTDOOR, S30 SMART HUB AND OPTIONAL PUREAIR S.

Communicating systems requires four thermostat wires between the Mag-Mount and Smart Hub. Four wires are also used between the Smart Hub and indoor/outdoor units as well. When a thermostat cable with more than four wires is used, the extra wires must be properly connected to avoid electrical noise. The wires must not be left disconnected.

- Use wire nuts to bundle the unused wires at each end of the cable. A single wire should then be connected to the indoor unit end of the wire bundle and attached to the "C" terminals as shown in "Figure 4. Thermostat Wire Termination in Communicating Systems (Electrical Noise)".
- Keep all communication wiring as far away from the house electrical wiring and large electrical appliances as possible. Recommended minimal distance is 15 feet (5 meters).
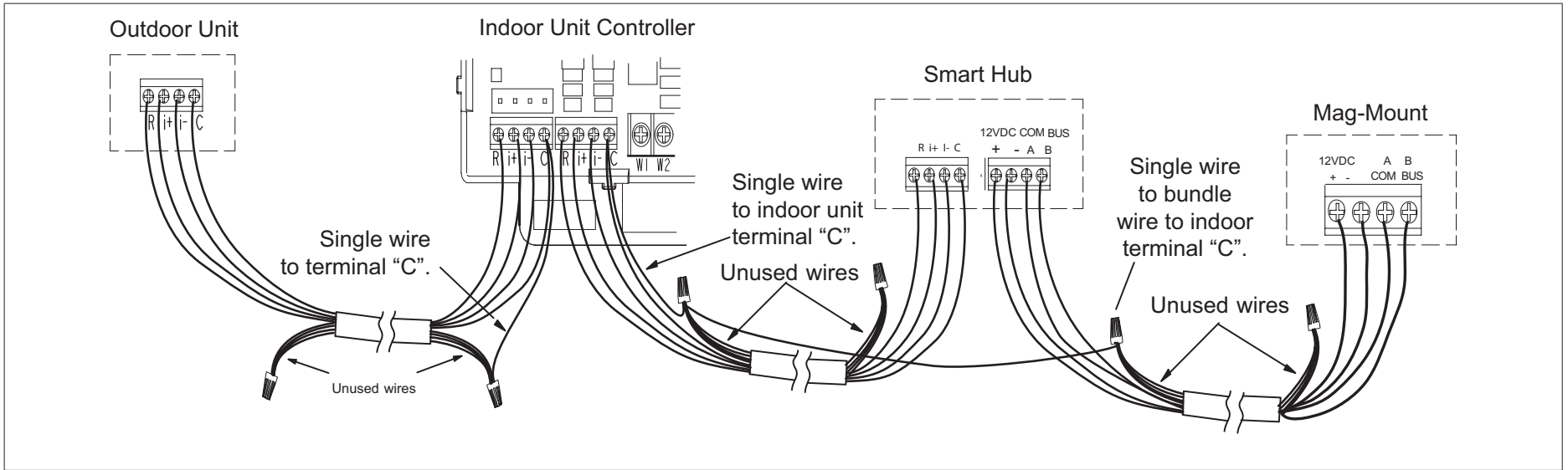
Figure 4. Thermostat Wire Termination in Communicating Systems (Electrical Noise)
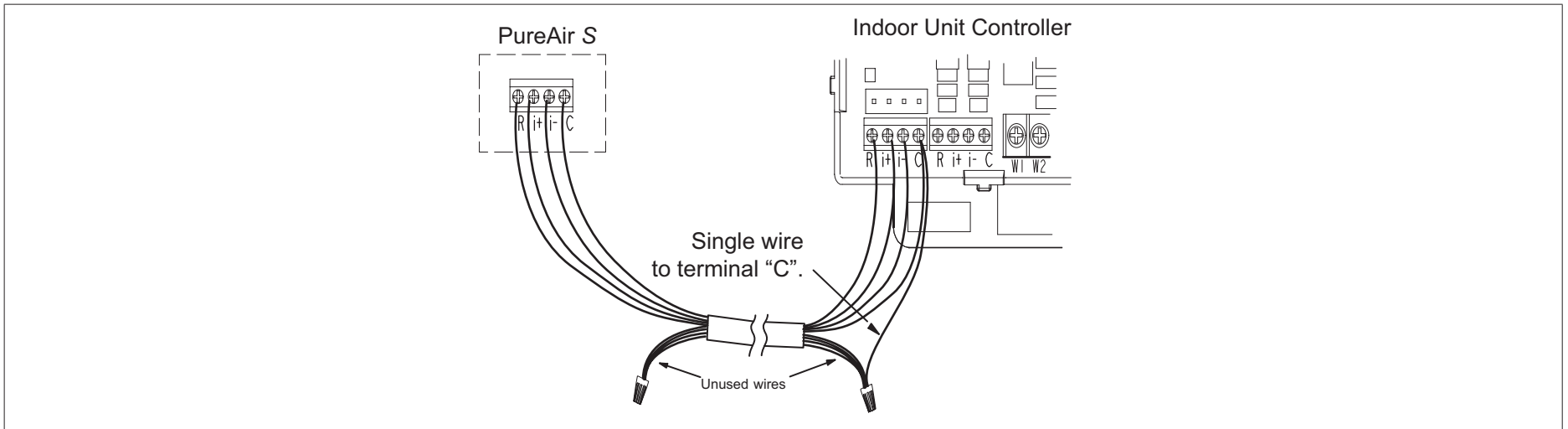
Figure 5. Thermostat Wire Termination in Communicating Systems (Electrical Noise) - Optional PureAir *S*

WIRING DIAGRAMS

The following diagrams are typical low voltage wiring connections for various system configurations.
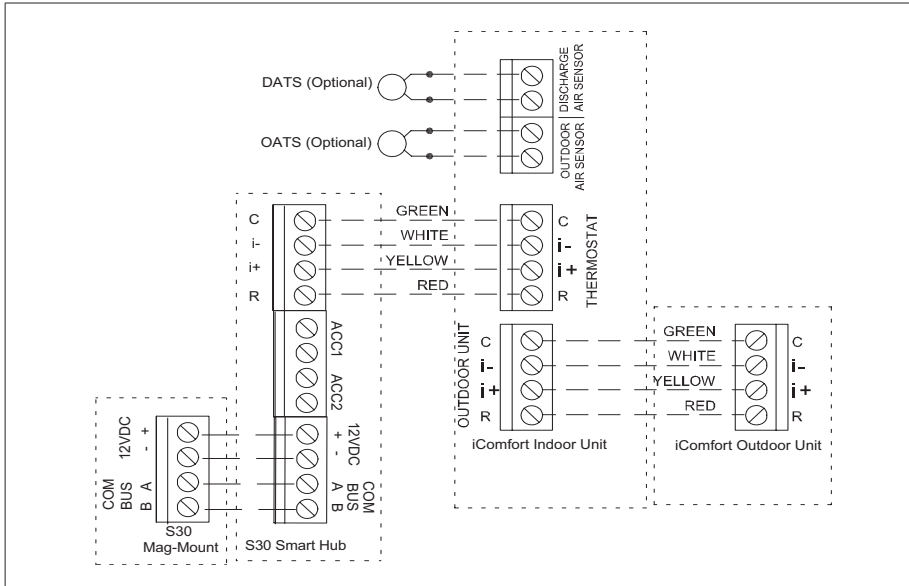
Figure 6. iComfort System
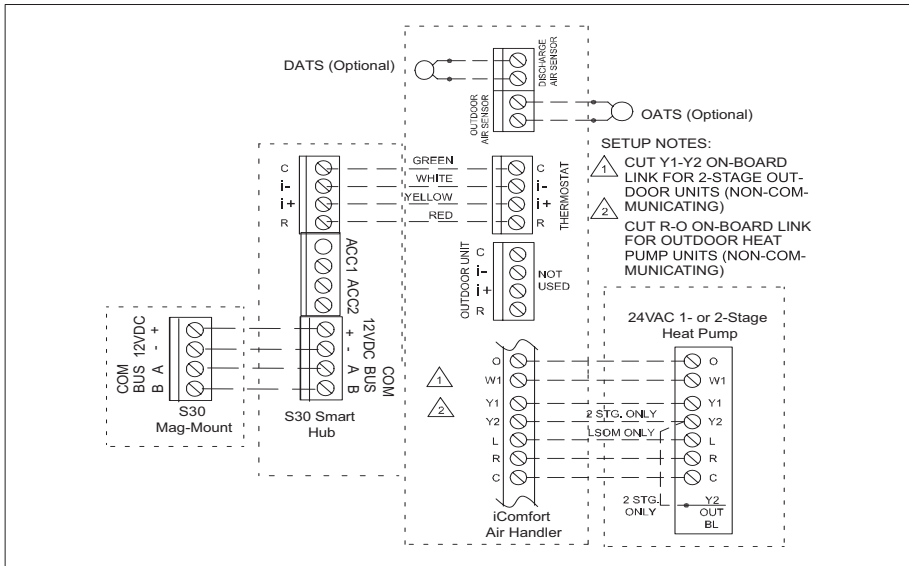
Figure 7. iComfort System with Non-Communicating Heat Pump
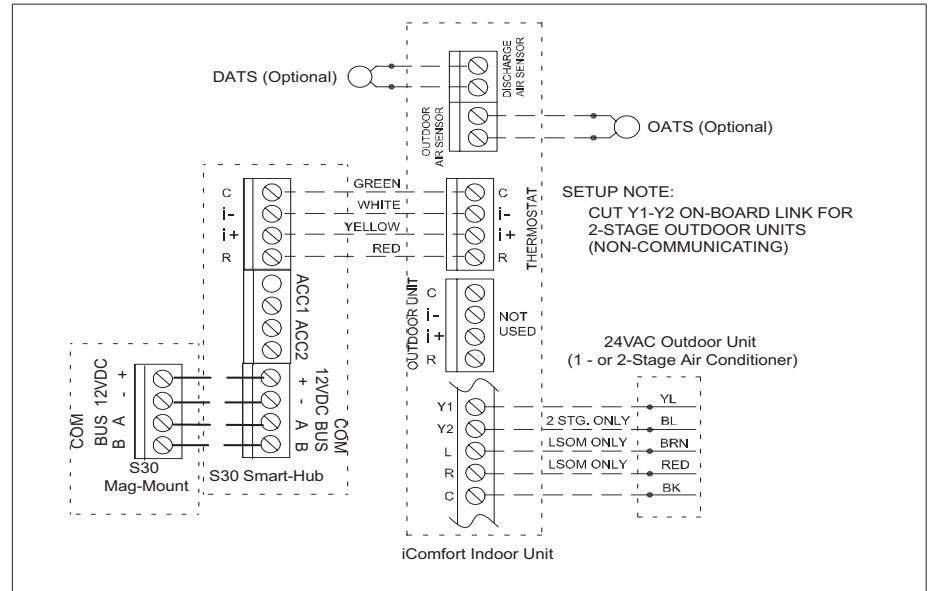
Figure 8. iComfort System with Non-Communicating Air Conditioner
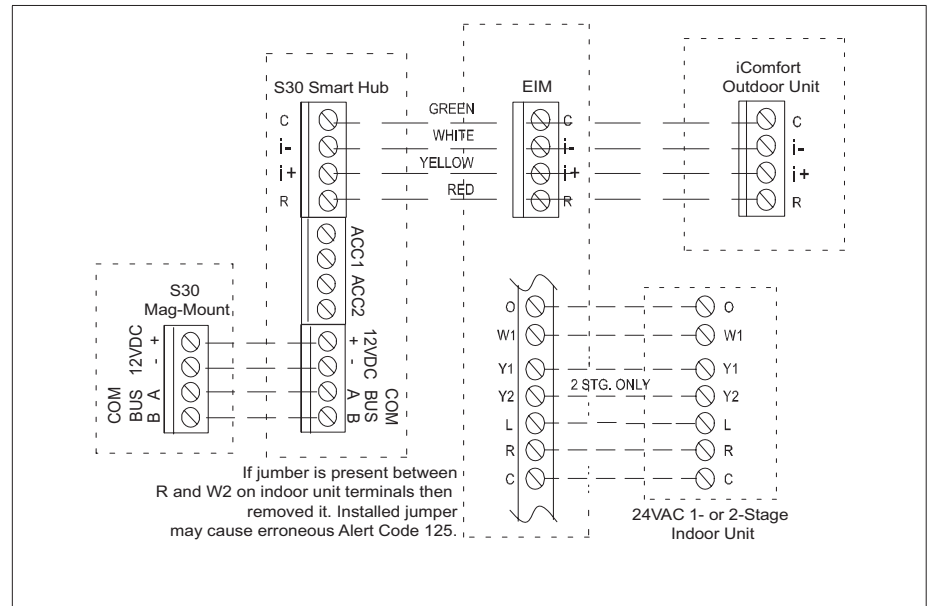
Figure 9. iComfort System with Equipment Interface Module, Non-Communicating Indoor Unit and Communicating Outdoor Unit
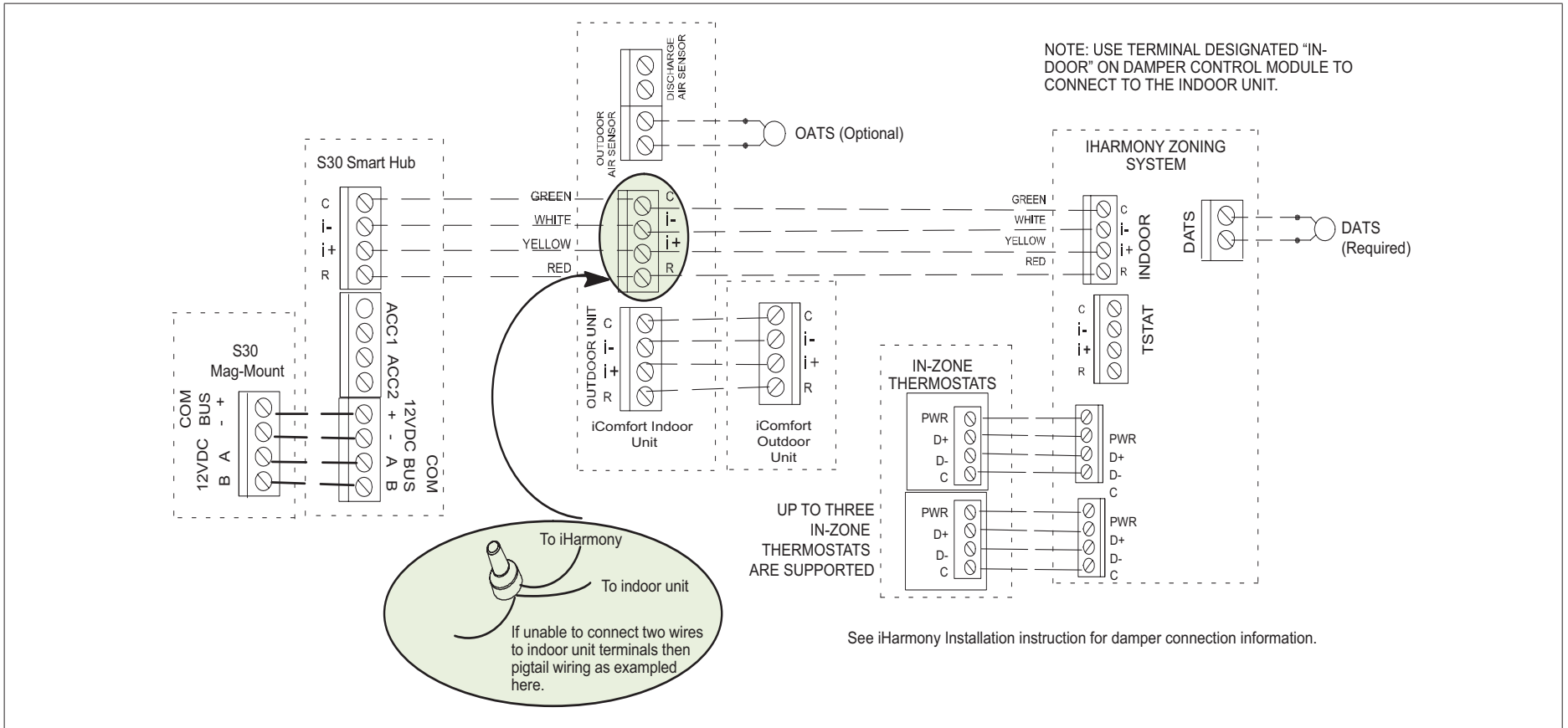
Figure 10. iComfort System with iHarmony Zoning System

AUXILIARY DEHUMIDIFIER MODELS HCWHD3-070 AND HCWHD-095

NC NO +- AB ODT

DH DH

FLOAT Switch

Gh Rf
Cf Gs
HVAC EQUIP W Y
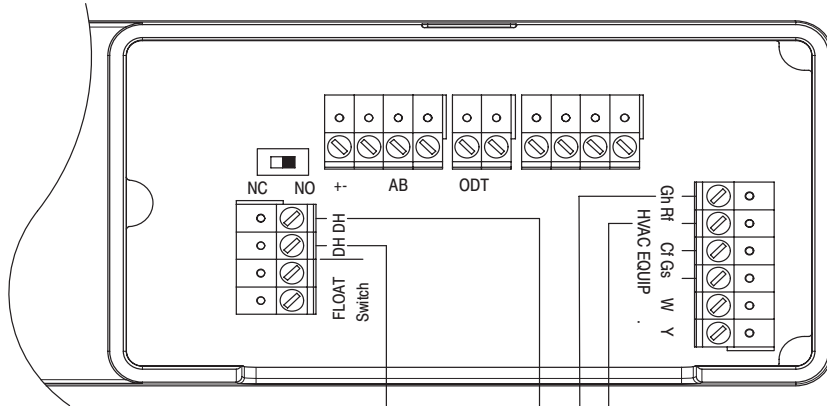
AUXILIARY DEHUMIDIFIER MODELS HCWHD-090
AND HCWHD-135

NOTE: HCWHD-065 IS NOT COMPATIBLE

SPDT RELAY

NC ④

NO ②

① ③

S30 SMART HUB

C
i-
i+
R

GREEN
WHITE
YELLOW
RED

DH
C
G
R

ICOMFORT INDOOR UNIT

C
i-
i+
R

GREEN
WHITE
YELLOW
RED

DH
C
R

COM BUS 12VDC
B A + -

S30 MAG MOUNT

S30 SMART HUB

DH
R
C
G

ICOMFORT INDOOR UNIT

Rf
Cf
Gs
Gh
W
DH
NC

HVAC EQUIP

AUXILIARY DEHUMIDIFIER

120VAC

S30 SMART HUB

C
i-
i+
R

ACC1 ACC2
COM 12VDC BUS
+ - A B

S30 MAG MOUNT

COM BUS 12VDC
B A - +
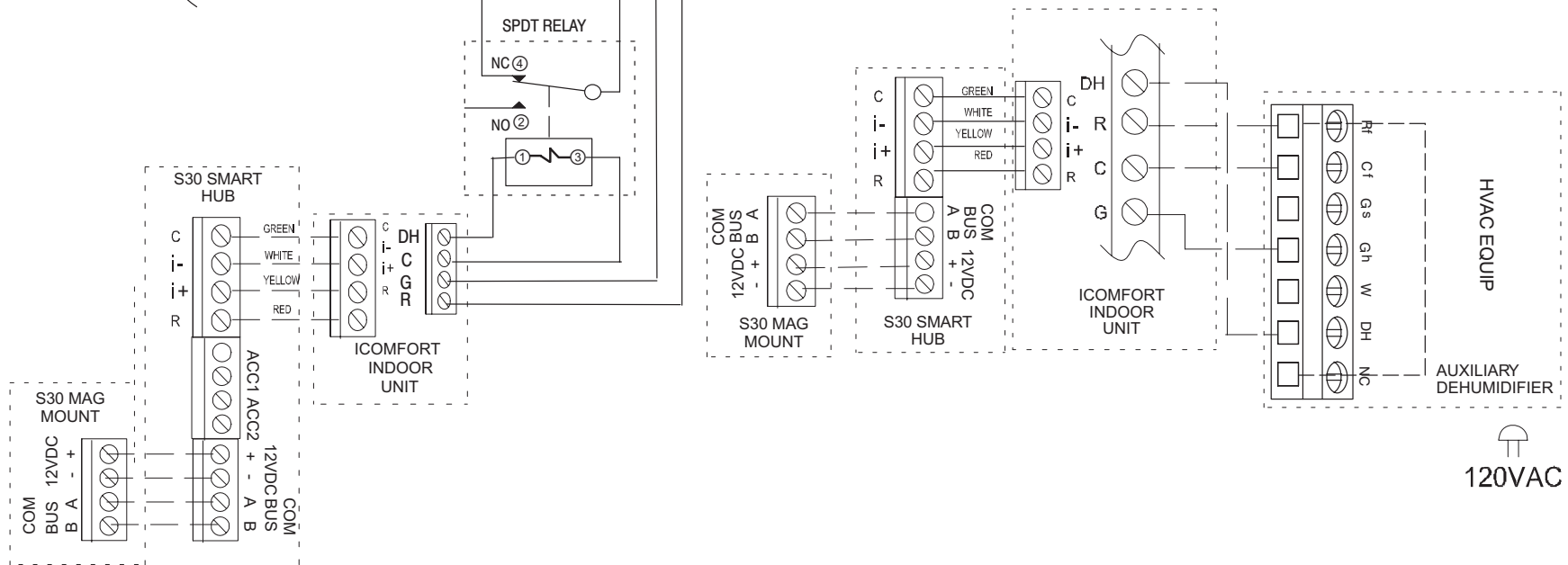
Figure 11. iComfort System with Auxiliary Dehumidifier Accessory
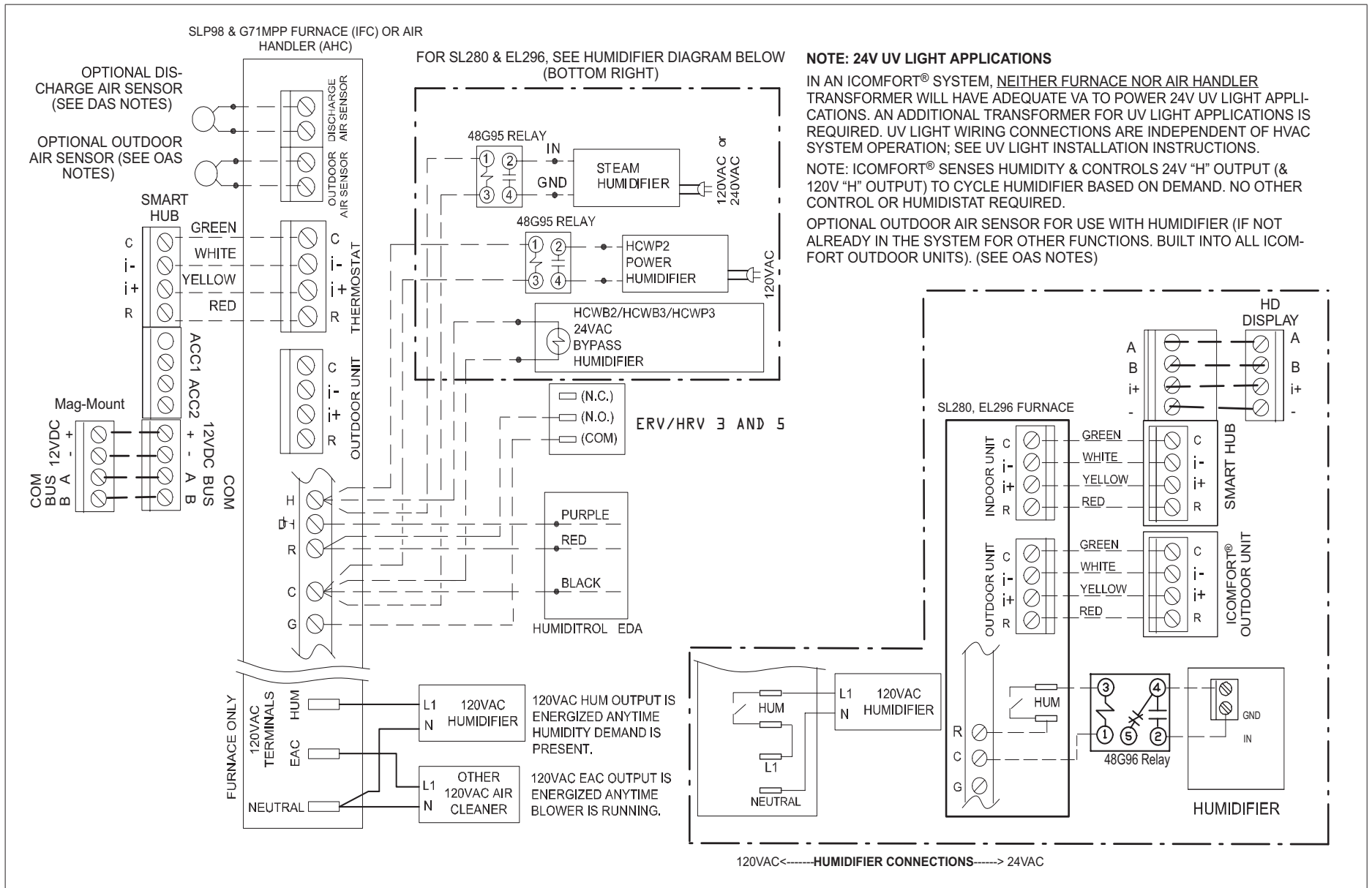
Figure 12. iComfort System with Humidifier Accessory

SLP98 & G71MPP FURNACE
(IFC) OR AIR HANDLER (AHC)

SMART HUB

Mag-Mount

⚠ 26L56 CURRENT SENSING RELAY KIT.

NOTE: PASS THE BLOWER MOTOR L1 WIRE THROUGH THE CURRENT LOOP ON THE CURRENT SENSING RELAY AS SHOWN.

HVAC HEAT OR COOL CALL, OR THE FAN IS IN CONTINUOUS OPERATION, THE VENTILATION CONTROLLER WILL OPEN OA DAMPER TO VENTILATE IF THE OUTDOOR TEMPERATURE AND INDOOR HUMIDITY ARE WITHIN THE LIMITS OF THE VENTILATION CONTROLLER.

LVCS. SET CYCLE TIME TO 1 HOUR; SET VENTILATION TIME TO 60 MINUTES.

NOTE: USE THE ICOMFORT® S30 CIRCULATE FAN PERCENTAGE OF ON TIME TO CONTROL VENTILATION TIME.

LVCS VENTILATION CONTROL SYSTEM

Figure 13. Optional Accessories

14

Electric Heat Configuration for iComfort Air Handlers

⚠ IMPORTANT

Prior to running the thermostat installer setup, electric heat must be manually configured.

⚠ IMPORTANT

After electric heat strips are installed, the air handler control must be manually configured to detect the number of electric heat sections. (See 506181-01 for complete configuration guide.
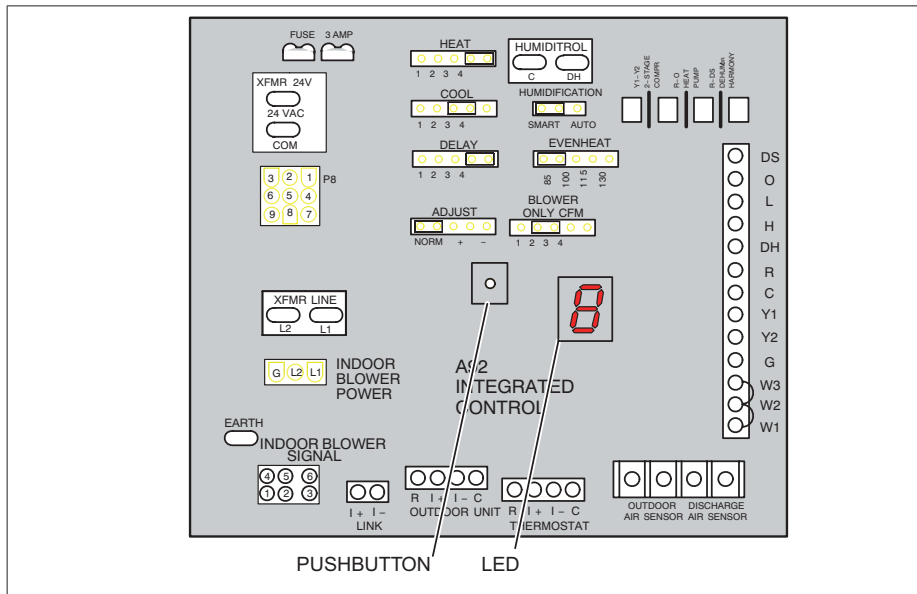
Figure 14. Air Handler Control

This procedure is applicable only to the CBX32MV-XX-230-6-06 and higher and all CBX40UHV models. This procedure is for configuring the heat strips so that they will be detected by the thermostat:

• Power must be applied to the air handler but NOT to the Smart Hub.

• Disconnect any communication wiring between the Smart Hub and indoor unit prior to electric heat discovery.

• The air handler control must be in idle mode (decimal blinks at 1 Hertz—0.5 second ON, 0.5 second OFF to use the following procedure.

1. Select field test mode—press and hold the push button until solid "–" appears; release button. Display will blink.

2. Push and hold button and wait for the display LED to show "H" (capital H), then release the button.

3. The air handler control cycles the indoor blower motor "on" to the selected heat speed and stages the electric heat relays "on" and "off" to automatically detect the number of electric heat sections. The air handler control stores the number of electric heat sections, then automatically exits "Field Test Mode".

4. The thermostat will now detect the heat strip information stored in the air handler control.

5. Turn off power and connect all low voltage wiring (power and communication to and from the Smart Hub).

6. After completing the commissioning of the system then check to see if you have electric heat or emergency heat.

Commissioning and Service (Using the Mobile Setup Application)

This application tool is used by dealers to commission a iComfort S30 ultra smart thermostat using a Wi-Fi enabled mobile device.

A temporary Smart Hub local network provides a means for a mobile device using the iComfort Mobile Setup application to directly communicate with the Smart Hub.

NOTE: The iComfort Mobile Setup application running on a mobile device cannot connect to the Smart Hub through the Internet or home Wi-Fi network.

To use the iComfort Mobile Setup app, the mobile device must be:

• Wi-Fi capable

• Located in the home near the Smart Hub

NOTE: A router with Bonjour capabilities is required for this function. Check the router features if the Smart Hub 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.

MOBILE DEVICE OPERATING SYSTEM REQUIREMENTS

The iComfort Mobile Setup application is available for both IOS 6.0 and higher (App Store) and Android 4.1 and higher (Google Play).

ESTABLISHING A DIRECT WIRELESS CONNECTION TO THE SMART HUB

⚠ IMPORTANT

If the connection between the iComfort Mobile Setup application and Smart Hub is idle for three (3) minutes, the Smart Hub will auto-disconnect from the mobile device. Repeat procedures to reconnect.

1. Download and install the iComfort Mobile Setup application.

NOTE: It is recommend that when using the iComfort Mobile Setup application to commission the system, remove the HD Display from the Mag-Mount before starting. Once commissioning is completed, reattach the HD Display to the Mag-Mount.

2. Go to the Smart Hub and press the commissioning button located on the side of the unit (see "Figure 2. Smart Hub Indicators and External Components" on page 4 for location of button).

3. The commissioning status LED will start blinking green for two minutes. During this time the Smart Hub will broadcast its Wi-Fi identifier (SSID).

4. Go to your mobile device's Wi-Fi connection tool and locate the Smart Hub Wi-Fi broadcast identifier. A typical example of a identifier (SSID) is DIRECT-XY12-3456.

NOTE: Refer to your mobile device's owners manual on how to use your Wi-Fi Connection tool.

5. Connect to the Smart Hub by using the last eight digits of the Smart Hub SSID as the password. In this example, it would be XY123456).

6. Once the mobile device is connected to the Smart Hub, the commissioning Status LED will turn solid green.

7. Start the iComfort Mobile Setup application and make sure you are connected to the correct Smart Hub by checking the serial number.

8. Touch the **remote-in** tab on the iComfort Mobile Setup application home screen. This will take you to the commissioning screen.

9. You can use the information provided in "Commissioning (Using the HD Display)" on page 17 to complete the commissioning process using the iComfort Mobile Setup application.

10. If the system has not been commissioned it will go to commissioning screen automatically. If the system has already been commissioned it will go to dealer control center.

11. Once the commissioning is completed, exit the iComfort Mobile Setup application.

12. Go to the mobile device's Wi-Fi tool and manually disconnect from the Smart Hub.

13. Once disconnected, the Smart Hub commissioning LED will change to solid blue.

14. Reinstall the HD Display on the Mag-Mount.

SERVICE

To use iComfort Mobile Setup application as a service tool, the commissioning of the system must have already been completed.

1. Download and install the iComfort Mobile Setup application if not already installed.

2. Go to the Smart Hub and press the commissioning button once.

3. The LED will start blinking green for two minutes. During this time the Smart Hub will broadcast its Wi-Fi identifier (SSID).

4. If this is the first time connecting to the target Smart Hub then go to your mobile device's Wi-Fi connection tool and locate the Smart Hub Wi-Fi broadcast identifier. A typical example of a identifier (SSID) is DIRECT-XY12-3456.

5. If your mobile device had already connected previously to the target Smart Hub, then touch the applicable Smart Hub SSID on the list and skip to step 7.

NOTE: Refer to your mobile device's owners manual on how to use our Wi-Fi Connection tool.

6. Connect to the Smart Hub by using the last eight digits of the Smart Hub SSID as the password (XY123456) for example.

7. Once connected to the mobile device the Smart Hub commissioning LED will turn solid green.

8. Start the iComfort Mobile Setup application and make sure you are connected to the correct Smart Hub by checking the serial number.

9. Touch the **remote-in** tab on the iComfort Mobile Setup application home screen.

10. If the system has not been commissioned it will launch the commissioning screen. If the system has already been commissioned it will go to dealer control center.

11. Once servicing is completed, exit the iComfort Mobile Setup application.

12. Go to the mobile device's Wi-Fi tool and manually disconnect from the Smart Hub.

13. Once disconnected the Smart Hub LED will change to a solid blue.

Alternative Method

From the home screen, go to **menu** > **settings** > **advanced settings** > pair Smart Hub to iComfort dealer mobile application selection. It will auto connect to dealer application and start you at the dealer control center screen. The following screen will appear and show the status of the connection. Once connected the screen will automatically disappear.
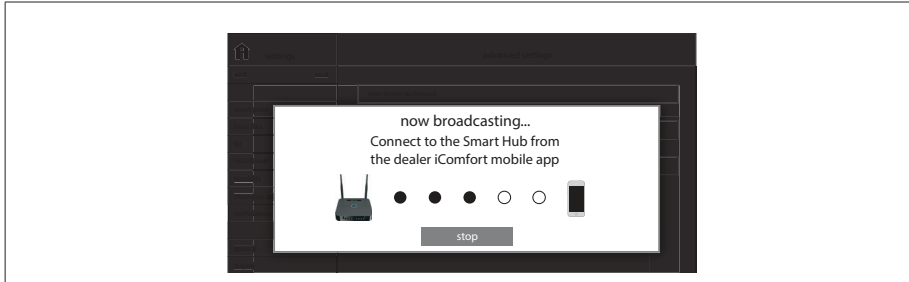
Figure 15. Pairing

Multiple Smart Hubs

Multiple Smart Hubs in a home can be assigned to a group (up to nine groups with up to eight (8) Smart Hubs in each group). All Smart Hubs in a group can communicate with other Smart Hubs in the same group over the home Wi-Fi network.

Default Group ID is 1. Range is 0 to 9.

For example, seven Smart Hubs in a home can be divided up for example as 1 in Group 1 and six in Group 2 or 4 in Group 1 and 3 in Group 2. Smart Hubs in Group 1 will not be able to see or interact with the Smart Hubs in Group 2. This allows the intentional isolation of the Smart Hub for the master bedroom from the Smart Hub for the children's area, for example.

NOTE: If a Smart Hub is set to Group 0, it will not communicate with other Smart Hubs.

Restarting Smart Hub

Pressing the Smart Hub button for more than five seconds will reboot the Smart Hub.

Commissioning (Using the HD Display)

The following procedures are written for commissioning the system using the HD display interface.

When power is first applied to the system all iComfort devices attached to the system (air handler or furnace, outdoor unit or zoning control) will automatically be configured using optimal factory default settings based on system type, capacity and other configuration considerations.

NOTE: If there is an PureAir S air purification system installed, during commissioning the blower will turn on and run at three different CFM settings for the PCO filter calibration to take place. This may be well in advanced before the display is fully up and running. This is a normal process. The blower may run as long as 90 seconds at each CFM setting to complete the filter calibration .

Boot-up Screen

When power is applied to the system, the HD Display will display a welcome screen.

If there is an issue with communication between any components attached to the thermostat, a critical alert message will appear on the screen. The alert message will provide detail information concerning the possible cause. Once the issue is corrected and power is restored to the system the first screen in the initial commissioning sequence will appear.

Below is an example of a communication error message.

Figure 16. Communication Error Message Example

Low Battery Status

If a critical low battery screen is displayed, the system will automatically start charging the HD Display internal battery. On the screen the word "charging" will appear. Once "charging" disappears (typically 3 to 10 minutes) then the display will automatically start-up.

APPLE HOMEKIT WI-FI ACCESSORY CONFIGURATION

A pop-up screen will appears providing instructions on how to connect the thermostat to the home Wi-Fi network using an Apple IOS device. If you wish to use this method to configure the unit for Wi-Fi and Apple HomeKit, then refer to the provided user guide for additional instructions.

Otherwise, select cancel to proceed with the thermostat commissioning procedures. There is an option to perform this task later on at the homeowners convenience.

NOTE: This procedure can only be accomplished using a Apple IOS device.

Figure 17. IOS Wi-Fi Accessory Configuration

DEALER INFO AND LANGUAGE SELECTION

The first screen in the commissioning sequence is the dealer information screen and language selection tool. Supported languages are English, French and Spanish. The drop-down selection tool is located in the upper right-hand corner of the screen.

Dealer ID and/or phone number can be added. Once the system is connected to the Internet, the remaining information will be populated automatically by the Lennox server based on the dealer ID or phone number entered. All information can be entered manually if desired however.

Information that can be manually entered is name, email website, dealer address which includes address 1, address 2, city, state and zip/postal code. Once completed touch continue.

WARNING SCREEN

If either the **Dealer ID** or **phone number** is NOT provided, a warning screen will appear. The warning screen will provide information on the limitation imposed on the system if this information is not provided. Touch **no** to return to the previous screen to complete the information requested or touch yes to continue.

GENERAL INFORMATION

On this screen general information needs to be verified or changed. Touch any item to change its contents. A pop-up screen will appear that will allow the information to be added or changed.

1. Select country / region.

2. Select time and date which includes time, date, time zone and daylight savings time (ON/OFF).

3. Temperature unit (Fahrenheit or Celsius).

4. Once completed touch **continue**.

EQUIPMENT FOUND SCREEN

This screen will display any iComfort equipment the system has detected (air handler, furnace, outdoor unit, PureAir *S*, Smart Hub and iHarmony zoning system during initial commissioning of the system.

NOTE: When a Lennox Equipment Interface Module (EIM) is used and configured as either a furnace or air handler, then the component would appear as either EIM-Furnace or EIM-Air Handler. When using a EIM the outdoor unit may be either a Lennox iComfort or any standard 24VAC non-communicating unit.

NOTE: Not all equipment may be visible from the equipment found system screen. Touch and swipe up to access additional information (if applicable) listed at the bottom of the system box.

If non-communicating equipment needs to be added, it can be done so from this screen.

NON-COMMUNICATING EQUIPMENT

When selecting the non-communicating (24VAC) equipment icon a screen will appear listing equipment that can be added. When selecting an applicable component, a green check will appear next to the item. The capacity selection of the outdoor unit will also be displayed on the screen after selecting the applicable outdoor equipment type.

NOTE: A temporary dialog box will appear indicating: Updating - Wait while we check for dependencies.

NOTE: Selecting an outdoor unit type only appears if a iComfort outdoor unit is not detected by the system. Selections are one or two-stage heat pumps or air conditioners. Outdoor unit capacity will also have to be set. Other equipment that can be added are humidifiers and dehumidifiers.

Once completed touch **done** which will display the equipment found screen. There the additional non-communicating equipment will now be displayed along with the iComfort equipment.

Once completed touch **continue**.

This screen allows you to set reminders as either disabled or 3, 6, 12 or 24 months and also custom by specific date. The other options on this screen is to trigger the reminder event either by calendar or actual system run-time.

1. Reminders may be set for replace filter 1, replace filter 2, replace UV bulb, replace humidifier pad, PureAir™, PureAir *S* maintenance and maintenance reminder. Once a reminder is set for a specific item, touch done to return to the previous screen. An "expires on date" will appear next to the item just set.

2. Once completed touch **continue**.

This screen will only appear if the iHarmony® *zoning system* is detected. This screen allows you to rename each zone. You may use the preset names or any custom name you may desire. If zoning is not applicable, proceed to the next section.

1. Touch on any zone to rename it. A screen will display that list several predefined names that can be used which are master bedroom, guest bedroom, kitchen, living room, media room, dining room, library or custom. When a predefine name is selected, a green check-mark will appear next to the selected name.

2. When creating a custom name, touch custom, enter a name and touch back to return to the previous screen. A new unique zone name can be created for all four zones.

3. When completed, touch done to return to the zoning screen and verify the new name is being used for the specific zone.

4. Once completed touch **continue**.

SET UP AIRFLOW PER ZONE

This screen will allow the installer to setup the airflow per zone. The types of circulation per zone are:
• Blower Circulation Airflow (gray) which includes total, assigned, minimum and maximum airflow.
• Heating Circulation Airflow (red) which includes total, assigned, minimum and maximum airflow.
• Cooling Circulation Airflow (blue) which includes total, assigned, minimum and maximum airflow.

1. Touch on the circled green arrow to touch a specific zone. The that zone settings will expand to allow the installer to adjust CFMs for each circulation airflow type. Use the plus and minus buttons to adjust CFMs up and down.

2. Once completed touch to **continue**. The next screen that will appear is the Dealer Control Center.

Once commissioning is completed, the system will leave you at the **Dealer Control Center**. You can either touch exit to go to the main screen or perform any function listed in the various categories displayed.

Dealer Control Center

This menu provides access for the installer or service technician to perform various functions. Advance equipment configurations, notifications, tests, diagnostics, installation reports and general information about the system.

To navigate back to the dealer control center, touch on the Dave Lennox icon when available on the top left-hand side of the screen.

< "Previous Screen Name" — To navigate back to the previous screen, touch on the left arrow when available.

Use to run test on system components

tests

Use to run diagnostics on system components

diagnostics

Used to display installation results.

NOTE: This report is not available until after exiting the dealer control center following the commissioning procedure. Exit and return to the dealer control center to view the installation report.

installation report

Use to display system notifications

notifications

Use to make changes to equipment settings and add or remove non-communicating equipment or accessories. In addition the reset all equipment option is available. This will allow the installer to reset all equipment and reconfigure.

equipment

dealer control center

information

Use to display system information

exit

Exit to Home screen.

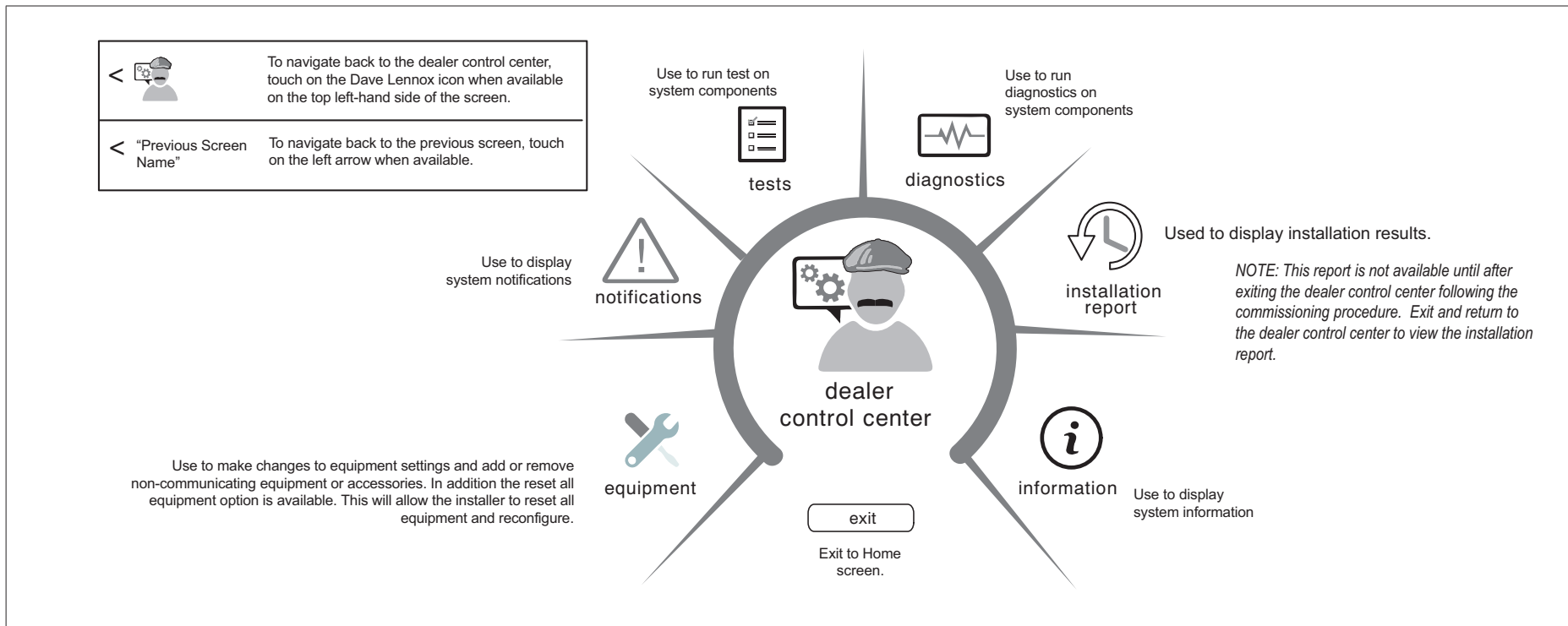**Figure 18. Dealer Control Center**

Selections listed in this section are dependent on system hardware configuration. Not all options listed in this section will be available.

NOTE: *When changing the default settings for any parameter, there is a possibility that it will affect the settings for another parameter. If this happens, a pop-up message will be displayed listing the other affected parameters and their new automatically set values.*

The following is a complete list of all possible parameters listed under **System**. Parameters actually available are dependent on the Lennox communicating equipment type detected and non-communicating equipment added.

Table 4. Smart Hub Parameters

Parameter	Description
About	This screen provides information concerning language supported, equipment type name, control software revision, model, control mode number, control serial number, control hardware revision, protocol revision number, device product level, 24VAC average power consumption, 24VAC peak power consumption, compatible devices list, application code memory size and micro-controller part number.
Auto Changeover - Humidif. Deadband	Prevents the Humidification and Dehumidification settings from being closer together than 5% or greater than 10% (Dead-band). Range is 5 to 10%. Default is 5%. Adjustments are in increments of 1%.
Auto Changeover - Temp Deadband	Prevents the Heating and Cooling from being set closer together than 3ºF (1.67°C) or greater than 9ºF (5.0°C) (Dead- band). Range is 3 to 9°F (1.67 to 5.0°C). Default is 3°F (1.67°C). Adjustments are in increments of 1°F (0.56°C).
Auto Dehumidification Overcooling Threshold	Adjustments are in increments of 1%. This value can automatically be affected by adjusting other parameters. One example would be when enabling Max Dehumidification Overcooling. Range is 0 - 10%. Default is 4%.
Aux Heating Activation Threshold	This is an adjustment to hasten or delay the aux heat activation. This adjusts how far below the set point the temperature must fall with the HP at 100% before allowing electric heat to come on. Range is 0 - 10°F (0.0 to 5.56°C) with increments of 0.25°F (0.14°C). The default setting is 2.5°F (0.83°C). **Definition/Dependencies:** **Step Change versus Steady State Modes** • Outdoor temperature below the high balance point or with balance points disabled. • Heat Pump demand above 95% for 10 minutes. • Sixty (60) minute temperature rise prediction = less than this Parameter Setting (value) **Result:** The Heating Proportional Integral Algorithm (as set for less, normal, or more aggressive) will begin to stage on the electric heat to bring the space temperature up to set point. **Synopsis**: The LOWER this parameter is set, the quicker the auxiliary heating will respond, in both step change mode and steady state mode.
Balance Point Control If system is set up as dual fuel or heat pump with electric heat and a outdoor temperature sensor connected to Smart Hub, the low and high balance point settings will appear. The balance points feature requires that a sensed outdoor temperature is provided to the thermostat. The outdoor ambient temperature can be read from either a: • Field-installed outdoor temperature sensor (X2658). • iComfort heat pump. All iComfort heat pumps have a factory-installed outdoor temperature sensor. Options are enabled or disabled. Default is disabled. When enabled, both low and high balance points can be set.	
High Balance Point	This setting is used to prevent the furnace or electric heat from heating the structure. (Alert 19 - Minor - Notification only - The outdoor temperature is higher than the level where the furnace or electric heat is programmed to heat the home.) Range is -17 to 75°F (-27.22 to 23.89°C). Default is 50°F (10.0°C). Adjustments are in increments of 1°F (0.56°C).
Low Balance Point	Setting used to prevent the heat pump from heating the structure. (Alert 18 - Minor - Notification only - The outdoor temperature is below the level where the heat pump is programmed to heat the home). Range is -20 to 72°F (-28.89 to 22.22°C). Default is 25°F (-3.89°C). Adjustments are in increments of 1°F (0.56°C). *NOTE: Dual-Fuel Applications (Communicating Systems Only) - Dual fuel applications, which include both a Heat Pump and a gas furnace, will provide multiple stages of heating. For example, a two−stage heat pump would deliver two stages of heat. The gas furnace can add two to four more stages of heat.*

Table 4. Smart Hub Parameters

Parameter	Description
CFA Cooling Discomfort Threshold	Default is ON. The purpose of this algorithm when set to ON is to detect systems with faults which are causing measurable loss of comfort and thus, need repair/service intervention. The algorithm monitors the duration in which the indoor temperature is above the cool set point or below the heat set point and does not approach the set-point. When an issue is detected alarm 901 is activated.
Cooling Mode	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 cooling cycle demand. • Comfort - This is when the system could automatically stage up or down based on the current load demand.
Cooling Prognostics	This algorithm will determine whether the unit will run out of capacity during the hottest time of summer. It will look back everyday a minimum of three days to see if there is a pattern and compare it to the hottest day on record for that zip code before triggering an notification. It must see a pattern before it will trigger the notification. There may be a component or components that will require attention. The sensitivity (threshold) selection options are **OFF**, **LOW**, **MEDIUM**, and **HIGH**. The default is **HIGH**. The alert code notification is 65545.
DAT Integral Gain (Lennox Modulating Outdoor Units Only)	The indicates how stable the system is attempting to reach the discharge air temperature set point. You may hear the compressor hunting (ramping up and down) adjusting to lower setting will correct. Lennox advises not to make changes to this setting without first contacting Lennox technical support or Lennox field technical consultant. Default is 3.0. Range is 1.0 to 15.0 in increments of 0.5.
DAT Offset	This parameter is only available when a Lennox modulating outdoor units is installed along with a discharge air temperature sensor (DATS) Installed is used. Default is 0.0°F (0.0°C). Range is -5.0°F to 5.0°F (-2.88 to 2.78°C) in increments of 0.5°F (0.28°C).
DAT Proportional Gain (Lennox Modulating Outdoor Units Only)	This is how the system attempts to reach the discharge air temperature set point. Lennox advises not to make changes to this setting without first contacting Lennox technical support or Lennox field technical consultant. Default is 3.0. Range is 1.0 to 15.0 in increments of 0.5.
Dew Point Adjustment	These settings allow adjustments to the Dew Point setting for the home. Some homes may require an adjustment to help maintain comfort. If condensation is present on windows, set the adjustment lower, between -15% to -5%. If the home feels dry, set the adjustment upwards, between +5 to +15%. Range is -15 to 15°F. Default is 0°F. Adjustments are in increments of 1°F.
Electric Heat Control Mode (Single and Two-Stage Lennox iComfort Outdoor Units Only)	In heat pump applications, the electric heat is staged to provide supplemental heat to meet desired comfort levels. When the electric heat section is used in applications that do not have a heat pump, the elements are staged to limit heat so that it meets heating demands only. Options are Standard and EvenHeat. Default is Standard.
Electric Heat Stages During Defrost	Can increase or decrease the number of electric elements to come on during a call for defrost. (Thermostat will have a demand for heat.) Range is 0 to 5 electric heat stages. Default is 2. Adjustments are in increments of 1.
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces. Default name is subnet controller.
EvenHeat Discharge Temp	When in EvenHeat Control Mode, the thermostat will stage the electric heat sections to maintain a constant discharge air temperature. The system must have a DATS connected to the system to show this parameter. *NOTE:* *Not selectable on Lennox modulating outdoor units. Electric heat elements will be staged on by the demand of the thermostat.* Range is 85 to 130ºF (29.4 to 54.4ºC). Default is 85ºF (29.4ºC). Adjustments can be made in increments of 15ºF (8.4ºC) .

Table 4. Smart Hub Parameters

Parameter	Description
Gas Heat Control Mode (SLP98 only)	Options are **Staged**, **Load Tracking Variable Capacity** and **Variable Capacity**. Default is Staged. **Staged**: Some furnaces can be configured to provide up to four stages of gas heat operation. When staged heating is chosen, the iComfort thermostat allows you to choose between 1, 2, 3 and 4 stages of heat. Single-stage heat: first stage provides 100% of full capacity. • Two-stage heat: First stage provides 70% of full capacity; 2nd stage provides 100% of full capacity. • Three-stage heat: First stage provides 60% of full capacity; 2nd stage provides 80% of full capacity; third stage provides 100% of full capacity. • Four-stage heat: First stage provides 35 or 40% of full capacity; second stage provides 60% of full capacity; third stage provides 80% of full capacity; fourth stage provides 100% of full capacity. **Load Tracking Variable Capacity**: Load tracking variable capacity will smoothly track the load (sensible temperature changes) up and down and adjust the furnace heating rate both ways. **Variable Capacity:** Variable capacity only tracks the load upward (rising temperature). Variable capacity uses the thermostat stage differentials but not stage timers.
Gas Heating Activation Temp Difference (Lennox Modulating Heat Pumps)	When the system is dual-fuel and steady state while operating at full HP demand, this is the amount of °F (°C) below the set point that is allowed before allowing to switch to gas heat. Range is 0.5 to 10°F (0.0 to -5.56°C). Default is 1.5°F (1.30°C). Adjustments are in increments of 0.5°F (0.14°C).

Heat Cool Stages Locked In

Heat Cool (H/C) Stages Lock in default is disabled (heat/cool stages are turned off separately). If changed to Enabled, heat/cool stages are turned off together. *For non-variable speed systems only.*

Cooling (1- and 2-Stages)

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

Table 4. Smart Hub Parameters

Parameter	Description
	Heating - Heat Pump with Electric - 3 Stage **(2 compressor / 1 backup OR 1 compressor / 2 backup)** H/C Stages Locked = NO H/C Stages Locked = YES **Heating - Heat Pump with Electric - 4 Stage (2 compressor / 2 backup)** H/C Stages Locked = Disabled H/C Stages Locked = Enabled **Heating - Dual Fuel - 2 Stage (1 compressor / 1 backup)** H/C Stages Locked = Disabled or Enabled

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Table 4. Smart Hub Parameters

Parameter	Description

Heating - Dual Fuel - 3 Stage (1 compressor / 2 backup)

H/C Stages Locked = Disabled

1st stage ON — Stg1 Differential
2nd stage ON ← Stg2 Differential →
3rd stage ON ← Stg3 Differential →
3rd stage OFF

H/C Stages Locked = Enabled

1st stage ON — Stg1 Differential
2nd stage ON ← Stg2 Differential →
3rd stage ON ← Stg3 Diff. →

SET-POINTS: SP -3.5   SP -3.0   SP -2.5   SP -2.0   SP -1.5   SP -1.0   SP -0.5   SP   SP

Heating - Dual Fuel - 3 Stages (2 compressor / 1 backup)

H/C Stages Locked = Disabled

1st stage ON — Stg1 Differential
2nd stage ON ← Stg2 Differential →
3rd stage ON ← Stg3 Differential →
2nd stage OFF

H/C Stages Locked = Enabled

1st stage ON — Stg1 Differential
2nd stage ON ← Stg2 Differential →
3rd stage ON ← Stg3 Differential →

SET-POINTS: SP -3.5   SP -3.0   SP -2.5   SP -2.0   SP -1.5   SP -1.0   SP -0.5   SP   SP

Heating - Dual Fuel - 4 Stage (2 compressor / 2 backup)

H/C Stages Locked = Disabled

1st stage ON — Stg1 Differential
2nd stage ON ← Stg2 Differential →
3rd stage ON ← Stg3 Differential →
4th stage ON ← Stg4 Differential →
2nd stage OFF
4th stage OFF

H/C Stages Locked = Enabled

1st stage ON — Stg1 Differential
2nd stage ON ← Stg2 Differential →
3rd stage ON ← Stg3 Differential →
4th stage ON ← Stg4 Diff. →

SET-POINTS: SP -3.5   SP -3.0   SP -2.5   SP -2.0   SP -1.5   SP -1.0   SP -0.5   SP   SP

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Table 4. Smart Hub Parameters

Parameter	Description
Group ID	Multiple Smart Hubs in a home can be assigned to a group (up to nine groups with up to eight Smart Hubs in each group). All Smart Hubs in a group can communicate with other Smart Hubs in the same group over the home Wi-Fi network. If a Smart Hub is set to Group ID 0, there will be no connectivity with another Smart Hub. Default Group ID is 1. Valid range is 0 to 9.
HP Heating Lockout Time	The HP could not get a zone to progress 0.5 degrees towards the set point in 120 minutes (Alert Code 40 - Minor alert). System will switch to secondary heat source. (Electric heat or furnace in dual fuel applications). Transition back to Heat Pump normal operation when termination setting times out. Range is 60 to 240 minutes. Default is 120 minutes. Adjustments are in increments of 30 minutes.
HP Heating Mode *(Lennox Modulating Heat Pumps Only)*	Options are Normal and Comfort. Default is Normal. The normal setting heats the home to the desired temperature setting. Modify the heating comfort mode to limit minimum compressor speed to 60 – 70 percent range and/or adjust comfort mode CFM. • Normal is when the heat pump will heat the home will providing the highest efficiency. • Comfort is when the heat pump will deliver warmer air for comfort, but sacrifices on efficiency.
Humiditrol Comfort Adjust	Options are Maximum Overcooling, Midpoint Overcooling and Minimum Overcooling. Default is Maximum Overcooling. • Maximum Overcooling: Indoor temperature > (greater than) two degrees above heating setpoint. • Midpoint Overcooling: Indoor temperature > (greater than) HEAT setpoint + COOL setpoint / 2. • Minimum Overcooling: Indoor temperature > (greater than) two degrees below cooling setpoint. ***NOTE:*** *XP20 and XP25 is not compatible with Humiditrol (EDA).*
Humidity Reading Calibration	If it is determine that the actual humidity percentage being detected at the thermostat is off based on independent readings using other humidity reading devices, the display can be adjusted using this setting. Range is -10.0 to 10.0%. Default is 0.0%.
Lock In 2nd Stage HP by Outdoor Temp *(Lennox Two-Stage Heat Pumps Only)*	This accessory allows the unit to lock in second stage HP heating when the outdoor temperature goes below the jumper pin setting. Options are off, 40°F (4°C), 45°F (7°C), 50°F (10°C) and 55°F (13°C). Default is off.
Max Heat Setpoint	The highest temperature setting that the heat set point can be set on the thermostat. Default is 90.0F (32.33°C). Range is 60.0 to 90.0°F (15.56 to 32.22°C). Adjustable in increments of 1°F (0.56°C).
Max Humidification Setpoint	Maximum allowed set point for humidification. Range is 15 to 45%. Default is 45%. Adjustments are in increments of 1%.
Min Cool Setpoint	The lowest temperature setting that the cool set point can be set on the thermostat. Range is Range is 60.0 to 90.0°F (15.56 to 32.22°C). Default is 60°F (15.56°C). Adjustments are in increments of 1°F (0.56°C).
Min Dehumidification Setpoint	Adjustable minimum dehumidification setting. Range is 40 to 60%. Default is 40%. Adjustments are in increments of 1%.
Modulating Cooling Cycles Per Hour *(Lennox Modulating Outdoor Units Only)*	This feature is activated when the structure BTU load is less than the minimum outdoor unit cooling capacity of the outdoor unit. The system will be cycled "ON" and "OFF" at the selected cycles per hour to maintain the settings of the thermostat. (This governs how many cycles per hour the system will try to run when it needs to run at less than minimum capacity). Range is 3 to 6 cycles hours. Can be adjusted in increments of 0.5. Default is 4.

Understanding Modulating Step Change and Steady State PI Gains

Each of these terms has a multiplier (or gain) associated with it called the proportional gain and the integral gain respectively and affect responsiveness and stability

• **Standard** is a moderate gain suitable for nearly all installations.
• **More Aggressive** is a set of slightly higher gains that will make the system more responsive to changes, and will try harder to stay on the set point. This setting may cause some systems to oscillate.
• **Less Aggressive** is a set of slightly lower gains that will make the system less responsive and help to stabilize an oscillating system by sacrificing a small amount of time to set point.

None of the above options will cause the system to end a call if the demand for heating or cooling remains above the minimum capacity of the system since the algorithm is designed to find the demand that allows the system capacity to exactly match the house heating or cooling loss, creating a balance and constant temperature.

Table 4. Smart Hub Parameters

Parameter	Description
Modulating Cooling Step Change PI Gain *(Lennox Modulating Outdoor Units)*	Step change gains deal with set point changes and affects how fast the system reaches the next set point. Options are **less aggressive**, **standard** and **more aggressive**. Default is **standard**.
Modulating Cooling Steady State PI Gain *(Lennox Modulating Outdoor Units Only)*	Steady state gain controls the demand when the system is not responding to a sensed temperature change away from the iComfort thermostat setting. Options are **less aggressive**, **standard** and **more aggressive**. Default is **standard**.
Modulating Gas Heating Cycles Per Hour *(SLP98V only)*	Heat Pump heating capacity of the outdoor unit. The system will be cycled "ON" and "OFF" at the selected cycles per hour to maintain the settings of the thermostat. (This governs how many cycles per hour the system will try to run when it needs to run at less than minimum capacity). Range is 4 to 10 cycles. Default is 6 cycles. Adjustments are in increments of 0.5 cycles.
Modulating Gas Heating Step Change PI Gain *(SLP98V only)*	This is applicable to the SLP98V only. Step change gains deal with set point changes and affects how fast the system reaches the next set point (Example: Adjustment to the thermostat setting). Options are **less aggressive**, **standard** and **more aggressive**. Default is **standard**. Recommend not changing this setting.
Modulating HP Heating Cycles Per Hour *(Lennox Modulating Heat Pumps)*	This feature is activated when the structure BTU load is less than the minimum Heat Pump heating capacity of the outdoor unit. The system will be cycled "ON" and "OFF" at the selected cycles per hour to maintain the settings of the thermostat. (This governs how many cycles per hour the system will try to run when it needs to run at less than minimum capacity). Range is 3 to 6 cycles. Default is 4 cycles. Adjustments are in increments of 0.5 cycles.
Modulating HP Heating Step Change PI Gain *(Lennox Modulating Heat Pumps)*	Step change gains deal with set point changes and affects how fast the system reaches the next set point (Example: Schedule change or adjustment to the thermostat setting). Options are **less aggressive**, **standard** and **more aggressive**. Default is **standard**. Recommend not changing this setting.
Modulating HP Heating Steady State PI Gain *(Lennox Modulating Heat Pumps)*	Steady state gain controls the demand when the system is not responding to a sensed temperature change away from the thermostat setting. Options are **less aggressive**, **standard** and **more aggressive**. Default is **standard**. Recommend not changing this setting.
Number of Gas Heating Stages *(SLP98V only)*	Number of selectable stages when Gas Heat Control Mode is set in "Staged" mode. Options are 1 through 4. Default is 4.
Outdoor Temperature Reading Calibration	This will allow for adjustment to the outdoor temperature display when the display temperature is off. Outdoor sensor is required. Range is -10 to 10°F (-5.56 to 5.56°C). Default is 0°F (0.0°C). Adjustments are in increments of 1°F. (0.56°C)
Reset Smart Hub	Reset Smart Hub (erases Smart Hub settings and restarts installer setup).
Severe Weather Protection (high and low temperature notification) Options are enabled or disabled. Default is disabled. When enabled either the heat or freezing alert temperature setting will automatically generate a email notification to the homeowner that the applicable condition exist and homeowner interaction is required. *NOTE: Notification is dependent on the thermostat having an active Wi-Fi connection and the user account has been setup and includes a valid email address.*	
Heat Alert Temperature	This will notified the homeowner when the indoor temperature reaches the setting defined for this parameter. Range is 80°F to 100°F (26.67 to 37.78°C) with a factory default of 90°F (32.22°C). Increments adjusted by 1.0°F (0.56°C).

Table 4. Smart Hub Parameters

Parameter	Description
Freezing Alert Temperature	This will notified the homeowner when the indoor temperature reaches the setting defined for this parameter. Range is 30°F to 50°F (-1.11 to 10.0°C) with a factory default of 40°F 4.4°C). Increments adjusted by 1.0°F (0.56°C).
Single Setpoint Mode (SSP) (Non-Zoning System Only) On the user screens this is referred to as Perfect Temp (Temperature). Options are enabled or disabled. Default is disabled. The Single Set Point (SSP) algorithm allows the user the set only one temperature set point value rather than one value for heating and a different value for cooling. When zoning is present, the following SSP settings are not available. When enabled the following parameters are automatically configured for optimal settings.	
SSP Heating Cancel Coast Counter Increment Slope	Range is 0 to 0.75°F (0.0 to 0.42°C). Default is 0.25°F (14°C). Adjustments are in increments of 0.125°F (0.07°C).
SSP Heating Cancel Coast Counter Decrement Slope	Range is 0.25 to 2°F (0.14 to 1.11°C). Default is 0.5°F (0.28°C). Adjustments are in increments of 0.125°F (0.07°C).
SSP Cooling Cancel Coast Counter Increment Slope	Range is -0.75 to 0.0°F (-0.42 to 0.0°C). Default is -0.25°F (-0.14°C). Adjustments are in increments of 0.125°F (0.07°C).
SSP Cooling Cancel Coast Counter Decrement Slope	Range is -2.0 to -0.25°F (-1.11 to -0.14°C). Default is -0.5°F (-0.28°C). Adjustments are in increments of 0.125°F (0.07°C).
SSP Heating Lockout Outdoor Temp	When the outdoor temperature is above this setting, heating is not allowed if single set point is running. Range is 50 to 80°F (10.0 to 26.67°C). Default is 70°F (21.11°C). Adjustments are in increments of 1.0°F (0.56°C).
SSP Cooling Lockout Outdoor Temp	When the outdoor temperature is below this setting, cooling is not allowed if single set point is running. Range is 30 to 60°F (-1.11 to 15.56°C). Default is 40°F (4.44°C). Adjustments are in increments of 1.0°F.
Smart Alert Enable	Options are disabled, conservative, medium and aggressive. Default is disabled. • Disable - There is no monitoring of Smart Alert Enable. • Conservative - The system will wait longer to display any Smart Alert Enable alarms. This options allow for a minimum chance for false alarms being shown. • Medium (default) - Extensive testing by the Lennox development team to minimize the number of false alarms. • Aggressive - Will shorten time to display any Smart Alert Enable alarms. **Smart Alert Enable function monitors:** • Thermostat set point setting • Temperature reading • Determine whether the system moving towards the desired temperature setting or is unable to achieve the desire temperature setting. • Uses local climate design temperatures • System run times. *NOTE: Smart Alert Enable feature is disabled in a zoning system.* *NOTE: Depending on type of system (conventional heating/cooling or heat pump system) and optional equipment not all system settings will be displayed.*

Table 4. Smart Hub Parameters

Parameter	Description
Smooth Setback Recovery (SSR)	When enabled, smooth set back begins recovery up to two hours before the programmed time so that the programmed temperature is reached at the corresponding programmed event time. Assume 12°F (6.72°C) per hour for first-stage gas/electric heating and 6°F (3.36°C) per hour for first-stage compressor based heating or cooling. With Smooth Set Back disabled, the system will start a recovery at the programmed time. Options are enabled or disabled. Default is enabled. The SSR set point calculation is as follows: $$\text{For New SSR CSP} = \text{Current SSR CSP} - \frac{\text{Current Program CSP} - \text{Target Program CSP}}{N}$$ $$\text{For New SSR HSP} = \text{Current SSR HSP} - \frac{\text{Target Program HSP} - \text{Current Program HSP}}{N}$$ **Where: CSP = Cool Set Point** **HSP = Heat Set Point** **N = number of 30 second intervals to the target program set point** **Note: N = 240 when target program set point is 2 hours away (maximum recovery time)**
	Rules for SSR: • 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
Stage Delay Timers (First)	Enabled (default) setting: When enabled all stage delay timers (stages 2 through 6) are enabled and will serve to bring on additional stage(s) of cooling or heating on a timed basis (default 20 minutes) Disabled setting: All stages delay timers are disabled. Heat/cool stages are changed based on temperature *NOTE: The second-stage delay timer (when stage timers is Enabled) is used for both HEATING and COOLING. However, if the system has a variable capacity furnace, zoning or variable outdoor unit, all stage delay timer will be ignored.*
Stage Delay Timers (1 through 6)	Second through Sixth Stage Delay timer (where applicable) - If staged delay timers are "Enabled", the default is 20 minutes but can be programmed from 5 to 120 minutes in 5-minute increments. If the first stage fails to advance the ambient temperature toward the set point by 1.0°F (0.56°C) in the programmed delay time, then the second stage is activated. However, if the system has a variable capacity furnace,
Stage Differentials (1 through 6)	Number of stages in thermostat is dependent on equipment that is installed. *NOTE: Lennox variable capacity systems will stage electric heat but not on differentials. It will use the thermostat PI logic to stage the electric heat. If the system has a variable capacity furnace or zoning all stage differentials will be ignored.*
Temp Reading Calibration	Range is -5.0 to 5.0°F (-2.78 to -2.78°C). Default is 0.0°F (-0.0°C). If it is determine that the actual temperature being detected at the thermostat is off based on independent readings using other ambient temperature reading devices, the display can be adjusted using this setting.
Temperature Control Mode	The Feels-Like feature factors in the outdoor temperature and indoor humidity for a more accurate control of the temperature in the home. Either an outdoor temperature sensor is used or Internet Weather is enabled for this feature to operate. Modifying this setting here will also change the feature status on the user settings screen. • **Normal** - This setting cools or heats the home to the desired temperature setting (Feels Like is OFF. • **Comfort** - This setting cools or heats the home to the desired temperature setting (Feels Like) is ON. When set to ON, other parameters are modified to optimal settings for this feature. Those setting changes will be listed on-screen when Comfort is enabled. Default is **Normal**.
Wall Insulation	Options are poor, average and good. Default is average.

Table 4. Smart Hub Parameters

Parameter	Description
Zone 1 through 4 First Stage Differential	Differential is the temperature between when first stage will cycle ON and cycle OFF. (Example: Zone 1 HD Display is set at 70°F (21°C) with a 1.0°F (0.56°C) differential. Cooling Demand - cooling will cycle ON when the room temperature reaches 70.5°F (21.4°C) and cycle OFF when the room temperature is 69.5°F (20.8°C). Range is 0.5 to 3°F (0.28 to 1.67°C). Default is 1°F (0.56°C). Adjustments are in increments of 1°F (0.56°C). ***NOTE:*** *For Lennox Modulating Outdoor Units differentials are ignored.*
Zone 1 through 4 Continuous Blower CFM	Minimum and maximum CFM will be dependent on system component configurations. These parameter values are automatically adjusted to the specific hardware configuration. See iHarmony zoning system installation instruction for minimum CFMs for specific indoor units. Zones requesting the fan ON are only allowed while no other zone demand is present. The thermostat will sum all the zone continuous blower CFM requirements and send the command only after positioning the dampers and waiting for the damper close delay period to expire (30 seconds) Continuous blower demands are the lowest priority demands, all other conditioning demands will over-ride the continuous blower demand. Range is 5 CFM to maximum of indoor unit. Default is dependent on tonnage of indoor unit. Adjustments are in increments of 5 CFM.
Zone 1 through 4 Cooling CFM	Minimum and maximum CFM will be dependent on system component configurations. These parameter values are automatically adjusted to the specific hardware configuration. See iHarmony zoning system installation instruction for minimum CFMs for specific indoor units. Target cooling CFM for a specific zone. Range is 5 CFM to maximum of indoor unit. Default is dependent on tonnage of indoor unit. Adjustments are in increments of 5 CFM.
Zone 1 through 4 Heating CFM	Minimum and maximum CFM will be dependent on system component configurations. These parameter values are automatically adjusted to the specific hardware configuration (See table 9 in iHarmony installation instruction for minimum CFMs for specific indoor units). Target heating CFM for a specific zone. Range is 5 to maximum of indoor unit. Default is dependent on tonnage of indoor unit. Adjustments are in increments of 5 CFM. Adjustments are in increments of 5 CFM.
Zoning Anticipated Discharge Air Temperature Adjustment	This parameter setting compensates for a rapid change of the discharge air temperature due to fast changing conditions. It examines the change in the discharge air temperature for the previous two minutes and extrapolates or looks forward by the number of seconds set in the parameter and uses this as the DATS value for staging. This parameter setting helps prevent limit trip/frozen coil from occurring. Range is 0 to 120 seconds. Default is 30 seconds. Adjustments are in increments of 5 seconds.
Zoning Gas Heating DAT Cooldown Target	At the end of a gas cycle, the Heat Blower Off-Delay may not be long enough to completely cool the heat exchanger. This may result in a primary limit trip then, or at the beginning of the next heat demand. This parameter allows the blower to run after a gas heat call ends until the discharge air temperature sensor (DATS) cools to the temperature set in the parameter. If the temperature is set too low this will cause the temperature in the room to overshoot. Range is 80 to 90°F (26.67 - 32.22°C). Default is 85°F (29.44°C). Adjustments are in increments of 1°F (0.56°C).
Zoning Minimum Zone Run-Time	Range is 90 to 600 seconds. Default is 120 seconds. Adjustments are in increments of 30 seconds.
Zoning Supply Air Temp Limit for Cooling	In cooling mode, this setting sets the discharge air temperature low limit. Below this temperature, the cooling is turned off. Range is 35 to 45°F (1.67 - 7.22°C). Default is 40°F (4.44°C). Adjustments are in increments of 1°F (0.56°C).
Zoning Supply Air Temp Limit for Gas / Electric Heating	In heating mode, this setting sets the target discharge air temperature. Range is 100 to 160°F (37.78 to 54.44°C). Default is 140°F (43.33°C). Adjustments are in increments of 5°F (2.78°C).
Zoning Target Supply Air Temp for Cooling	In cooling mode, this setting sets the target discharge air temperature. Range is 40 to 60°F (4.44 - 15.56°C). Default is 45°F (7.22°C). Adjustments are in increments of 1°F (0.56°C).
Zoning Target Supply Air Temp for HP Heating	In heat pump heating mode, this setting sets the target discharge air temperature. Range is 85 to 110°F (29.44 to 43.33°C). Default is 90°F (32.22°C). Adjustments are in increments of 1°F (0.56°C).
Zoning Target Supply Air Temp for Gas/Electric Heating	Default is 110°F. Range is 100°F to 130°F with 1 degree increment adjustable. In heating mode, this setting sets the target discharge air temperature.

Table 5. Heat Pump Parameters

Parameter	Description
About	This screen provides information concerning language supported, equipment type name, unit model number, unit serial number, unit nominal capacity, number of heating states, number of cooling stages, heating capacity by stage, cooling capacity by stage, control software revision, control model number, control serial number, control hardware revision, outdoor air temp sensor, protocol revision number, device product level, 24VAC average power consumption, 24VAC peak power consumption, line voltage average power consumption, line voltage peak power consumption, outdoor inverter model number, outdoor inverter firmware version, outdoor fan RPM profile, unit code, compatible devices list, application code memory size and micro-controller part number.
Automatic Max Defrost *(Single and Two-Stage iComfort Heat Pumps)*	When set to **ON**, the system will always run at MAX DEFROST when accumulated compressor off time is longer than 30 minutes and ambient temperature is less than 35°F (1.6°C). When ambient sensor temperature is higher than 40°F (4.5°C) then defrost termination will be 90°F (32°C). This option has two settings, either **ON** or **OFF**. Default is **OFF**.
Compressor Shift Delay ON / OFF *(Single and Two-Stage iComfort Outdoor Units)*	The options are **ON** or **OFF**. By default it is set to **ON**. • Shift Delay "OFF" - Compressor will not be cycled "OFF" going in and out of defrost. • Shift Delay "ON" - Compressor will be cycled "OFF" going in and out of defrost.
Compressor Short Cycle Delay' *(Single and Two-Stage iComfort Outdoor Units)*	This feature prevents the compressor from being short cycled any time the compressor is turned "OFF". The range is 60 - 300 seconds. Default is 300 seconds and with an incremental adjustment of 60 seconds.
Defrost Termination Temp *(Single and Two-Stage iComfort Heat Pumps)*	This is the temperature that defrost mode will be terminated. In dual fuel applications (furnace and heat pump), defrost tempering is automatically enabled and operates as follows: • Furnace will run for 75 seconds ON then after 90 seconds OFF for two cycles. • After the first two cycles, the furnace will run for 60 seconds ON then cycle OFF for 90 seconds. • This cycle will be repeated unit the room thermostat is informed by the outdoor control that defrost has terminated. The range is 50 - 100°F (10.0 to 37.78°C). Default is 50°F (10.0°C) and with an incremental adjustment of 10°F (5.56°C). **Modulating - Both Furnace and Heat Pump are Modulating:** When the thermostat receives information that the heat pump has entered defrost the thermostat sends a minimum rate heating demand to the furnace. Then the thermostat terminates the minimum rate heating demand upon defrost completion or any time the heat pump stops. (i.e., pressure switch opens, mode switch changes, etc.) **Staged – Both Furnace and Heat Pump are Multi-Stage:** When the thermostat receives information that the heat pump has entered defrost the thermostat performs the following : • Sends a first stage heating demand to the furnace. • After 75 seconds elapse from the time the first stage demand was sent, the thermostat terminates the furnace heating demand. • After the furnace minimum off time has elapsed (90 seconds) from the time the previous heating termination, the thermostat starts first stage furnace heat again by sending the first stage heating demand. This is the new adjustable gas heat delay setting for zoning. • After 60 seconds elapse from the previous heating demand being sent, the thermostat terminates the furnace heating demand. • Repeat steps 3 and 4 while defrost is active, terminating any running furnace heat demand when the HP indicates that defrost is no longer active or any time the heat pump stops. (i.e., pressure switch opens, mode switch changes, etc.) *NOTE: The on times above assume the minimum furnace ignition time of 35 seconds.*
Dehum Airflow Adjustment Adder *(Lennox Modulating Heat Pumps Only)*	Dehumidification airflow = HUMID Mode CFM table value for a given thermostat demand + dehumidification adjustment adder (High Normal Cooling Airflow CFM x Dehumidification Airflow Adjustment Adder in percentage. Both these values are in the installer set up under dealer control center > equipment > heat pump. Range is 0 to 30%. Default is 28%. *NOTE: Deactivated in auxiliary dehumidification and enhanced dehumidification accessory (Humiditrol)*
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces.
High Normal Cooling Airflow *(Lennox Modulating Heat Pumps Only)*	Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements. The range is 450 - 2150 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM.

Table 5. Heat Pump Parameters

Parameter	Description
Fan Cycling *(Single and Two-Stage iComfort Heat Pumps)*	Options are ON or OFF. Default OFF.
High Normal HP Heating Airflow *(Lennox Modulating Heat Pumps Only)*	Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements. The range is 450 - 2150 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM.
Low Normal Cooling Airflow *(Lennox Modulating Heat Pumps Only)*	Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements. The range is 450 - 2150 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM.
Low Normal HP Heating Airflow *(Lennox Modulating Heat Pumps Only)*	Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements. The range is 450 - 2150 CFM. Default is dependent on unit capacity with incremental adjustment of 25 CFM.
Max Defrost by Weather *(Single and Two-Stage iComfort Heat Pumps)*	Options are off and on. Default is off. When set to on, information from the default Internet weather source is used to determine when Max Defrost is used.
Reset Heat Pump	Any installer modifications under the heat pump tab will be reset back to the factory defaults if the reset heat pump option is used.

Table 6. Air Conditioner Parameters

Parameter	Description
About	This screen provides information concerning language supported, equipment type name, unit model number, unit serial number, unit nominal capacity, number of cooling stages, cooling capacity by stage, control software revision, control model number, control serial number, control hardware revision, outdoor air temp sensor, protocol revision number, device product level, 24VAC average power consumption, 24VAC peak power consumption, line voltage average power consumption, line voltage peak power consumption, outdoor inverter model number, outdoor inverter firmware version, outdoor fan RPM profile, unit code, compatible devices list, application code memory size and micro-controller part number.
Compressor Short Cycle Delay *(Single and Two-Stage iComfort Outdoor Units)*	This feature prevents the compressor from being short cycled any time the compressor is turned "OFF" The range is 60 - 300 seconds. Default is 300 seconds and with an incremental adjustment of 60 seconds.
Dehum Airflow Adjustment Adder *(Lennox Modulating Air Conditioners Only)*	Dehumidification airflow = "HUMID" Mode CFM table value for a given thermostat demand + dehumidification adjustment adder (High Normal Cooling Airflow CFM x Dehumidification Airflow Adjustment Adder in percentage. Both these values are in the installer set up under System Device/Air Conditioner/High Normal Cooling Airflow). ***NOTE:*** *Deactivated in auxiliary dehumidification and Enhanced Dehumidification Accessory (Humiditrol).*
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and **spaces.**
High Normal Cooling Airflow *(Lennox Modulating Air Conditioners Only)*	The range is 450 - 2150 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM. Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements.
Low Normal Cooling Airflow *(Lennox Modulating Air Conditioners Only)*	The range is 450 - 2150 CFM. Default is dependent on unit capacity with an incremental adjustment of 25 CFM. Thermostat values shown are defaults. This value can be adjusted up or down to meet each application requirements.
Reset Air Conditioner	Any installer modifications under the air conditioner tab will be reset back to the factory defaults if the reset air conditioner option is used.

Table 7. Air Handler Parameters

Parameter	Description
About	Provides information concerning unit code, language support, equipment type name, unit model number, unit serial number, unit nominal capacity, number of heating states, heating capacity by stage, indoor blower CFM range, control software revision, control model number, control serial number, control hardware revision, discharge air temp sensor, outdoor air temp sensor, protocol revision number, device product level, factory installed transformer, 24VAC average power consumption, 24VAC peak power consumption, line voltage average power consumption, line voltage peak power consumption, compatible devices list, applicable code memory size, and micro-controller part number.
Airflow Profile - Cooling	Options are: 1 - No delays. 2 - ON: No delays; OFF: 45 sec delay. 3 - ON: 82% - 7-1/2 minutes; OFF: No delays. 4 - ON: 50% - 30 seconds at 82% - 7-1/2 minutes at 100% and finish cycle 50% / 30 seconds off.
Continuous Indoor Blower Airflow	Range of operation of the indoor blower during continuous blower operation. The range is 450 to 2150 CFM. Default is dependent on component match-up. Incremental adjustments are made in 5 CFM. *NOTE:* *All iComfort parameter default CFM values are based on Air Handler Control (AHC) DIP switch setting (non-communicating value) prior to power up. This dip switch settings are use and calculated using CFM conversion tables. They are then rounded up to closest number on 25 CFM resolution. Any DIP switch changes made after power up are ignore.*
Cooling Indoor Blower Off Delay	The range is 0 - 30 seconds. Default is 0 seconds with an incremental adjustment of 2 seconds.
Cooling Indoor Blower On Delay	The range is 0 - 10 seconds. Default is 2 seconds with an incremental adjustment of 1 second.
Electric Heating Airflow	Range of operation of the indoor blower during electric heat operation. The range is 1560 to 2150 CFM. Default is dependent on unit capacity with an incremental adjustment of 5 CFM.
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces.
Heating Indoor Blower Off Delay	Heating Indoor Blower OFF Delay (Electric Heat only -Blower runs at continuous air CFM setting during delay timing period). The range is 0 - 10 seconds. Default is 10 seconds with an incremental adjustment of 1 second.
Heating Indoor Blower On Delay	The range is 0 - 5 seconds. Default is 0 seconds with an incremental adjustment of 1 second.
High Cooling Airflow	Range of operation of the indoor blower during high cooling operation. The range is 1560 to 2150 CFM. Default is based on cooling demand with an incremental adjustments of 25 CFM.
High HP Airflow	Range of operation of the indoor blower during high heat pump operation. Information below is example only and exact air flow range is dependent on equipment tonnage. Use your example and add adjustment increments of +/-25 CFM Example: The range is 800 -1100 CFM. Default setting is depending on unit tonnage. Can be incrementally adjusted by 25 CFM.
HP Indoor Blower Off Delay	Heat Pump Indoor Blower OFF Delay (Heat Pump only - Blower runs at continuous air CFM setting during delay timing period). The range is 0 - 60 seconds. Default is 45 seconds with an incremental adjustment of 5 seconds.
HP Indoor Blower On Delay	The range is 0 - 30 seconds. Default is 0 seconds with an incremental adjustment of 5 seconds.
Low Cooling Airflow	Range of operation of the indoor blower during low cooling operation. The range is 450.0 to 2150 CFM. Default is based on cooling demand with an incremental adjustments of 25 CFM.
Low HP Airflow	Range of operation of the indoor blower during low heat pump operation. Information below is example only and exact air flow range is dependent on equipment tonnage. Use your example and add adjustment increments of +/-25 CFM. Example: The range is 450 - 600 CFM. Default setting is depending on unit tonnage. Can be incrementally adjusted by 25 CFM.
Reset Air Handler	Any installer modifications under the air handler tab will be reset back to the factory defaults if the reset air handler option is used.

Table 8. Furnace Parameters

Parameter	Description
About	This screen provides information on unit code, language supported, equipment type name, unit model number, unit serial number, unit nominal capacity, number of heating stages, heating capacity by stage, indoor blower CFM range, control software revision, control model number, control serial number, control hardware revision, discharge air temp sensor, outdoor air temp sensor, protocol revision number, device product level, factory installed transformer, 24VAC average power consumption, 24VAC peak power consumption, line voltage average power consumption, line voltage peak power consumption, compatible devices list, application code memory size and micro-controller part number.
Airflow Profile - Cooling	Options are: A - ON: 50% - 30 seconds at 82% - 7-1/2 minutes at 100% and finish cycle 50% / 30 seconds off. B - ON: 82% - 7-1/2 minutes at 100% and finish cycle off. C - ON: 100% - No delays; OFF: 45 seconds. D - no delays.
Continuous Indoor Blower Airflow	The range is 450 - 2000 CFM with a default setting based on equipment type match-up. Adjustments are in increments of 5 CFM. *NOTE:* All iComfort parameter default CFM values are based on Furnace Control (IFC) DIP switch setting (non-communicating value) prior to power up. This dip switch settings are use and calculated using CFM conversion tables. They are then rounded up to closest number on 25 CFM resolution. Any DIP switch changes made after power up are ignore.
Cooling Indoor Blower Off Delay	The range is 0.0 - 30.0 seconds with a default setting base on equipment type match-up. Adjustment are increments of 10 seconds. Default is 0.0 seconds.
Cooling Indoor Blower On Delay	The range is 0.0 - 10.0 seconds with a default setting base on equipment type match-up. Adjustment are increments of 1 second. Default is 2.0 seconds.
Dehumidification Airflow %	Range is 60.0 to 80.0%. Default is 70.0%
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces.
Heating Indoor Blower Off Delay	The range is 60 - 180 seconds with a default setting base on equipment type match-up. Adjustment are increments of 10 seconds.
Heating Airflow Control Type	Options for this setting are **fixed CFM** or **fixed DAT** (discharge air temperature). Default is dependent on equipment type match-up. **Fixed CFM** is selected as the Heating Airflow Control Type (parameter default selection), the circulator will operate at a CFM that is linearly interpolated between Low Heating Airflow and High Heating Airflow based on the current IFC firing rate. For example, if the firing rate is 60% and Low Heating Airflow and High Heating Airflow were set to 500 CFM and 900 CFM respectively (both parameter values are set during the IFC commission), the circulator will run at 297 CFM (= 500+ (900-500) *(60-40)/(100-40)) – assuming 40% minimum fire rate. **Fixed Discharge Air Temperature** (DAT) control when selected as Heating Airflow Control Type, the IFC will vary circulator at a CFM to maintain a set Discharge Air Temperature (DAT). For example if the firing rate is 60% and Low Heating DAT and High Heating DAT were set to 115°F (46°C) and 130°F (54.4°C) respectively (both parameter values are set during the IFC commission), the IFC will control the circulator to maintain a DAT at 120°F (48.9°C) (115+ (130-115) *(60-40)/(100-40)) – assuming 40% minimum fire rate. When Fix DAT is enabled, the following parameters are available: **Low Heating Discharge Temp** Range is 105 to 135°F (43.44 to 60.0°C). Adjustable in increments of 5F (2.78°C). Default is 120°F (51.67°C). **High Heating Discharge Temp** Range is 115 to 145°F (48.89 to 65.56°C). Adjustable in increments of 5F (2.78°C). Default is 130°F (57.22°C).
Heating Indoor Blower On Delay	The range is 15 - 45 seconds with a default setting base on equipment type match-up. Adjustment are increments of 5 seconds.
High Cooling Airflow	Range of operation of the indoor blower during high cooling operation. The range is dependent of indoor unit model and size. Default is based on cooling demand with an Incremental adjustments of 25 CFM.
High Heating Airflow	Both range and default setting is based on equipment type match-up. Adjustments are in increments of 25 CFM. This value is automatically adjusted by the system based on heating airflow control type used.
High HP Airflow	Range is 800.0 to 1100.0 CFM. Default is 967.0 CFM.
HP Indoor Blower Off Delay	The range is 0.0 - 60.0 seconds with a default setting base on equipment type match-up. Adjustment are increments of 5 seconds. Default is 45.0 seconds.

Table 8. Furnace Parameters

Parameter	Description
HP Indoor Blower On Delay	The range is 0.0 - 30.0 seconds with a default setting base on equipment type match-up. Adjustment are increments of 5 seconds. Default is 0.0 seconds.
Low Cooling Airflow	Range of operation of the indoor blower during low cooling operation. The range is dependent of indoor unit model and size. Default is based on cooling demand with an Incremental adjustments of 25 CFM.
Low Heating Airflow	Both range and default setting is based on equipment type match-up. Adjustments are in increments of 25 CFM. This value is automatically adjusted by the system based on heating airflow control type used.
Minimum Gas Heating Off Time	Default is 1.5 minutes. Range is 1.5 to 10 minutes. With increments of 0.5. This setting will help with the Alarm 250 limit tripping in zoning applications where a second zone calls immediately after the satisfying a gas heating call and there is still residual heat in heat exchanger.
Reset Furnace	Any installer modifications under the furnace tab will be reset back to the factory defaults if the reset furnace option is used.

Table 9. Zoning Control Parameters

Parameter	Description
About	This provides information on unit code, language supported, equipment type name, control software revision, control model number, control serial number, control hardware revision, protocol revision number, device product level, 24VAC average power consumption, 24VAC peak power consumption, compatible devices list, application code memory size, micro-controller part number, max number of zones, supported damper types, number of damper positions, zone temp sensor 1, zone temp sensor 2, zone temp sensor 3 and zone temp sensor 4.
Equipment Name	A unique name can be assigned to this component. Name can be up to 29 characters. Name can consist of letters, numbers, special characters and spaces.
Zones 1 through 4 Temp Reading Calibration	Allows adjustment to temperature reading displayed on zone thermostat.
Reset Zoning Control	Any installer modifications under the zoning control tab will be reset back to the factory defaults if the reset zoning control option is used.

Table 10. Thermostat (HD Display) Parameters

Parameter	Description
About	This screen provides information concerning model number, serial number, hardware revision, software revision, language support and equipment type name.
Auto Brightness	Options are on and off. Default is off.
Brightness Value	The brightness range is 0 - 100. Default 80. Touch either the + or - button to increase or decrease the setting.
Display Air Quality	Options are on and off. Default is off. Air Quality is displayed under the weather display. Touch the Weather icon on the home page to see the current air quality.
Display Indoor Humidity	Options are on and off. Default is off.
Display Outdoor Weather	Options are on and off. Default is off.
Outdoor Temperature Source	Options are off, Internet (AccuWeather) or sensor. Default is Internet (AccuWeather).
Proximity Control	Options are ON and OFF. Default is OFF. Is used to wake-up the display from screen saver mode when motion near the HD Display is detected.
Reset thermostat	Resets the thermostat settings to factory default.
Screen Locked	Options are unlocked, partially locked and locked. Default is unlocked.
Screen Saver	Options are off, weather, power save and logo. Default is off.
Wide Setpoint	Options are ON and OFF. Default is OFF. This allows a wider low and high temperature. Normal range is 60 to 90°F (15.6 to 32.2°C) . When this parameter is set to ON, the range is 40 to 100°F (4.4 to 37.8°C). This feature can also be set through the user interface setting screen. From the home screen go to menu > settings > heat & cool (or it may be just heat or cool) > wider set-point range.

Table 11. Mag-Mount Parameters

Parameter	Description
About	This provides information on equipment type name, control hardware revision, control software revision, control serial number and control model number.

Table 12. *PureAir S* Parameters

Parameter	Description
Equipment	PureAir Filter
Dirty Filter Detection and UV Life Detection	Default: ON. Options are either ON or OFF. This parameter turns on and off the filter life and UV lamp life reporting. When set to off, the control will continue to calculate the remaining filter life through continuous sampling, but will not use filter tests to determine filter life. The control will: • Perform a filter calibration upon indication of a filter change regardless of the value of this parameter. • Perform a UVA lamp calibration upon indication of a lamp change regardless of the value of this parameter. • Calculate UVA lamp life remaining regardless of the value of this parameter. Alarms 504 and 503 will not be sent while this parameter is set to "Off" The Diagnostics screen on the thermostat will continue to show values for both filter life and UV lamp life regardless of the value of this parameter.
Max Air Filtered between Tests	Default is 100%, Range is 50% to 100% Changes can be made in increments of 10%. This parameter: • Modifies the amount of air that is allowed to pass through the filter after a valid % life determination before a filter test is initiated. • Expressed as a percentage of the cubic feet of air that would pass through the filter if the fan operated at continuous fan CFM for 30 days.
UV lamp operation detection	Default: ON. Options are either ON or OFF.
Filter Life	Provides percentage of remaining filter life. This is for display purposes only and cannot be changed.
Last replacement date for filter	Date last filter reset was accomplished. This is for display purposes only and cannot be changed
Purifier life	Provides percentage of remaining purifier life. This is for display purposes only and cannot be changed
Last replacement date for purifier	Date last purifier insert reset was accomplished. This is for display purposes only and cannot be changed
• reset *PureAir S* will reset all *PureAir S* parameters back to factory defaults. • reset purifier will reset it to 100%. This is usually accomplished after the purifier insert has been replaced. • reset filter will reset it to 100%. This is usually accomplished after the air filter has been replaced.	

Table 13. Utilities

Parameter	Description
Restart Smart Hub	Restarts the Smart Hub.
Re-configure System	Re-configure HVAC system.
Reset HVAC Equipment	Resets all HVAC equipment.
Factory Reset Thermostat	Resets thermostat to factory default settings.
Factory Reset Smart Hub	Resets Smart Hub parameters back to factory default.

Table 14. Service Alert Codes

Alert Code	Description
3000	Filter 1
3001	Filter 2
3002	Humidifier pad
3003	UV light
3004	Maintenance
3005	PureAir maintenance
4000	User Wi-Fi state change, disabled.
4001	Firmware download failed
4002	Image file download failed

TESTS

Verify Airflow Per Zone is the first screen to appear under this selection. If no zoning is installed, zone airflow settings will be for zone 1 only. If zoning equipment is detected by the system then zones 1 through 4 will be listed. These screens allow for verification and modification of CFMs for blower, heating and cooling circulation. Touch continue to proceed to the next screen.

Select Test to Run is the next screen to appear. Depending on hardware present, various tests are available. By default all items to be tested are enabled. Selecting a specific test will un-check the item. When a specific set of tests are completed the results will be displayed on the screen next to the tested item. Touch continue to proceed to the next set of test items. Once all tests are completed press done to return to the touch tests to run screen. Touch the left arrow at the top left side of screen to return to the Dealer Control Center.

DIAGNOSTICS

This screen allows the installer to test all major communicating components of the system indoor unit (air handler or furnace), outdoor unit (air conditioner or heat pump) and zoning control (if applicable). Pressing the stop diagnostics button will pause the diagnostic function.

Touch the left arrow at the top left side of screen to return to the Dealer Control Center.

INSTALLATION REPORT

The overview screen provides information on dealer and customer information. Also included under day of install section is information on conditions at the time of installation. Information includes date, time indoor and outdoor temperatures and indoor humidity. Under equipment, system, indoor/outdoor and zoning model number, serial number and firmware information is displayed.

Other menus items include system indoor and outdoor units and zoning control parameter settings.

NOTE: Installation Report is not available until after exiting the dealer control center following commissioning. Return to the dealer control center from the home screen to view the installation report.

INFORMATION

The dealer information screen will appear. The next screen will be for dealer information. Here either the dealer ID or phone number can be added. Once the system is connected to the Internet, the remaining information is automatically populated. Not all information for this screen will be viewable. Touch and hold and then drag up to access the remaining information on the screen.

Information Required: Dealer ID and / or dealer phone number. Information that can be manually entered is name, email website, dealer address which includes address 1, address 2, city state and zip/postal code. Once completed, touch the left arrow at the top left side of screen to return to the Dealer Control Center.

⚠ IMPORTANT

Adding dealer information will ensure the thermostat is associated with your LennoxPros account when connecting to the Lennox server.

Warning Screen: If the dealer ID or phone number is not provided, a warning screen will appear. The warning screen will provided information on the limitation imposed on the system if this information is missing. Touch no to return to the above screen to complete the information requested or press yes to continue.

General Information

On this screen general information needs to be verified or changed. Touch any item to change its contents. A pop-up screen will appear that will allow the information to be added or changed.

Information Required:

1. Select desired language (ENGLISH, FRANÇAIS or ESPAÑOL).

2. Select country / region.

3. Select time and date which includes time, date, time zone, daylight savings time (ON/OFF)

4. Temperature unit (**Fahrenheit** or **Celsius**).

5. Once completed press **continue**.

Home Address

On this screen general information needs to be verified or changed. Touch any line item to change its contents. Information to be added is address 1, address 2, state, city and zip/postal code.

Complete the requested information and press the continue button.

Dehumidification Settings

For firmware version 3.15 and later, all controls for dehumidification are listed at **menu** > **settings** > **humidity**. Under **Humidity Control,** select **dehumidify** to enable dehumidification. By default it is **disabled**.

When dehumidify is enabled, the options are as follows and are dependent on equipment type and accessory installed.

DEHUMIDIFICATION SETTING OPTIONS

• **Normal** — Recommend when the air outside is not too humid.

• **Max** —

   » Single and Two-Stage Outdoor Units or Modulating outdoor units without a Discharge Air Temperature Sensor (DATS) Installed. Recommend when outdoor air is excessively humid. May cool your home below the set temperature.

NOTE: Recommend use of discharge air temperature sensor (DATS) catalog number 88K38 when modulating outdoor units are used.

   » Modulating Outdoor Units with DATS installed. Recommended when outdoor air is excessively humid. Adjusts cooling based on duct sensor data. May cool your home below the set temperature.

• **Climate IQ (Auto)** — Automatically adjusts fan speeds and cooling power based on local climate conditions, using Climate IQ technology. May cool your home below the set temperature.

OVERCOOLING

Slide bar adjust with a range of 0°F to 4°F (-17.8 to -15.5°C). Only available when Max or Climate IQ is selected.

DEHUMIDIFICATION SET POINT

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

ADVANCED DEHUMIDIFICATION DESCRIPTIONS

See table 1 for detail information concerning system operations when using Normal, Max or Climate IQ settings.

Table 15. Dehumidification Control Modes of Operations

Mode of Operation	Option	Description
Dehumidification Only	Normal	Both Staged and Modulating Outdoor Units: Dehumidifies while servicing a cooling demand and will not over cool. The overcooling slider is hidden from the user. Modulating units use the "comfort" table to run the system, regardless of the presence of a discharge air temperature sensor (DATS).
	Max	**Staged Outdoor Unit:** If at the start or during a cooling call, the humidity is above the relative humidity set point then the unit dehumidifies during the cooling demand. If at the time the cooling call terminates, the humidity demand is not satisfied, overcooling will occur up to the overcooling slider setting in an attempt to satisfy the dehumidification demand. Once the room temperature reaches the over cooling set point. If the system still has a dehumidification demand, the system keeps using the over cooling set point as its operating cooling set point (will not wait for the temperature to rise to the normal cooling set point to run again) until the dehumidification demand is satisfied **Modulating Outdoor Unit:** These units work as like staged units and if a discharge air temperature sensor (DATS) sensor is installed, the DAT PI setting is used to control the compressor speed to maintain a cold coil for optimized dehumidification. If a DATS is not installed, the system runs using the outdoor unit's "comfort" tables during dehumidification.
	Available only with Max and Climate IQ (Auto)	**Staged Outdoor Unit:** At the end of a cooling call, if the humidity is above the set point by a certain amount (Basic to Precision Threshold parameter), then overcooling to the overcooling slider setting occurs to satisfy the dehumidification demand. Once the room temperature reaches the overcooling set point, if the system still has a dehumidification demand, the system keeps using the over cooling set point as its operating cooling set point (will not wait for the temperature to rise to the normal cooling set point to run again) until the dehumidification demand is satisfied. **Staged Outdoor Unit:** At the end of a cooling call, if the humidity is above the set point by a certain amount (Basic to Precision Threshold parameter), then overcooling to the overcooling slider setting occurs to satisfy the dehumidification demand. Once the room temperature reaches the over cooling set point, if the system still has a dehumidification demand, the system keeps using the over cooling set point as its operating cooling set point (will not wait for the temperature to rise to the normal cooling set point to run again) until the dehumidification demand is satisfied.
		Modulating Outdoor Unit: If at the start or during a cooling call, the humidity level is below the relative humidity set point by more than 10%, then the mode becomes "Dry" such that the blower CFM is increased to the "Dry" table setting. • If a cooling call starts with the humidity level below the relative humidity setpoint, or if during a cooling call, the humidity level is between the dehumidify off relative humidity point and the relative humidity set point -10, then standard cooling runs to satisfy the cooling demand, without any added dehumidification. • If at the start or during a cooling call, the humidity is above the relative humidity set point then the unit dehumidifies during the cooling demand. If at the time the cooling call terminates, the humidity is above the Basic to Precision Threshold then overcooling will occur up to the slider setting in an attempt to satisfy the dehumidification demand. Once the room temperature reaches the over cooling set point, if the system still has a dehumidification demand, the system keeps using the over cooling set point as its operating cooling set point (does not wait for the temperature to rise to the normal cooling set point to run again) until the dehumidification demand is satisfied. • The Basic to Precision Threshold is a parameter with the following properties: Definition: Relative humidity amount above the relative humidity set point where over cooling will occur to dehumidify. Default: 4, Min: 0, Max: 10, Inc: 1 • Modulating units use the "comfort" table to run the system, regardless of the presence of a DATS.
		overcooling 0°F 2°F 0°F 4°F
		dehumification set–point 48% 40% 60%

1 Modulating outdoor units are XC20, XP20, XC25 and XP25. NOTE - The above information is applicable only for non-zoning systems, in addition to thermostat using firmware version 3.15 or later. There is no dehumidification capability in zoning systems.

Displaying Outdoor Temperature (Sensor) and Indoor Humidity on the Home Screen

DISPLAYING THE OUTDOOR SENSOR TEMPERATURE ON THE HOME SCREEN

An outdoor temperature sensor is provided in all iComfort outdoor units. To display the outdoor temperature on the home screen of the HD Display, you can enable this feature under the dealer control center. Use the following procedure to enable the outdoor temperature sensor display

1. Touch **menu** and then touch **settings**.

2. Touch **advanced settings** and then touch **view dealer control center**.

3. Touch **equipment** and then touch **thermostat**.

4. Touch **Outdoor Temperature** and touch **sensor**.

5. Touch the back arrow (<) at the top left-hand of the screen to return to the *dealer control center*.

6. Touch **exit**.

7. From the Home screen, touch **menu** and then touch **settings**.

8. Touch **display** and touch **outdoor temperature**.

9. Touch **sensor** to touch the outdoor sensor. Touch < display to return to display screen. There under outdoor temperature it will indicate sensor.

10. Touch the home icon at the top left-hand corner of the screen to return to the home screen.

DISPLAYING THE INDOOR HUMIDITY ON THE HOME SCREEN

To enable the Indoor Humidity Display on the Home screen use the following procedure:

1. Touch **menu** and then touch **settings**.

2. Touch **advanced settings** and then touch **view dealer control center**.

3. Touch **equipment** and then touch **thermostat**.

4. Touch **Display Indoor Humidity** and touch the toggle switch to turn on.

5. Touch the back arrow (<) at the top left-hand of the screen to return to the dealer control center.

6. Touch **exit** to return to the home screen.

System Configurations

COMPLETE ICOMFORT SYSTEMS — FURNACE AND AIR CONDITIONER

An iComfort gas furnace (G71MPP, EL296V, SLP98 or SL280) with an iComfort air conditioner (SL18XC, XC17, XC20, XC21 or XC25 only) unit.

1. Wiring—See Communicating System and optional accessories wiring diagrams.
   - Four-conductor thermostat wire between the HD Display, Smart-Hub and gas furnace (R, i+, i-, C).
   - Four-conductor thermostat wire from the integrated furnace control (IFC) terminal strip to the iComfort air conditioner unit (R, i+, i-, C)
   - Wiring as required for accessories.

2. DO NOT cut any option links on furnace control.

3. After the entire system is wired, power up the system; the thermostat will check the system for installed communication devices.

4. During commissioning, you will end that process with the *dealer control center* screen. From there touch **equipment** to modified any system or equipment settings.

5. From the equipment list, touch **furnace**. From this furnace screen you will have access to the various airflow settings. Set the system air volumes according to the needs of the home.

6. When all CFM settings are complete, press the back arrow (<) at the top left-hand of the screen to return to the dealer control center. Touch **tests** to access the test section.

7. Here you will have another opportunity to adjust blower circulation, heating and cooling circulation air flows. Use the plus or minus buttons to adjust up or down the CFM settings. Once adjustments are completed, touch **continue**.

8. Under the **test to run**, you may un-check any test not desired, or run all tests. Touch **start tests** to proceed. Once each test section is completed, touch **continue** to proceed to the next group of tests.

9. Once all tests are completed, touch done which will return you to the *select test to run* screen. If finish, touch the back arrow (<) at the top left-hand of the screen to return to the *dealer control center*.

10. Touch exit to return to the home screen.

COMPLETE iCOMFORT SYSTEMS — FURNACE AND HP UNIT (DUAL-FUEL)

An iComfort gas furnace (G71MPP, EL296V, SLP98 or SL280) with an iComfort air conditioner (SL18XC, XC17, XC20, XC21 or XC25 only) unit.

1. Wiring—See Communicating System and optional accessories wiring diagrams.

    • 4-conductor thermostat wire between the HD Display, Smart-Hub and gas furnace (R, i+, i-, C).

    • 4-conductor thermostat wire from the integrated furnace control (IFC) terminal strip to the iComfort air conditioner unit (R, i+, i-, C)

    • Wiring as required for accessories.

2. DO NOT cut any option links on furnace control.

3. After the entire system is wired, power up the system; the thermostat will check the system for installed communication devices.

4. During commissioning, you will end that process with the **dealer control center** screen. From there touch **equipment** to modify any system or equipment settings.

5. Select Balance Point Control and press edit. Use the down arrow to touch Enabled. A pop-up warning screen indicating that due to enabling **Balance Point Control** other related parameter values were automatically changed.

6. Complete **Balance Point Control** by editing the **High** and **Low Balance Points**. It is not necessary to change the defaults.

7. From the equipment list, press **furnace**. From this furnace screen you will have access to the various airflow settings. Set the system air volumes according the needs of the home.

8. When all CFM settings are complete, touch the back arrow (<) at the top left-hand of the screen to return to the dealer control center. Touch **tests** to access the test section.

9. Here you will have another opportunity to adjust blower circulation, heating and cooling circulation air flows. Use the plus or minus buttons to adjust up or down the CFM settings. Once adjustments are completed, touch **continue**.

10. Under the **select test to run screen**, you may un-check any test not required, or run all tests. Touch **start tests** to proceed. Once each test section is completed, touch **continue** to proceed to the next group of tests.

11. Once all tests are completed, touch **done**. This will return you to the touch tests to run screen. If finish, touch the back arrow (<) at the top left-hand of the screen to return to the **dealer control center**.

12. Touch **exit** to return to the home screen.

COMPLETE iCOMFORT SYSTEMS — AIR HANDLER AND AIR CONDITIONER

An iComfort air handler (CBX32MV or CBX40UHV) with an iComfort air conditioner (SL18XC, XC17, XC20, XC21 or XC25).

> ## ⚠ IMPORTANT
>
> Be sure to configure the air handler control so that heat strips (if used) information will be detected by the thermostat. This must be done prior to powering up the system and control system.

1. Configure air handler control (AHC) for auxiliary heat strips if used.

2. Wiring—See Communicating System and optional accessories Wiring diagrams.

    • Four-conductor thermostat wire between the HD Display, Smart-Hub and gas furnace (R, i+, i-, C)

    • Four-conductor thermostat wire from the integrated furnace control (IFC) terminal strip to the iComfort air conditioner unit (R, i+, i-, C)

    • Wiring as required for accessories.

3. DO NOT cut any option link on air handler control.

4. After the entire system is wired, power up the system; the thermostat will check the system for installed communication devices.

5. During commissioning, you will end that process with the **dealer control center** screen. From there touch **equipment** to modify any system or equipment settings.

6. From the equipment list, touch **air handler**. From this air handler screen you will have access to the various airflow settings. Set the system air volumes according to the needs of the home.

7. When all CFM settings are complete, touch the back arrow (<) at the top left-hand of the screen to return to the **dealer control center**.

8. Touch **tests** to access the test section.

9. Here you will have another opportunity to adjust blower circulation, heating and cooling circulation air flows. Use the plus or minus buttons to adjust up or down the CFM settings. Once adjustments are completed, press continue.

10. Under the **select test to run** screen, you may un-check any test not required, or run all tests. Touch **start tests** to proceed. Once each test section is completed, touch **continue** to proceed to the next group of tests.

11. Once all tests are completed, press done. This will return you to the touch tests to run screen. If finish, press the back arrow (<) at the top left-hand of the screen to return to the **dealer control center**.

12. Touch **exit** to return to the home screen.

TIPS

If the thermostat's *select mode* screen does not offer a choice for "emerg. heat" then it may be possible that the electric heat is not working or perhaps the electric heat has not been configured.

Configure the electric heat as described "Electric Heat Configuration for iComfort Air Handlers" on page 15, or for complete detail, see the air handler installation instruction. After confirming that the electric heat has been configured correctly, reconfigure the iComfort system by going to **menu** > **system** > **advanced settings** > **view dealer control center** > **equipment** > **reset** > **re-configure system**.

COMPLETE iCOMFORT SYSTEMS — AIR HANDLER AND HEAT PUMP UNIT

An iComfort air handler (CBX32MV or CBX40UHV) with an iComfort heat pump (SL18XP, XP17, XP17N, XP20, XP21, XP21N or XP25) unit.

> ### ⚠ IMPORTANT
>
> Be sure to configure the air handler control so that heat strips (if used) information will be detected by the thermostat. This must be done prior to powering up the system and control system.

1. Configure air handler control (AHC) for auxiliary heat strips if used.

2. Wiring—See Communicating System and optional accessories Wiring diagrams.
   - Four-conductor thermostat wire between the HD Display, Smart-Hub and gas furnace (R, i+, i-, C)
   - Four-conductor thermostat wire from the integrated furnace control (IFC) terminal strip to the iComfort air conditioner unit (R, i+, i-, C)
   - Wiring as required for accessories.

3. DO NOT cut any option link on air handler control.

4. After the entire system is wired, power up the system; the thermostat will check the system for installed communication devices.

5. During commissioning you will end that process with the *dealer control center* screen. From there touch **equipment** to modified any system or equipment settings.

6. Select *Balance Point Control* and touch **edit**. Use the down arrow to touch Enabled. A pop-up warning screen indicating that due to enabling Balance Point Control other related parameter values were automatically changed.

7. Complete *Balance Point Control* by editing the *High* and *Low Balance Points*. It is not necessary to change the defaults.

8. From the equipment list, touch **air handler**. From this air handler screen you will have access to the various airflow settings. Set the system air volumes according to the needs of the home.

9. When all CFM settings are complete, touch the back arrow (<) at the top left-hand of the screen to return to the *dealer control center*. Touch **tests** to access the test section.

10. Here you will have the opportunity to adjust blower circulation, heating and cooling circulation air flows. Use the plus or minus buttons to adjust up or down the CFM settings. Once adjustments are completed, touch **continue**.

11. Under the *select test to run* screen, you may un-check any test not required, or run all tests. Touch **start tests** to proceed. Once each test section is completed, touch **continue** to proceed to the next group of tests.

12. Once all tests are completed, touch **done**. This will return you to the *select tests to run* screen. If finish, touch the back arrow (<) at the top left-hand of the screen to return to the *dealer control center*.

13. Touch **exit** to return to the home screen.

PARTIAL iCOMFORT SYSTEM — iCOMFORT FURNACE AND LENNOX CONVENTIONAL AIR CONDITIONER

An iComfort furnace (G71MPP, EL296V, SLP98 and SL280) with a conventional non-communicating Lennox brand air conditioner.

1. Wiring—See Communicating System and optional accessories Wiring diagrams.
   - 4-conductor thermostat wire between the HD Display, Smart-Hub and gas furnace (R, i+, i-, C)
   - Conventional thermostat wire with 2 to 4 conductors from the furnace terminal strip to the air conditioner unit (Y1, C, & on some models, R & Y2).
   - Wiring as required for accessories.

2. Cut option link **2-stage compr** (Y1 to Y2, W915) on furnace control on two-stage Lennox brand conventional air conditioner units only.

3. After the entire system is wired, power up the system; the thermostat will check the system for installed communication devices.

4. During commissioning you will arrive at the *equipment found* screen. From there touch **non-communicating equipment** to add non-communicating equipment.

5. From the add/remove equipment screen, touch either **1 Stage A/C unit** or **2 Stage A/C unit**.

6. Touch **done** to return to the *equipment found* screen.

7. Touch **continue** to proceed to the next screen.

8. From the equipment list, touch **Furnace**. From this furnace screen you will have access to the various airflow settings. Set the system air volumes according to the needs of the home.

9. Continue with the commissioning sequence. When the *set up airflow per zone* screen appears you can adjust the blower, heating and cooling circulation air flows per zone. When done, touch **continue** to proceed.

10. The *dealer control center* will appear. Touch **tests** to access the test section.

11. Here you will have the opportunity to adjust blower circulation, heating and cooling circulation air flows. Use the plus or minus buttons to adjust up or down the CFM settings. Once adjustments are completed, press **continue**.

12. Under the *select test to run* screen, you may un-check any tests not required, or run all tests. Touch **start tests** to proceed. Once each test section is completed, touch **continue** to proceed to the next group of tests.

13. Once all tests are completed, touch **done**. This will return you to the touch tests to run screen. If finish, touch the back arrow (<) at the top left-hand of the screen to return to the *dealer control center*.

14. Touch **exit** to return to the home screen.

TIPS

If the thermostat's **select mode** screen has only **heat only** or **off** selections and no choice for cooling or heat/cool you must add the non-communicating air conditioning unit. Use the following procedures from the home screen to add a non-communicating air conditioner.

1. Select **menu** > **settings** > **advance settings** > **view dealer control center** > **equipment**.

2. Select either **1-Stage A/C** or **2-Stage A/C**. Touch the back arrow (<) at the top left-hand of the screen to return to the dealer control center.

3. Touch **exit** to return to the home screen.

On two-stage air conditioners you must cut the **W915 2 Stage Compr** link on the furnace control

PARTIAL ICOMFORT SYSTEM — ICOMFORT FURNACE AND LENNOX CONVENTIONAL HEAT PUMP UNIT (DUAL-FUEL)

If using a conventional non-communicating heat pump unit in an iComfort dual-fuel system then a iComfort Equipment Interface Module must be used and set up as a communicating heat pump.

If the HD Display System Setting only shows "heat only" or "off" choices and does not offer a choice for "cooling" you must "Install" the non-communicating air conditioning unit (see procedures above).

For two-stage air conditioners you must cut the **Y1-Y2 2-stage comp** on-board clippable link on the air handler control.

PARTIAL ICOMFORT SYSTEM — ICOMFORT AIR HANDLER AND LENNOX CONVENTIONAL AIR CONDITIONER

An iComfort air handler (CBX32MV or CBX40UHV) with a conventional non-communicating Lennox brand air conditioner unit.

⚠ IMPORTANT

Be sure to configure the air handler control so that heat strips (if used) information will be detected by the thermostat. This must be done prior to powering up the system and control system.

1. Configure air handler control (AHC) for auxiliary heat strips if used.

2. Wiring—See Communicating System and optional accessories wiring diagrams:
    - Four-conductor thermostat wire from the Smart Hub to the air handler (R, i+, i-, C).
    - iComfort air handler to conventional Lennox brand air conditioner (5 – 8 wires). (Y1, Y2, C, R, W1,W2).
    - Wiring as required for accessories.

3. On air handler control, when matched with conventional Lennox brand 2-stage air conditioner, cut the **Y1-Y2 2-stage comp** on-board clippable link.

4. On air handler control, remove jumper between W1 and W2 for two-stage electric heat only.

5. After the entire system is wired, power up the system; the thermostat will check the system for installed communication devices.

6. During commissioning you will arrive at the **equipment found screen**. From there touch **non-communicating equipment** to add non-communicating equipment.

7. From the *add/remove equipment* screen, touch either **1-Stage A/C unit** or **2-Stage A/C unit**.

8. Touch the **done** to return to the *equipment found* screen.

9. Touch **continue** to proceed to the next screen.

10. Continue with the installer setup sequence. When the set up airflow per zone screen appears you can adjust blower, heating and cooling circulation air flows. When done, press **continue** to proceed.

11. The dealer control center will appear. Touch **tests** to access the test section.

12. Here you will have another opportunity to adjust blower circulation, heating and cooling circulation air flows. Use the plus or minus buttons to adjust up or down the CFM settings. Once adjustments are completed, touch **continue**.

13. Under the touch test to run screen, you may un-check any tests not required, or run all tests. Touch **start tests** to proceed. Once each test section is completed, touch **continue** to proceed to the next group of tests.

14. Once all test are completed, touch **done**. The will return you to the *select tests to run* screen. If finish, touch the back arrow (<) at the top left-hand of the screen to return to the *dealer control center*.

15. Touch **exit** to return to the home screen.

TIPS

If the thermostat's *select mode* screen does not offer a choice for "emerg. heat" then it may be possible that the electric heat is not working or perhaps the electric heat has not been configured.

Configure the electric heat as described "Electric Heat Configuration for iComfort Air Handlers" on page 15, or for complete detail, see the air handler installation instruction. After confirming that the electric heat has been configured correctly, reconfigure the iComfort system by going to **menu** > **system** > **advanced settings** > **view dealer control center** > **equipment** > **reset** > **re-configure system**.

PARTIAL iCOMFORT SYSTEM — iCOMFORT AIR HANDLER AND LENNOX CONVENTIONAL HEAT PUMP UNIT

An iComfort air handler (CBX32MV or CBX40UHV) with a conventional non-communicating Lennox brand heat pump unit.

⚠ IMPORTANT

Be sure to configure the air handler control so that heat strips (if used) information will be detected by the thermostat. This must be done prior to powering up the system and control system.

---

1. Configure air handler control (AHC) for auxiliary heat strips if used.

2. Wiring—See Communicating System and optional accessories wiring diagrams.
  • Four-conductor thermostat wire between the HD Display, Smart-Hub and gas air handler (R, i+, i-, C).
  • Conventional thermostat wire with 5 to 6 conductors from iComfort air handler to conventional HP (5 – 8 wires). (Y1, C, R, W1, O, and on some models Y2).
  • Wiring as required for accessories.

3. On air handler control:

  • When matched with conventional Lennox brand 2-stage heat pump, cut the **Y1-Y2 2-stage comp** on-board clippable link.
  • Remove jumper between W1 and W2 for two-stage electric heat only.
  • Cut on-board R-O clippable link.

4. After the entire system is wired, energized the system and the thermostat will check the system for installed communication devices.

5. During commissioning you will arrive at the *equipment found* screen. From there touch **non-communicating equipment** to add non-communicating equipment.

6. From the *add/remove equipment* screen touch the **Outdoor Unit Type** from the device list (**1-stage HP** or **2-stage HP**) and touch **done** to return to the *equipment found* screen.

7. Touch **continue** to proceed to the next screen.

8. Continue with the commissioning sequence until you reach the *dealer control center*. Touch **equipment** to continue.

9. Touch **air handler** from the list. From this *air handler* screen you will have access to the various airflow settings. Set the system air volumes according to the needs of the home. When all CFM settings are complete, touch the **back** button.

10. Test the system operation and confirm the system is electrically energized and operational. Test the heat strips (when used) to insure the auxiliary stages operates as designed.

11. Touch **done**.

12. Exit the *dealer control center* by touching **exit** to return to the home screen.

PARTIAL iCOMFORT SYSTEM — iCOMFORT EQUIPMENT INTERFACE MODULE

The iComfort Equipment Interface Module (EIM) can be configured in the following setups:

• Thermostat, EIM with either a non-communicating (conventional) indoor unit and iComfort outdoor unit.

• Thermostat, EIM with either a non-communicating (conventional) indoor unit and outdoor unit.

• Thermostat, iComfort furnace, EIM and a non-communicating heat pump.

1. Wiring—See Communicating System and Optional Accessories Wiring diagrams.

  • Four-conductor thermostat wire between the HD Display, Smart-Hub and equipment interface module (R, i+, i-, C).
  • Four-conductor thermostat wire from the Smart Hub to the iComfort heat pump (R, i+, i-, C).

- Up to 8-conductor thermostat wire from the non-communicating furnace terminal strip to the equipment interface module (R, C, O, Y1, Y2, G, W1, W2 and W3).

- Wiring as required for accessories

2. DO NOT cut any option link on furnace control.

3. After the entire system is wired, power up the system; the thermostat will check the system for installed communication devices.

4. During commissioning you will arrive at the *equipment found* screen. From there touch **non-communicating equipment** to add non-communicating equipment.

5. From the *add/remove equipment* screen, touch either **1-Stage A/C unit** or **2-Stage A/C unit**.

6. Touch the **done** to return to the *equipment found* screen. Touch **continue** to proceed to the next screen.

7. Continue with the commissioning sequence. When the *set up airflow per zone* screen appears, you can adjust blower, heating and cooling circulation air flows. When done, touch **continue** to proceed.

8. The *dealer control center* will appear next. Touch **tests** to access the test section

9. Here you will have another opportunity to adjust blower circulation, heating and cooling circulation air flows. Use the plus or minus buttons to adjust up or down the CFM settings. Once adjustments are completed, press **continue**.

10. Under the *select test to run* screen, you may un-check any tests not required, or run all tests. Touch **start tests** to proceed. Once each test section is completed, touch **continue** to proceed to the next group of tests.

11. Once all test are completed, touch **done**. This will return you to the *select tests to run* screen. If finish, press the back arrow (<) at the top left-hand of the screen to return to the *dealer control center*.

12. Touch **exit** to return to the home screen.

G71MPP or SLP98 Furnace Setting Adjustments

If your thermostat is being used with either a G71MPP or SLP98 furnace and is set to variable-capacity mode of operation (the iComfort default with these units), the system's settings for stage timers are ignored (even if shown enabled in the thermostat). The stage timer will be used on the cooling side for other cooling units except when modulating outdoor units are used. The furnace software sets and controls the firing rates. The only other controlling factor is the stage temperature differentials. In Load-Tracking Variable Capacity (default for these furnaces), both stage timers and temperature differentials are ignored.

Wi-Fi Connection

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 Smart Hub do 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. Never use an open router connection (non-secure). Always use a secure connection physically located in the home where the thermostat is located.*

Home Wi-Fi Access Point is Visible

1. Go to **menu** > **settings** > **wi**-fi ,

2. Slide the option to **ON** to enable Wi-Fi.

3. Wi-Fi network will show **not connected**. Press on **not connected** to display a list of available access points.

4. Select a network will be displayed listing all detected networks within range. Select your home network by pressing on the network name.

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

5. When connecting to a secure home Wi-Fi network, a password will be requested. Enter your home Wi-Fi network password and press join to continue.

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.*

Home Wi-Fi Access Point is Hidden

1. Slide the option to ON to enable Wi-Fi.

2. Wi-Fi network will show not connected. Press on not connected.

3. Select other.

4. The "enter new network information" screen will appear. Enter the name of the hidden network.

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

5. 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.

6. Once security type is selected, a password field will appear. Enter the password to access your home Wi-Fi network.

NOTE: *If you wish to see the characters you are typing, check show password. The thermostat will support up to a 63 character password.*

7. Press join.

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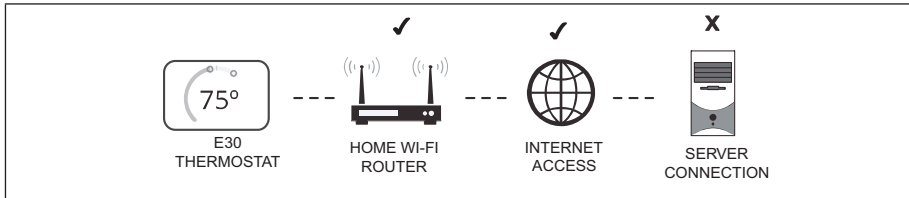

Figure 19. Connection Status

Troubleshooting Wi-Fi Connection

The following terminology is used in this troubleshooting section:

• 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.

• 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)

• Internet Protocol Address (IP address). This is an address assigned by your home router for each network device (e.g., computer, printer, thermostat).

Electromagnetic Interference Causing Poor Connectivity: Locate the Smart Hub 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 devices and see if Wi-Fi performance has improved.

Received Signal Strength Indication (RSSI)

The ideal signal strength range for the thermostat is -1 to -69 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. 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. 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 Smart Hub. Adjusting antenna on router and/or Smart Hub may resolve the issue.
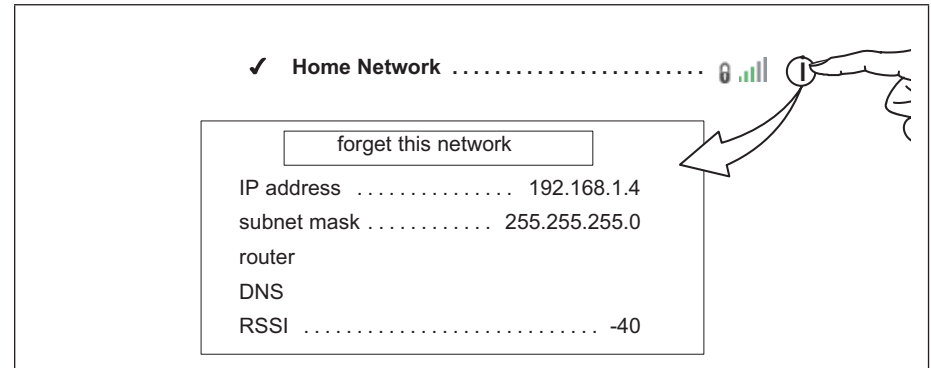
Figure 20. Verifying Signal Strength

Performance Reports

Performance reports are only available through either the consumer or dealer web portals.

• Homeowner access is available at **www.myiComfort.com**.

• Dealer access is available through the Dealer Dashboard at **www.LennoxPros.com**.

More information concerning Performance Reports is available in the user guide.

Replacement Parts

The following thermostat component parts can be ordered:

Table 16. Replacement Parts

Catalog #	Component	Remarks
12X97	HD display	Thermostat interface
15X98	Smart hub	Control base
12X99	Mag-Mount	Wall mount for HD Display
13X01	Wall plate	Wall plate for Mag-Mount (use is optional)

Replacement Indoor and Outdoor Communicating Controls

These kits have been set up for replacement of the communicating controls. Please note that control kits are unit-specific.

Table 17. Replacement Communicating Controls

Catalog #	Replacement Kit Catalog #
SLP98 (rev. 01 or later)	15M50
SL280 (rev. 02 or later)	15T94
EL296 (rev. 01 or later)	15T94
CBA38MV	16B27
CBX40UHV (rev. 02 or later) and CBX32MV (rev. 06 or later)	16B27
XC21 (rev. 04 or later) and SL18XC	11H36
SL18XP, XP21 and XP21N	11H36
XP20 and XP25	14G30
XC20 and XC25	14G30

Mobile Applications

iComfort Thermostat App (Homeowner)

The free iComfort Thermostat app is available for use on iPhone® and iPad®, Android™ devices.

Control cooling/heating temperatures, fan operation, set programs and set Away mode for multiple locations.

Also controls individual zone settings if system is equipped with the optional iHarmony® Zoning System.

iComfort Mobile Setup App (Installer)

Allows the installer to commission the system and remotely turn the system on and off during setup on any iPhone®, iPad® and Android™ device.

Apple, the Apple logo, iPhone and iPad are trademarks of Apple Inc. registered in the US and other countries.

Android is a trademark of Google Inc. Use of this trademark is subject to Google permission.

Notifications (Alert Codes)

These screens provide information on active notifications and previously cleared notifications. When selecting either a cleared or active notification a brief description and alert code will be displayed. Notifications are categorized by system, indoor unit (air handler or furnace), outdoor unit (air conditioner or heat pump), zoning control (if installed) and thermostat.

ALERT CODE TYPES

To expand a specification notification to access a more detail description of the alert code, press the down arrow to expand the description.

- **Critical** alerts are displayed on Home (user) screen, in the Homeowner alert button, and in the Installer alert button. Critical means that a service call is needed to get the system running.

- **Minor** and **Moderate** alerts are found only in the Installer alert button.

What does minor and moderate mean?

- **Minor** is information only, helps Lennox interpret test results, understand complicated behavior.

- **Moderate** means that the system will likely recover on its own, no action necessary.

Communication System: When communication controls are operating in a communication system, all jumper and link setting on controls are ignored. Jumpers and link setting are treated as defaults and would only be active if the system was converted to a non-communicating system.

Soft Disable

Soft disabling is when the iComfort® thermostat finds an unknown control on the S30 system communication bus. The thermostat sends the unknown control a message to go into soft disable mode until the component is properly configured or removed.

The iComfort® thermostat will not show any code for a soft disabled control. When soft disabling occurs only the control that has been disabled will display the blinking LED status. Refer to the device's installation and setup guide for further guidance.

Use the following procedure if a equipment interface module (EIM) is used and is displaying the soft disable code.

1. Confirm proper wiring between all devices such as thermostat and Smart Hub.

2. Cycle power to the EIM.

3. Go to the **menu** > **settings** > **advanced settings** > **view dealer control center.** Touch **proceed** to continue.

4. Select **equipment**.

5. Touch **reset**.

6. Touch **re-configure** system.

7. Select **confirm** to continue.

8. The thermostat will reboot and start through the system commissioning procedure.

Table 18. Alert Codes and Troubleshooting					
Initial notification of critical alerts will pop up on the home screen and will be listed under notification menu. Minor and moderate alerts are found only under the notification menu. ***** Current Lennox modulating outdoor units are XC20, XP20, XC25 and XP25.					
Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
10	Critical	Thermostat	Unknown Device Detected - DEVICE2	The thermostat when NOT in configuration mode has detected an unknown device. Typically the thermostat will send a command to the unknown device and place the device into a soft disable state. The soft disable control will indicate so as follows: • On air handler, furnace and outdoor controls, the soft-disabled state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink 3 seconds on and 1 second off. • On the equipment interface module, the green LED will blink 3 seconds on and 1 second off. • A new communicating device has been added to the system since the original configuration setup was completed. • Go to menu > advance settings > view dealer control center > equipment and press reset all equipment. This will allow the system to auto-detect any iComfort components attached.	Clear alert code by reconfiguring the system.
11	Critical	Thermostat	Missing DEVICE2	The thermostat cannot find a previously installed system component. • Check all system components (devices) connections to make sure they are iComfort-compatible. • Cycle system power. • If problem persists, then check all system components (devices) connections to make sure they are iComfort-compatible. • Go to **menu** > **advance settings** > **view dealer control center** > **equipment** and press **reset all equipment**. This will allow the system to auto-detect any iComfort components attached.	Cycle system power, and If problem persists then clear by reconfiguring the system.

Table 18. Alert Codes and Troubleshooting

Initial notification of critical alerts will pop up on the home screen and will be listed under notification menu. Minor and moderate alerts are found only under the notification menu.

* Current Lennox modulating outdoor units are XC20, XP20, XC25 and XP25.

Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
12	Critical	Thermostat	Incomplete System	Thermostat did not find an indoor unit. Make sure there is an iComfort indoor unit on the system. • Check for voltage and missing component. • Check R, i+, i- and C connections. • Ohm wires for electrical continuity. • Cycle power to both indoor unit first and then thermostat. • Verify that equipment interface module (if applicable) is configured as either an air handler or furnace when used with a non-communicating indoor unit. • Go to **menu** > **advance settings** > **view dealer control center** > **equipment** and press **reset all equipment**. This will allow the system to auto-detect any iComfort components attached. • Replace indoor unit control if there is no response.	Automatically clears when the system detects that the issue no longer exists.
13	Critical	Thermostat	Duplicate Comfort Sensor ID	Thermostat found more than one outdoor unit, or more than one indoor unit, or more than one thermostat connected to the system. Thermostat will display the message "Too Many Devices of the Same Type". • Check wiring and remove duplicate equipment. • Go to **menu** > **advance settings** > **view dealer control center** > **equipment** and press **reset all equipment**. This will allow the system to auto-detect any iComfort components attached.	Automatically clears when the system detects that the issue no longer exists.
14	Critical	Thermostat	Too Many Devices of the Same Type	The thermostat found more than one thermostat, indoor or outdoor unit on the system. • Check wiring and remove duplicate equipment. • Go to **menu** > **advance settings** > **view dealer control center** > **equipment** and press **reset all equipment**. This will allow the system to auto-detect any iComfort components attached.	Automatically clears when the system detects that the issue no longer exists.
18	Minor	Thermostat	Low Ambient HP Heat Lockout	The outside temperature is below the level where the heat pump is programmed to heat the home. The system will not use the heat pump to warm your home. • Outdoor temperature is below the low balance point. • Heat pump will not be used to service a heating demand.	This is a notification only alert code. Will automatically clear once the outdoor temperature rises above the low balance point.
19	Minor	Thermostat	High Ambient Auxiliary Heat Lockout	The outside temperature is higher than the level where the furnace or electric heat is programmed to work. The system will only use the heat pump to warm your home. • This is a notification only alert code. • Outdoor temperature is above the low balance point. • Indoor unit (furnace or air handler) will not be used to service a heating demand.	Automatically clears when the system detects that the issue no longer exists.
29	Critical	Thermostat	Over Temperature Protection	The thermostat is reading an indoor temperature that is higher than 90ºF (factory default). The thermostat will not allow any heating operation to begin until it senses an indoor temperature lower than 90ºF. Indoor temperature rose above 90ºF during a heating or cooling demand. • Heating operation is not allowed. • Check to ensure that heating equipment is not stuck ON (reversing valve, etc.) • Check the accuracy of the thermostat temperature sensor. • Select cooling system mode to cool the indoor space below 90ºF.	Automatically clears when the system detects that the issue no longer exists.

Table 18. Alert Codes and Troubleshooting

Initial notification of critical alerts will pop up on the home screen and will be listed under notification menu. Minor and moderate alerts are found only under the notification menu.

* Current Lennox modulating outdoor units are XC20, XP20, XC25 and XP25.

Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
30	Moderate	Thermostat	Low Temperature Protection	The thermostat will not allow any cooling operation to begin until it senses a temperature higher than 40ºF. • Cooling operation is not allowed. • Check to ensure that cooling equipment is not stuck ON. • Check accuracy of the thermostat temperature sensor. • Select heating system mode to heat the indoor space to above 40ºF.	Automatically clears when the system detects that the issue no longer exists.
31	Critical	S30 Smart Hub	Lost Communication with DEVICE2	The applicable system component (indoor, equipment interface or damper control module or outdoor unit) has not communicated with thermostat for more than three minutes. • Check connections and voltages. • Ohm wires for electrical continuity. • If float switch is installed on air handler drain pain, check condensate line to ensure it is not clogged and tripping the float switch connected in series with R terminal.	If fault persists, then cycle power. Fault clears after communication is restored.
32	Moderate	S30, furnace, air handler or outdoor unit	Asynchronous Reset DEVICE2	The applicable system component (device) is resetting itself. This issue may occur during a power outage or power fluctuation in the system. If persistent or if it coincides with the system operations then proceed with the following troubleshooting steps. • Check the power connections. • Check the amp draw at the transformer (the transformer maybe overloaded). • Check 24VAC voltage at the system component (device). • If the fault persists after checking the connections, replace the applicable control.	To clear the alert code, go to **menu > settings > advanced settings > view dealer control center > notifications** and select the alert code and press the **clear** button.
34	Critical	Indoor or outdoor unit	Must Program Unit Capacity for DEVICE2	The thermostat does not know the capacity (tonnage) of the indoor or outdoor unit. The applicable system component is missing the programmed unit capacity. • Remove power to thermostat before programming the unit control. • Go to applicable unit control and program the unit capacity manually (see the unit installation instruction for configuration instructions). • Once configuration is complete then reconnect thermostat wires. • Go to **menu** > **advance settings** > **view dealer control center** > **equipment** and press **reset all equipment**. This will allow the system to auto-detect any iComfort components attached.	Automatically clears when the system detects that the issue no longer exists.
36	Critical	Thermostat	Heating when Not Requested DEVICE2	The system has been heating for at least 15 minutes without a demand for heating. • Run the system in diagnostic mode and verify that it matches actual equipment operation. Go to **menu** > **settings** > **advance settings** > **dealer control center** > **diagnostics** and press the **start diagnostics** button. • Check for other alert codes that may be preventing the system from operating as expected. • Check all heating equipment to determine cause of heating demand. • Recycle power.	Automatically clears when the system detects that the issue no longer exists.
37	Critical	Thermostat	Cooling when not Requested DEVICE2	The system has been cooling for at least 15 minutes, without a demand for cooling. • Run the system in diagnostic mode and verify that it matches actual equipment operation. Go to **menu** > **settings** > **advance settings** > **dealer control center** > **diagnostics** and press the **start diagnostics** button. • Check for other alert codes that may be preventing the system from operating as expected. • Check all cooling equipment to determine cause of cooling demand. • Recycle power.	Automatically clears when the system detects that the issue no longer exists.

Table 18. Alert Codes and Troubleshooting

Initial notification of critical alerts will pop up on the home screen and will be listed under notification menu. Minor and moderate alerts are found only under the notification menu.

* Current Lennox modulating outdoor units are XC20, XP20, XC25 and XP25.

Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
38	Critical	Thermostat	Not Heating when Requested DEVICE2	The system has not been able to turn on the heating for more than 45 minutes. • The system will go off-line for 60 minutes and will attempt to restart itself. • Run the system in diagnostic mode and verify that it matches actual equipment operation. Go to **menu** > **settings** > **advance settings** > **dealer control center** > **diagnostics** and press the **start diagnostics** button • Check for other alert codes that may be preventing the system from operating as expected. • Check all heating equipment to determine cause. • Recycle power.	Automatically clears when the system detects that the issue no longer exists.
39	Critical	Thermostat	No Cooling when Requested DEVICE2	The system has not been able to turn on the cooling for more than 45 minutes. • The system will go off-line for 60 minutes and will attempt to restart itself. • Run the system in diagnostic mode and verify that it matches actual equipment operation. Go to **menu** > **settings** > **advance settings** > **dealer control center** > **diagnostics** and press the **start diagnostics** button • Check for other alert codes that may be preventing the system from operating as expected. • Check all cooling equipment to determine cause. • Recycle power.	This alert code will automatically clear when the system detects the issue no longer exists.

Table 18. Alert Codes and Troubleshooting

Initial notification of critical alerts will pop up on the home screen and will be listed under notification menu. Minor and moderate alerts are found only under the notification menu.

* Current Lennox modulating outdoor units are XC20, XP20, XC25 and XP25.

Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
40	Minor	Heat pump, furnace, electric heat, and iHarmony	HP Heating Lockout.	The heat pump could not increase the room temperature 0.5°F towards the set point in 30 minutes. In order to use the gas furnace as a primary heating source (not defrost tempering) when the outdoor temperature is between the high and low balance points, the heat pump: • Must be used for a minimum of 30 minutes and the temperature in the zone not increase by more than 0.5°F • Has not gone into defrost in the 30 minute period. The default for HP Heating Lockout Time default is 120 minutes and will lock the heat pump off when the outdoor temperature is above the high balance point. Selectable range is 60 to 240 minutes. • Go to **menu** > **settings** > **advance settings** > **dealer control center** > **equipment** > **Smart Hub** and located **HP Heating Lockout Time** to verify the lockout time setting. ***NOTE:*** *HP Heating Lockout Time is only available in a zoning system.* If any single zone satisfies the aforementioned conditions, the heat pump is stopped and the gas furnace is used to satisfy all heat calls for the next duration of the parameter heat pump lockout time. After the heat pump lock out is expired, the heat pump is once again used as the primary heat source. • Run system and verify that the heat pump cannot raise the room temperature 0.5F in 30 minutes on the zone or zones. • Check air flow to the zones or zones. • Check discharge air temperatures. • Check calibration of room thermostat. • Set the low balance point and high balance point as close together as possible. (This is 3°F difference – Example: Set high balance point at 40°F and low balance point would set at 37°F). Go to **menu** > **settings** > **advance settings** > **dealer control center** > **equipment** > **Smart Hub** and located **Low and High Balance Points**. • When below the low balance point, the indoor unit will heat the home between the low and high balance point, the heat pump and furnace will heat the home. When the outdoor temperature is above the high balance point, the gas furnace is locked out and all the heat is provided by the heat pump.	Clears when heat pump comes out of HP Heating Lockout Time.
41	Moderate	Furnace, air handler or outdoor control	Component control has been replaced.	This alert code will appear anytime a component control [*Furnace, air handler, air conditioner or heat pump]* is replaced in the system.	Must be cleared manually.
105	Critical	Thermostat, furnace, air handler, outdoor unit, equipment interface, PureAir *S* or IHarmony	Communication Problem	A system component has lost communication with the system. System component (device) is unable to communicate. • This may indicate the existence of other active alert codes. • In most cases errors are related to electrical noise. Verify that high voltage power is separated from the low voltage communication wires. • Check for incorrectly wired or loose connections between system components (devices). • Check for a high voltage source of noise close to the system.	Automatically clears when the system detects the issue no longer exists.
110	Critical	Furnace	Low AC Line Voltage	The component AC line voltage is too low. This alert code may appear during a brownout. It may also occur when line voltage is below its designed operating value. • Check and correct the power line voltage.	Automatically clears when the system detects the issue no longer exists.

Table 18. Alert Codes and Troubleshooting

Initial notification of critical alerts will pop up on the home screen and will be listed under notification menu. Minor and moderate alerts are found only under the notification menu.

* Current Lennox modulating outdoor units are XC20, XP20, XC25 and XP25.

Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
111	Critical	Furnace	Line Polarity Reversed	The unit is reporting that its power and neutral lines are reversed. • Turn off the power to the system and correct the line power voltage wiring. • System resumes normal operation five seconds after critical condition is recovered.	Automatically clears when the system detects the issue no longer exists.
112	Critical	Furnace	No Ground Connection	The reporting component cannot find earth ground. The thermostat will shut down the system. • Provide proper earth ground to the equipment. • System resumes normal operation five seconds after critical condition is recovered.	Automatically clears when the system detects the issue no longer exists.
113	Critical	Furnace	High AC Line Voltage	Line voltage high (voltage higher than nameplate rating). • Provide power voltage within proper range. • System resumes normal operation five seconds after critical condition is recovered.	Automatically clears when the system detects the issue no longer exists.
114	Moderate / Critical	Furnace, air handler, equipment interface or IHarmony	AC Line Frequency / Distortion Prob	There is a frequency / distortion problem with the power to a specific system component. There is a frequency / distortion problem with the power to a specific system component. • This alert code may indicate transformer overloading. • Check the voltage and line power frequency. • Check the generator operating frequency, if the system is running on back-up power. • Correct voltage and frequency problems. • System will resume normal operation five seconds after fault recovered. • All applicable system component outputs are disabled – moderate condition. • After 10 minutes, the priority condition is escalated – critical condition. • Damper control module will operate in central mode only until proper voltage is restored or frequency distortion is resolved – moderate condition.	Automatically clears when the system detects the issue no longer exists.
115	Critical	Furnace, air handler, equipment interface module and IHarmony	Low Secondary (24VAC) Voltage	24VAC power to a system component control is lower than the required range of 18 to 30VAC. • Check and correct voltage. • Check for additional power-robbing system components (devices) connected to system. • This alert code may require the installation of an additional or larger VA transformer. • Damper control module will operate in non-zone mode until proper voltage is restored.	Automatically clears when the system detects the issue no longer exists.
116	Critical	Furnace or Air Handler	High Secondary (24VAC) voltage	• Thermostat will display this code when 24VAC power is high (18 to 30 VAC). • Will display Furnace or Air Handler High Secondary (24VAC) voltage.	Check and correct voltage. Check for proper line voltage (120V, 240V, etc.) to equipment. Clears when control senses proper voltage.
117	Minor	Furnace	Poor Ground	The reporting unit has poor earth grounding. • Provide proper grounding for the system component (device). • Check for proper earth ground to the system.	Automatically clears 30 seconds after the issue is corrected.
120	Moderate	Thermostat, furnace, air handler, outdoor unit, equipment interface, PureAir S or IHarmony	Unresponsive DEVICE2.	There is a delay in the system component responding to the system. Typically this alert code does not cause any operational issues and will clear on its own. • This alert code is usually caused by a delay in the outdoor unit responding to the thermostat. • Check all wiring connections.	Automatically clears after an unresponsive system component (device) responds to any inquiry.

Table 18. Alert Codes and Troubleshooting

Initial notification of critical alerts will pop up on the home screen and will be listed under notification menu. Minor and moderate alerts are found only under the notification menu.

* Current Lennox modulating outdoor units are XC20, XP20, XC25 and XP25.

Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
124	Critical	Thermostat, furnace, air handler, outdoor unit, equipment interface, PureAir S or IHarmony	Active Subnet Controller Missing	The thermostat has lost communication with a system component for more than three minutes. System component has lost communication with the thermostat. • Check the wiring connections. • Ohm wires. • Cycle power. • Check voltage at component. This alert code stops all associated system operations and waits for a heartbeat message from the system component that is not communicating.	Automatically clears after communication is re-established with applicable system component (device).
125	Critical	Thermostat, furnace, air handler, outdoor unit, equipment interface, PureAir S or IHarmony	Control Hardware Problem	There is a hardware problem on a system component control. There is a control hardware problem. • Replace the control if the problem prevents operation and is persistent. • Damper control module will remain in non-zone mode (all dampers open) for five minutes after priority condition no longer exist. • Remove jumper if present on indoor unit between R and W2 if equipment interface module is in use. • PureAir S jumper selector is missing	Automatically clears five minutes after the issue no longer exists.
126	Critical	Furnace, air handler or outdoor unit	Control Internal Communication Prob	There is an internal hardware problem on the system component control. • Typically the system component control will reset itself. • Replace the system component (device) control if the problem prevents operation and is persistent.	Automatically clears 300 seconds after the issue no longer exists.
130	Moderate	Equipment interface module	Configuration Jumper Missing	• Configuration jumper missing on equipment interface module. • Install the missing jumper. **NOTE:** *This is applicable in non-communicating applications only).*	Automatically clears after the missing or incorrectly installed jumper is installed or corrected.
131	Critical	Thermostat, furnace, air handler, outdoor unit, equipment interface, PureAir S or IHarmony	Corrupted Control Parameters	System component control parameters are corrupted. • Replace the system component control if heating or cooling is not available. • Go to **menu** > **advance settings** > **view dealer control center** > **equipment** and press **reset all equipment**. This will allow the system to auto-detect any iComfort components attached.	Will automatically clear when system component (device) passes memory self-test or system component control is replaced.
132	Critical	Air handler, equipment interface module , PureAir S or IHarmony	Failed Flash CRC Check	System component control software is corrupted. • Recycle power. • If failure re-occurs, replace the system component control.	Manual system power reset is required to recover from this alert code.

Table 18. Alert Codes and Troubleshooting

Initial notification of critical alerts will pop up on the home screen and will be listed under notification menu. Minor and moderate alerts are found only under the notification menu.

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Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
180	Critical	Furnace, air handler or equipment interface module	Outdoor Temperature Sensor Problem	The thermostat has found a problem with a system component's outdoor temperature sensor. In normal operation after system component control recognizes sensors, the alarm will be sent if valid temperature reading is lost. • Compare outdoor sensor resistance to temperature / resistance charts in unit installation instructions. • Replace sensors pack if necessary. • At the beginning of (any) configuration, furnace, air-handler control or equipment interface module will detect the presence of the sensor(s). • If detected (reading in range), appropriate feature will be set as 'installed' and shown in the 'About' screen.	Automatically clears upon configuration, or sensing normal values.
200	Critical	Furnace	Rollout Limit Switch Open	The furnace roll out limit switch is open. Correct the cause of roll out trip. • Reset roll out switch. • Test the furnace operation.	Automatically clears after the furnace roll out switch is closed.
201	Critical	Furnace or air handler	Indoor Blower Motor Problem	Lost communication with indoor blower motor. • Possible causes include power outage, brown-out, motor not powered, loose wiring, condensation on system component control without cover on breaker. • Problem may be on system component control or motor side.	Automatically clears after communication is restored.
202	Critical	Furnace or air handler	ID Blower Motor & Unit Size Mismatch	The unit size code for the indoor unit and the size of blower motor do not match. Incorrect appliance unit size code selected. • Remove the thermostat from the system while applying power and reprogramming. • Check for proper configuring under unit size codes for furnace/air handler in configuration guide or in installation instructions.	Automatically clears after the correct match is detected following a reset.
203	Critical	Furnace or air handler	Invalid Unit Code	The unit size code for the indoor unit has not been selected. • Remove the thermostat from the system while applying power and reprogramming. • Check for correct configuration. Unit size codes for furnace and air handler are listed in the system component configuration guide or installation instruction.	Automatically clears after the correct match is detected following a reset.
204	Critical	Furnace	Gas Valve Problem	There is an issue with the furnace gas valve. • Check gas valve operation and wiring.	Automatically clears after the issue is corrected.
205	Critical	Furnace	Gas Valve relay Contact Closed	The furnace gas valve relay contact is closed. • Check wiring on control and gas valve.	Automatically clears after the issue is corrected.
206	Critical	Furnace	Gas Valve 2nd Stage Relay Failure	The furnace gas valve second-stage relay is faulty. • Furnace will operate on first-stage for the remainder of the heating demand • If unable to operate second-stage, replace furnace control.	Automatically clears after the issue is corrected.
207	Critical	Furnace	HIS Sensed Open	The furnace hot surface igniter is open. • Measure the resistance of hot surface igniter. • Replace the igniter if it is not within the specified range found in furnace installation instruction.	Automatically clears after the issue is corrected.

Table 18. Alert Codes and Troubleshooting

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Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
223	Critical	Furnace	Low Pressure Switch Open	The furnace low pressure switch is open. • Check pressure (inches w. c.) of the low pressure switch closing during a heat call. • Measure operating pressure (inches w. c.). • Inspect vent and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box or condensate drain and cracked hoses.	Automatically clears after the issue is corrected.
224	Critical	Furnace	Low Pressure Switch Stuck Closed	The furnace low pressure switch is stuck closed. • Check operation of low pressure switch to see if it is stuck closed for longer than 150 seconds during a heat call. • Measure operating pressure (inches w. c.). • Inspect vent and combustion air inducer for correct operation and restriction.	Automatically clears after the issue is corrected.
225	Moderate	Furnace	High Press. Switch Failed to Close	The furnace high pressure switch will not close. • Check pressure (inches w. c.) of high pressure switch closing during a heat call. • Measure operating pressure (inches w. c.). • Inspect vent and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box or condensate drain and cracked hoses.	Automatically clears after the issue is corrected.
226	Critical	Furnace	High Pressure Switch Stuck Closed	The furnace high pressure switch will not open. • Check operation of high pressure switch closing during a heat call. • Measure operating pressure (inches w. c.). • Inspect vent and combustion air inducer for correct operation and restriction.	Automatically clears after the issue is corrected.
227	Moderate	Furnace	Lo Pressure Switch Open in Run Mode	The furnace low pressure switch is open while in run mode. • Check pressure (inches w. c.) of low pressure switch closing during a heat call. • Measure operating pressure (inches w.c.). • Inspect vent and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box or condensate drain and cracked hoses.	Automatically clears after the issue is corrected.
228	Moderate	Furnace	Inducer / Press. Switch Calib. Failure	The furnace control is not able to calibrate the pressure switch. Unable to perform pressure switch calibration. • Check vent system and pressure switch wiring connections. • Check the drain trap for blockage. • Check for blocked cold end heater box or condensate drain and cracked hoses.	Automatically clears after a successful calibration.
229	Minor	Furnace	Ignition on High Fire	Furnace control switched to high fire ignition because low fire pressure switch did not close in allowed time.	No action is required.
240	Moderate	Furnace	Low Flame Current - Run Mode	The furnace flame current is low. • Check micro-amperes of the flame sensor using thermostat diagnostics. • Clean or replace the flame sensor. • Measure voltage of neutral to ground to ensure good unit ground. • Clean face of burner assembly. • Check for AC voltage from flame sensor electrode to ground.	Automatically clears after a proper micro-amp reading has been sensed.

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241	Critical	Furnace	Flame Out of Sequence - Still Present	The furnace flame is going out while the furnace is heating. • Shut off gas. • Check for a gas valve leak. • Replace the gas valve if needed. • Check for low flame signal.	Automatically clears when a heat call ends successfully.
250	Moderate	Furnace and iHarmony	Primary Limit Switch Open	The furnace primary limit switch is open. • If limit switch is not closed within three minutes, the unit will go into a 60 minute soft lockout (WatchGuard mode). • Check for high gas pressure. • Low supply air due to being plugged or restriction in system (example: dirty air filter or blockage in duct work). • Limit trips will place the iHarmony zoning system into non-zone mode. • Check for proper firing rate on furnace. • Check for non-functioning zone dampers. *NOTE:* Refer to S&A Note ACC-14-01 - iHarmony and SLP98 - Insufficient Zone Heating and Alarm Code 250 Issues for corrective actions.	Automatically clears when a heat call ends successfully. *NOTE*: If this issue occurred on an iHarmony zoning system, the field will need to manually activate the zoning.
252	Moderate	Furnace	Discharge Air Temperature High	The furnace discharge air-temperature is high. • Check temperature rise, air flow and input rate. • Check for dirty air filter(s).	Automatically clears when a heat call ends successfully.
270	Critical	Furnace	WatchGuard - Flame Failure on Ignite	The furnace is in WatchGuard mode. The furnace igniter cannot turn on the flame. This is a five strike condition during a single demand. • Check for proper gas flow. • Ensure that igniter is lighting burner. • Check flame sensor current. • Check for dirty filters. • Check for blocked cold end heater box or condensate drain and cracked hoses.	Automatically clears on successful ignition.
271	Critical	Furnace	WatchGuard - Low Press Switch Open	The furnace is in WatchGuard mode. The furnace low pressure switch is open. This is a five strike condition during a single demand. • Check pressure (inches w. c.) of low pressure switch closing during a heat call. • Measure operating pressure (inches w. c.). • Inspect vent and combustion air inducer for correct operation and restriction.	Automatically clears on successful ignition.
272	Critical	Furnace	WatchGuard - Lo Press Switch Open Run Mode	The furnace low pressure switch is open during run mode. The system will go into WatchGuard mode. • Check operation of low pressure switch to see if it is stuck open during a heat call. • Measure operating pressure (inches w. c.). • Inspect vent and combustion air inducer for correct operation and restriction. • Check for blocked cold end heater box or condensate drain and cracked hoses.	Automatically clears when a heat call ends successfully.

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273	Critical	Furnace	WatchGuard - Flame fail in Run Mode	The furnace flame is going off during a heating cycle. The system will go into WatchGuard mode. • Check micro-amperes of flame sensor using thermostat diagnostics. • Clean or replace sensor. • Measure voltage of neutral to ground to ensure good unit ground. • Clean face of burner assembly.	Automatically clears when a heat call ends successfully.
274	Critical	Furnace	WatchGuard - Primary Limit Switch Open	The furnace limit switch has been open for more than three minutes. The system will go into WatchGuard mode. • Check firing rate and air flow. • Check for air blockage.	Automatically clears when a heat call ends successfully.
275	Critical	Furnace	WatchGuard - Flame Out of Seq. No Flame	The furnace flame is out of sequence. The system will go into WatchGuard mode. • Shut off gas. • Check for gas valve leak.	Automatically clears on successful ignition.
276	Critical	Furnace	WatchGuard - Calibration Failure	The furnace is not able to calibrate or the high pressure switch opened or failed to close in run mode. The system will go into WatchGuard mode. • Check vent system • Check pressure switch wiring connections.	Automatically clears when the furnace calibrates itself successfully.
290	Critical	Furnace	Ignition Circuit Problem	There is a problem with the furnace ignition circuit. The system will go into WatchGuard mode. • Measure resistance of hot surface igniter. • Replace the hot surface igniter; it is not within specifications. • Measure voltage to igniter.	Automatically clears on successful ignition
291	Critical	Furnace	Heat Airflow Restricted Below Min	The heating airflow is below the minimum required level. The system will go into WatchGuard mode. • Check for dirty air filter(s) and other air flow restrictions. • Check blower performance.	Automatically clears when a heat call ends successfully.
292	Critical	Furnace or air handler	Indoor Blower Motor Start Problem	The indoor unit blower motor will not start. The system will go into WatchGuard mode. • Indoor blower motor unable to start. • This could be due to seized bearing, stuck wheel, and obstructions. • Replace motor, motor module or wheel if assembly does not operate or meet performance standards.	Automatically clears after the indoor blower motor starts successfully.
294	Critical	Furnace	Inducer Motor Overcurrent	There is over current in the furnace inducer motor. The system will go into WatchGuard mode. • Check combustion blower bearings, wiring and amps. • Replace furnace inducer motor if it does not operate or does not meet performance standards.	Automatically clears after inducer motor current is sensed to be in-range after the ignition following either WatchGuard mode or unit reset.
295	Minor	Furnace	Indoor Blower Over Temperature	The indoor blower motor is overheating. Indoor blower motor over temperature (motor tripped on internal protector). • Check motor bearings and amps. • Replace indoor blower motor if necessary. • Check for high duct static.	Automatically clears after blower demand is satisfied.

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310	Moderate	Furnace and air handler only	Discharge Air Temp Sensor Problem	There is a discharge air temperature sensor issue. • Compare discharge temperature sensor (DATS) resistance to temperature / resistance charts in system component installation instruction. • Replace discharge air sensor if necessary. **NOTE:** *Confirm there is no short or open circuits in the iComfort thermostat connections to any of the other components in the communication system.* **NOTE:** *Issues with a DATS connected to a damper control module or equipment interface model will not generate an alert code.*	Automatically clears 30 seconds after condition is detected as recovered or after system restart.
311	Minor	Furnace	Heat Rate Reduced to Match Airflow	The heat firing rate has been reduced to match available airflow (cutback mode). This is a warning only alert code. • Furnace blower in cutback mode due to restricted airflow. • Reduce firing rate every 60 seconds to match available CFM. • Check air filter and duct system. • To clear, replace air filter if needed or repair or add additional ducting. • Two-stage controls will reduce firing rate to first stage.	Automatically clears when a heating call finishes successfully.
312	Minor	Furnace or air handler	Reduced/ Airflow-Indoor Blower Cutback	The indoor blower cannot provide the requested CFM due to high static pressure. This is a warning only alert code. • Possible restricted airflow - Indoor blower is running at a reduced CFM (Cutback Mode). • The variable speed motor has pre-set speed and torque limiters to protect the motor from damage caused by operating outside of design parameters (0 to 0.8" e.g. total external static pressure). • Check air filter and duct system. • To clear, replace air filter if needed or repair or add additional ducting.	Automatically clears after the current service demand is satisfied.
313	Minor	Furnace, air handler and outdoor unit	Indoor/Outdoor Unit Capacity Mismatch	The indoor and outdoor unit capacities do not match. This is a warning only alert code. • Check for proper system component configuring in installation instructions. • The system will operate, but might not meet efficiency and capacity parameters.	Automatically clears after commissioning is complete.
344	Critical	Furnace	Relay Y1 Stuck	Link Relay Problem. Relay **Y1** Failure • Possible Y1 relay failure. • All system operations will stop.	Automatically clears five minutes after **Y1** input sensed OFF.
345	Critical	Air handler, equipment interface module or heat pump	Relay O Failure	The **O** relay on the system component has failed. Either the pilot relay contacts did not close or the relay coil did not energize. • Possible O relay / stage 1 failure. • Pilot relay contacts did not close or the relay coil did not energize. • Replace system component (device) control. • If error is applicable to the XC25 or XP25, the outdoor control will need to be replaced.	Automatically clears after the fault recovered following reset.
346	Critical	Air handler	HP Jumper Not Removed	The heat pump configuration link is not cut on the air handler control. • Configuration link not cut on air handler control. • Cut O to R. • This is only applicable with non-communicating heat pump with communicating indoor unit.	Automatically clears when the system detects that the issue no longer exists.

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347	Critical	Furnace, air handler or equipment interface module	Relay Y1 Failure	The **Y1** relay on the applicable system component has failed. Either the pilot relay contacts did not close or the relay coil did not energize. • System operation will stop. • Possible Y1 relay / stage 1 failure. • Pilot relay contacts did not close or the relay coil did not energize; • There is no input back to the applicable system component control.	Automatically clears after reset and **Y1** input sensed.
348	Critical	Furnace or air handler	Relay Y2 Failure	The **Y2** relay on the applicable system component has failed. Either the pilot relay contacts did not close or the relay coil did not energize. • Possible Y2 relay / stage 2 failure. • Furnace pilot relay contacts did not close or the relay coil did not energize • No input back to furnace or air handler control.	Automatically clears when the system detects that the issue no longer exists.
349	Critical	Furnace	IFC Error Check Jumper O to R	The **O** to **R** link on the furnace needs to be restored. • Configuration link R to O needs to be restored. • Repair cut link by hard-wiring the R to O terminals on the terminal strip. • Only applicable in non-communicating mode.	Automatically clears when the system detects that the issue no longer exists.
350	Critical	Air handler	Electric Heat Not Configured	The air handler's electric heat is not configured or incorrectly configured. • Heat call with no configured or incorrectly configured electric heat. • Check for proper configuring under Configuring Electric Heat Stages in the air handler installation instructions. Smart Hub MUST be removed from the system before configuring electric heat.	Automatically clears after electrical heat detection is successful.
351	Critical	Air handler	Electric Heat Stage 1 Problem	There is an issue with the air handler's first stage electric heat. • Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize. • Possible heat section / stage 1 failure. • Air handler will operate on HP first stage for reminder of the heat call.	Automatically clears after fault recovered.
352	Critical	Air handler	Electric Heat Stage 2 Problem	There is a issue with the air handler's second stage electric heat. • Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize. • The air-handler will operate on first stage electric heat until the issue is resolved.	Automatically clears after fault recovered.
353	Critical	Air handler	Electric Heat Stage 3 Problem	There is a issue with the air handler's third stage electric heat. • Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize. • The air-handler will operate on first stage electric heat until the issue is resolved.	Automatically clears after fault recovered.
354	Critical	Air handler	Electric Heat Stage 4 Problem	There is a issue with the air handler's fourth stage electric heat. • Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize. • The air-handler will operate on first stage electric heat until the issue is resolved.	Automatically clears after fault recovered.

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355	Critical	Air handler	Electric Heat Stage 5 Problem	There is an issue with the air handler's fifth stage electric heat. • Either the pilot relay contacts did not close or the relay coil in the electric heat section did not energize. • The air-handler will operate on first stage electric heat until the issue is resolved.	Automatically clears after fault recovered.
370	Critical	Furnace	Interlock Switch Open	The furnace control has not received 24VAC power for two minutes or more on the DS terminal • The system will not operate. • Dealer has cut the W914 jumper (Dehum, Harmony III) on the Lennox Furnace Control. • The thermostat monitors the DS terminal in the furnace for power and if the link has been cut then power will be lost to DS.	This alert code will clear when 24VAC is continuously sensed on **DS** terminal for a minimum of 10 seconds or on a power reset.
380	Moderate / Critical	Equipment interface module	Interlock Relay Failure	Interlock relay failure (furnace or air handler modes only). • Interlock relay is energized, but input is not sensed after three seconds. • There will be no heating or cooling due to this alert code – moderate condition. • De-energize interlock relay and energize after five minutes if demand is still present – critical condition.	Automatically clears after fault recovered.
381	Moderate / Critical	Equipment interface module	Interlock Relay Stuck	Interlock relay stuck (furnace or air handler modes only). • Interlock relay continuously sensed (with relay off). • There is no heating and cooling operation – moderation condition. • After 10 minutes if event still exist it will be escalated – critical condition.	Automatically clears 30 seconds after fault clears.
382	Moderate	Equipment interface module	Relay W1 Failure	Relay **W1** failure (furnace or air handler modes only). W1 relay is energized but input is not sensed after three seconds.	Automatically clears when W1 relay input is sensed.
400	Critical	Outdoor unit	Compressor Internal Overload Tripped	The compressor internal overload has tripped. • Thermostat demand Y1 is present; however compressor is not running. • Check power to unit. • This alert code is automatically cleared after current is sensed in both RUN and START sensors for at least two seconds or after service is removed, or after power reset.	Automatically clears when the system detects that the issue no longer exists.
401	Moderate	Outdoor unit	Compressor Long Run Cycle	Either the compressor ran for more than 18 hours continuously while attempting to cool the home during a single demand or the system refrigerant pressure is low. • Alert code will not lockout system. • If the two-stage outdoor unit has: • An outdoor control with blinking LED lights then the unit will run in low speed; • An outdoor control with a 7-segment display, the outdoor control will display alert code 401, but continue to run in high speed. • If the outdoor unit is a heat pump, and the outdoor temperature is less than 65°F, alert code 401 is ignored. • Also monitors low pressure switch trips.	Automatically clears after 30 consecutive normal run cycles or power reset.
402	Critical	Outdoor unit	Outdoor Unit System Pressure Trip	• Either the discharge or suction pressure level is out-of-limits, or the compressor has overloaded. • Check discharge or suction pressure.	Automatically clears after four consecutive normal compressor run cycles.

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403	Moderate	Outdoor unit	Compressor Short-Cycling	The compressor ran for less than three minutes to satisfy a thermostat demand.	Automatically clears after four consecutive normal compressor run cycles.
404	Critical	Outdoor unit	Compressor Rotor Locked	The compressor rotor is locked up. • Compressor rotor locked up due to run capacitor short. • Bearings are seized. • Excessive liquid refrigerant, etc. (NOTE: May need to install hard start kit).	Automatically clears after four consecutive normal run cycles or after power reset.
405	Critical	Outdoor Unit	Compressor Open Circuit	The compressor circuit is open. Compressor circuit open (due to power disconnection - open fuse, etc.)	Automatically clears after one normal compressor run cycle.
406	Critical	Outdoor unit	Compressor Open Start Circuit	The required amount of current is not passing through the START current transformer.	Automatically clears after current is sensed in START sensor, or after power reset.
407	Critical	Outdoor unit	Compressor Open Run Circuit	The required amount of current is not passing through RUN current transformer.	Automatically clears after current is sensed in RUN sensor, one normal compressor run cycle, or after power reset
408	Critical	Outdoor unit	Compressor Contactor Welded	The compressor is running continuously.	Automatically clears one normal compressor run cycle or after power reset.
409	Moderate	Furnace, air handler or outdoor unit	Compressor Voltage Low	The secondary voltage for the applicable system component has fallen below 18VAC. • Secondary voltage is below 18VAC. • If this continues for 10 minutes, the thermostat will turn off the applicable system component.	Automatically clears after voltage is detected as higher than 20VAC for two seconds or after power reset.
410	Moderate	Outdoor unit	Open Low Pressure Switch	Unit low pressure is below the required limit. • Check operating pressures. • Low pressure switch opens at a specific pressure (system shuts down) and closes at a specific pressure (system restarts).	Automatically clears when the system detects that the issue no longer exists.
411	Critical	Outdoor unit	Low Pressure Switch Strikes Lockout	The low pressure switch has opened five times during one cooling or heating demand. • Thermostat will shut down the outdoor unit. • Open low pressure switch error count reached five strikes. • Check system charge using both approach and sub-cooling methods. • Reset by putting outdoor unit control in test mode or resetting low voltage power.	Automatically clears when the system detects that the issue no longer exists.
412	Moderate	Outdoor unit	Open High Pressure Switch	The unit high pressure is above the upper limit. • System will shut down. • Confirm that the system is properly charged with refrigerant. • Check condenser fan motor, expansion valve (if installed), indoor unit blower motor, stuck reversing valve or clogged refrigerant filter. • Confirm that the outdoor unit is clean.	Automatically clears after the high pressure switch closes or a power reset

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413	Critical	Outdoor unit	Hi Pressure Switch Strikes Lockout	The high pressure switch has opened five times during one cooling demand. • Thermostat will shut down the outdoor unit. • Open high pressure switch error count reached five strikes. • Check system charge using superheat and sub-cooling temperatures. • Check outdoor fan operation. • Check for dirt or debris blocking air flow to outdoor unit. • Reset by putting outdoor unit control in test mode or resetting low voltage power.	Automatically clears when the system detects that the issue no longer exists.
414	Moderate	Outdoor unit	High Discharge Line Temperature	The discharge line temperature is higher than the recommended upper limit of 279ºF. • Discharge line temperature is greater than 279ºF. • Make sure coil is clean and airflow unobstructed in and out of condenser. • Check system operating pressures and compare to unit charging charts in installation manual.	Automatically clears after discharge temperature is less than 225ºF.
415	Critical	Outdoor unit	Hi Discharge Line Temp Strikes Lockout	The discharge line temperature has been consistently higher than the recommended upper limit of 279ºF. • Discharge line high temperature error count reached five strikes during a single demand. • Make sure coil is clean and airflow unobstructed in and out of condenser. • Check system charge using superheat and sub cooling temperatures. • Reset by putting outdoor control in test mode or resetting low voltage power.	Correct issue and cycle power to the system.
416	Moderate / Critical	Outdoor unit	Outdoor Coil Sensor Faulty	The outdoor coil sensor is either open, short-circuited or the temperature is out of sensor range. • Outdoor unit control will not perform demand or time / temperature defrost operation. (System will still heat or cool.) • This fault is detected by allowing the unit to run for 90 seconds before checking sensor resistance. If the sensor resistance is not within range after 90 seconds, the control will display a moderate code. • Advances from moderate to critical after ten (10) minutes. • Plug-in sensor harness correctly. (Refer to Service and Application Note C-18-08) • Check resistance of sensor to determine if it is open, shorted, out of temperature calibration or out of ambient temperature range. Replace if out-of-specifications.	Automatically clears when outdoor unit control detects proper sensor readings. If sensor is faulty and the system is reporting the condition as critical, replaced sensor. Reset power to clear alert code.

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Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
417	Moderate / Critical	Outdoor unit	Discharge Sensor Faulty	SYSTEM DETECTION AND Operation: The outdoor unit discharge line temperature sensor is either open, short-circuited or the temperature is out of sensor range. • This fault is detected by allowing the unit to run for 90 seconds before checking discharge line sensor resistance. • If the discharge sensor resistance is not within range after 90 second period, the control will display the priority condition as **moderate**. • If the moderate condition continues for 10 minutes, the system changes the priority condition to **critical**. POSSIBLE CAUSES: • The applicable system component detects either an open, shorted or temperature out of range condition. • Discharge sensor leads located in wrong pin positions in harness plug-in connector. Refer to the applicable unit installation and service procedure and locate the terminal descriptions table to verify cable harness assembly wiring pin positions are correct. POSSIBLE SOLUTIONS: • Check the resistance of the discharge sensor and compare to temperature resistance chart located in the applicable unit installation and service procedure. If sensor resistance is out of range then replace the discharge line temperature sensor. • If discharge sensor wring leads are located in the wrong connector pin-out then order a replacement cable assembly.	**Moderate** - Automatically clears after fault signal condition is no longer present. **Critical** - Power down the system component and either replace faulty sensor or cable assembly (whichever is applicable). Power up system component after replacing the applicable part which will clear the alert code / priority condition.
418	Moderate	Equipment interface module and outdoor unit	W Output Hardware Fault	There is a faulty **W** output circuit. • W terminal is energized while in cooling mode. • Possible cause may be a stuck closed relay on the control, or something external to the control that is energizing W terminal when it should not be energized. • Disconnect any wiring from the W terminal. • If 24VAC is still present on the terminal, then it is a stuck relay. • If 24VAC disappears, then there is a need to check any of the wires hooked up to the W terminal.	Automatically clears after fault signal is removed.
419	Critical	Equipment interface module and outdoor unit	W Output hardware Fault Lockout	The **W** output has reported more than five errors. • The system will shut down the outdoor unit. • The W output (code E418) on the outdoor unit has reported more than five strikes. • Disconnect thermostat wire from W and verify there is no 24VAC on the W. • If 24VAC is present, replace the outdoor control.	Automatically clears after power recycled.
420	Critical	Air handler or equipment interface module	Defrost Out of Control	The heat pump defrost cycle has taken more than 20 minutes to complete. • Defrost cycle lasts longer than 20 minutes. • Check heat pump operation. • This is applicable only in communicating indoor unit with non-communicating heat pump.	Automatically clears when **W1** signal is removed.
421	Critical	Equipment interface module and outdoor unit	W External Mis-wire Fault	The **W** output terminal on the outdoor unit is not wired correctly. Voltage sensed on **W** output terminal when **Y1** out is deactivated.	Automatically clears once voltage is not sensed on output or power is cycled.

Table 18. Alert Codes and Troubleshooting

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Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
422	Moderate	Outdoor unit	Compressor Top Cap Switch Open	Compressor top cap switch exceeding thermal limit. • Check condenser fan motor, TXV and indoor unit blower motor. • Check for stuck reversing valve or clogged refrigerant filter. • XC/XP25: Check to ensure that one of the wires from the top cap switch has not been disconnected from one of the TP terminals on the outdoor control. Reconnect wire if disconnected. • Check superheat and sub-cooling.	Automatically clears when error is corrected.
423	Moderate / Critical	Inverter based outdoor unit*	OD Inverter CT Circuit Problem	The inverter has detected a circuit issue. • When this condition is detected the outdoor control will stop outdoor unit operations and start the anti-short cycle timer – moderate condition. • Outdoor control will lockout unit after 10 strikes within an hour – critical condition. • Inverter LEDs will blink code 40 • Refer to the unit service documentation for troubleshooting procedures.	A moderate alarm will clear automatically when the inverter detects the condition no longer exist and will send a clear alarm message. To clear critical alarm disconnect power to outdoor unit and restart.
424	Moderate	Outdoor unit	OD Liquid Line Sensor Faulty	The liquid line temperature sensor has malfunctioned. • In normal operation after outdoor control recognizes sensors, the alert code will be sent if a valid temperature reading is lost. • Compare liquid line sensor resistance to temperature / resistance charts in unit installation instructions. • Replace sensor pack if necessary. • At the beginning of (any) configuration, furnace or air handler control will detect the presence of the sensor(s). • If detected (reading in range), appropriate feature will be set as 'installed' and shown in the thermostat 'About' screen.	Automatically clears upon configuration, or sensing normal values.
425	Minor	Inverter based outdoor unit*	Compressor Speed Limited by OD Temperature	Outdoor control has increased minimum compressor speed to allow for proper oil return due to low ambient temperature. • Outdoor ambient temperature is below system limit. • Control will attempt to run at lowest allowed compressor speed to allow for proper oil return. *NOTE:* Minimum speed adjustments start at 45°F and go up to 100% minimum at 17°F	Automatically clears when outdoor ambient temperature rises above limit for more than five minutes.
426	Critical	Inverter based outdoor unit*	Excessive Inverter Alarms	After 10 faults within 60 consecutive minutes, the control will lockout. Inverter will blink codes 12 to 14 and 53. These inverter codes do not count towards this lockout condition.	To clear disconnect power to outdoor control and restart
427	Moderate / Critical	Inverter based outdoor unit*	OD Inverter DC Peak Fault	The inverter has detected a DC peak fault condition. • If condition (55A or higher) is detected, outdoor unit will stop (compressor and fan) – moderate condition. • Anti-short cycle is initiated. • If peak current (55A or higher) occurs 10 times within an hour, system will lockout – critical condition. • Inverter LEDs will blink code 21. • Refer to the unit service documentation for detailed troubleshooting procedures.	To clear, disconnect and reconnect power to outdoor control.

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428	Moderate / Critical	Inverter based outdoor unit*	OD Inverter High Main Input Current	The inverter has detected a high main input current condition. • If condition is detected, outdoor unit will stop (compressor and fan) – moderate condition. • Anti-short cycle is initiated. • If condition occurs 10 times within an hour, system will lockout – critical condition. • Inverter LEDs will blink code 22. • Refer to the unit service documentation for detailed troubleshooting procedures.	To clear, disconnect power to outdoor unit and restart.
429	Moderate / Critical	Inverter based outdoor unit*	OD Inverter DC Link Low Voltage	The inverter has detected a DC link low voltage condition. • On a call for compressor operation, if DC link power in inverter does not rise above 180 VDC for 2- and 3-ton models, 250 VDC for 4- and 5-ton models within 30 seconds, the control will display a moderate code. • If condition is detected, outdoor unit will stop (compressor and fan) – moderate condition. • An anti-short cycle timer is initiated. If condition occurs 10 times within a 60 consecutive minutes, system will lock out and display alert code 429 – critical condition. • The outdoor control anti-short cycle timer will time out and the unit will recycle the demand. • Replace outdoor inverter. • Inverter LEDs will blink code 23. • Refer to the unit service documentation for detailed troubleshooting procedures.	Automatically clears when the system detects that the issue no longer exists.
430	Moderate / Critical	Inverter based outdoor unit*	OD Inverter Compressor Startup Fail	Compressor start-up failure. • If condition is detected, outdoor unit will stop (compressor and fan) – moderate condition. • Anti-short cycle is initiated. • If condition occurs 10 times within 60 consecutive minutes, the system will lockout – critical condition. • Inverter LEDs will blink code 26. • Refer to the unit service documentation for detailed troubleshooting procedures.	To clear, disconnect power to outdoor unit and restart.
431	Moderate / Critical	Inverter based outdoor unit*	OD Inverter PFC Fault	The inverter has detected a PFC circuit over-current condition. • Error occurs when PFC detects an over current condition of 100A peak. • If condition is detected, outdoor unit will stop (compressor and fan) – moderate condition. • Anti-short cycle timer is initiated. • If condition occurs 10 times within 60 consecutive minutes, the system will lockout – critical condition. • Inverter LEDs will blink code 27. • Refer to the unit service documentation for detailed troubleshooting procedures.	To clear, disconnect power to outdoor unit and restart.
432	Moderate / Critical	Inverter based outdoor unit*	OD Inverter DC Link High Voltage	The inverter has detected a DC link high voltage condition. • Error occurs when the DC link capacitor voltage is greater than 480VDC. • If condition is detected, outdoor unit will stop (compressor and fan) – moderate condition. • Anti-short cycle timer is initiated. • If condition occurs 10 times within 60 consecutive minutes, the system will lockout – critical condition. • Inverter LEDs will blink code 28. • Refer to the unit service documentation for detailed troubleshooting procedures.	To clear, disconnect power to outdoor unit and restart.

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433	Moderate / Critical	Inverter based outdoor unit*	OD Inverter Compressor Over-current	Compressor phase current is too high. • Error occurs when compressor peak phase current is greater than 28A. • Inverter will issue code 14 first and slow down to try to reduce the current. • If the current remains high, outdoor unit will stop (compressor and fan) – moderate condition. • Anti-short cycle timer is initiated. • If condition occurs 5 times within 60 consecutive minutes, the system will lockout – critical condition. • Inverter LEDs will blink code 29. • Refer to the unit service documentation for detailed troubleshooting procedures.	To clear alert code disconnect power to outdoor unit and restart.
434	Moderate / Critical	Inverter based outdoor unit*	OD Inverter Comm Error to Main Control	Outdoor control has lost communications with the inverter for greater than three minutes. • Outdoor control has lost communications with the inverter for greater than three minutes. • Outdoor control will stop all compressor demands – moderate condition. • Recycle power to the inverter by de-energizing the contactor for two minutes. • If this occurs three times in one thermostat call, the outdoor unit will lock out and display alert code 434 – critical condition. • Check for loose or disconnected electrical connections. • Interruption of main power to inverter. • Inverter LEDs will blink code 53. • Refer to the unit service documentation for detailed troubleshooting procedures.	Automatically clears when the system detects that the issue no longer exists.
435	Moderate / Critical	Inverter based outdoor unit*	OD Inverter EEPROM Checksum fault	Inverter internal error. • When this error occurs, the outdoor control will cycle power to the inverter by opening the contactor for two minutes – moderate condition. • Outdoor control will cycle power to the inverter three times and then outdoor unit is locked out – critical condition. • Inverter LEDs will blink code 60. • Refer to the unit service documentation for detailed troubleshooting procedures.	To clear alert code disconnect power to outdoor unit and restart.
436	Moderate / Critical	Inverter based outdoor unit*	OD Inverter High Heat-Sink Temperature	Inverter heat sink temperature exceeded limit. • This occurs when the heat sink temperature exceeds the inverter limit. Inverter will issue inverter alert code 13 first and slow down to try to cool the heat sink. • If temperature remains high, outdoor unit will stop both compressor and fan – moderate condition. • Anti-short cycle is initiated. • If condition occurs five times within an hour, system will lockout – critical condition. • The screws that hold the inverter to the inverter board were loose causing poor contact between these two components. • Tighten screws that hold the heat sink to the inverter control board. ***NOTE:*** *Wait five minutes for all capacitors to discharge before checking screws.* • Inverter LEDs will blink code 62. • Refer to the unit service documentation for detailed troubleshooting procedures.	Moderate condition will automatically clear when the inverter sends an alarm clear message. Critical condition is cleared by disconnecting power to the outdoor unit and restart.

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437	Moderate / Critical	Inverter based outdoor unit*	OD Inverter Heat-Sink temp Sensor Fault	Heat sink temperature sensor fault has occurred (temperature less than 4ºF or greater than 264ºF after 10 minutes of operation). • When the temperature sensor detects a temperature less than 4ºF or greater than 264ºF after 10 minutes of operation. • Outdoor unit will stop both compressor and fan – moderate condition. • Anti-short cycle is initiated. • If condition occurs five times within an hour, system will lockout – critical condition. • Inverter LEDs will blink code 65. • Refer to the unit service documentation for detailed troubleshooting procedures.	Moderate priority condition will automatically clear when the inverter sends an alarm clear message. Critical priority condition can be cleared by disconnecting and reconnecting power to outdoor unit to restart.
438	Moderate / Critical	Inverter based outdoor unit*	OD Inverter PFC Input Overcurrent	The inverter has detected a PFC circuit over-current condition. • The inverter has detected a power factor correction (PFC) over current condition. This may be caused by a high load condition, high pressure, or outdoor fan failure. • Outdoor control will display the code when the inverter has detected the error – moderate condition. • After three minutes, the inverter will reset and the compressor will resume operation. • If the error condition occurs 10 times within a 60 minute rolling time period, the outdoor unit control will lock out operation of the outdoor unit – critical condition. • Possible issue is system running at high pressures. • Check for high pressure trips or other alert codes in thermostat and outdoor control. • Inverter LEDs will blink code 73. • Refer to the unit service documentation for detailed troubleshooting procedures.	Moderate priority condition is automatically cleared when the inverter sends a clear message. Critical priority condition will automatically clear when inverter is power cycled.
439	Moderate	Inverter based outdoor unit*	OD Inverter Compressor Slowdown - High Input Current	Compressor slowdown due to high input current. • Input current is approaching a high limit. • Compressor speed will automatically slow down. The outdoor control will continue sending the inverter speed demanded by the thermostat. • The outdoor control will set indoor CFM and outdoor RPM to values according to demand percentage rather than the actual Hz. • Inverter LEDs will blink code 12. • Refer to the unit service documentation for detailed troubleshooting procedures.	Automatically clears when the condition no longer exists.
440	Moderate	Inverter based outdoor unit*	OD Inverter Compressor Slowdown - High Heat-Sink temperature	Compressor slowdown due to high heat sink temperature. • Heat sink temperature is approaching limit. • The compressor speed automatically slows to reduce heat sink temperature. • The control sets indoor CFM and outdoor RPM to values according to demand percentage rather than the actual Hz. • Feedback from supplier tear down of inverter indicates that the screws that hold the inverter to the inverter board were loose causing poor contact between these two components. • Tighten screws that hold the heat sink to the inverter control board. **NOTE:** *Wait five minutes for all capacitors to discharge before checking screws*. • Inverter LEDs will blink code 13. • Refer to the unit service documentation for detailed troubleshooting procedures.	Automatically clears when the condition no longer exists.

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Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
441	Moderate	Inverter based outdoor unit*	OD Inverter Compressor Slowdown - High Compressor Current	Compressor slowdown due to high compressor current. • Compressor slowdown due to high compressor current. • Compressor current is approaching limit. • The compressor speed automatically slows. • The control sets indoor CFM and outdoor RPM to values according to demand percentage rather than the actual Hz. • Possible issue is system running at high pressures. • Check for high pressure trips or other alert codes in thermostat and outdoor control. • Inverter LEDs will blink code 14. • Refer to the unit service documentation for detailed troubleshooting procedures.	Automatically clears when the condition no longer exists.
442	Critical	Outdoor unit	Compressor Top Cap Switch Strike Lockout	The top cap switch has opened five times within one hour. As a result, the outdoor unit is locked out. • This condition occurs when compressor thermal protection sensor opens five times within one hour. • Outdoor unit will stop.	To clear, disconnect power to outdoor unit and restart.
443	Critical	Outdoor unit	MUC Unit Code to Inverter Model Mismatch	Incorrect appliance unit size code selected. • Check for proper configuring under unit size code used for outdoor unit (see unit configuration guide or in installation instructions). • If replacing inverter, verify inverter model matches unit size. • Remove the thermostat from the system while applying power and reprogramming.	Automatically clears after the correct match is detected following a power reset.
500	Minor (Escalated to Critical after alarm persists for 15 minutes)	PureAir S	Diff Press Sensor Fault	Pressure sensor reports a fault for more than 5 minutes, or does not respond for more than 5 minutes. Device will not perform any pressure reading calculations until fault is recovered. Remaining filter life display will indicate "-" while fault exists.	Automatically clears 30 seconds after fault is recovered.
501	Minor (Escalated to Critical after alarm persists for 15 minutes)	PureAir S	UV Sensor Fault	UV sensor reports a fault for more than 5 minutes or UV sensor does not respond for more than 5 minutes. Device will not perform any UV lamp life remaining calculations until fault has recovered. Life remaining display shall indicate "-" while fault exists.	Automatically clears 30 seconds after fault is recovered.
502	Critical	PureAir S	UV Lamp Off	The light is determined to be off when the last three last light intensities measurements are below the set threshold.	Light is determined on after 1 set of five samples are above the set threshold.
503	Moderate	PureAir S	Filter life at 10%	Filter life remaining determined to be <=10%, but greater than 0%	None
504	Critical	PureAir S	Filter Life at 0%	Filter life remaining determined to be 0%	None
505	Moderate	PureAir S	PureAir Model Selection Changed	Model Selection jumper has changed positions.	Jumper repositioned back to original jumper position or system rebooted.

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506	Critical	PureAir S	UV Lamp Life at 0%	UV Lamp Life at 0%	None
532	Moderate	IHarmony	Zoning Pressure Switch Opened (High Pressure)	Zoning Pressure Switch Opened (high pressure) • Compressor pressure is above the specified limit. • Compressor is turned off. • Zoning will be restored once the high pressure switch closes.	Automatically clears after compressor pressure is within limits.
542	Moderate/ Critical	iHarmony Zone Sensor	Zone 1 Temperature Sensor Problem	• Zone temperature sensor reading out of range. • Open or short zone temperature sensor detected for more than five second. • Damper control module will operate in non-zone mode (all dampers open) – moderate condition. • If after 10 minutes the condition does not change, the priority code is change to critical. System will continue to operate in non-zone mode.	Automatically clears 30 seconds after condition no longer exist.
543	Moderate/ Critical	iHarmony Zone Sensor	Zone 2 Temperature Sensor Problem		
544	Moderate/ Critical	iHarmony Zone Sensor	Zone 3 Temperature Sensor Problem		
545	Moderate/ Critical	iHarmony Zone Sensor	Zone 4 Temperature Sensor Problem		
546	Critical	iHarmony Zone Sensor	Memory Error	Zone Sensor EEPROM error (Power ON). System shall restore everything to Energy save Default and operate.	Zone sensor will have to be replace.
547	Critical	iHarmony Zone Sensor	Memory Error	Zone Sensor EEPROM error (Operating). System shall operate in normal mode operation until power off. The reading for humidity will not be valid. This message indicates hum sensor is not working correctly.	Zone sensor will have to be replace.
548	Critical	iHarmony Zone Sensor	Humidity Sensor Error	Zone Sensor - Hum sensor error (without humidifier or dehumidifier): sensor reads out of range 0% to 100%	Zone sensor will have to be replace if it does not auto correct itself.
549	Reminder	iHarmony Zone Sensor	User Editable	Zone Sensor custom reminder1. Displayed in notification screen.	Pressing done button will clear the reminder or pressing remind later on pop-up screen will extend the duration.
550	Reminder	iHarmony Zone Sensor	User Editable	Zone Sensor custom reminder2. Displayed in notification screen.	
594	Moderate / Critical	Equipment interface module	Pre-Coil Air temp Sensor Problem	Pre-coil discharge air temperature sensor problem (dual-fuel mode only). Advances from moderate to critical after ten (10) minutes. • Interlock relay energized, but input not sensed after three seconds. • No heating and cooling operations. • De-energize interlock relay and re-energized five minutes later if demand is still present.	Alarm clears five minutes after fault clears.
600	Minor	Outdoor unit	Load Shed Event	Compressor has been cycled **OFF** on utility load shedding. • Load shedding function provides a method for a local utility company to limit the maximum power level usage of the outdoor unit. • The feature is activated by applying 24VAC power across the L and C terminals on the outdoor control.	Automatically clears when L terminal is inactive.

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601	Minor	Heat Pump	OD Unit Low Ambient Operational Lockout	• This is a low ambient protection feature. • Outdoor unit has been lock out (will not run) due to low ambient conditions. • Outdoor unit will not operate when the outdoor ambient is at or below 4°F (-15.6°C). • If the unit is satisfying a demand (running) and the outdoor ambient drops below 4°F (-15.6°C), the unit will continue to operate until the demand has been satisfied or the outdoor ambient drops to 15°F (-9.4°C) which will result in the unit being locked out (shut down).	Automatically clears when low temperature condition no longer exists.
610	Critical	Thermostat	Low Room Temperature Detected	• This alert will automatically notified the user that a low room temperature condition exist. A notification is displayed on the HD Display and email notification sent to homeowner and dealer. • The freeze alert protection parameter range is 30°F to 50°F (-1.11 to 10.0°C). Default is 40°F (4.44°C). **NOTE:** Notification is dependent on the thermostat having a active Wi-Fi connection and the user account has been setup and includes a valid email address.	Automatically clears when condition is resolved.
611	Critical	Thermostat	High Room Temperature Detected	• This alert will automatically notified the user that a high room temperature condition exist. A notification is displayed on the HD Display and email notification sent to homeowner and dealer. • The heat alert protection parameter range is 80°F to 100°F (26.67 to 37.78°C). Default is 90°F (32.22°C). **NOTE:** Notification is dependent on the thermostat having a active Wi-Fi connection and the user account has been setup and includes a valid email address.	Automatically clears when condition is resolved.
700	Critical	S30 HD Display Unit or Mag-Mount	Comfort Sensor Temp Sensor Problem	The temperature sensor in the HD Display is not working properly. • Run reset all under Dealer Control Center. • Try removing display from mag-mount and reattaching. • If issue persist, then replace either the HD Display or Mag-Mount.	Automatically clears when the system detects that the issue no longer exists.
701	Moderate	Thermostat	The thermostat is reading indoor temperatures above the pre-programmed limit.	• Run **reset all** under Dealer Control Center. • Cool thermostat • Adjust set point. • Replace HD Display or mag-mount, if needed.	Automatically clears when the system detects that the issue no longer exists.
702	Moderate	Thermostat			
703	Moderate	S30 Mag-Mount			Automatically clears when the system detects that the issue no longer exists.
704	Moderate	S30 Mag-Mount		• Run reset all under Dealer Control Center. • Replace mag-mount, if needed.	Automatically clears when the system detects that the issue no longer exists.
705	Moderate	S30 Mag-Mount		• Run reset all under Dealer Control Center. • Replace mag-mount, if needed.	Automatically clears when the system detects that the issue no longer exists.
900	Moderate	S30 System	Temperature Control Problem	Something is causing the system not to be able to reach set point. Check for dirty coil, low refrigerant or verify the system is not under size for the application.	Automatically clears when the system detects that the issue no longer exists.

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901	Moderate	S30 System	Temperature Control Problem	This indicates the system is not running in optimized efficiency. There may be a component or component that will require attention. Alert will be a moderate when ON, which will be the default setting. If turned off, this alert will be a minor.	Automatically clears when the system detects that the issue no longer exists.
65537	Critical	Thermostat	Missing Mag-Mount Base	• Base not detected for more than 30 seconds. • Amber LED is displayed on Smart Hub. • Mount and wire Mag-Mount before powering up Smart Hub.	Automatically clears once is detected for two seconds.
65538	Minor	Thermostat	Missing Mag-Mount Base	• Base not detected for less than 30 seconds. • Amber LED is displayed on Smart Hub. • Mount and wire Mag-Mount before powering up Smart Hub.	Automatically clears once is detected for two seconds.
65539	Critical	Thermostat	Missing HD Wall Display	• HD Wall Display not detected for more than 30 seconds. • Solid blue LED will appear on Mag-Mount if powered. • Blinking blue LED will appear if not communicating with Smart Hub. Typically the thermostat will send a command to the unknown device and place it in a soft disable state. The iComfort control with the soft disable state will indicate so as follows: • On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink 3 seconds on and 1 second off. • On the equipment interface module, the green LED will blink 3 seconds on and 1 second off. Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.	Automatically clears once is detected for two seconds.
65540	Minor	Thermostat	Missing HD Wall Display	• HD Wall Display not detected for less than 30 seconds. • Solid blue LED will appear on Mag-Mount if powered. • Blinking blue LED will appear if not communicating with Smart Hub. Typically the thermostat will send a command to the unknown device and place it in a soft disable state. The iComfort control with the soft disable state will indicate so as follows: • On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink 3 seconds on and 1 second off. • On the equipment interface module, the green LED will blink 3 seconds on and 1 second off. Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.	Automatically clears once is detected for two seconds.

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65541	Minor	Thermostat	Download-failed	Download for firmware failed. Typically the thermostat will send a command to the unknown device and place it in a soft disable state. The iComfort control with the soft disable state will indicate so as follows: • On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink 3 seconds on and 1 second off. • On the equipment interface module, the green LED will blink 3 seconds on and 1 second off. Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.	Not applicable.
65542	Minor	Thermostat	Hash verification failed	Has verification failed. Update failed. • Solid blue LED will appear on Mag-Mount if powered. • Blinking blue LED will appear if not communicating with Smart Hub. Typically the thermostat will send a command to the unknown device and place it in a soft disable state. The iComfort control with the soft disable state will indicate so as follows: • On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink 3 seconds on and 1 second off. • On the equipment interface module, the green LED will blink 3 seconds on and 1 second off. Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.	Not applicable. Automatically clears once is detected for two seconds.
65543	Info	Thermostat	Firmware updated	When new firmware has been successfully updated to the thermostat. Typically the thermostat will send a command to the unknown device and place it in a soft disable state. The iComfort control with the soft disable state will indicate so as follows: • On air handler, furnace and outdoor controls, the state is displayed by double horizontal lines on seven-segment display. • On the damper control module, the green LED will blink 3 seconds on and 1 second off. • On the equipment interface module, the green LED will blink 3 seconds on and 1 second off. Cycling power to the soft disabled control may clear the condition. If cycling power does not clear the soft disable state then replace control.	Clears automatically after successfully update.
65544	Critical	Thermostat	Too many siblings	The system is limited to no more than five (5) Smart Hubs in a local Wi-Fi network.	Once the system detects that only five or less Smart Hubs are detected on the network will the alert code automatically clears.

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* Current Lennox modulating outdoor units are XC20, XP20, XC25 and XP25.

Alert Code	Priority Condition	Applicable System Component(s)	Actual Displayed Alert Text	Component or System Operational State and Troubleshooting Tip	How to clear alert code
65545	Minor	S30 System	Cooling Prognostics Alert (capacity alert)	This indicates the system is not running cooling mode in optimized efficiency. There may be a component or components that will require attention. *NOTE:* *Currently this is a minor alert and will not generate an email notification to the dealer or homeowner. Parameter settings for this feature are hidden for the software version 3.2 release. The information will be used for data collection only and sent to the Lennox server.* This algorithm will determine whether the unit will run out of capacity during the hottest time of summer. It will look back everyday a minimum of three days to see if there is a pattern and compare it to the hottest day on record for that zip code before triggering an alert. It must see a pattern before it will trigger the alert.	The system will continue to count the number occurrences within a 24 hours period where system demand is not achieved. Will clear once cooling demand is achieved.

Installation Checklist

Smart Hub Checks:		YES	NO
1	Is the Smart Hub properly mounted to either a wall stud or wall? (Do not mount on equipment or ductwork)		
2	Is communication status LED (green) visible? When LED is active it indicates that 24VAC is present at the Smart Hub. It also indicates communication is active between Smart Hub, Mag-Mount and HD Display.		
3	Are all terminal wiring properly connected and tight?		
4	When required, is either or both the discharge (DATS) and outdoor (OAS) air sensors properly connected and isolated when used?		

Mag-Mount Checks:		YES	NO
1	Are all terminal wiring properly connected and tight?		
2	Is the solid blue LED visible when the HD Display is removed? This indicates all wiring is correct. Blinking blue LED indicates the A and B communication wires are reversed.		
3	Is the solid blue LED not visible when the HD Display is removed? This usually indicates 12VDC to + and - is not present at the Mag-Mount terminals.		

HD Display Checks:		YES	NO
1	Is the HD Display properly placed and connected to Mag-Mount? When properly connected, the Mag-Mount blue LED will be off.		
2	Is the screen blank after initial power-up? The HD Display may take up to three minutes before anything appears on the screen due to a HD Display low battery condition. HD Display battery charging only occurs when connected to the Mag-Mount.		

System Checks		YES	NO
1	Is the Wi-Fi connected?		
2	Can the homeowner access the consumer portal (www.myicomfort.com) from either a PC or tablet?		
3	Has the homeowner downloaded the Lennox Thermostat application from either Google Play or IOS App Store to their mobile devices?		
4	Is the Lennox Dealer account number or your main shop phone number been added to the dealer information screen?		
5	If applicable, has the air handler's electric heat strips been commissioned? If not, commissioning of heat strips must be performed.		
6	Has a complete system test been run? If not, from the HD Display home screen go to **settings** > **advance settings** > **view dealer control center > and select tests.**		

Electrical Troubleshooting

OVERVIEW

The purpose of the service and application note is to address electrical troubleshooting of various connections between iComfort equipment and the applicable expected voltages. Applicable controls are thermostats, Lennox iComfort Equipment Interface Module (EIM) and iHarmony (DCM) and all iComfort Air Handler, Furnaces and Outdoor Units. Use these voltages to:

- Resolve double dashes on in-zone sensors.
- Determine whether the wire is bad or the device is faulty.
- Determine which wire is bad in the bundle.
- Resolve "missing outdoor unit".
- Resolve "can't find iComfort indoor unit".

DEFINITIONS

- **Naked** = control has no wires on it at all
- **Loaded** = voltage from **c** to **i-** / **i+** when all four wires are on
- **Landed** = voltage from **c** to **i-** / **i+** without **r** wired on board
- Transformer voltage is specific and best with three decimal places. For example 28.316
  - » Thousandths always bounces and is okay.
  - » Hundredths can bounce but not wide range
  - » Tenths should never bounce

1. If it does almost every time it is a float switch that is breaking **r** to the thermostat

2. Complaint of system waiting

3. History of active alarm codes 105 and 120.

4. Codes not related to equipment

5. Blank screens

6. Wi-Fi will not stay connected.

TESTING

Table 19. Various Equipment

C to i+ and i- Terminals	Naked	Loaded	Landed
Gas Furnace (IFC)	2.84	2.615	1.9
Air Handlers - CBX32MV and CBX40UHV (AHC)	2.44	2.5	1.7
Equipment Interface Module	2.44	2.4	1.7
Outdoor Unit with IFC	0	2.615	1.9
Outdoor Unit with AHC	0	2.45	1.7

Table 20. DCM C to i+ and i- Terminals

DCM C to i+ and i- Terminals	Naked	Loaded	Landed
DCM with IFC	N/A	2.615	1.9
DCM with AHC	N/A	2.45	1.7

Table 21. DCM C to D+, D- and PWR Terminals

DCM C to D+, D- and PWR Terminals	Naked	Loaded	Landed
DCM with IFC			
C to d-	2.5	2.497	1.8
C to d+	2.5	2.497	1.8
C to pwr	12.43	12.43	N/A
NOTE: IFC d-/d+ will be .1vdc lower than i-/i+			

Table 22. DCM C to D+, D- and PWR Terminals

DCM C to D+, D- and PWR Terminals	Naked	Loaded	Landed
DCM with AHC			
C to d-	2.4	2.4	1.7
C to d+	2.4	2.4	1.7
C to pwr	12.43	12.43	N/A
NOTE: IFC d-/d+ will be .1vdc lower than i-/i+			

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